THE SHORES PROJECT

DRAFT
ENVIRONMENTAL IMPACT REPORT

Volume I

COUNTY PROJECT NO. R2005-00234-(4)
COASTAL DEVELOPMENT PERMIT NO. RCDP 200500002
PARKING PERMIT NO. RPKP 200500004
VARIANCE NO. RVAR 200500004
STATE CLEARINGHOUSE NO. 2005071080

Los Angeles County
Department of Regional Planning
320 West Temple Street
Los Angeles, California 90012

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TABLE OF CONTENTS

VOLUME I of II

Section		Page
1.0	EXECUTIVE SUMMARY	1.0-1
2.0	INTRODUCTION	2.0-1
3.0	PROJECT DESCRIPTION	3.0-1
4.0	ENVIRONMENTAL SETTING	4.0-1
5.0	IMPACT ANALYSIS	5.0-1
	5.1 Geotechnical and Soil Resources	5.1-1
	5.2 Noise	5.2-1
	5.3 Hydrology and Water Quality	5.3-1
	5.4 Air Quality	5.4-1
	5.5 Visual Quality	5.5-1
	5.6 Traffic/Access	5.6-1
	5.7 Solid Waste Disposal	5.7-1
	5.8 Water Service	5.8-1
	5.9 Sewer Service	5.9-1
6.0	ALTERNATIVES	6.0-1
7.0	THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY	7.0-1
8.0	SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD RESULT FROM THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED	8.0-1
9.0	GROWTH-INDUCING IMPACTS	9.0-1
10.0	REFERENCES	10.0-1
11.0	PREPARERS OF THE EIR	11.0-1

TABLE OF CONTENTS (continued)

VOLUME II of II

APPENDICES

Appendix 2.0(A) – Initial Study / Notice of Preparation

Appendix 2.0(B) – Written Responses to the Notice of Preparation

Appendix 4.0(A) – Minutes of DCB Hearing

Appendix 5.1 – Geotechnical Data / Reports

Appendix 5.1(A) – URS, Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California (May 8, 2001)

Appendix 5.1(B) – URS, Soil Gas Survey Letter Report, Proposed Apartment Complex Redevelopment, Del Rey Shores, Marina del Rey, California (May 12, 2005)

Appendix 5.1(C) – URS, recent update of the Geotechnical Investigation (June 2, 2005)

Appendix 5.2 – Noise Data

Appendix 5.3 – Hydrology and Water Quality Report
PSOMAS, Site Hydrology Study for Del Rey Shores (April 2005)

Appendix 5.4 – Air Quality Data

Appendix 5.4(A) – Calculations

Appendix 5.4(B) – Analysis of Construction Emissions

Appendix 5.4(C) – Wind Study
RWDI, Wind Study Del Rey Shores Apartments (March 30, 2005)

Appendix 5.6 – Traffic Report
Crain & Associates, Traffic Analysis for a Proposed 544-Unit Residential Development on Parcels 100 and 101 In Marina Del Rey (June 2005)

Appendix 5.7 – Solid Waste Data

Appendix 5.8 – Water Service Availability Letter

Appendix 5.9 – Sewer Capacity Verification Letter

LIST OF FIGURES

Figure		Page
2.0-1	Regional Location	2.0-3
2.0-2	The Shores Apartments Project Site	2.0-4
2.0-3	The Shores Proposed Site Plan	2.0-7
3.0-1	Regional and Local Site Location	3.0-3
3.0-2	Relationships of Project Parcels to the Marina del Rey Land Use Plan	3.0-4
3.0-3	Existing Site Conditions	3.0-5
3.0-4	The Shores Illustrative Site Plan	3.0-6
3.0-5	The Shores Perspective from Via Marina and Marquesas Way	3.0-7
3.0-6	The Shores One-Bedroom Apartment Floor Plans	3.0-12
3.0-7	The Shores Two-Bedroom Apartment Floor Plans	3.0-13
3.0-8	The Shores Perspective from Courtyard	3.0-14
3.0-9	The Shores Building Elevations	3.0-15
3.0-10	The Shores Building Cross-Sections	3.0-16
3.0-11	The Shores Vehicular Access	3.0-17
4.0-1	Marina del Rey Parcels 100 and 101	4.0-3
4.0-2	Surrounding Land Uses/Development Zones	4.0-4
4.0-3	Related Projects Location Map	4.0-11
5.2-1	Noise Attenuation Barriers	5.2-3
5.2-2	Typical Levels of Ground-Bourne Vibration	5.2-6
5.2-3	Land Use Compatibility Guidelines for Noise	5.2-13
5.2-4	Noise Sensitive Uses Along Studied Roadway Segments	5.2-14
5.2-5	Haul Route	5.2-21
5.4-1	South Coast Air Basin	5.4-3
5.5-1	Representative Site Vistas	5.5-5
5.5-2	Viewshed Photo Key Map	5.5-6
5.5-3	Pre- and Post-Development View of Site; Viewing Northbound on Via Marina South of Marquesas Way	5.5-9
5.5-4	Pre- and Post-Development View of Site; Viewing Southbound on Via Marina North of Panay Way	5.5-10
5.5-5	Site Renderings	5.5-11
5.5-6	Shade Shadow Effects	5.5-18
5.6-1	Study Intersection Locations	5.6-5
5.6-2	Existing (2005) Traffic Volumes – AM Peak Hour	5.6-10
5.6-3	Existing (2005) Traffic Volumes – PM Peak Hour	5.6-11
5.6-4	Related Projects Locations	5.6-16
5.6-5	Trip Distribution Percentages	5.6-21
5.6-6	Traffic Volumes – Net Shores Project Traffic – AM Peak Hour	5.6-22
5.6-7	Traffic Volumes – Net Shores Project Traffic – PM Peak Hour	5.6-23
5.6-8	Future (2009) Traffic Volumes without Project (Ambient Growth) – AM Peak Hour	5.6-26
5.6-9	Future (2009) Traffic Volumes without Project (Ambient Growth) – PM Peak Hour	5.6-27
5.6-10	Future (2009) Traffic Volumes with Project – AM Peak Hour	5.6-28
5.6-11	Future (2009) Traffic Volumes with Project – PM Peak Hour	5.6-29
5.6-12	Related Project Traffic Volumes – AM Peak Hour	5.6-38
5.6-13	Related Project Traffic Volumes – PM Peak Hour	5.6-39
5.6-14	Future (2009) Traffic Volumes – with Project and Related Projects – AM Peak Hour	5.6-40
5.6-15	Future (2009) Traffic Volumes – with Project and Related Projects – PM Peak Hour	5.6-41
5.7-1	Locations of Major Los Angeles County Landfill Sites	5.7-11
5.8-1	Marina del Rey Water Distribution System	5.8-5
5.9-1	Existing Wastewater Collection System	5.9-5

LIST OF TABLES

Table		Page
1.0-1	Summary Table of Project Impacts and Mitigation Measures	1.0-6
3.0-1	Description of Proposed Residential Units by Type	3.0-10
4.0-1	Related Projects Descriptions	4.0-10
4.0-2	SCAG Demographic Projections – Census Tract 7029.10	4.0-13
4.0-3	The Shores Population and Housing Unit Statistical Summary	4.0-13
5.1-1	Seismic Design Parameters	5.1-4
5.2-1	Outside to Inside Noise Attenuation	5.2-4
5.2-2	County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources	5.2-9
5.2-3	County of Los Angeles Construction Equipment Noise Restrictions	5.2-10
5.2-4	Existing Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project	5.2-15
5.2-5	Predicted Future Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project	5.2-18
5.2-6	Noise Levels of Typical Construction Equipment	5.2-20
5.2-7	Predicted Cumulative Roadway Noise Levels at Noise-Sensitive Locations	5.2-25
5.4-1	National Ambient Air Quality Standards and Status – South Coast Air Basin (Los Angeles County)	5.4-5
5.4-2	California Ambient Air Quality Standards and Status – South Coast Air Basin (Los Angeles County)	5.4-6
5.4-3	Ambient Air Quality Standards	5.4-11
5.4-4	Ambient Pollutant Concentrations Registered in SRA 2	5.4-13
5.4-5	Existing Carbon Monoxide Concentrations at Project Study Area Intersections	5.4-15
5.4-6	Existing Project Site Air Emissions	5.4-16
5.4-7	Localized Significance Criteria for SRA 2	5.4-18
5.4-8	Estimated Unmitigated Demolition, Excavation / Grading and Construction Emissions	5.4-21
5.4-9	Localized Significance Thresholds Analysis During Construction	5.4-22
5.4-10	Estimated Operational Emissions without Mitigation	5.4-23
5.4-11	Carbon Monoxide Concentrations Cumulative with Project Traffic (2009)	5.4-26
5.4-12	Comparison of Growth of ADT to Population Growth	5.4-31
5.6-1	Project Trip Generation Rates	5.6-4
5.6-2	Level of Service Operating Characteristics	5.6-6
5.6-3	Critical Movement Volume Ranges for Determining Levels of Service	5.6-6
5.6-4	Level of Service as a Function of CMA Values	5.6-7
5.6-5	Directional Trip Distribution	5.6-12
5.6-6	Critical Movement Analysis (2005) Summary	5.6-13
5.6-7	Total Allowable Phase II Marina del Rey Development	5.6-14
5.6-8	Phase II Development Potential Allocated to Development Zone 12	5.6-14
5.6-9	Related Projects Descriptions and Trip Generation	5.6-17
5.6-10	Project Trip Generation	5.6-20
5.6-11	Summary of Critical Movement Analysis Future (2009) Traffic Conditions – Without and With Project – AM Peak Hour	5.6-25
5.6-12	Summary of Critical Movement Analysis Future (2009) Traffic Conditions – Without and With Project – PM Peak Hour	5.6-25
5.6-13	Parking Tabulation for the Proposed Project	5.6-31
5.6-14	Development Zone 12 PM Peak-Hour Trips	5.6-33
5.6-15	Summary of Critical Movement Analysis – Future (2009) Traffic Conditions – With Project Plus Mitigation	5.6-36
5.6-16	Summary of Critical Movement Analysis – Future (2009) Traffic Conditions – With Cumulative Development – AM Peak Hour	5.6-37
5.6-17	Summary of Critical Movement Analysis – Future (2009) Traffic Conditions – With Cumulative Development – PM Peak Hour	5.6-42
5.6-18	Summary of Critical Movement Analysis – Future (2009) With Cumulative Development Traffic Conditions	5.6-46

LIST OF TABLES (continued)

Table		Page
5.7-1	The Shores Project Site – Existing Solid Waste Generation (No Recycling)	5.7-8
5.7-2	Existing Landfill Capacity and Regional Needs Analysis for Los Angeles County	5.7-12
5.7-3	The Shores Proposed Project Solid Waste Generation (No Recycling)	5.7-16
5.7-4	Cumulative Solid Waste Generation (No Recycling) – Proposed Project and Related Projects	5.7-19
5.8-1	Existing Water Demand – The Shores Project Site	5.8-4
5.8-2	The Shores Project Water Demand	5.8-8
5.8-3	Cumulative Water Demand – Proposed Project and Related Projects	5.8-10
5.9-1	Existing Wastewater Generation	5.9-4
5.9-2	Proposed Project Wastewater Generation	5.9-8
5.9-3	Cumulative Wastewater Generation – Proposed Project and Related Projects	5.9-10

1.0 EXECUTIVE SUMMARY

PURPOSE

It is the intent of the Executive Summary to provide the reader with a clear and simple description of the proposed project and its potential environmental impacts. Section 15123 of the California Environmental Quality Act (CEQA) Guidelines *requires that the summary identify each significant effect, recommended mitigation measure(s), and alternatives that would minimize or avoid potential significant impacts. The summary is also required to identify areas of controversy known to the lead agency, including issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives, and whether or how to mitigate significant effects. This section focuses on the major areas of the proposed project that are important to decision makers and utilizes non-technical language to promote understanding.*

1.1 INTRODUCTION

The Shores project is located within the boundaries of the Marina del Rey Land Use Plan (LUP) area. Land area surrounding the small-craft harbor is leased by the County of Los Angeles to various individuals and entities through long-term ground leases.

Existing uses in Marina del Rey were developed in the early to mid-1960s, around the time the small-craft harbor was initially dedicated, and are considered Phase I development as identified in the Marina del Rey LUP. Existing residential uses, in most locations, are over 30 years of age. These aging improvements lack contemporary design elements and tenant amenities necessary to serve current residential lifestyles, such as state-of-the-art wiring for high-speed telecommunications and electronics, contemporary kitchens, and modern climate control systems.

The Marina del Rey LUP specifically encourages the recycling and intensification (within designated limits) of existing Phase I development. To maintain the popularity of Marina del Rey and to enhance the revenue stream from the Marina, the County approved a Marina del Rey Asset Management Strategy to encourage the redevelopment of uses constructed by leaseholders during Phase I. Beginning in 1998, the County, as part of this strategy, has released invitations to solicit lease extension and redevelopment proposals for specific parcels in Marina del Rey. The proposal for The Shores project is a response to this solicitation. Being wholly consistent with the numerous policies of the LUP for Marina del Rey, the applicant proposes to redevelop uses on the project site.

The applicant is requesting approval of the entitlements necessary to redevelop existing uses located on Parcels 100 and 101 in Marina del Rey. As discussed in greater detail within **Section 3.0, Project Description,** land-use entitlement approvals necessary to complete the project development include (1) site plan review by the Marina del Rey Design Control Board; (2) issuance of a Coastal Development Permit; (3) issuance of a Parking Permit (to authorize installation and maintenance of compact parking for a small portion of required parking); (4) a variance to the LUP (to modify residential sign standards in order to provide sufficient project signage) by the Department of Regional Planning; and (5) grading and building permit approvals from the County Department of Public Works.

1.2 SITE LOCATION AND DESCRIPTION

Regionally, Marina del Rey is located along the coast within southwestern Los Angeles County. The proposed project site is situated in the western portion of the Marina del Rey small-craft harbor, but is not adjacent to the waters of the Marina or to the Pacific Ocean. Specifically, the site is situated at the northwest corner of the intersection of Via Marina and Marquesas Way. The project site consists of two contiguous parcels (Parcels 100 and 101) that total approximately 8.31 acres in size.

Existing land uses on the project site include 34 garden-style apartment buildings, primarily two-story walk-ups, with 202 total units, as well as surface parking and landscaping associated with the residences. These structures would be removed as part of The Shores project.

1.3 PROJECT DESCRIPTION

The Shores project consists of an apartment community of 12 structures containing a total of 544 residential dwelling units. These structures are generally built along the perimeter of the site, most fronting Marquesas Way and Via Marina. Ten of the 12 buildings are arranged around a large, central courtyard that contains a pool and recreation facilities for residents of the buildings. The 12 buildings would be five-story, wood-framed structures, with parking provided below the residences in semi-subterranean parking garages. Structure height would not exceed 75 feet (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features) when measured along Via Marina and Marquesas Way per County standards. The project features significant landscaping both in the central courtyard area and fronting streets that surround the buildings.

A total of 1,114 parking spaces would be provided throughout The Shores project in structured parking garages. The project's structured parking would be provided in two-level parking garages within each proposed structure. The lower parking level would be subterranean while the upper parking level would

be partially below grade. Parking for apartment residents would be kept secure through the use of security gate enclosures in each parking entrance. Guest parking would be provided in non-gated areas of the garages. All parking garages would be screened from the street by terraced, landscaped areas. Parking is consistent with the current code requirements defined in the Marina del Rey LUP.

Vehicular access to the parking garages would be provided from driveways in six locations: one along Via Marina, two along Admiralty Loop, and three along Dell Avenue (a private alley). The driveway on Via Marina would provide ingress and egress right-turn-only lanes; all other driveways would provide full left- and right-turn access.

1.4 RELATIONSHIP OF THE PROJECT TO THE REGION

The project site is located within the West Side Cities Subregion as defined by the Southern California Association of Governments (SCAG). This area is projected to undergo sustained population growth through the year 2020. Population in this region is predicted to increase by 11.5 percent, while the number of housing units is predicted to increase by 14.7 percent.

The site is located immediately adjacent to existing development in an area that is presently afforded all necessary roadway, utility, and communications infrastructure, as well as law enforcement, fire protection, regional employment and shopping centers, and governmental and medical services. Intensification of development within Marina del Rey is consistent with latest planning concepts promoting in-fill development over developing outlying areas away from employment centers. This type of development can serve to reduce commute distances and time, and makes use of existing infrastructure to provide services.

1.5 TOPICS OF CONCERN

Consistent with the requirements of CEQA, the County of Los Angeles prepared an Initial Study for the project. Based on conclusions of the Initial Study, this EIR addresses the following topics:

- Geotechnical and Soil Resources
- Noise
- Hydrology and Water Quality
- Air Quality
- Visual Quality
- Traffic/ Access
- Solid Waste Disposal
- Water Service
- Sewer Service

1.6 IMPACTS, MITIGATION MEASURES, AND UNAVOIDABLE SIGNIFICANT IMPACTS

This EIR has been prepared to assess each potentially significant impact to the environment that could result from implementation of the proposed project. For a detailed discussion regarding potential impacts, refer to **Section 5.0, Impact Analysis,** of this EIR.

In accordance with the *State CEQA Guidelines*, summaries of the project's impacts are provided in **Table 1.0-1, Summary Table of Project Impacts and Mitigation Measures**. Also provided in **Table 1.0-1** is a list of the proposed mitigation measures that are recommended in response to the significant impacts identified in this EIR, and a determination of the level of significance of the impact after implementation of the recommended mitigation measures.

1.7 ALTERNATIVES

In response to the significant impacts resulting from the project, the following four on-site alternatives to the project have been defined and analyzed in **Section 6.0, Alternatives,** of this EIR. The environmentally superior alternative is also defined in **Section 6.0**. Descriptions of each alternative are provided below.

- **Alternative 1, The No Project Alternative.** This alternative is required by the *State CEQA Guidelines* and compares the impacts which might occur if the project is not approved, based on present plans and infrastructure constraints, with those that would be generated by the project as proposed. Under the No Project Alternative, the project site would remain in its present condition until the termination of its lease, and potential project-related impacts described in this EIR would not occur.

- **Alternative 2, Provision for Affordable Housing.** This alternative would increase the intensity of development on the project site. Provisions and precedent are present in the County of Los Angeles Affordable Housing Density Bonus Interim Guidelines that allow for a density bonus of 25 percent should affordable housing be included in the project. The LUP stipulates that 624 units are permitted on the project site. Given a density bonus of 25 percent, 780 units could be constructed on the project site (624 permitted units x 1.25 = 780 units). This number of units would require the project to include four levels of parking (one level below grade and the remaining levels at and above grade). Above this parking structure, eight levels of housing would be necessary to accommodate the 780 residential units. These project modifications would increase overall building height by approximately 40 feet (an increase in overall height from 75 to approximately 115 feet). The project

would provide for approximately 156 affordable units (an increase of 25 percent over the base density of 624 units).

- **Alternative 3: Rehabilitation of Existing Structures.** This alternative involves rehabilitation of the existing structures inclusive of one additional floor. Existing uses on the project site provide for 202 apartment units. Preliminary design schemes indicate that given the existing building area, the addition of one floor would yield approximately 303 total apartment units (a net increase of 101 units). Demolition of the structures and site grading would not occur as part of this project alternative. However, structural reinforcement of the foundations and building framing would be required. As such, the exterior façades of the structures and the interior framing would need to be exposed. This would require the removal and disposal of all of the wood and stucco façades and all interior features associated with the apartment units, including the existing drywall. The construction period would be approximately 20 months.

- **Alternative 4: Above Ground Parking.** This alternative would result in the construction and operation of an alternative project consisting of an above-ground, six-deck parking structure in the southern portion of the project site and a 12-story above-ground residential structure situated in the northern portion of the project site. It is anticipated that the parking structure would provide for 1,114 parking spaces inclusive of guest spaces. The parking structure height would be approximately 62 feet above finished grade. The residential tower would provide for 544 apartment units with a combination of 273 one-bedroom and 271 two-bedroom units. As proposed, the residential tower height would be approximately 120 feet above finished grade. No below-grade parking is proposed as part of this alternative. The construction period would be approximately 28 months.

Table 1.0-1
Summary Table of Project Impacts and Mitigation Measures

Project Impacts	Mitigation Measures	Residual Impact
GEOTECHNICAL AND SOIL RESOURCES		
The project site is not traversed by any known active fault. During a moderate or major earthquake occurring close to the site, however, proposed project improvements would be subject to hazards associated with seismically-induced settlement due to seismic shaking, as well as soil liquefaction within the less dense silty sand, sand and silt soils. Unless mitigated, these impacts would have a significant effect on the environment and could expose people or structures to major geologic hazards.	**Fault Rupture, Seismic Groundshaking, Landslides:** 5.1-1. Proposed structures shall be designed in conformance with the requirements of the 1997 edition of the UBC and the County of Los Angeles Building Code for Seismic Zone 4. **Liquefaction:** 5.1-2. Remedial measures shall be taken to limit lateral deformation and subsidence by installation of ground improvements as discussed in the URS Corporation (URS) geotechnical investigation of May 8, 2001 and its letter update of June 2, 2005. As an alternative to remedial measures, the structures may be founded on a pile foundation system designed for static loads as well as the lateral and vertical drag loadings from earthquake induced liquefaction and lateral deformation. 5.1.3. The proposed structures shall either be placed on a pile foundation system deriving its support from deeper non-liquefiable dense sands and silty sands or the structures shall be placed on a shallow foundation system such as mat footing on stone columns. The owner in consultation with the Structural Engineer and Geotechnical Engineer shall select the most suitable foundation support option for the project. The choice shall be governed by the ability of the selected system to reduce the estimated earthquake induced movements to levels which can be tolerated by the supported structure and systems without losing structural integrity, or sustaining an unacceptable level of damage/loss of systems function in the design earthquake and by cost considerations. Either option shall be carried out in accordance with the recommendations outlined in the URS geotechnical investigation of May 8, 2001, and the letter update of June 2, 2005. **Expansive Soils:** 5.1-4. Any import material shall be tested for expansion potential prior to importing. 5.1-5. Expansion index tests shall be performed at the completion of grading if silty subgrade soils are exposed to verify expansion potential. **Soil Erosion:** 5.1.6 Precautions shall be taken during the performance of site clearing, excavations and grading to protect the project from flooding, ponding, or inundation by poor or improper surface drainage.	Less Than Significant

Project Impacts	Mitigation Measures	Residual Impact
GEOTECHNICAL AND SOIL RESOURCES (continued)		
	5.1-7. Temporary provisions shall be made during the rainy season to adequately direct surface drainage away from and off the project site. Where low areas cannot be avoided, pumps shall be kept on hand to continually remove water during periods of rainfall. 5.1-8. Where necessary during periods of rainfall, the Contractor shall install checkdams, desilting basins, rip-rap, sand bags or other devices or methods necessary to control erosion and provide safe conditions, in accordance with site conditions and regulatory agency requirements. 5.1-9. Following periods of rainfall and at the request of the Geotechnical Consultant, the Contractor shall make excavations in order to evaluate the extent of rain-related subgrade damage. 5.1-10. Positive measures shall be taken to properly finish grade improvements so that drainage waters from the lot and adjacent areas are directed off the lot and away from foundations, slabs and adjacent property. 5.1-11. For earth areas adjacent to the structures, a minimum drainage gradient of 2 percent is required. 5.1-12. Drainage patterns approved at the time of fine grading shall be maintained throughout the life of the proposed structures. 5.1-13. Landscaping shall be kept to a minimum and where used, limited to plants and vegetation requiring little watering as recommended by a registered landscape architect. 5.1-14. Roof drains shall be directed off the site. **Wastewater Disposal:** No mitigation measures are proposed or are required. **Soil Gas:** 5.1-15. If deemed necessary by the County Building and Safety, as defined in Los Angeles County Building Code Section 110.4, buildings or structures adjacent to or within 200 feet (60.96 meters) of active, abandoned or idle oil or gas well(s) shall be provided with methane gas-protection systems. **General Mitigation Measure:** 5.1-16. The project shall incorporate any additional design recommendations as defined in the URS geotechnical investigation, dated May 8, 2001, and the update letter to this report, dated June 2, 2005.	

Project Impacts	Mitigation Measures	Residual Impact
NOISE		
The project site is located in an urbanized area. Existing noise levels experienced on the site and surrounding area are typical of an urban setting. Proposed development on the site and existing development in nearby off-site areas contain a variety of land uses, some of which are considered noise sensitive. Construction noise could affect noise sensitive residential uses proximal to the site and noise sensitive uses along the haul route. Exterior noise levels during site construction of up to 94 dB(A) could be experienced at some noise sensitive receptor locations with direct lines of sight to the construction site. Noise levels generated from the project during construction stages would occur periodically throughout the workday. To mitigate construction noise, all construction activities would comply with County of Los Angeles Plans and Policies for noise control (Ordinance No. 11743). Construction noise would be limited to normal working hours when many residents in the Marina del Rey area are away from their homes. Nevertheless, construction noise and vibration would represent temporary but significant impact, as levels would periodically exceed County standards. The primary source of noise during project operation would be associated with vehicular traffic. Operation of The Shores project will introduce an additional 1,354 daily vehicle trips to roadways situated proximal to the project site. However, noise level increases at off-site locations generated by traffic from The Shores project would be between 0.0 and 0.4 dB(A) Community Noise Equivalent Level (CNEL), well below the range of human perception.	5.2-1. All construction equipment, fixed or mobile, that is utilized on the site for more than two working days shall be in proper operating condition and fitted with standard factory silencing features. To ensure that mobile and stationary equipment is properly maintained and meets all federal, state and local standards, the applicant shall maintain an equipment log. The log shall document the condition of equipment relative to factory specifications and identify the measures taken to ensure that all construction equipment is in proper tune and fitted with an adequate muffling device. The log shall be submitted to the LACDPW for review and approval on a quarterly basis. In areas where construction equipment (such as generators and air compressors) is left stationary and operating for more than one day within 100 feet of residential land uses, temporary portable noise structures shall be built. These barriers shall be located between the piece of equipment and sensitive land uses that preclude all sight-lines from the equipment to the residential land use(s). As the project is constructed, the use of building structures as noise barriers would be sufficient. The County Building Official or a designee should spot check to ensure compliance. 5.2-2. Construction activities shall be restricted to between the hours of 8:00 AM and 5:00 PM in order to minimize construction and haul route activities that would create noise disturbance on surrounding residential and commercial real property line. 5.2-3. Occupants/tenants of the surrounding sensitive land uses shall be informed of the anticipated duration of the project, noise impact and any other pertinent information where people can register complaints or questions regarding project activities. 5.2-4. The project applicant shall post a notice at the construction site and along the proposed truck haul route. The notice shall contain contact information, the type of project, anticipated duration of construction activity and a hotline phone number to register complaints.	Unavoidable Significant Impact for Construction Noise and Vibration

Project Impacts	Mitigation Measures	Residual Impact
NOISE (continued)		
	5.2-5. Grading work shall be kept between the hours of 8:00 AM and 5:00 PM Monday through Friday. Noise generated by the project shall attempt to remain within standards dictated by the Los Angeles County Code, Title 12, Environmental Protection, Section 12.08.440. However, the noise level shall not exceed a cumulative 15 minute noise level of 85 dB(A) (L25) during any hour that construction activities are in operation. This standard shall apply for any period of time during construction that compliance is technically and economically feasible.	Unavoidable Significant Impact for Construction Noise and Vibration
	5.2-6. All construction equipment, fixed and mobile, shall be in proper operating condition and fitted with standard silencing devices. Proper engineering noise controls should be implemented when necessary on fixed equipment. It is recommended that a monitoring program be implemented by the applicant in conjunction with the County of Los Angeles Sheriff's Department to monitor mobile sources as necessary, contingent upon the Sheriff's Department acceptance of a monitoring agreement.	
	5.2-7. Vibration associated with the operation of any device capable of exceeding the vibration perception threshold (motion velocity) of 0.01 in/sec over the range of 1 to 100 hertz) at or beyond the property boundary on private property, or at 150 feet from the source if on a public space or public right of way is prohibited.	
	5.2-8. The project applicant shall consult with an engineer regarding available technology for the noise attenuation of the Pile Driver equipment. Past operation of this device has resulted in levels above 105 dB(A) 75 feet away from the equipment. Reports shall be provided to the County of Los Angeles Department of Health Services, Public Health Division, prior to grading.	

Project Impacts	Mitigation Measures	Residual Impact
HYDROLOGY AND WATER QUALITY		
The project site is presently developed and generates surface runoff that is discharged into an existing stormwater drainage collection and conveyance system in the Dell Avenue alley and Via Marina. Due to the incorporation of eight bioswales in the proposed project, a decrease in surface water runoff during a 25-year storm event is anticipated as a result of project implementation. The project would result in potentially significant impacts with respect to erosion, sedimentation and water quality impacts (pollution from non-point sources) during demolition, construction, and operation. The project would be subject to Section 402(p) of the Federal Clean Water Act (CWA) that regulates construction storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. With implementation of the mitigation measures already incorporated into the project, no unavoidably significant flooding, erosion, sedimentation, or water quality impacts from the proposed project would occur.	To minimize pollutants and sedimentation from entering the adjacent storm drain system, the applicant would implement accepted materials storage procedures, spill prevention and other "good housekeeping" practices. As proposed, The Shores project proposes eight bioswales that would capture and treat surface runoff before it enters the off-site storm drain system. Existing flood control facilities can accommodate storm flows during a 25-year frequency storm and would be designed and constructed in accordance with the policies and standards of the LACDPW, Flood Control Division. In addition, the project applicant must also implement any additional required Best Management Practices.	Less Than Significant
AIR QUALITY		
Implementation of the project would generate both construction-related and operation-related pollutant emissions from a wide variety of stationary and mobile sources. During all project development phases, on-site and off-site emissions would be generated by construction activities including demolition, excavation, grading and construction. On-site emissions and fugitive dust would be generated by heavy-duty construction vehicles, construction worker vehicles and power generators. Off-site (mobile source) emissions would be generated by motor vehicle travel associated with construction activities. In addition, for structures built before 1978, microscopic asbestos fibers may also pose an air quality concern.	5.4-1. Develop and implement a construction management plan, as approved by the County, which includes the following measures recommended by the South Coast Air Quality Management District (SCAQMD), or equivalently effective measures approved by the SCAQMD: a. Configure construction parking to minimize traffic interference. b. Provide temporary traffic controls during all phases of construction activities to maintain traffic flow (e.g., flag person). c. Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the degree practicable. d. Re-route construction trucks away from congested streets. e. Consolidate truck deliveries when possible.	Unavoidable Significant Impact for Construction Emissions

Project Impacts	Mitigation Measures	Residual Impact
AIR QUALITY (continued)		
During construction recommended thresholds for NO_x would likely be exceeded most of the time during the demolition and grading phases due to the operation of heavy-duty vehicles. During the finishing phases of development, emissions of VOC would exceed recommended thresholds. These emissions would consist of evaporative emissions from architectural coatings and building materials (i.e., paints, solvents, roofing materials, etc.).	5.4-1 (continued) f. Provide dedicated turn lanes for movement of construction trucks and equipment on and off site. g. Maintain equipment and vehicle engines in good condition and in proper tune according to manufacturers' specifications and per SCAQMD rules, to minimize exhaust emissions. h. Suspend use of all construction equipment operations during second stage smog alerts. Contact the SCAQMD at (800) 242-4022 or www.aqmd.gov/telemweb/Forecast.aspx for daily forecasts. i. Use electricity from power poles rather than temporary diesel- or gasoline-powered generators. j. Use methanol- or natural gas-powered mobile equipment and pile drivers instead of diesel if readily available at competitive prices. k. Use propane- or butane-powered on-site mobile equipment instead of gasoline if readily available at competitive prices.	
Measures are recommended that would reduce construction-related emissions. However, no feasible mitigation exists which would reduce these emissions to below the SCAQMD's recommended thresholds of significance. Therefore, the project's construction-related emissions would be considered unavoidably significant. During operation, on-site and off-site emissions would be generated by proposed uses. On-site emissions would be generated by stationary area sources such as water and space heaters, landscape maintenance equipment and consumer products. Off-site (mobile source) emissions would be generated by motor vehicle travel associated with commuting and other auto travel by residents of the apartments.	5.4-2. Develop and implement a dust control plan, as approved by the County, which includes the following measures recommended by the SCAQMD, or equivalently effective measures approved by the SCAQMD: a. Apply approved non-toxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas inactive for four days or more). b. Replace ground cover in disturbed areas as quickly as possible. c. Enclose, cover, water twice daily, or apply approved soil binders to exposed piles (i.e., gravel, sand, dirt) according to manufacturers' specifications. d. Water active grading sites at least twice daily (SCAQMD Rule 403). e. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour (mph). f. Provide temporary wind fencing consisting of 3- to 5-foot barriers with 50 percent or less porosity along the perimeter of sites that have been cleared or are being graded.	

Project Impacts	Mitigation Measures	Residual Impact
AIR QUALITY (continued)		
	5.4-2 (continued) g. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code. h. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads (recommend water sweepers using reclaimed water if readily available). i. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip. j. Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces. k. Enforce traffic speed limits of 15 mph or less on all unpaved roads. l. Pave construction roads when the specific roadway path would be utilized for 120 days or more. 5.4-3. In the event asbestos is identified within existing on-site structures, the project applicant/developer shall comply with SCAQMD Rule 1403 (Asbestos Emissions From Demolition/Renovation Activities). Compliance with Rule 1403 is considered to mitigate asbestos-related impacts to less than significant.	
VISUAL QUALITY		
The height and mass of proposed structures are not in character with existing uses proximal to the project site to the south and west. Some tall apartment structures are present north of the project site. The project is consistent with height and mass standards defined in the Marina del Rey LUP. As defined in the Plan, replacement of Phase I Marina development is to be more intensive, both in height and density. The character of the proposed project would be typical of the future visual character of the marina as subsequent projects are developed and recycle existing land uses.	The Marina del Rey LUP requires that the project site plan and architectural design be reviewed by the Design Control Board (DCB) which is charged with the authority to regulate signage, building architectural design, site planning and facade design for all new development proposals. The DCB has reviewed the proposed The Shores project and on January 20, 2005 and gave the project its conceptual approval; such approval ensures compliance with the various applicable development standards and policies outlined in the LUP. No further mitigation is proposed or is required.	Not Significant

Project Impacts	Mitigation Measures	Residual Impact
TRAFFIC/ACCESS		
Upon completion, The Shores project would generate approximately 1,354 net new daily trips, with approximately 120 net new trips occurring during the AM peak hour and approximately 111 net new trips occurring during the PM peak hour. A total of 1,114 resident and visitor parking spaces would be provided for the 544 apartment units. This represents a surplus of 27 spaces above what is required. Prior to mitigation, project traffic volumes for The Shores project could produce a significant traffic impact at the intersection of Lincoln Boulevard and Mindanao Way. The Shores project would be required to pay the traffic mitigation fees imposed by the County of Los Angeles pursuant to the Marina del Rey Specific Plan Transportation Improvement Program. This fee is intended to address regionally significant impacts and/or impacts resulting from cumulative development in and around the Marina, by providing "fair share" contributions to planned roadway improvements identified in the LUP. After payment of the mitigation fees, impacts for The Shores project would be less than significant.	The Transportation Improvement Program (TIP) includes specific detailed transportation and circulation improvements designed to fully mitigate the traffic generation of the Phase II development in Marina del Rey. Project-specific traffic mitigation measures include the following: 5.6-1. In order to fund the recommended TIP roadway improvements, all projects within the Marina, including the proposed project are required to pay the traffic mitigation fee imposed by the County of Los Angeles, pursuant to the Marina del Rey Specific Plan TIP. This fee is intended to fund the Category 1 (local Marina) and Category 3 (regional) roadway improvements described in the TIP, by providing "fair share" contributions toward the improvements, based on the amount of project PM peak-hour trips. These improvements address local traffic generated in and confined to the Marina, as well as trips, which leave the Marina (regional trips). The County's traffic mitigation fee structure is currently $5,690 per PM peak-hour trip. Based on the expected project trip generation of 111 net new PM peak-hour trips, the project would be required to pay $631,590.00 in trip mitigation fees. Of the $631,590.00, $176,712 shall go toward Category 1 transportation improvements and the remaining $454,878.00 will go toward Category 3 transportation improvements. The LACDPW has expressed that it prefers to implement the Marina del Rey roadway improvements funded by the trip mitigation fees as a single major project in order to minimize traffic disruptions and construction time. Therefore, payment of the fee described previously is the recommended mitigation over the partial construction by this project of portions of the significant TIP roadway improvements. However, should the County decide that some roadway improvement measures are necessary immediately, the following measure is recommended to reduce the significant project traffic impact identified in this study to less than significant levels: Should the County decide that some roadway improvement measures are necessary immediately, the following measure is recommended to reduce the significant project traffic impact identified in this study to less than significant levels: 5.6-2. Lincoln Boulevard and Mindanao Way – Widen Lincoln Boulevard, and relocate and narrow the existing median island to provide a northbound right-turn only or through lane at Mindanao Way. This measure is identical to the improvement described in Appendix G (TIP) of the Marina del Rey LIP.	Less Than Significant

Project Impacts	Mitigation Measures	Residual Impact
TRAFFIC/ACCESS (continued)		
Calculations indicate that cumulative traffic resulting from area-wide development (inclusive of The Shores project) would significantly impact 10 of the 18 study intersections. Cumulative traffic would impact five intersections that occur within Marina del Rey and five intersections outside the County. As defined by the LACDPW in their letter of November 3, 2005: "The (The Shores) project is within the Marina del Rey Local Coastal Plan. The project, as well as the identified related projects within the Marina, are well within the MDR LCP potential development entitlement of 2,750 PM peak-hour trips. The proposed project is within the development zone (DZ) 12 and is consistent with the development potential identified in the current MDR Land Use Plan."	Cumulative traffic miligation includes the following: Cumulative traffic impacts would affect five intersections that occur within Marina del Rey. To implement mitigation measures at these intersections the LACDPW has established a transportation improvement fund. As defined in this report, based on the expected project trip generation of 111 net new PM peak-hour trips, the project would be required to pay $631,590.00 in trip mitigation fees. Of the $631,590.00, $176,712 shall go toward Category 1 transportation improvements, and the remaining $454,878.00 will go toward Category 3 transportation improvements. The intersections and specific mitigation measures that would be funded by either Category 1 or Category 3 transportation improvements are defined below. • Admiralty Way and Via Marina – Participate in the reconstruction of the intersection to provide for a realignment of Admiralty Way as a "through roadway," with Via Marina intersecting into Admiralty Way in a "tee" configuration. All turning movements at the intersection will be constructed as dual- or right-turning movements. This improvement is identified in the Marina del Rey TIP and will enhance flow within the Marina. • Admiralty Way and Palawan Way – Restripe the southbound approach to convert the through lane into a left/through shared lane; restripe the northbound approach to provide an exclusive right-turn only lane, in addition to a shared left-turn/through lane. This improvement is currently being investigated by the County for implementation as a new TIP-type measure, funded by fair-share contributions by projects within Marina del Rey. Also, add a third westbound through lane to Admiralty Way within the existing right-of-way by moving the median and restriping Admiralty Way, as identified in the TIP. • Lincoln Boulevard and Mindanao Way – In addition to the project-specific mitigation improvement described earlier (installation of a northbound right-turn only lane), restripe Lincoln Boulevard at Mindanao Way to provide dual left-turn lanes in the southbound direction. This improvement may require additional widening along southbound Lincoln Boulevard. Acquisition of additional rights-of-way to implement this improvement could be funded through payment of the applicable Marina del Rey traffic impact assessment fees described earlier. • Lincoln Boulevard and Fiji Way – Widen the eastbound Fiji Way approach to Lincoln Boulevard to provide an additional left-turn lane at Lincoln Boulevard. This measure is identical to the improvement described in Appendix G (TIP) of the Marina del Rey LIP.	Significant

Project Impacts	Mitigation Measures	Residual Impact
TRAFFIC/ACCESS (continued)		
	• Admiralty Way and Mindanao Way – Widen northbound Admiralty Way to provide a right-turn lane at Mindanao Way. Install dual left-turn lanes on Admiralty Way for southbound travel at the approach to Mindanao Way. In addition, modify the traffic signal to provide a westbound right-turn phase concurrent with the southbound left-turn movement. The dual left-turn lanes on Admiralty Way will enhance egress from the Marina at Mindanao Way and has already been approved as part of a previous project (Marina Two). The analysis of cumulative traffic impacts also defines impacts at five intersections that occur wholly outside or that have shared jurisdiction with the City of Los Angeles or Caltrans. For these intersections, physical improvements are infeasible as there are no reasonable, enforceable plans or programs sufficiently tied to the actual mitigation of the traffic impacts at issue. Intersection improvement measures recommended to address these cumulative traffic impacts at this intersection are described below. • Washington Boulevard and Via Marina/Ocean Avenue – The northbound approach on Palawan Way at Washington Boulevard shall be reconstructed to allow for a dual northbound left-turn lane onto westbound Washington Boulevard. Install a new traffic signal and, as necessary, modify the traffic signal at the intersection of Admiralty Way at Palawan Way. The applicant's pro-rata share is 13 percent which is $39,650.00 based on a total improvement cost estimated at $305,000.00. • Washington Boulevard and Palawan Way – Install a new traffic signal at this intersection. The northbound approach should be realigned to reduce the angle of the right-turn only lane and provide a more perpendicular approach. This improvement is also currently being assessed by the County as a new fair-share-funded Marina improvement. • Lincoln Boulevard and Washington Boulevard – No feasible physical improvements have been identified for this intersection. • Lincoln Boulevard and Marina Expressway (SR 90) – Extend SR 90 to connect to Admiralty Way via a fly-over across Lincoln Boulevard. The project should contribute its fair share to the applicable traffic impact assessment fees toward this key regional improvement. • Marina Expressway (SR 90) Eastbound and Mindanao Way – Implement a second left-turn lane in the east approach from on Mindanao Way from the Marina Expressway. Implementation of this measure(s) shall occur at the discretion and approval of the City of Los Angeles and Caltrans.	

Project Impacts	Mitigation Measures	Residual Impact
TRAFFIC/ACCESS (continued)		
	Should the County, the City of Los Angeles and Caltrans agree on a funding mechanism to implement the recommended traffic improvements prior to building occupancy, it is recommended that the applicant, where appropriate, pay its fair share of required transportation improvements.	
SOLID WASTE		
Demolition of existing uses on The Shores project site would generate approximately 88,000 cubic yards (cy) of solid waste. Additionally, construction debris would result in an approximately 4,576 cy of solid waste. In total, demolition and construction activities on the site would generate approximately 92,576 cubic yards of solid waste, assuming no recycling, or approximately 46,288 cy assuming a 50 percent diversion rate. During project operation, The Shores project would generate a net increase of solid waste generation of approximately 2,193 pounds per day, or approximately 400 tons per year, assuming no solid wastes from the project would be recycled (a worst- case scenario). The project will also generate some hazardous wastes consistent with typical residential land uses. Los Angeles County's landfills have adequate capacity to service the existing population and planned growth until the year 2017, and capacity will likely extend well beyond the year 2017. However, because an adequate supply of landfill space has not been approved for beyond 2017 and because existing solid and hazardous waste management facilities in the County are inadequate, the project increase in solid and hazardous waste generation would cause a significant impact unless additional landfill space or other disposal alternatives are approved.	5.7-1. Consistent with Title 20, Chapter 20.87 of the Los Angeles County Code, the project proponent shall provide a Recycling and Reuse Plan to recycle, at a minimum, 50 percent of the construction and demolition debris. Documentation of this recycling program will be provided to the LACDPW, prior to the issuance of the Demolition and Grading permits. 5.7-2. To reduce the volume of solid and hazardous waste generated by the operation of the project, a solid waste management plan shall be developed by The Shores project applicant. This plan shall be reviewed and approved by the LACDPW. The plan shall identify methods to promote recycling and reuse of materials, as well as safe disposal consistent with the policies and programs contained within the County of Los Angeles Source Reduction and Recycling Element. Methods could include locating recycling bins in proximity to dumpsters used by future on-site residents. 5.7-3. The Shores project applicant shall arrange with a hazardous materials hauling company for materials collection and transport to an appropriate disposal or treatment facility located outside of Los Angeles County. There are no mitigation measures known to be available that would mitigate impacts to landfill space to a less than significant levels.	Unavoidable Significant Impact on Landfill Space beyond 2017

Project Impacts	Mitigation Measures	Residual Impact
WATER SERVICE		
Water is provided to Marina del Rey by the County of Los Angeles LACDPW (Water Works District No. 29), which is the local purveyor for the Metropolitan Water District. The LACDPW prepared a master plan to upgrade the Marina del Rey Water Distribution System based on existing demand and growth projections provided by the Los Angeles County Department of Regional Planning and land uses proposed in the Marina del Rey LUP. The Shores project would consume approximately 105,280 gallons of water per day (gpd), or about 123.26 acre-feet per year (afy). This represents a net increase of approximately 66,187 gpd, or about 77.49 afy over existing water use on the project, assuming a similar irrigation requirement. No significant impacts to the existing water distribution system would occur with implementation of County-approved improvements. Entitlements for water have been secured and are adequate to serve existing uses and projected growth in Marina del Rey. In addition, mitigation is recommended that requires The Shores project to provide the Los Angeles County Department of Regional Planning with a letter from the Los Angeles County Water Works District Number 29 (WWD No. 29) indicating their ability to serve the project prior to the issuance of grading, building, or construction permits. Given these water system improvements and recommended mitigation measures, impacts to the water supply system would be less than significant.	5.8-1. Prior to the issuance of occupancy permits, The Shores project applicant shall improve, to the satisfaction of the LACDPW, water lines in Marquesas Way and Dell Avenue, as described in their correspondence of May 26, 2005. 5.8-2. The Shores project shall meet the County Efficient Landscape Ordinance since landscaped areas exceed 2,500 square feet in area. 5.8-3. The Shores project shall incorporate into the building plans water conservation measures as outlined in the following: • Health and Safety Code Section 17921.3 requiring low-flow toilets and urinals; • Title 24, California Administrative Code which establishes efficiency standards for shower heads, lavatory faucets and sink faucets, as well as requirements for pipe insulation which can reduce water used before hot water reaches equipment or fixtures; and • Government Code Section 7800, which requires that lavatories in public facilities be equipped with self-closing faucets that limit the flow of hot water.	Less Than Significant

Project Impacts	Mitigation Measures	Residual Impact
SEWER SERVICE		
Wastewater in Marina del Rey is collected and conveyed by a sewer system owned and operated by the LACDPW, which is regulated in the Marina Sewer Maintenance District (MSMD). Treatment of domestic sewage and wastewater occurs at the City of Los Angeles Hyperion Treatment Plant (HTP) in El Segundo. The Shores project would generate approximately 95,150 gallons of wastewater per day. This represents a net increase of approximately 57,058 gallons per day when compared with existing uses. The HTP currently has adequate capacity to treat sewage generated by the project. The Shores project applicant must pay connection fees to the City of Los Angeles in order to retroactively fund recent treatment plant improvements. The project applicant must also obtain a "will serve" letter prior to issuance of building permits demonstrating the ability of the treatment plant and collection system to accommodate project generated effluent. Based on the above, no significant impacts to wastewater treatment facilities would occur as a result of the proposed project. The LACDPW requires that any developer constructing a new sewer line coordinate the construction and dedication of any new sewer facilities with LACDPW's Water Works and Sewer Maintenance Division, which would be responsible for future operation and maintenance. All local collector sewer lines within the project boundaries would be constructed to standards set forth by LACDPW, and would be sized to accommodate sewage flows generated at project buildout. Impacts to the wastewater collection system would also be less than significant.	The project applicant shall pay the required sewer connection and capacity fees that are used to fund expansion of facilities. In addition, the following mitigation measures are recommended by the EIR: 5.9-1. Prior to issuance of building permits, The Shores project applicant shall demonstrate sufficient sewage capacity for the proposed project by providing a "will-serve" letter from LACDPW's Waterworks and Sewer Maintenance Division. 5.9-2. Prior to issuance of building permits, The Shores project applicant shall pay a one-time Sewer Facilities Charge to the City of Los Angeles, as required, to account for the increase in sewage generation.	No Significant Impacts to Wastewater Treatment Facilities Less Than Significant Impacts to Wastewater Collection System

2.0 INTRODUCTION

PURPOSE

This Introduction is to provide the reader with general information regarding: (1) a historical perspective; (2) an overview of the proposed project; (3) the purpose of an Environmental Impact Report (EIR); (4) standards for EIR adequacy; (5) an introduction to the format and content of this EIR; and (6) the EIR processing requirements for the project.

2.1 HISTORICAL PERSPECTIVE

2.1.1 BACKGROUND

As depicted in **Figure 2.0-1, Regional Location,** the project site is located within the Marina del Rey harbor area, which is situated within an unincorporated part of Los Angeles County. The Marina del Rey harbor and adjacent land comprise an area of approximately 800 acres owned by the County of Los Angeles. Beginning in 1960, the area was dredged to create a large recreational small-craft harbor. Construction of an offshore breakwater began in 1963 and was completed in early 1965.

Existing operations within Marina del Rey include a combination of public and private uses. The County of Los Angeles maintains and operates landside and waterside developments dedicated to public use for roadways, parks, fishing docks, boat docks, walkways, piers and channels. Land area surrounding the small-craft harbor is leased by the County of Los Angeles to various individuals and entities through long-term ground leases. The initial ground leases were executed from 1963 to 1968 with 60-year terms. There are currently 54 major leaseholds and over 300 subleases within Marina del Rey.

Existing leasehold improvements consist of approximately 6,000 boat slips, more than 5,300 rental apartment units, approximately 600 condominium units, six hotels with a total of over 1,000 rooms and approximately 1,000,000 square feet of commercial space divided among office, retail and restaurant uses. These existing uses are referred to collectively as Marina del Rey Phase I development.[1]

Existing residential uses, in most locations, are over 30 years of age. These aging improvements are not of contemporary design and do not provide tenant amenities necessary to serve current residential lifestyles, including state-of-the-art wiring for high-speed telecommunications and electronics,

1 County of Los Angeles Department of Regional Planning, *Marina del Rey Land Use Plan*, February 1996.

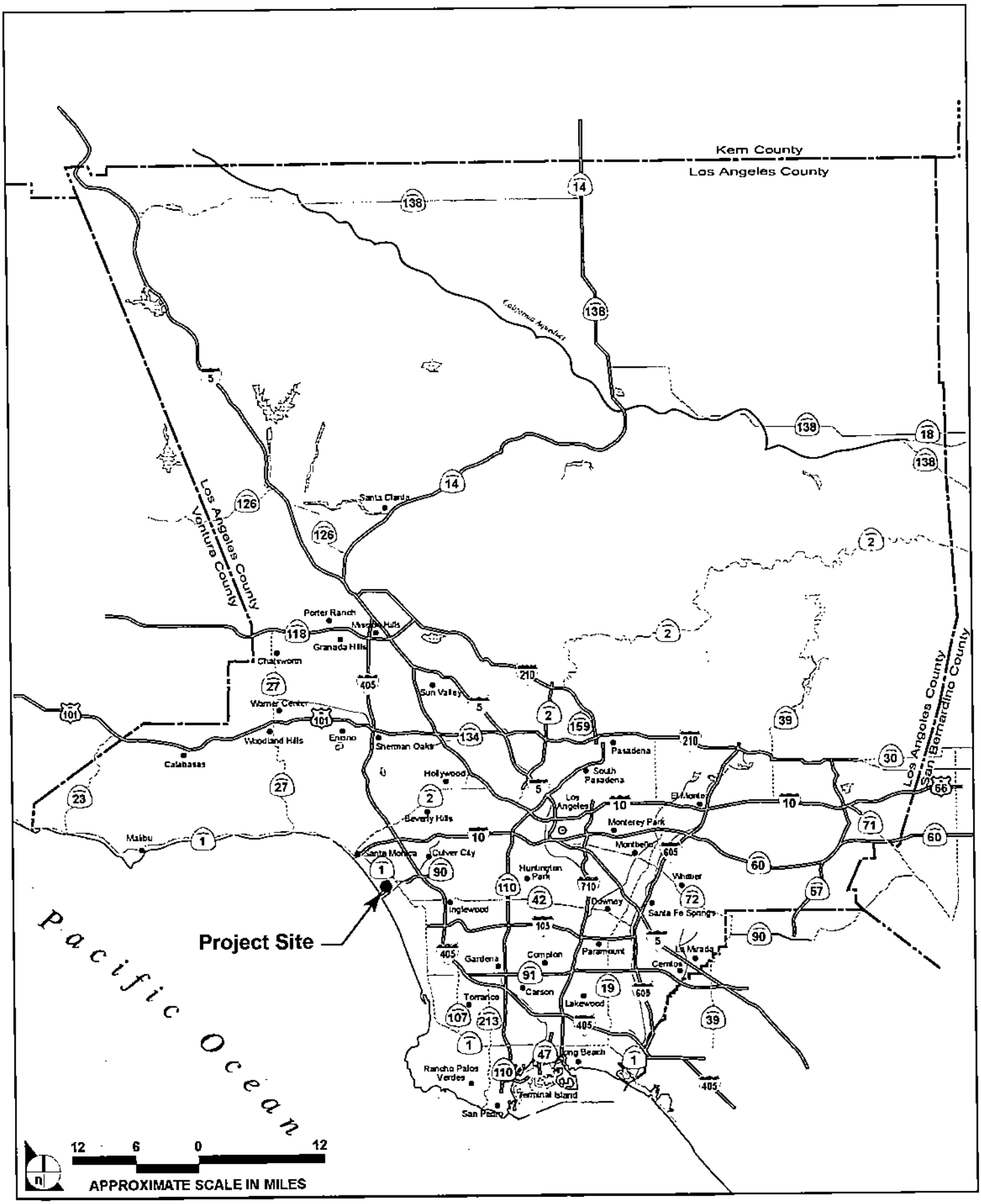
contemporary kitchens and modern climate control systems, etc. Similarly, the existing anchorages, some of which have aged beyond repair, were originally constructed to accommodate the boating community of the 1950s and 1960s. The anchorages also lack contemporary design features and amenities, such as wider slip berths, increased storage, state-of-the-art wiring for high-speed telecommunications and electronics, etc.

To maintain the popularity of the small-craft harbor and to continue and enhance the contemplated revenue stream to support the Certificates of Participation issued by the County of Los Angeles in 1993, the County submitted extensive amendments to the Local Coastal Program, which was recertified by the California Coastal Commission in 1996. The County subsequently approved a Marina del Rey Asset Management Strategy to encourage the redevelopment of uses constructed by leaseholders during Phase I. Based on this strategy, the County, since 1998, has released invitations to solicit lease extension and redevelopment proposals for specific parcels in Marina del Rey. These solicitations contemplate lease extensions of an additional 39 years to create a financeable leasehold term to allow potential developers the ability to acquire the capital necessary to fund substantial redevelopment activities.

2.2 PROJECT OVERVIEW

The project site (the combined area of Parcels 100 and 101) consists of 8.31 acres (**Figure 2.0-2, The Shores Apartments Project Site**). Existing uses on the project site—known as Del Rey Shores and Del Rey Shores North Apartments—include 34 primarily two-story, garden-style, walk-up apartment buildings with a total of 202 total units, approximately 305 surface parking spaces, and amenities and landscaping associated with the residential uses. These uses are considered part of the original lease agreement that expires in 2022. In recognition of the need to redevelop the aging improvements in Marina del Rey, and to generate significant additional revenue to the County through intensification of development, the County invited a lease extension and redevelopment proposal for Parcels 100 and 101, as well as other adjacent and nearby parcels, for initial submittal in January 2001.

The County and the current lessee and applicant agreed on the term sheet for the proposed redevelopment of Parcels 100 and 101 in December 2003. The applicant submitted plans for the redevelopment of Parcels 100 and 101 to the Design Control Board of the County of Los Angeles, which held a public hearing and subsequently voted its approval for the project to proceed with the Coastal Development Permit regulatory process in January 2005.



SOURCE: Impact Sciences, Inc – June 2005

FIGURE **2.0-1**

Regional Location

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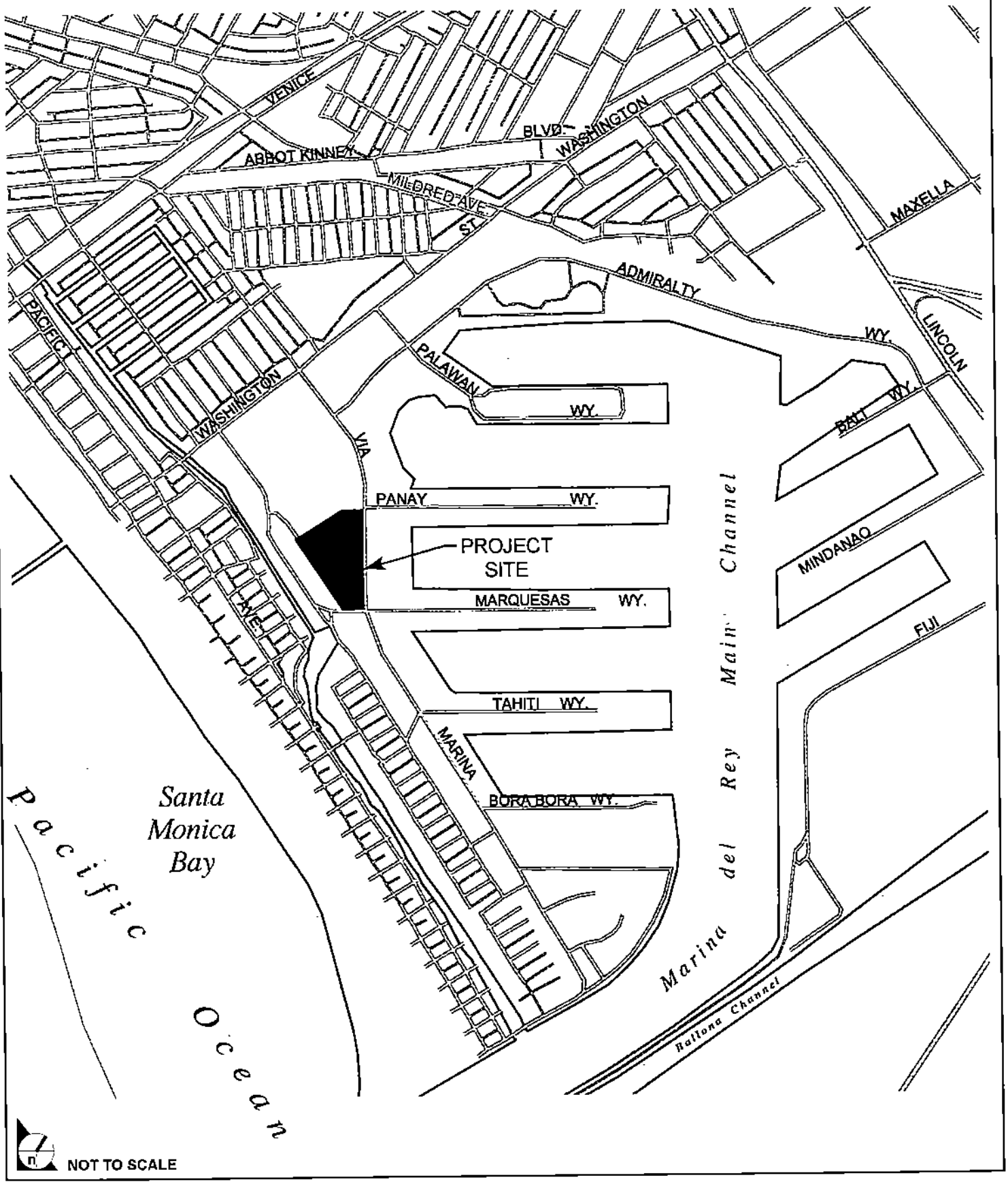


SOURCE: Impact Sciences, Inc – June 2005

FIGURE **2.0-2**

The Shores Apartments Project Site

779-02-09/05

The development proposed for Parcels 100 and 101 (The Shores project) consists of an apartment community composed of 12 structures that surround a central courtyard of approximately 2.25 acres. The Shores project would consist of 544 residential dwelling units (a net increase of 342 apartment units) and 1,114 parking spaces (a net increase of 809 parking spaces). Overall building height would not exceed 75 feet (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features). Parapets and architectural features are expected to be approximately 25 feet in height. A site plan illustrating The Shores project design is provided as **Figure 2.0-3, The Shores Proposed Site Plan.**

2.3 PURPOSE OF AN ENVIRONMENTAL IMPACT REPORT

An Environmental Impact Report (EIR) is an informational document as required by the California Environmental Quality Act (CEQA). This EIR is intended, among other things, to provide the public, decision makers and agency staff information about: (1) the environmental impact of a proposed project; (2) identification of ways in which the significant effects of a project might be minimized; and (3) define and analyze alternatives to the project which would reduce or avoid significant impacts. Thus, the EIR is an important document that is ultimately used by decision makers when considering whether or not to approve, deny or modify a proposed project.

2.4 STANDARDS FOR EIR ADEQUACY

Given the important role of the EIR in the planning and decision-making process, it is imperative that information presented in the EIR be factual, objective, adequate and complete. Standards for EIR adequacy are defined in Section 15151 of the *State CEQA Guidelines* as follows:

> "An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information, which enables them to make a decision, which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."

These standards for EIR adequacy were followed by the County of Los Angeles in preparing this EIR.

2.5 TYPE OF EIR AND LEVEL OF ANALYSIS

This EIR is intended to serve as a Project EIR under CEQA. Section 15161 of the *State CEQA Guidelines* states that a Project EIR should focus primarily on the changes in the environment that would result from

the development project. In addition, a Project EIR must examine all phases of the project, including planning, construction and operation. This Project EIR is intended to provide the environmental information necessary for the County of Los Angeles to make a final decision on the requested entitlements for this project.

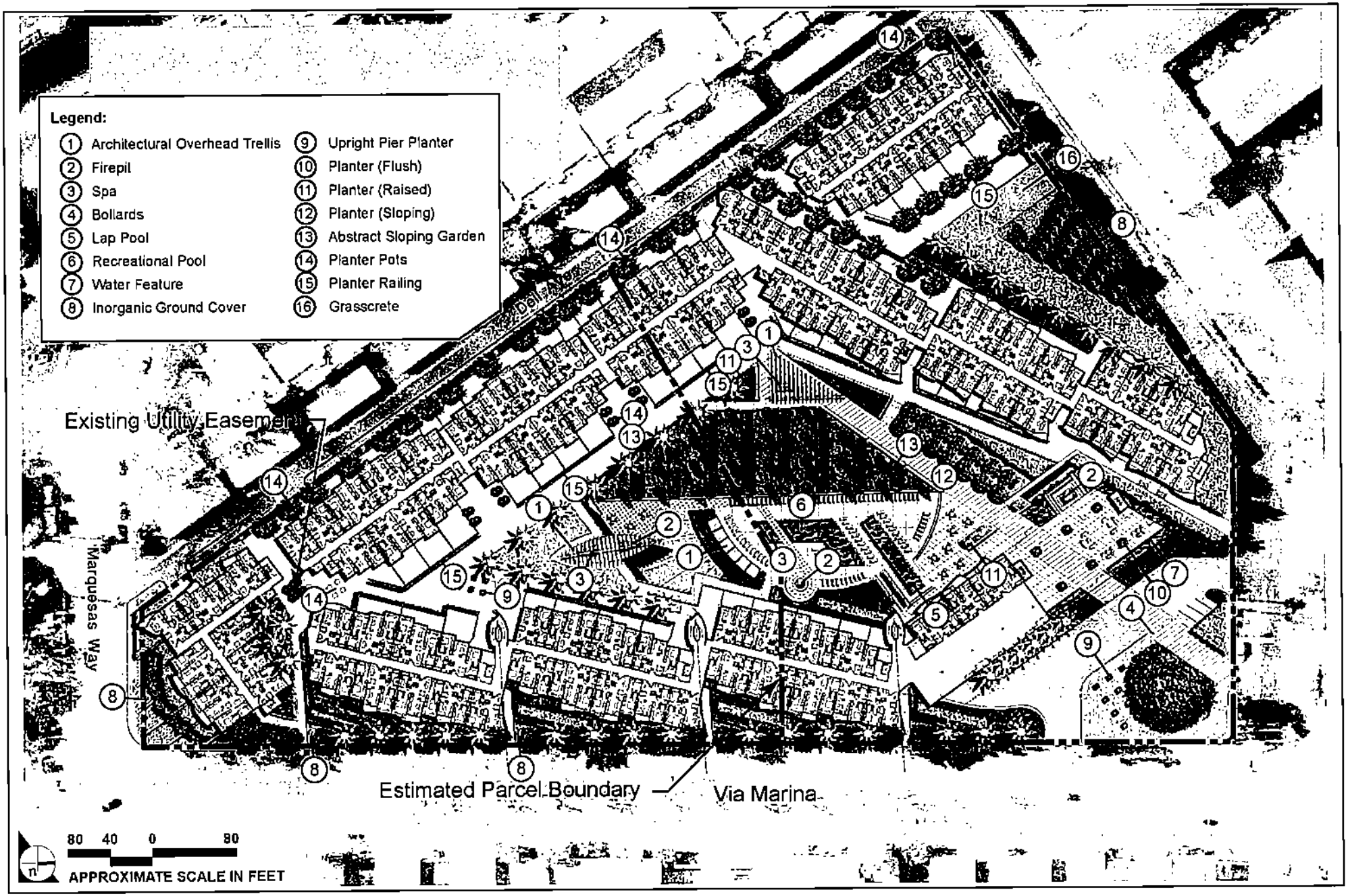
2.6 FORMAT AND CONTENT OF THIS EIR ANALYSIS

2.6.1 EIR CONTENT

Consistent with the requirements of CEQA, the County of Los Angeles prepared an Initial Study for the project **(Appendix 2.0[A], Initial Study/Notice of Preparation)**. A purpose of the Initial Study is to determine the environmental effects of a project and to define those effects that have the potential to result in a "significant adverse effect." As required by state law, potentially significant adverse effects shall be evaluated as part of a Project EIR versus those effects that have no potential for significance. In response to the planning process, the County determined a Focused EIR shall be prepared for The Shores project. The County of Los Angeles circulated a Notice of Preparation (NOP) between July 20, 2005 and August 19, 2005 in order to receive input from interested public agencies and private parties. A copy of the NOP is presented in **Appendix 2.0(A)**, of this EIR, along with a copy of the distribution list. Copies of all written responses to the NOP are presented in **Appendix 2.0(B), Written Responses to the Notice of Preparation.**

Based on conclusions of the Initial Study, this Focused EIR addresses the following topics:

- Geotechnical and Soil Resources
- Noise
- Hydrology and Water Quality
- Air Quality
- Visual Quality
- Traffic/ Access
- Water Service
- Sewer Service
- Solid Waste Disposal



SOURCE: Nadel Architects, Inc. – January 2005

FIGURE **2.0-3**

The Shores Proposed Site Plan

779-02-09/05

In addition to these technical sections and as required by CEQA, this EIR includes (1) a description of the existing environmental and regulatory setting that exists on and in the vicinity of the project; (2) a description of the ultimate buildout of The Shores project; (3) an alternatives section that describes and analyzes plans that could reduce or change the project's impact potential; and (4) sections that generally summarize the cumulative, long-term, irreversible and growth-inducing effects associated with The Shores project, and those effects found to be either not significant or unavoidably significant after implementation of all of the mitigation measures identified in this EIR.

2.6.2 EIR FORMAT

Section 1.0, Executive Summary, provides an overview of the project and summarizes project impacts and mitigation measures, while **Section 2.0, Introduction**, provides an overview of the project, defines the intent of this EIR, and also provides an overview of the planning process. **Section 3.0, Project Description**, describes, in detail, the characteristics of the project as it is proposed. **Section 4.0, Environmental Setting**, provides an overview of the physical characteristics of the project site and assesses this project's consistency with pertinent local and regional plans and policies. **Section 5.0, Impact Analysis**, describes existing conditions on and near the project site, predicts potential individual and cumulative impacts, presents mitigation measures that are intended to minimize or avoid significant impacts caused by the project, and identifies significant impacts which would occur after mitigation (if any). In this section, and as required by Section 15126(c) of the *State CEQA Guidelines*, the presentation of project mitigation measures is divided as follows: (1) those that are required by federal, state or local statute or requirement; (2) measures already incorporated into the project (i.e., project design features); and (3) mitigation measures recommended by this EIR. Because legally-required measures will be imposed on this project by the responsible public agency whether or not they are contained in this EIR, the listing contained in this EIR is neither intended to be, nor does it need to be, all-inclusive. **Section 6.0, Alternatives**, defines alternative projects or plans that focus on reducing the significant effects of the project. The remaining sections of the EIR define: (1) the relationship between short-term uses of man's environment and maintenance and enhancement of long-term productivity; (2) significant irreversible environmental changes which would result from The Shores project should it be implemented; (3) growth-inducing impacts; (4) references; and (5) a list of preparers of the EIR.

To facilitate review of this EIR and to meet the requirements and objectives of CEQA, specific features have been incorporated into this EIR to make it more understandable for non-technical reviewers, while

at the same time providing the technical input necessary for agency personnel. Specific features are briefly described below.

- Each major section of the EIR includes a brief explanation of the purpose of that section.
- Each technical environmental section (e.g., traffic, air quality, etc.) begins with a brief summary of the potential impacts of The Shores project as they relate to the topic discussed in that section.
- In each technical section, an attempt has been made to present information in a manner that is understandable to the layperson. More technical information is incorporated into the Appendices of this report for review by agencies with technically-oriented staff and other interested persons.

2.7 EIR PROCESSING

Los Angeles County Department of Regional Planning and other County department staff independently reviewed this EIR. This Draft EIR has been subject to a Los Angeles County inter-agency review and approval prior to the 45-day public review and comment period as mandated by CEQA. During the public review period, written comments concerning the adequacy of the document will be submitted by interested public agencies and private parties to the County of Los Angeles, Department of Regional Planning, 320 West Temple Street, Los Angeles, California 90012; Attention: Rick Kuo.

A public hearing(s) will be held before the Los Angeles County Regional Planning Commission to consider The Shores project, the requested entitlements and the adequacy of this Draft EIR, at which time public comments will be heard. After the public hearing(s), written responses to all written comments and oral testimony pertaining to environmental issues will be compiled into a Final EIR. As required by CEQA, responses to comments submitted by responsible public agencies will be distributed to those agencies for review prior to consideration of the Final EIR by the Regional Planning Commission. At the conclusion of the EIR public hearing process, the Regional Planning Commission will vote on whether or not to certify the EIR. Regional Planning Commission decisions may be appealed to the Board of Supervisors for a De Novo hearing, which can adopt findings relative to the project's environmental effects after implementation of mitigation measures and then take action to recommend outright approval, conditional approval or denial of The Shores project.

3.0 PROJECT DESCRIPTION

INTRODUCTION

The purpose of the Project Description is to describe the project in a way that will be meaningful to the public, reviewing agencies and decision makers. The State California Environmental Quality Act (CEQA) Guidelines *state that the Project Description need not be exhaustive and should not supply extensive detail needed for the evaluation and review of potential environmental impacts. The* State CEQA Guidelines *require that a Project Description address the following items: (1) the precise location and boundaries of the project; (2) a statement of project objectives; (3) a general description of the project's characteristics; and (4) a statement briefly describing the intended uses of the EIR. The following Project Description serves as the basis for the technical analysis contained in this document.*

3.1 PROJECT LOCATION

The proposed project site is situated in the western portion of the Marina del Rey small-craft harbor. Marina del Rey is located along the Pacific Coast in the southwestern portion of the Los Angeles Basin. Specifically, the site is situated at the northwest corner of the intersection of Via Marina and Marquesas Way. Maps illustrating the site location from both a regional and local perspective are shown on **Figure 3.0-1, Regional and Local Site Location**.

The Shores Apartment Project (The Shores) is subject to the Marina del Rey Specific Plan, which is a component of the certified Marina del Rey Local Coastal Program (LCP). The LCP consists of the Marina del Rey Land Use Plan (LUP), Local Implementation Plan (LIP) and Design Guidelines that are an appendix to the LUP. As part of the County of Los Angeles' (County) original construction of Marina del Rey, the County divided the marina's land and water areas into a number of parcels. The LCP utilizes the parcel number and lettering scheme devised by the County.

The Shores project, to be developed by Del Rey Shores Joint Venture and Del Rey Shores Joint Venture North, is situated on two parcels defined in the LUP as Parcels 100 and 101 (the "project site"). The relationship of the project parcel to the LUP is illustrated in **Figure 3.0-2, Relationships of Project Parcels to the Marina del Rey Land Use Plan**. As shown, the proposed project is situated adjacent to and west of Via Marina.

The Shores project site is 8.31 acres on two parcels. Existing land uses on the project site include 34 primarily two-story, garden-style, walk-up apartment buildings with 202 total units (76 one-bedroom

units, 122 two-bedroom units and four three-bedroom units), approximately 305 surface parking spaces and landscaping associated with the residences (**Figure 3.0-3, Existing Site Conditions**). These structures would be removed as part of The Shores project.

3.2 PROJECT OBJECTIVES

The Marina del Rey LUP specifically encourages the recycling and intensification (within existing limits) of existing Phase I development. For example, the Marina del Rey LUP defines the project site as Residential V, which allows up to 75 units/acre. As such, 624 could be constructed on the project site, compared with the 202 units that are present and the 544 units that are proposed. Also, the LUP identifies The Shores project site as occurring within an area that is defined as "Height Category 6" with a corresponding maximum building height of 225 feet. For reference purposes, the proposed project would not exceed 75 feet in height (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features). Parapets and architectural features are expected to be approximately 25 feet in height (a maximum height of 100 feet). Consistent with the LUP for Marina del Rey, the applicant proposes to redevelop uses on the project site in order to meet the following objectives:

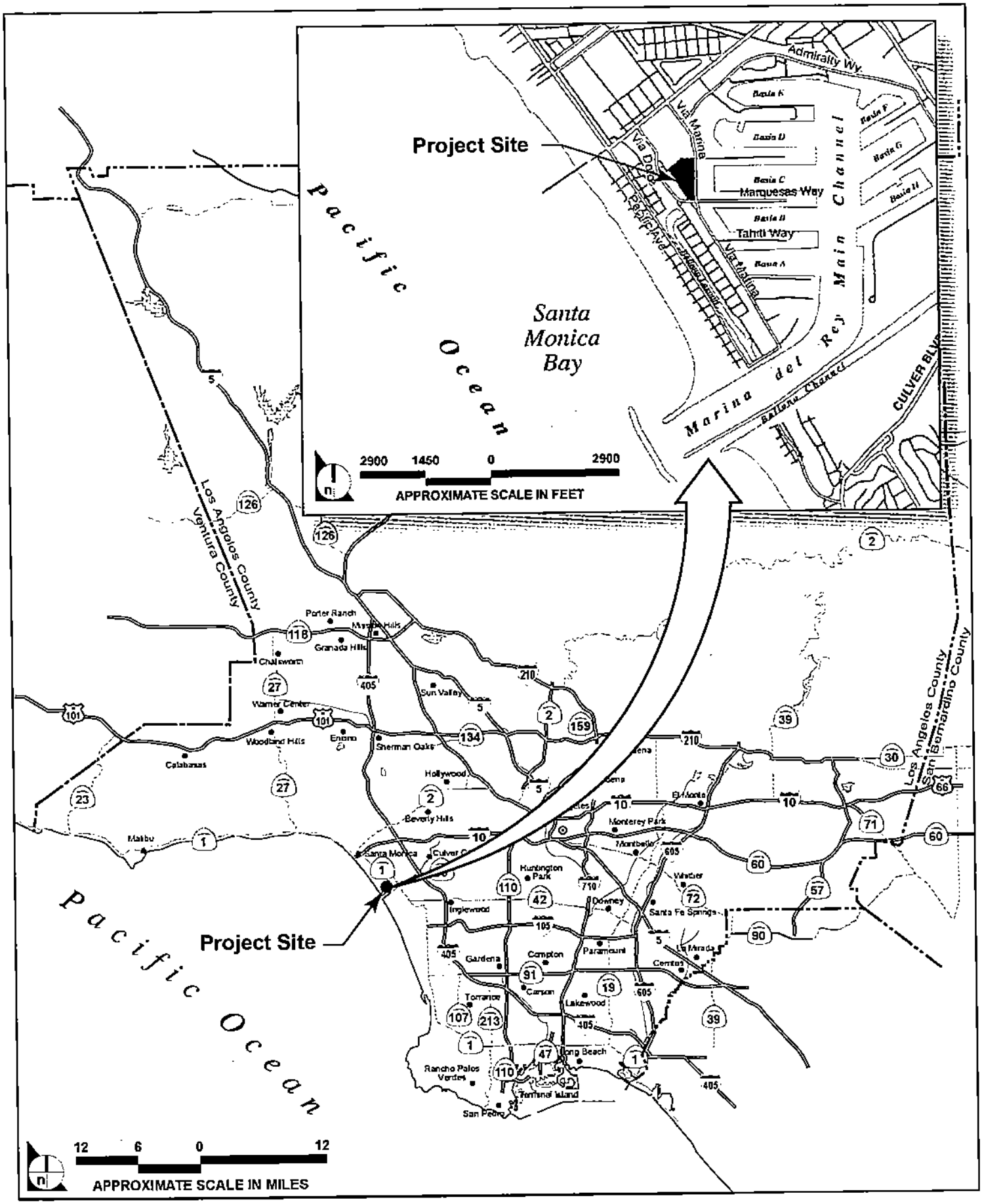
- Provide residential opportunities with modern features such as high-speed telecommunications, contemporary floor plans, modern kitchens, and climate control; and
- Provide increased coastal residential opportunities with a design and project density that are consistent with the certified Marina del Rey LCP.

3.3 PROJECT CHARACTERISTICS

3.3.1 OVERVIEW OF SITE PLAN

The Shores project consists of an apartment community of 12 structures. These structures front Marquesas Way and Via Marina and are located generally northwesterly of the intersection of those two streets. **Figure 3.0-4, The Shores Illustrative Site Plan,** provides an illustrative site plan for the proposed project. **Figure 3.0-5, The Shores Perspective from Via Marina and Marquesas Way,** shows a conceptual architectural perspective of how the proposed project would appear from the corner of Via Marina and Marquesas Way.

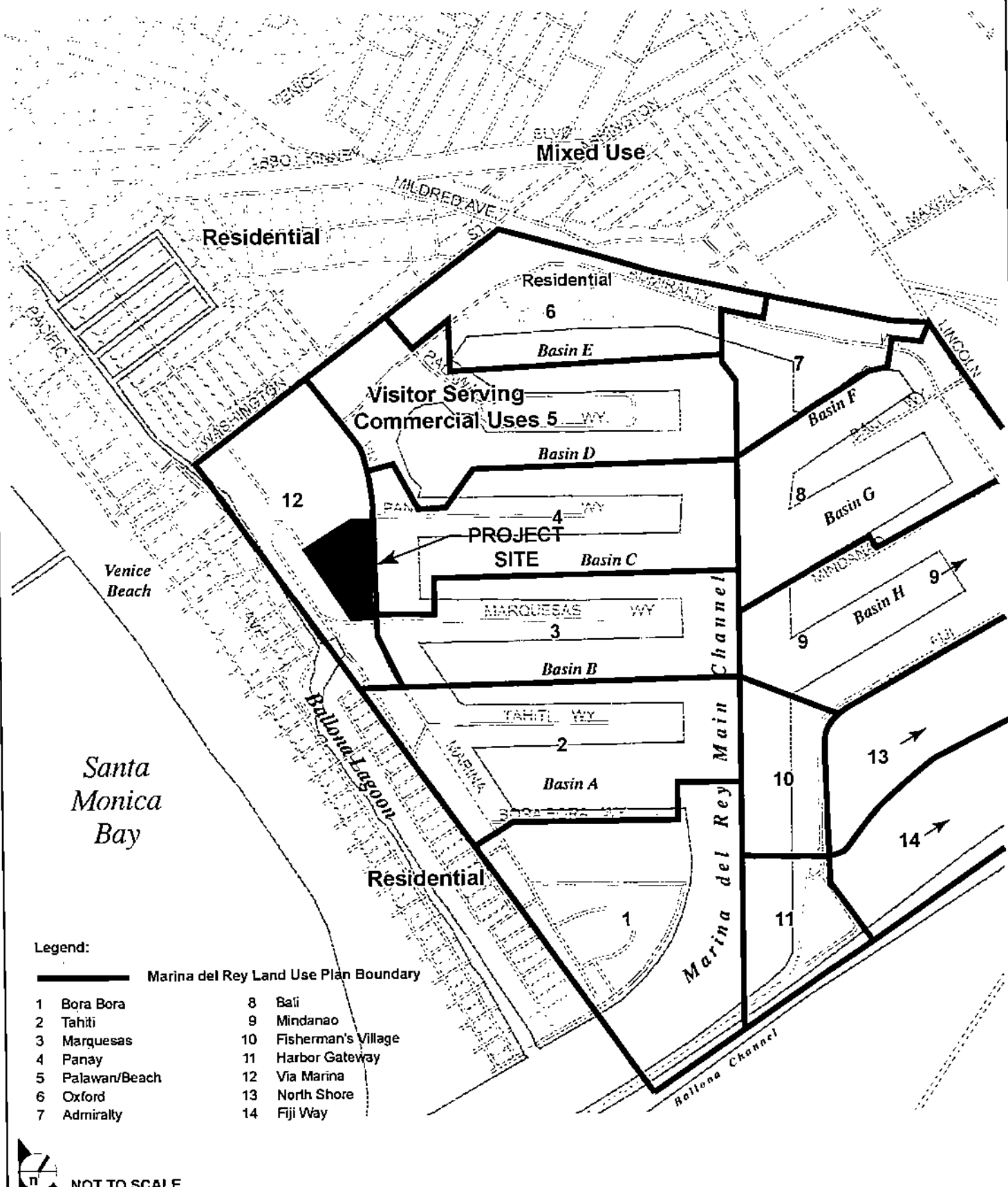
The 12 buildings are arranged around the perimeter of the project site, with a large central courtyard that contains a pool and recreation facilities for residents of the buildings. The project features landscaping both in the central courtyard area and fronting the streets that surround the buildings.



SOURCE: Impact Sciences, Inc – June 2005

FIGURE **3.0-1**

Regional and Local Site Location

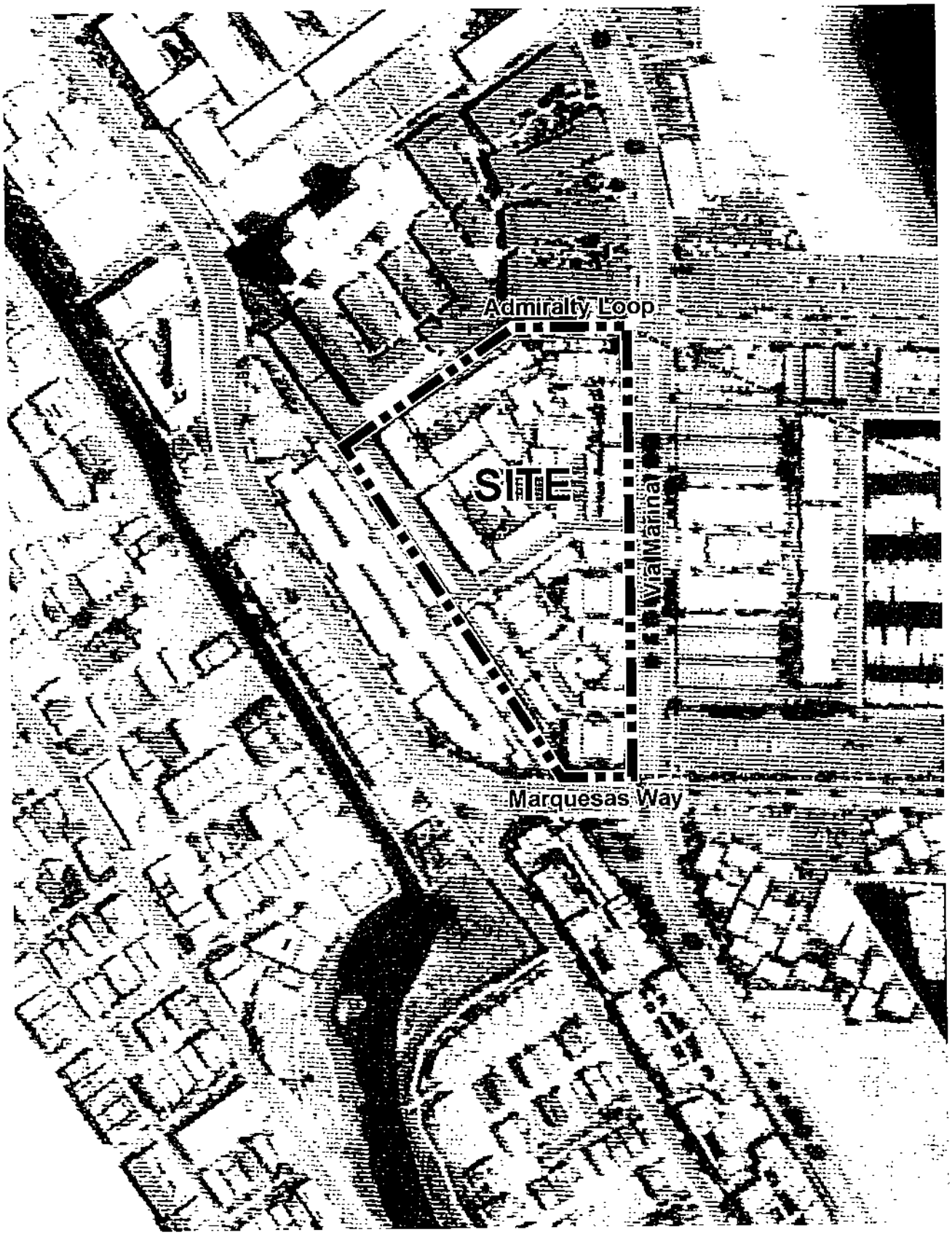


SOURCE: Impact Sciences, Inc – November 2005

FIGURE **3.0-2**

Relationships of Project Parcels to the Marina del Rey Land Use Plan

779-02-011/05

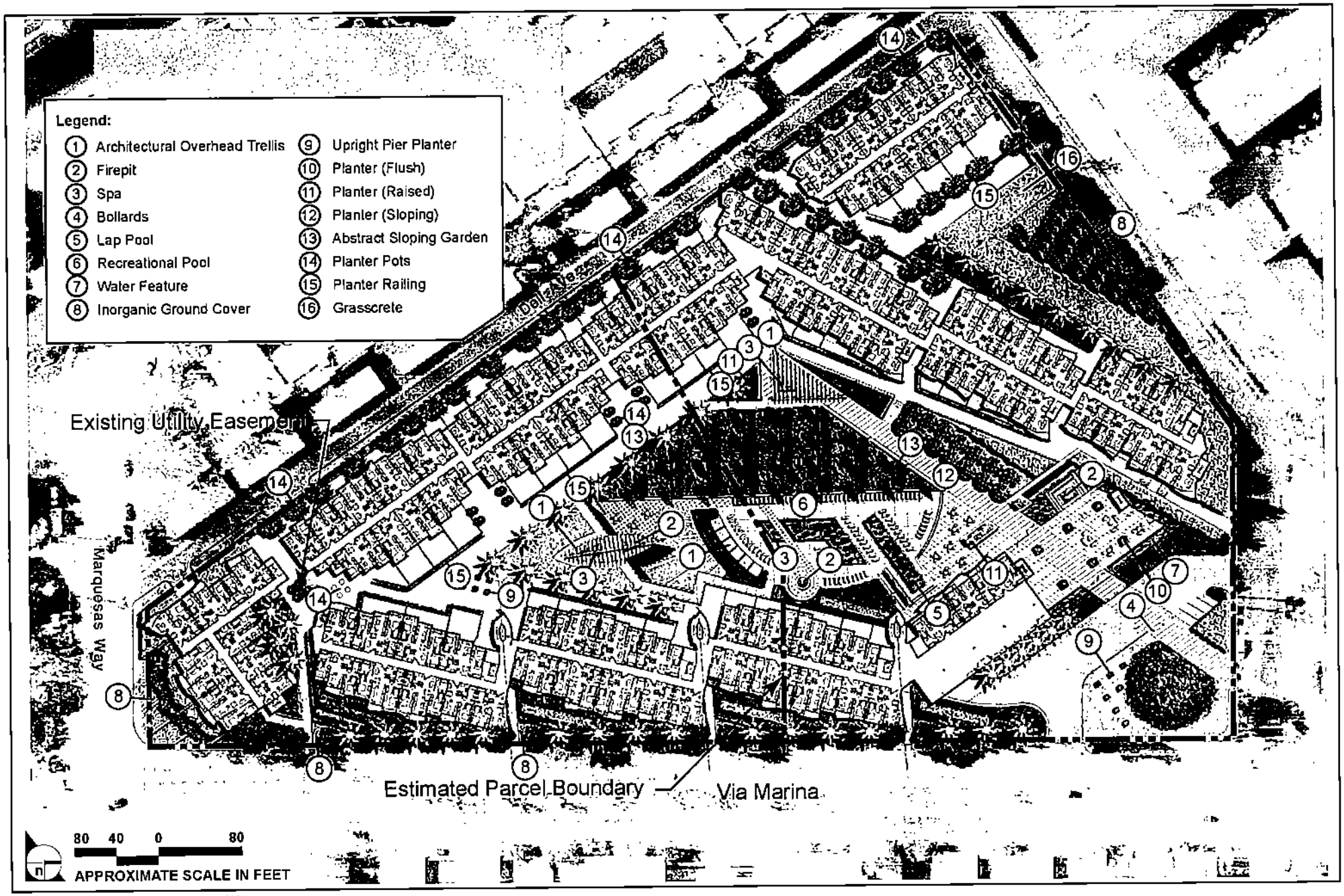


NOT TO SCALE

SOURCE: Impact Sciences, Inc – June 2005

FIGURE **3.0-3**

Existing Site Conditions



SOURCE: Nadel Architects, Inc. – January 2005

FIGURE **3.0-4**

The Shores Illustrated Site Plan

SOURCE: Nadel Architects, Inc. – January 2005

FIGURE 3.0-5

The Shores Perspective from Via Marina and Marquesas Way

77B-02-09/05

The Shores project would provide 544 residential dwelling units and 1,114 parking spaces. As there are 202 existing apartments on site, completion of the proposed project would result in a net increase of 342 apartment units and 809 parking spaces.

A total of 12, five-story, Type III one-hour, fully sprinklered. wood-framed structures would house the residential units, with parking provided in subterranean parking garages below the residences. Structure height would not exceed 75 feet (exclusive of appurtenant, screened rooftop equipment, parapets and architectural features) when measured along Via Marina and Marquesas Way. Parapets and architectural features are expected to be approximately 25 feet in height (a maximum height of 100 feet).

3.4 CONSTRUCTION

Demolition activities on the existing project site are expected to occur over a two- to three-month period. Waste material would either be recycled or disposed of at a licensed, environmentally acceptable disposal site. Additional information regarding construction waste and materials recycling can be found in **Section 5.7, Solid Waste**. Construction for The Shores project is anticipated to take 25 months to complete and would occur in a single phase.

3.4.1 DEMOLITION OF EXISTING USES

Beginning in 2004, the property management company prepared a notice that was sent to all current residential tenants occupying the existing Del Rey Shores project site informing them of the proposed project's timing of construction. The management company also had an open evening meeting with residents to answer tenant questions regarding the project. The management company has informed all new residents about the project and will prepare periodic updates to current residents of the existing Del Rey Shores project regarding the project. The management company will, at the time of the notice to vacate, provide all interested tenants lease-availability information for other Marina del Rey properties it currently manages. The management company will also coordinate with other Marina del Rey property management companies to collect information for interested tenants on rental options in the Marina del Rey area. To further assist tenants, the management company will schedule an on-site lease fair to provide Marina del Rey specific rental availability information to all interested tenants.

Prior to commencement of demolition, appropriate testing for asbestos-containing material and lead-based paint within the existing structures would be completed. Abatement of identified materials would occur prior to building removal. The initial stage of demolition requires that construction crews disconnect and remove all utilities. A variety of equipment would be used during the demolition phase

and may include cranes, tractors, pneumatic hammers, drills and similar types of equipment. A staging area would be identified within the project site for the storage of equipment and material. This staging area would be located as far as reasonably possible from adjacent residential uses. Debris would be trucked from the site for disposal at unclassified landfills that accept these waste materials and may include, but are not limited to, Sunshine Canyon, Long Beach Southeast Resource Recovery Facility (the nearest landfill by distance), Peck Road or Reliance Pit No. 2 Landfills, or other appropriate landfills which may be located outside Los Angeles County. Building materials containing asbestos, if any, would be handled, transported and disposed of in accordance with applicable laws and regulations prior to building removal (reference South Coast Air Quality Management District Rule 1403 [Asbestos Emissions from Demolition/ Renovation Activities]).

3.4.2 INFRASTRUCTURE IMPROVEMENTS

All infrastructure and utilities needed to serve The Shores project are located proximal to the project site. The site currently is developed with apartment units that receive water and sewer service from the County of Los Angeles. As a note, County sewers connect to existing City of Los Angeles mains north of the Marina del Rey area. The proposed project would construct or participate in the construction of all improvements necessary to serve the additional residential units. This project requires no improvements to off-site sewer facilities. Proposed sewer improvements associated with The Shores project are limited to the connection of new on-site sewer lines to the existing sewer collection network. As proposed, approximately 1,050 lineal feet of 10-inch water main occurring along Marquesas Way and Dell Avenue would be upgraded to a 12-inch main to satisfy the requirements of the Los Angeles County Fire Department water flow requirement of 3,500 gallons per minute. For additional information regarding the existing and proposed infrastructure, reference **Sections 5.8, Water Service**, and **5.9, Sewer Service**.

Other on-site improvements involve construction of the stormwater drainage network and utility systems. All infrastructures would be designed and constructed in accordance with policies and standards set forth by the County of Los Angeles Department of Public Works (LACDPW).

3.4.3 CONSTRUCTION OF APARTMENTS

Following demolition of the existing improvements of each construction phase, excavation for the parking garages would commence. Excavation for the subterranean garages would require a cut of approximately five feet below the existing ground level. Groundwater on the site can be encountered three to 10 feet below the existing ground surface. Therefore, it is possible de-watering will be required during excavation. Should de-watering be necessary during construction, de-watering wells and pumps

would be placed as needed to draw down the water table as necessary. Groundwater would be pumped to settling basins, filtered and then pumped to the existing stormwater drain system. These actions would require the applicant to obtain a Separate National Pollutant Discharge Elimination System Permit for Ground Water Discharge from the Regional Water Quality Control Board. Permanent de-watering is not proposed for the project.

Once excavation is complete (approximately one month), foundations would be constructed and framing of the proposed project would begin upon completion of the parking garage. As currently proposed, site excavation would require the movement of approximately 40,000 cubic yards of cut and fill. Excavation on the site would be balanced. During construction, equipment and materials would be stored at a construction-staging site as previously described.

3.5 RESIDENTIAL UNITS

Figure 3.0-6, The Shores One-Bedroom Apartment Floor Plans, and **Figure 3.0-7, The Shores Two-Bedroom Apartment Floor Plans**, provide conceptual floor plans for The Shores project. One- and two-bedroom residential units are proposed in five different floor-plan configurations. Of these, approximately 50 percent (273 of the 544 proposed residential units) would be one-bedroom apartment units (750 to 900 square feet), and approximately 50 percent (271 of the 544 proposed residential units) would be two-bedroom units (1,050 to 1,250 square feet). **Table 3.0-1, Description of Proposed Residential Units by Type**, provides a breakdown of the number of residential units by product type and their approximate size.

Table 3.0-1
Description of Proposed Residential Units by Type

Type of Unit	Quantity Proposed
One-Bedroom (750 square feet)	154
One-bedroom (900 square feet)	65
One-bedroom corner unit (900 square feet)	54
Two-bedroom (1,050 square feet)	156
Two bedroom (1,250 square feet)	115
TOTAL	**544**

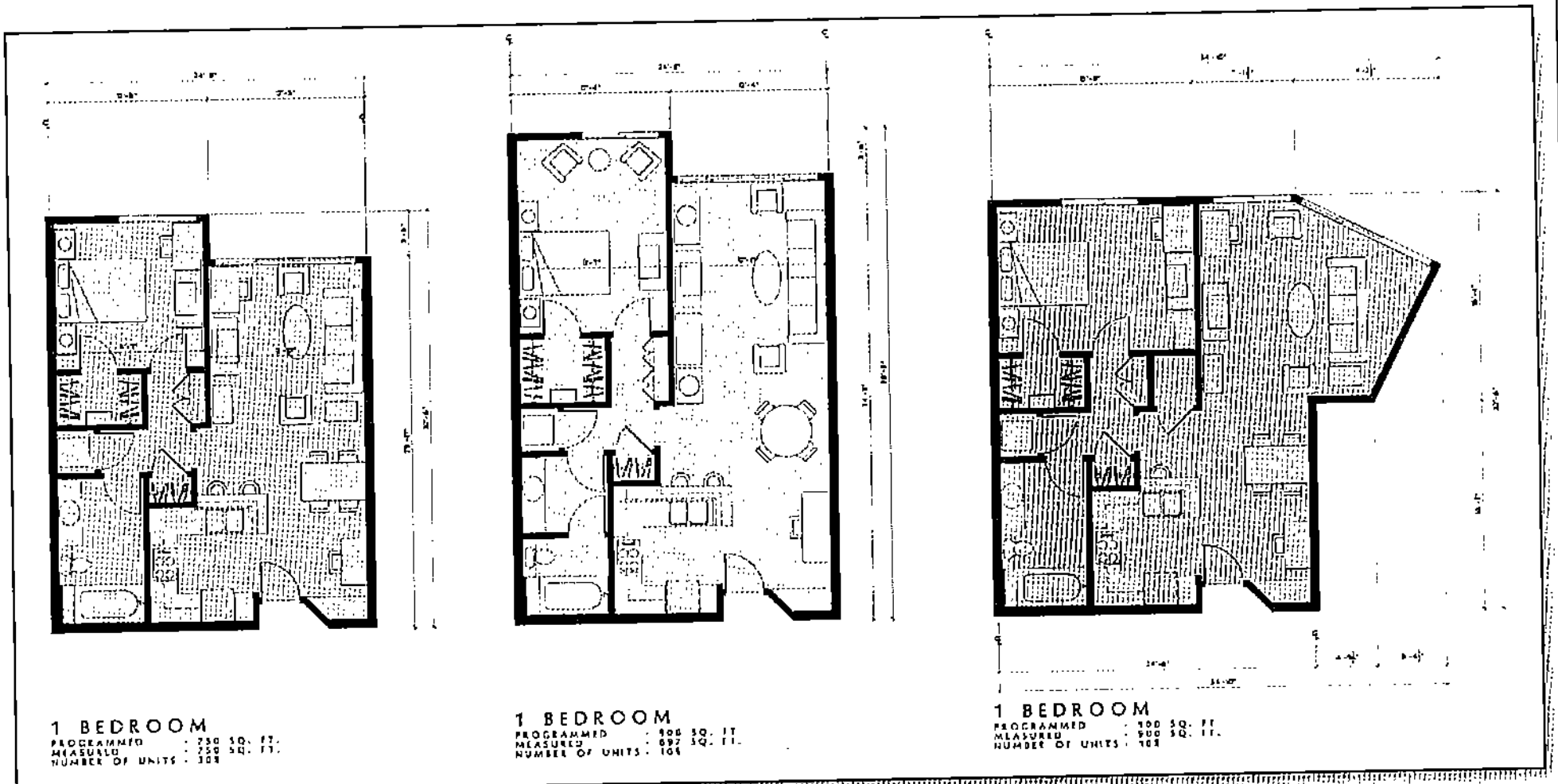
Figure 3.0-8, The Shores Perspective from Courtyard, shows a perspective view from the interior of the courtyard looking south, while **Figure 3.0-9, The Shores Building Elevations,** provides three representative conceptual building elevations, while **Figure 3.0-10, The Shores Building Cross-Sections,** illustrates representative conceptual building cross-sections for the proposed structures. As noted in **Figure 3.0-10,** structure height would not exceed 75 feet (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features). Parapets and architectural features are expected to be approximately 25 feet in height (a maximum height of 100 feet).

3.6 ACCESS AND PARKING

Vehicular access (**Figure 3.0-11, The Shores Vehicular Access**) to the parking garages would be provided from driveways in six locations: one along Via Marina, two along Admiralty Loop and three along Dell Avenue (a private alley). The driveway on Via Marina would provide ingress and egress right-turn-only lanes; all other driveways would provide full left- and right-turn access.

A total of 1,114 parking spaces would be provided throughout The Shores project in structured parking garages. As proposed, 925 standard spaces and 189 compact spaces are proposed. 378 tandem stalls and 736 single stall spaces are proposed. Tandem spaces can accommodate two cars parked nose-to-tail.

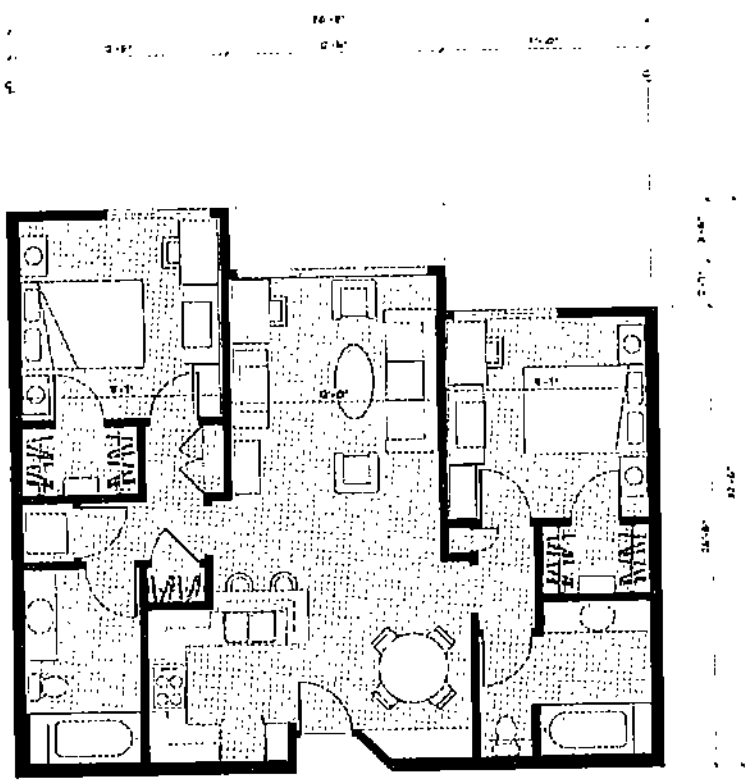
The project's structured parking would be provided in a two-level, partially subterranean parking garage. The lower parking level would be subterranean while the upper parking level would be partially below grade. Parking for apartment residents would be kept secure through the use of security gate enclosures in each parking entrance. Guest parking would be provided in non-gated areas of the garages (see **Figure 3.0-11**). All parking garages would be screened from the street by terraced, landscaped areas.



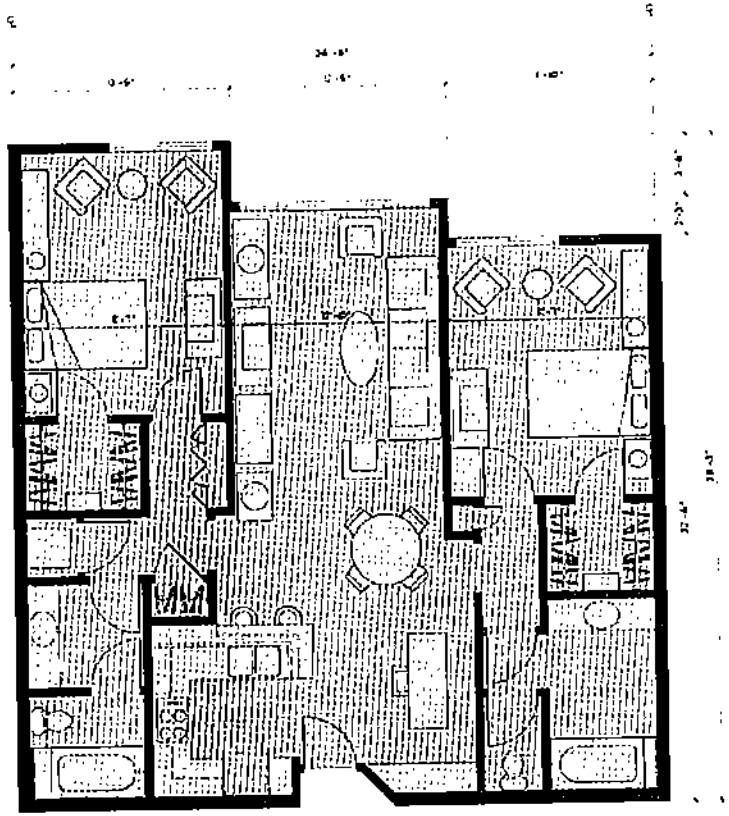
SOURCE: Nadel Architects, Inc. – January 2005

FIGURE **3.0-6**

The Shores One-Bedroom Apartment Floor Plans



2 BEDROOM
PROGRAMMED : 1,050 SQ. FT.
MEASURED : 1,067 SQ. FT.
NUMBER OF UNITS : 308

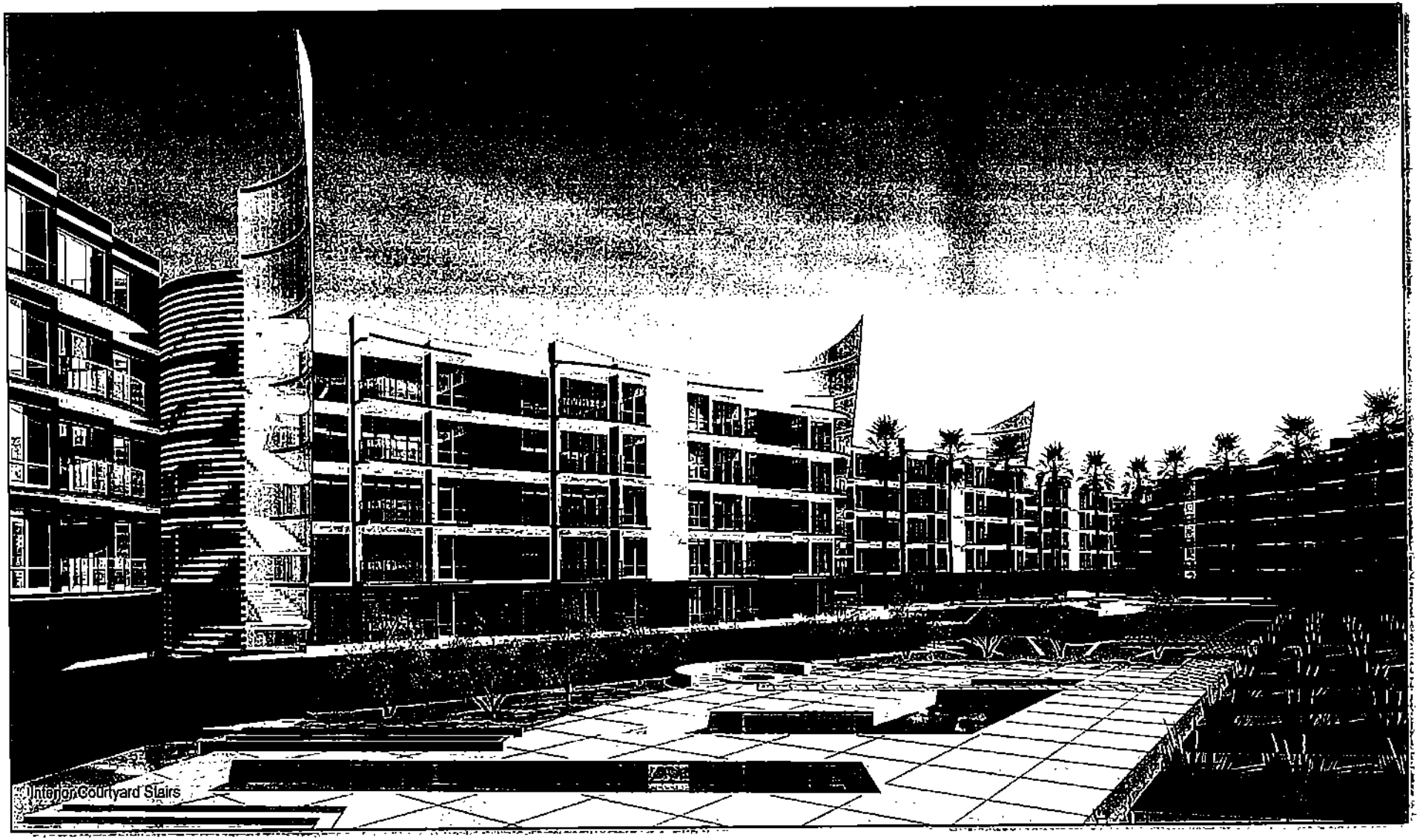


2 BEDROOM
PROGRAMMED : 1,230 SQ. FT.
MEASURED : 1,253 SQ. FT.
NUMBER OF UNITS : 284

SOURCE: Nadel Architects, Inc. – January 2005

FIGURE **3.0-7**

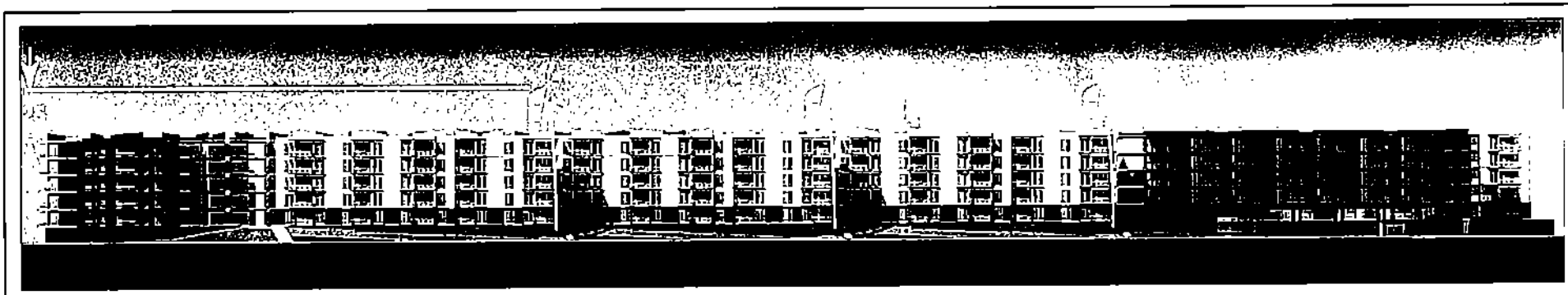
The Shores Two-Bedroom Apartment Floor Plans



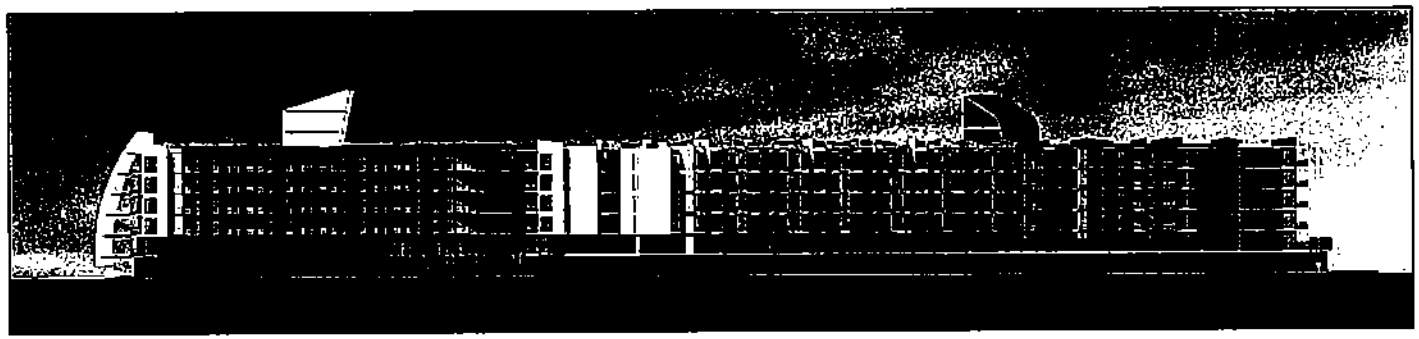
SOURCE: Nadel Architects, Inc. – January 2005

FIGURE **3.0-8**

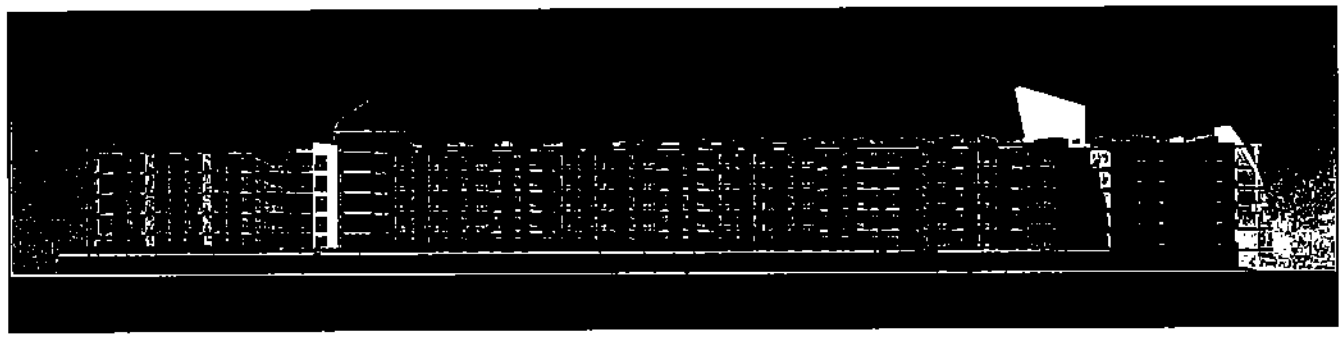
The Shores Perspective from Courtyard



Via Marina



Admiralty Way

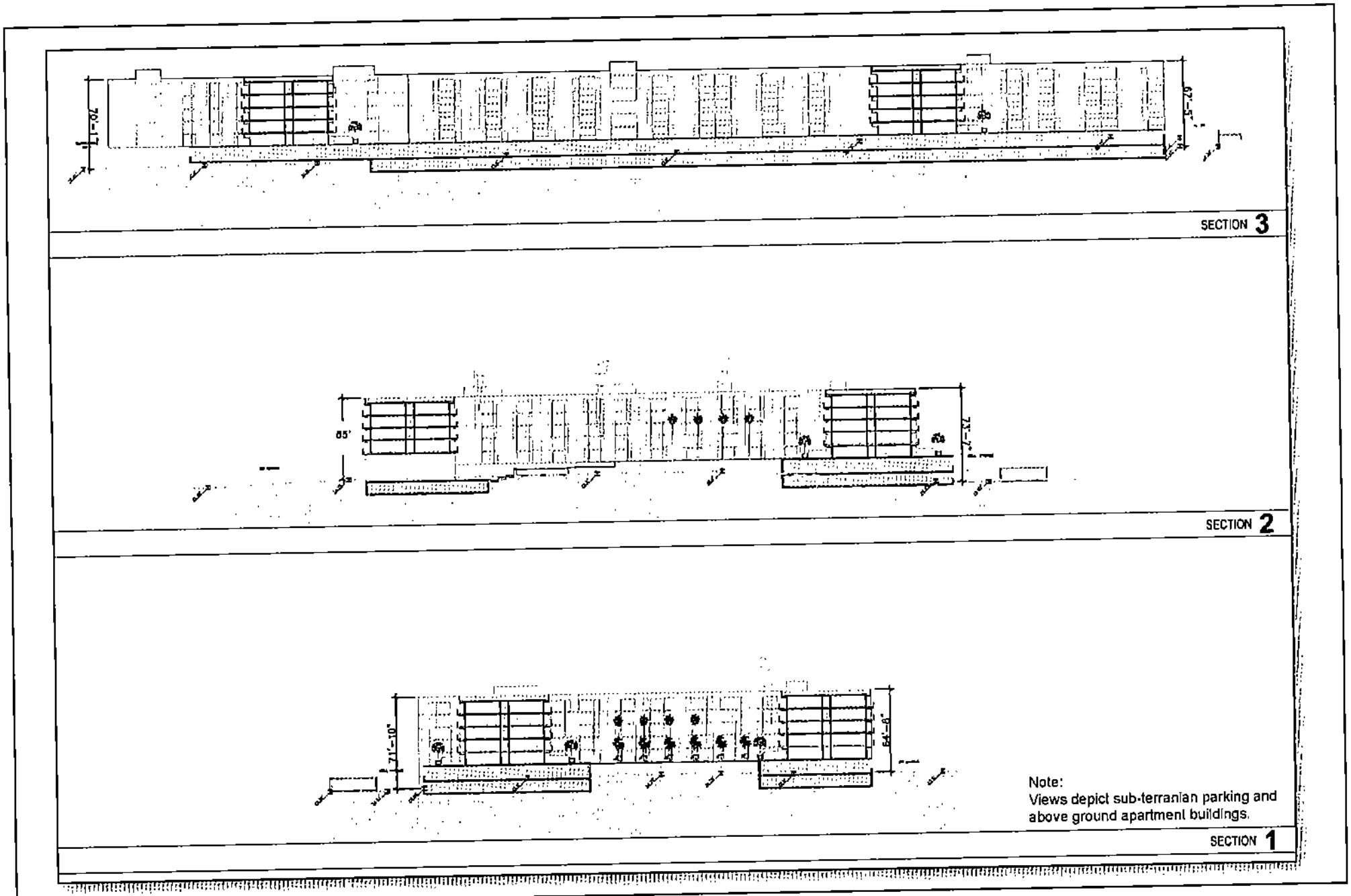


Marquesas Way

SOURCE: Nadel Architects, Inc. – January 2005

FIGURE **3.0-9**

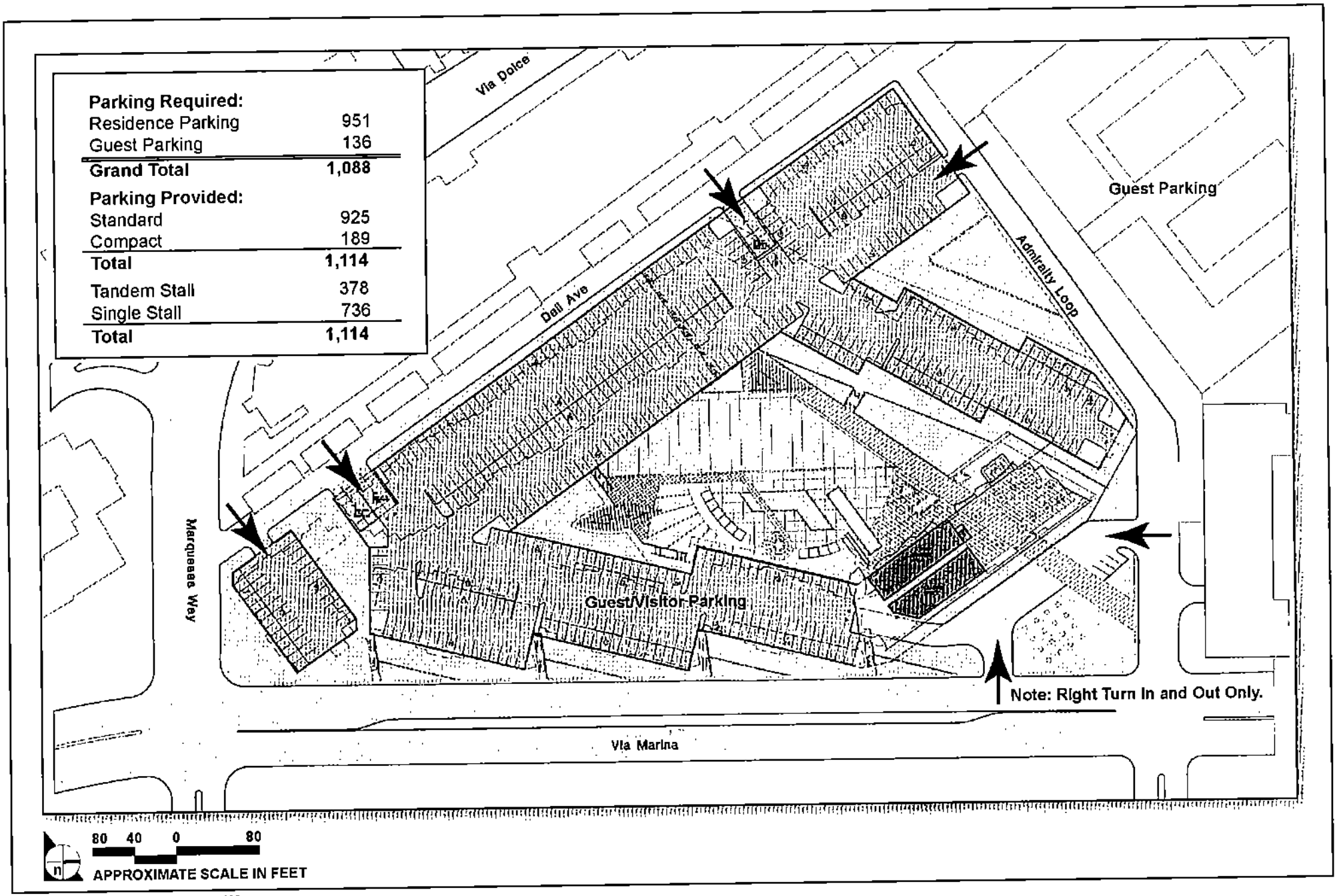
The Shores Building Elevations



SOURCE: Nadel Architects, Inc – January 2005

FIGURE 3.0-10

The Shores Building Cross-Sections



SOURCE: Nadel Architects, Inc – January 2005

FIGURE 3.0-11

The Shores Vehicular Access to Underground Parking

3.7 INTENDED USES OF THIS EIR

The County of Los Angeles, as the public agency that has the principal responsibility for approving the proposed project, is serving as the "Lead Agency" as defined by CEQA. The County intends to use this EIR as the environmental review document for the various entitlements actions, described below, that are required to develop the project.

Land use entitlement approvals necessary to complete the project development include: site plan review by the Marina del Rey Design Control Board; issuance of a Coastal Development Permit; a Parking Permit (to authorize installation and maintenance of compact parking for a small portion [approximately 17 percent] of the required parking); a Variance (to modify residential sign standards in order to provide sufficient project signage) by the Department of Regional Planning; and grading and subsequent building permit approvals from the LACDPW.

3.7.1 RESPONSIBLE AGENCIES

As defined by the CEQA, "Responsible Agencies" are public agencies other than the lead agency which have discretionary approval over the project. The County of Los Angeles has prepared this EIR with the intent it will serve as the primary source of environmental information for each responsible agency.

- Regional Water Quality Control Board;
- City of Los Angeles;
- California Coastal Commission; and
- Division of Oil and Gas Resources.

4.0 ENVIRONMENTAL SETTING

INTRODUCTION

The California Environmental Quality Act (State CEQA) Guidelines *require a description of the environment, as it exists, from both a local and regional perspective. A discussion of a proposed project's consistency with the applicable regional and local plans is required and is included in this section.*

4.1 SETTING

4.1.1 PROJECT LOCATION

The Shores project site is located along the Pacific coast in the southwestern portion of the Los Angeles basin. **Figure 2.0-1, Regional Location,** illustrates the location of the project site in a regional context. As shown, the project site is located approximately 15 miles west of downtown Los Angeles, and approximately 1.5 miles north of the Los Angeles International Airport. The City of Santa Monica is located approximately 4 miles north of the site. The Marina Freeway (State Route 90) and Interstate 405 (I-405) provide primary regional access to the site and surrounding area. Local access is provided via a number of roadways, including Washington Boulevard, Venice Boulevard and Lincoln Boulevard. Regional public transportation systems serving the project site and surrounding area include the Los Angeles County Metropolitan Transportation Authority (MTA), the Santa Monica Municipal Bus Blue Lines, the Culver City Bus lines and the Los Angeles Department of Transportation (LADOT) "Commuter Express" transit system.

Locally, the project site is located on the "landward" side of Via Marina and is set apart from the Marina del Rey Small-Craft Harbor. Marina del Rey was constructed in the early 1960s from part of the "Ballona Wetlands" and the former Lake Los Angeles. Land area in Marina del Rey totals approximately 400 acres. Approximately 400 additional acres of water area provides berthing for approximately 6,000 pleasure crafts. This small-craft harbor is divided into eight basins, A through H, located on either side of a main navigation channel. The project site is located northwest of the intersection of Via Marina and Marquesas Way. Within the marina specific land parcels are designated with alphanumeric parcel identification codes that are defined in the Marina del Rey Specific Plan. The Shores project site covers Parcels 100 and 101 **(Figure 4.0-1, Marina del Rey Parcels 100 and 101).**

Areas of interest in the vicinity of Marina del Rey include the Playa Vista property located to the southeast of the site; the Ballona Lagoon, which is located immediately south of Marina del Rey; and Venice Beach and Dockweiler State Beach Park, located to the southwest and south along Santa Monica Bay. Mixed-use development consisting primarily of commercial and residential uses is located to the north, east and south of Marina del Rey. Within Marina del Rey a variety of land uses occur, including residential and visitor-serving commercial uses, such as hotels, restaurants and marine service centers.

4.2 PHYSICAL ENVIRONMENT

4.2.1 SURROUNDING LAND USES

Figure 4.0-2, Surrounding Land Uses/Development Zones, provides an aerial view of the project site and surrounding land uses. As shown, land use patterns that characterize Marina del Rey are highly urbanized. High-density residential uses surround the project site. East of the project site is the main collector road for the west side of Marina del Rey, Via Marina. Across this road, high-density residential land uses also occur.

4.2.2 REGIONAL GEOLOGY/TOPOGRAPHY

The project site is located in the Los Angeles Coastal Plain within the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges Province is characterized by northwest trending ranges and valleys that extend south from the Los Angeles Basin into Baja California. The Peninsular Ranges extend approximately 80 miles offshore to the west and are truncated on the north by the Transverse Ranges, an east-west trending series of mountains that include the Santa Monica and San Gabriel Mountains.[1]

Locally, natural deposits beneath the site consist of both marine and non-marine sedimentary units of Holocene to Pleistocene age. The project site is low-lying and generally flat, with an elevation of approximately 10 feet above sea level. No natural landforms occur on the project site.

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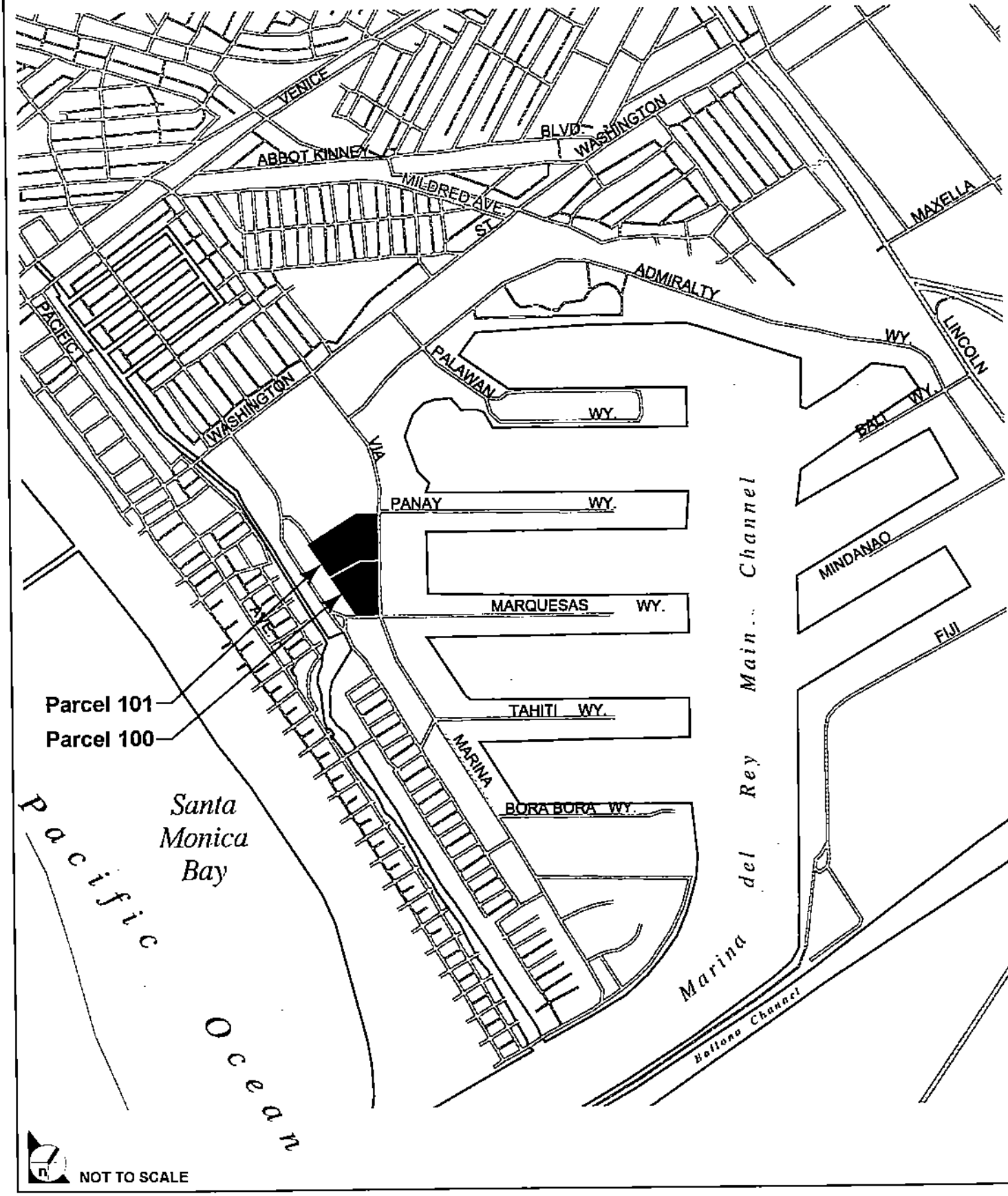
1 LeRoy Crandall and Associates, *Geotechnical Studies Area D, T.T. 49104,* January 3, 1991.

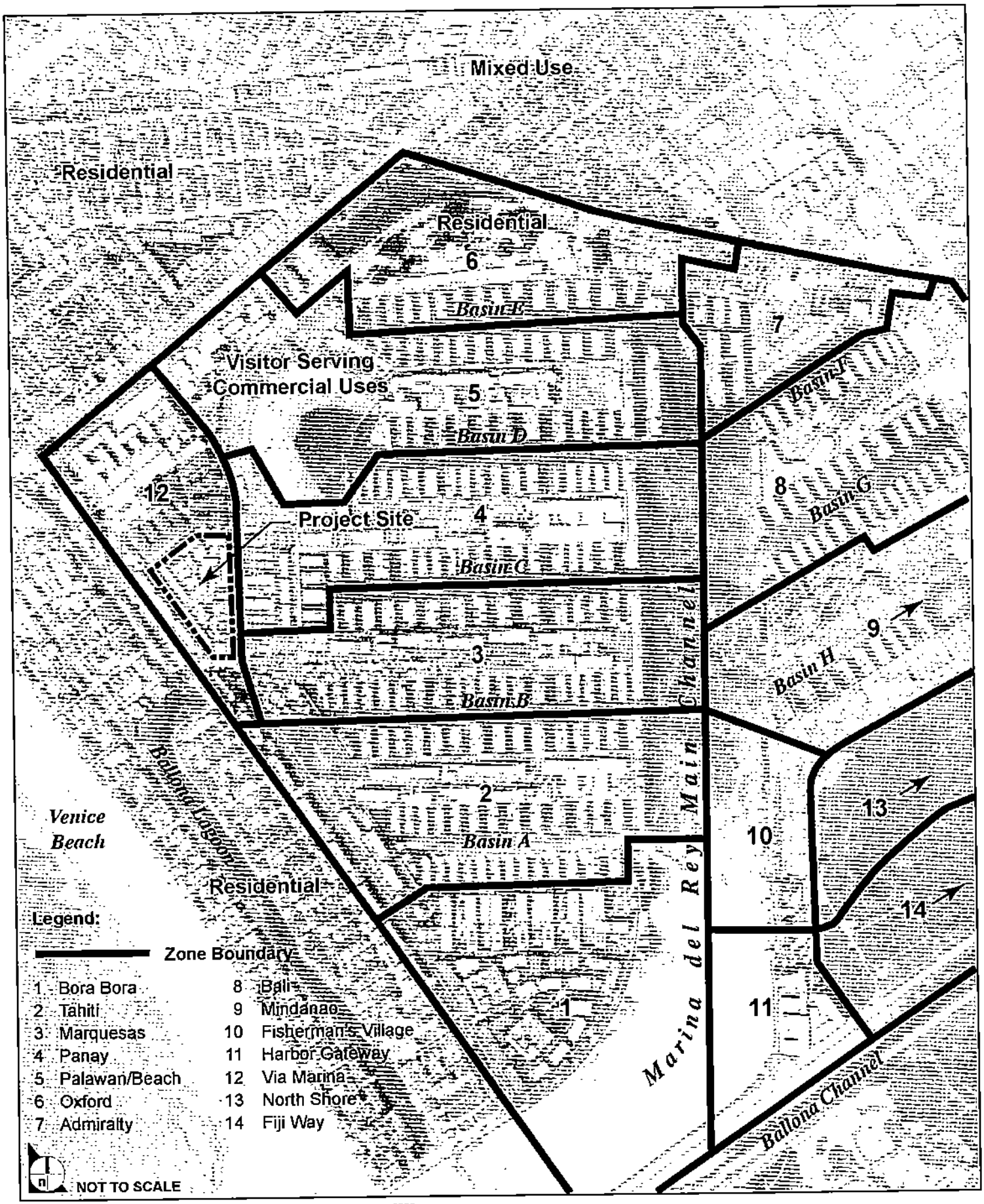


SOURCE: Impact Sciences, Inc – June 2005

FIGURE **4.0-1**

Marina del Rey Parcels 100 and 101

779-02-09//05



SOURCE: Eagle Aerial Photo, LA98-672, 3/11/98, Impact Sciences, Inc – June 2005

FIGURE **4.0-2**

Surrounding Land Uses/Development Zones

4.2.3 SOILS

Based on on-site surveys, the upper 10 to 15 feet of soil on the site and immediate surroundings consists of a mixture of artificial and hydrolic fill deposits dredged from the Ballona wetlands during construction of the small-craft harbor. These fill deposits consist of silty and relatively clean sands. Native soils encountered below these fills are the natural beach and alluvial deposits consisting of interbedded silty sands, clayey sands, sandy and clayey silts, silty and sandy clays and relatively clean sands.[2]

4.2.4 MINERAL RESOURCES

Oil and natural gas deposits occur in the Marina del Rey area. The Playa del Rey oil field began operation in the area during the mid 1920s, with production of crude oil peaking in 1935. The field was largely depleted by the 1940s. At that time, the Southern California Gas Company began storing natural gas in the oil field.[3] Today, Southern California Gas Company operates a large natural gas processing, storage and transmission facility south and southeast of Marina del Rey. Although no accidents have occurred in recent years, this facility has created a potential for the subsurface migration of methane gas. On-site investigations indicate no presence of methane gas in soils occurring beneath the project site.[4]

4.2.5 WATER RESOURCES

Brief descriptions of water resources are provided below. Please refer to **Section 5.3, Hydrology and Water Quality**, for further information.

4.2.5.1 Surface Hydrology

As depicted above in **Figure 4.0-1**, a variety of surface water bodies are located in the project area. These include the waters of Marina del Rey, Santa Monica Bay to the west, the Ballona Channel to the south and the Del Rey Lagoon to the southwest. In the project area, storm water runoff depending on the project site flows either directly or indirectly to each of these water bodies. From The Shores project site, storm water is discharged to the Santa Monica Bay via the Grand Canal that occurs west of the project site. A number of surface and subsurface storm drains surround the site that are ultimately directed to a catch

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2 *Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California* (URS, June 2, 2005) **(Appendix 5.1)**.

3 Law/Crandall, Inc., *Geotechnical Investigation for Proposed Wetlands Restoration and Proposed Development North of Jefferson Boulevard, Parcel B*, August 1991.

4 *Soil Gas Survey Letter Report, Proposed Apartment Complex Redevelopment, Del Rey Shores, Marina del Rey, California* (URS, May 12, 2005) **(Appendix 5.1)**.

basin on the eastern side of Via Marina. From this catch basin, storm water flows to the Grand Canal and ultimately to the Santa Monica Bay.

In the region, water quality in the Santa Monica Bay and the small-craft harbor is influenced by urban runoff.

4.2.5.2 Groundwater Hydrology

On a regional level, the project site lies within the Santa Monica hydrologic sub-area of the Coastal Plain of Los Angeles. There are three aquifer systems beneath or in the vicinity of the project site. Aquifer systems include the Silverado Aquifer, the Ballona Aquifer and the Gage/Gardena Aquifer. Groundwater levels around the region fluctuate based on variations in rainfall, regional climate and tidal influence. Groundwater elevations at the site vary from approximately 7 feet to approximately 17 feet below the ground surface depending upon tide and location on the property. Groundwater is not used as a source of potable water. Historical information indicates that the mean higher high water mark is about +5 (mean sea level) in this portion of the small-craft harbor.[5]

4.2.6 BIOLOGICAL RESOURCES

As illustrated above in **Figure 4.0-2**, the land area surrounding the project site is urbanized with the exception of a small number of vacant parcels, parks and open space areas. Open space portions of the Playa Vista property (opposite the Ballona Channel to the south) incorporate a variety of vegetation communities, including salt marsh, coyote brush scrub, coastal sage scrub, freshwater marsh, salt flat and ruderal habitat. These habitats support or provide potential habitat for a number of special status wildlife species. Given the generally developed nature of the project site and surroundings, terrestrial wildlife resources outside of Playa Vista are not expected to be abundant or diverse.

4.2.7 AIR QUALITY

The proximity of the ocean and ocean waters serve to moderate climate. Summers are characterized by warm temperatures while winters are mild with infrequent rainfall. Meteorological conditions are characterized by light winds and shallow vertical mixing due to low-altitude temperature inversions. When combined with the surrounding mountain ranges, these conditions hinder the dispersion of air pollutants.

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5 *Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California* (URS, June 2, 2005).

The project site is located within the South Coast Air Basin (SCAB), which includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino and Riverside counties. The project site is located in the Northwest Coastal Los Angeles County SRA (SRA 2). The monitoring station for this area is located at the Veterans Administration Hospital in West Los Angeles (13.3 miles to the north). This station monitors emission levels of O_3, CO, NO_2 and sulfate. The nearest station that monitors SO_2, PM_{10} and lead is the Hawthorne station (located 13.1 miles to the southeast) in the Southwest Coastal Los Angeles County SRA (SRA 3). The nearest station monitoring $PM_{2.5}$ is the North Main Street station in the Central Los Angeles County SRA (SRA 1) (located 14.7 miles to the east).

Please refer to **Section 5.4, Air Quality**, for additional information.

4.2.8 SOCIO-ECONOMICS

The Southern California Association of Governments (SCAG) reports that the City and County of Los Angeles have undergone sustained population, housing and job growth since 1990. SCAG forecasts that this sustained population, housing and job growth will continue at least through the year 2020. Because of the size of the urban area, SCAG has divided their planning region into 13 sub-areas. The project site is located within the Westside Cities Subregion.

Growth projections for the Westside Cities Subregion indicate that the population is expected to increase by 11.5 percent to 253,100 persons by the year 2020. Similarly, the housing stock is predicted to increase by 14.7 percent to a total of 129,900 units during this period. Employment opportunities are also predicted to increase during this time frame, with a total of 286,100 jobs located within this subregion by the year 2020 (a 20 percent increase).[6]

4.2.9 PUBLIC SERVICES

The project site and surrounding area is developed and afforded all municipal services. Law enforcement is provided by the Los Angeles County Sheriffs Department, which maintains a Sheriff station within Marina del Rey. Fire protection and emergency medical response services for Marina del Rey are provided by the Los Angeles County Fire Department (LACFD). The LACFD operates Fire Station 110 within Marina del Rey, which is the jurisdictional (i.e., primary response) engine company for Marina del Rey.

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6 Southern California Association of Governments, *Regional Comprehensive Plan and Guide*, April 1998.

Educational services are provided to the Marina del Rey area by the Los Angeles Unified School District (LAUSD). The project site is within the attendance boundaries of three LAUSD schools: Coeur d'Alene Avenue Elementary School (92 percent of school capacity); Marina del Rey Middle School (62 percent of school capacity); and Venice Senior High School (74 percent of school capacity). As indicated, all three schools are currently operating within their design capacities (LAUSD, 2005).

A number of park and recreational facilities exist in and near Marina del Rey. Park facilities in Marina del Rey are managed by the County of Los Angeles Department of Beaches and Harbors and include Mother's Beach, Burton W. Chace Park, Admiralty Park, Harold Eddington Park and Aubrey E. Austin Park.

Library services for Marina del Rey are provided by the County of Los Angeles Public Library system. The Marina del Rey Library, located at 4533 Admiralty Way, is the nearest library and serves an estimated resident population of approximately 8,000 people. This branch provides adequate services according to County library standards.

Potable water is provided to the site by the Los Angeles County Department of Public Works (LACDPW), through Water Works District No. 29. The Marina del Rey Water system receives 100 percent of its supply from imported water purchased from the Metropolitan Water District of Southern California. Water to areas immediately surrounding Marina del Rey is provided by the City of Los Angeles Department of Water and Power. As proposed, approximately 1,050 lineal feet of 10-inch water main occurring along Marquesas Way and Dell Avenue would be upgraded to a 12-inch main to satisfy the requirements of the Los Angeles County Fire Department water flow requirement of 3,500 gallons per minute. Please refer to **Section 5.8, Water Service**, for additional information.

Wastewater disposal is provided by the County of Los Angeles Marina Sewer Maintenance District, which owns and maintains the local sanitary sewer network. Sewage generated in Marina del Rey is transported by the County-owned local sewer network to the Coastal Interceptor Sewer, a line owned and operated by the City of Los Angeles. Domestic wastewater is ultimately conveyed and treated at the City-owned Hyperion Treatment Plant (HTP). The County Sewer Maintenance District maintains a contract with the City of Los Angeles, which allocates 3.0 million gallons per day (gpd) of the HTP's treatment capacity to sewage generated by uses in Marina del Rey. Of this total, existing uses generate approximately 2.0 million gpd of domestic sewage. HTP has available capacity to treat domestic wastewater from proposed uses in Marina del Rey. This project requires no improvements to off-site sewer facilities. Proposed sewer improvements associated with The Shores project are limited to the

connection of new on-site sewer lines to the existing sewer collection network. Please refer to **Section 5.9, Sewer Service**, for additional information on sewage transmission and treatment capacity.

4.3 CUMULATIVE DEVELOPMENT

Reasonably foreseeable development in the vicinity of The Shores project is listed in **Table 4.0-1, Related Projects Descriptions**, on the following page. The list of projects was compiled by Crain & Associates as part of the traffic impact analysis for this Draft EIR. Development of the 24 projects listed in this table would result in additional residential, commercial, governmental and community-serving space and land uses. Residential uses would include apartments, condominiums, senior housing and convalescent and assisted care facilities. Commercial uses will include additional space for hotels, retail, restaurants and warehouse, office and other service uses. Developments also include the addition of park space and boat slips to the Marina del Rey area. The locations of the cumulative project relative to The Shores project are shown in **Figure 4.0-3, Related Projects Location Map**. Thirteen of the projects are within or proximal to Marina del Rey (defined here as an area bound by the Pacific Ocean to the west, Washington Boulevard to the north, Lincoln Boulevard to the east and Culver Boulevard to the south. The balance (10 projects) is within the municipal boundaries of the City of Los Angeles or Culver City.

Table 4.0-1
Related Projects Descriptions

Map Number	New Development	Jurisdiction	Existing Uses to be Replaced
1.	8,800 sf Shopping center addition	SM	
2.	197,000 sf Retail 280 du Apartment	SM	
3.	6 p Service station 720 sf Convenience store	SM	
4.	25,656 sf Mar Vista Postal Station	LAC	
5.	134,557 sf Warehouse 1,357 sf Office	LAC	58,323 sf U. of CA laundry bldg.
6.	1,623 sf Fast-food rest. w/drive-thru	LAC	
7.	20 du Senior care facility (9,970 sf)	LAC	9,970 sf Furniture warehouse
8.	70 du Alzheimer's/assisted living facility	LAC	
9.	22,000 sf Office 20,000 sf Mini-warehouse	LAC	42,000 sf Mini-warehouse
10.	42,270 sf Retail/motorcycle/office 1,000 sf Café 8,200 sf Restaurant	LAC	
11.	120 du Apartment expansion	LACo	
12.	298 du Apartment	LAC	24,000 sf Light manufacturing 21,600 sf Office 40,000 sf Auto service/repair
13.	15,180 sf Office	LAC	
14.	6,236 sf Retail	LACo	5,750 sf Retail
15.	15,250 sf Retail 405 sf Restaurant 4,250 sf Drive-in bank 7,888 sf Office	LACo	9,180 sf Office 165 sf Restaurant 7,500 sf Drive-in bank
16.	133 rm Motel expansion	LACo	
17.	600 du Condominium	LACo	
18.	526 du Apartment 161 sl Boat	LACo	400 du Apartment 184 sl Boat
19.	940 du Apartment 82 du Senior apartment 4,000 sf Retail 6,000 sf Commercial 439 sl Boat	LACo	
20.	100 du Apartment 6,885 sf Commercial	LACo	
21.	65 du Apartment 75 du Congregate care facility	LACo	
22.	179 du Apartment	LACo	64 rm Apartment
23.	175,000 sf Office 2,600 du Apartment 150,000 sf Retail 40,000 sf Community serving uses	LAC	
24.	288 rm Hotel 2 ac Public park	LACo	

ac = acres; du = dwelling units; p = pumps; rm = rooms; sf = square feet; sl = slips
SM = City of Santa Monica; LAC = City of Los Angeles; LACo = Los Angeles County
Source: Crain & Associates.

NOT TO SCALE

SOURCE: Crain & Associates – March 2005

FIGURE **4.0-3**

Related Projects Location Map

4.4 REGIONAL PLANS AND POLICIES

Over the past several years, the passage of various state and federal laws have increased emphasis on regional planning and the preparation of regional land use plans (LUPs). For The Shores project, four regional planning documents include planning polices that are relevant. Proposed development projects that require an EIR are required to discuss any project inconsistency with goals and policies defined in these applicable regional plans. Applicable regional plans for The Shores project are:

- *Regional Comprehensive Plan and Guide* (RCPG), prepared by SCAG (dated 1996);
- *1997 Air Quality Management Plan*, prepared by the South Coast Air Quality Management District;
- *Water Quality Control Plan* (Basin Plan), prepared by the California Regional Water Quality Control Board, Los Angeles Region (dated 1995); and
- *Congestion Management Program for Los Angeles County* (CMP), prepared by the Los Angeles County Metropolitan Transportation Authority (MTA) (dated 2004).

4.4.1 REGIONAL COMPREHENSIVE PLAN AND GUIDE (RCPG)

The County of Los Angeles is within the six-county jurisdiction of SCAG, which also includes Ventura, Orange, San Bernardino, Riverside and Imperial counties. SCAG has divided its jurisdiction into 13 subregions to facilitate regional planning efforts. As previously mentioned, Marina del Rey is located in the Westside Cities Subregion.

The *Regional Comprehensive Plan and Guide* (RCPG), dated March 1996, consists of five core chapters: Growth Management, Regional Mobility, Air Quality, Water Quality and Hazardous Waste Management. Although SCAG is not a permitting agency, under CEQA, local governments are required to discuss the consistency of project with the RCPG. The following is a discussion of the project's consistency with policies defined in the core chapters of the RCPG that apply to The Shores project.

4.4.1.1 Growth Management Chapter

- **POLICY:** ***The population, housing and jobs forecasts, which are adopted by SCAG's Regional Council and which reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.***

The project site is located within Census Tract 7029.01. The SCAG demographic forecasts for this tract are provided in Table 4.0-2, **SCAG Demographic Projections – Census Tract 7029.01**.

Table 4.0-2
SCAG Demographic Projections – Census Tract 7029.01

	2000	2010	2020	2030	Growth 2000-2030 (% Increase)
Population	8,334	11,587	13,205	14,890	6,556 (78.7%)
Housing	5,328	6,298	6,950	7,645	2,317 (43.5%)
Employment	10,454	10,845	11,405	11,875	1,421 (13.6%)

Source: 2004 Regional Transportation Plan, adopted April 2004.

As shown below in **Table 4.0-3, The Shores Population and Housing Unit Statistical Summary,** implementation of The Shores project would intensify development on Parcels 100 and 101 by adding a net increase of 342 apartment units, resulting in a net increase in population of approximately 513 persons. It is assumed for purposes of this analysis that construction of The Shores project would be complete by the year 2008.

Table 4.0-3
The Shores Population and Housing Unit Statistical Summary

Use	Dwelling Units	Avg. Household Size[1]	Population
The Shores Project	544	1.5	816
Existing Apartment Complex (Parcels 100 and 101)	202	1.5	303
Net Increase	**342**	**(no change)**	**513**

[1] *Marina del Rey Specific Plan, 1996.*

As described above, SCAG predicts the population of Census Tract 7029.01 will increase by 3,253 persons by the year 2010. A net increase of 513 persons resulting from The Shores project would equate to approximately 15.8 percent of this planned population increase. This total is within SCAG demographic projections prepared for year 2010. Therefore, no significant population impacts are expected on a subregional level with build-out and full occupancy of the project.

Conclusion: Consistent.

- POLICY: *SCAG shall encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment.*

The Shores project proposes to make an affordable housing in-lieu fee payment, consistent with the County Board of Supervisors action of August 6, 2002, for the production of new affordable housing within Marina del Rey. Therefore, The Shores project is considered consistent with this policy.

Conclusion: Consistent.

- POLICY: *SCAG shall encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.*
- POLICY: *SCAG shall support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.*
- POLICY: *SCAG shall support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide equally to all members of society, accessible and effective services, such as: public education, housing, health care, social services, recreational facilities, law enforcement and fire protection.*

Analysis: The Shores project site is presently developed and is situated in an existing urban area. The project requires no improvements to infrastructure or services that have not been pre-planned. As such, a full range of infrastructure and municipal services exist and are available to the project site. In addition to developer fees and construction related infrastructure improvements, residences generated by the project and new project residents would create revenue in the form of property taxes, sales taxes, fees, etc., which would be available to the County to fund the recurring costs associated with provision of municipal services. Revenues for capital improvements would also be generated by the project directly through various forms of development fees. Therefore, the project is consistent with these RCPG policies.

Conclusion: Consistent.

- POLICY: *SCAG shall support provisions and incentives created by local jurisdictions to attract housing growth in job rich subregions and job growth in housing subregions.*

Analysis: The Shores project site is located in an urbanized area that is proximal to a variety of employment opportunities. One purpose of this policy is to reduce vehicle trip lengths by promoting the ability of people to live near their place of employment. The Shores project site is near aerospace and manufacturing jobs located in the City of El Segundo, located approximately 2.5 miles south of the site, as well as office and professional employment opportunities found in the Playa Vista and Century City areas, in Westwood and along the Wilshire Corridor to the north. As indicated above in **Table 4.0-2**, the

project site is located in an area that contains wide variety of employment opportunities and where employment growth is anticipated.

Conclusion: Consistent.

- **POLICY:** ***SCAG shall encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled and create opportunities for residents to walk and bike.***

Analysis: No new transit facilities are planned for the area near The Shores project. However, the project will be within an urbanized area that is served by several mass transit providers, including the Los Angeles County Metropolitan Transit Authority, the Culver City Bus lines and the Santa Monica Municipal Bus service. Marina del Rey is served by existing bus routes, including routes along Admiralty and Marina Way, as well as by routes on nearby arterials such as Lincoln Boulevard, Venice Boulevard and the Marina Freeway. These routes would be readily accessible to residents of The Shores project. Additionally, as Marina del Rey is a fully developed, mixed-use community, a full complement of neighborhood-supporting commercial services presently exists in the vicinity of the project site. All of the above can act to reduce total vehicle miles traveled, as residents of the site have convenient access to alternative forms of transportation and can patronize local establishments to meet their daily needs.

Conclusion: Consistent.

- **POLICY:** ***SCAG shall encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural sites and archaeological sites.***

Analysis: The project site is situated on hydraulic fill generated during marina construction. According to archaeological research conducted on the project site and adjacent parcels, no known cultural or archaeological resources exist on or near the project site. Therefore, The Shores project would not directly or indirectly impact cultural or archaeological resources.

Conclusion: Consistent.

- **POLICY:** ***SCAG shall discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood and seismic hazards.***

Analysis: The site is neither subject to wildland fire hazards nor does the site have any steep slopes. Like most locations in southern California, the site would be subject to seismic hazards common to the region. Using recorded tsunami heights (7 feet maximum) and maximum tide (7.5 feet mean lower low water or

4.8 feet mean sea level, tsunami run-up could affect land area in the marina occurring below elevations of approximately 12 feet. Therefore, tsunami run-up and flooding of the site under maximum tide conditions is not likely given a site elevation of 17 feet. Further, the probability of a maximum tide corresponding with a 50-year or 100-year tsunami event is small. Through compliance with Los Angeles County Building Code, as required, hazards to the project associated with seismic events would be reduced to less than significant levels making the project consistent with this SCAG policy.

Conclusion: Consistent.

- **POLICY:** ***SCAG shall encourage measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage and to develop emergency response and recovery plans.***

Analysis: The site is currently developed as a 202-unit apartment complex and surrounding land uses are highly urbanized. Biological resources present on The Shores project site are limited to ornamental vegetation and an assemblage of wildlife that has adapted to a substantial human presence. Therefore, noise associated with The Shores project is not anticipated to adversely affect wildlife present or wildlife that would be expected to occur on site.

The project is consistent with the land use classification (Residential V) defined in the Marina del Rey LUP. Further, the project has been reviewed and approved by the LACDPW, the Los Angeles County Fire Department and the Los Angeles County Sheriff's Department. These County departments have found the project to be consistent with safety requirements defined by each department and that the project has incorporated all measures designed to minimize the public's exposure to seismic hazards. Further, these County Department have not defined that any element of this project is inconsistent with emergency response and recovery plans.

Conclusion: Consistent.

4.4.1.2 Regional Mobility Chapter

The Regional Mobility Chapter summarizes a SCAG document entitled, *Regional Mobility Element* (RME). The RME, adopted in 1994, is the principal transportation policy, strategy and objective statement of SCAG, proposing a comprehensive strategy for achieving mobility and air quality mandates. The RME is also referred to as the *Regional Transportation Plan* (RTP). It serves as both the federal- and state-required regional long-range transportation plan for the SCAG region through the year 2015.

The RME links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns and encouraging fair and equitable access for residents affected by socio-economic, geographic and commercial limitations.

Goals of the RME relevant to the project are listed below followed by a consistency analysis.

- POLICY: ***Support the coordination of land use and transportation decisions with land use and transportation capacity, taking into account the potential for demand management strategies to mitigate travel demand if provided for as a part of the entire package.***
- POLICY: ***Public transportation programs shall be considered an essential public service because of their social, economic and environmental benefits.***

Analysis: As previously discussed, the project would accommodate projected regional growth in a location that is adjacent to existing and planned infrastructure, urban services, transportation corridors and major employment centers. Moreover, the project is located in an area that is served by a number of mass transit providers.

Conclusion: Consistent.

- POLICY: ***Potential down-stream congestion impacts from a capacity enhancing project will be studied.***

Analysis: A traffic study has been prepared for the project and is discussed in **Section 5.6, Traffic/Access.** The study evaluates project and cumulative traffic impacts on the local and regional transportation network. As indicated in this section, all traffic-related impacts can be mitigated to levels that are less than significant.

Conclusion: Consistent.

4.4.1.3 Air Quality Chapter

The Air Quality Chapter of the RCPG is intended to facilitate an improved standard of living by encouraging sustained economic growth along with an improvement in air quality through the creation of new industries and products required to achieve cleaner air and by providing adequate transportation for all residents while meeting clean air goals.

The following policies in the Air Quality Chapter are relevant to The Shores project.

- POLICY: *Through the environmental documentation review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.*

Analysis: An air quality study has been prepared for the project and is discussed in **Section 5.4, Air Quality**. The study evaluates project and cumulative traffic impacts on the local and regional air quality. The project's consistency with the requirements of the South Coast *Air Quality Management Plan* (AQMP) is discussed in **Section 5.4**.

Conclusion: Consistent.

4.4.1.4 Water Quality Chapter

The stated purpose of this chapter is to provide a regional perspective on current water quality issues and the plans and programs for addressing these issues. The chapter also identifies the current water quality goals and objectives for the region under existing law and provides a framework for ensuring that growth in wastewater treatment capacity is consistent with regional growth projections. Policies of the Water Quality Chapter, which have some relevance to The Shores project, are discussed below.

- POLICY: *Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.*

It is beyond the scope of The Shores project and EIR to provide watershed management programs and strategies. However, the project does incorporate measures to minimize water quality impacts through the use of on-site bio-swales. The project would also comply with requirements for development projects under the County's National Pollutant Discharge Elimination System (NPDES) Permit and would obtain all necessary permits for both the construction and ultimate development stages. See **Section 5.3, Hydrology and Water Quality**, for further discussion of on-site water quality issues and Best Management Practices to be implemented by The Shores project.

4.4.2 WATER QUALITY CONTROL PLAN (BASIN PLAN), LOS ANGELES REGION (4)

The California Regional Water Quality Control Board, Los Angeles Region (RWQCB), has jurisdiction over coastal drainages between Rincon Point and the eastern Los Angeles County line. Pursuant to its authority under the California Water Code, the RWQCB has developed a "Basin Plan." The Basin Plan is

designed to preserve and enhance water quality and to protect the beneficial uses of all regional waters. Specifically, the Basin Plan designates beneficial uses for surface and ground waters; sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and to conform to the state's anti-degradation policy; and describes implementation programs to protect all waters in the Region. For a detailed discussion of water resources and the consistency of The Shores project with this plan, please see **Section 5.3, Hydrology and Water Quality**.

4.4.3 CONGESTION MANAGEMENT PROGRAM FOR LOS ANGELES COUNTY

The Congestion Management Program (CMP) was enacted by the state legislature to address traffic congestion in California's urbanized counties. Please see **Section 5.6, Traffic/Access**, for an analysis of consistency of The Shores project with the CMP.

4.5 LOCAL PLANS AND POLICIES

4.5.1 CALIFORNIA COASTAL ACT OF 1976

The California Coastal Act (CCA) was enacted by the Legislature in 1976 to regulate coastal development. The act requires preparation of a Local Coastal Program (LCP) by each local coastal entity in order to carry out the intent of the CCA. The California Coastal Commission is the body that manages coastal resources in accordance with the Coastal Act. The CCA establishes several basic goals for the Coastal Zone, the physical boundaries of which are defined in Section 30103 of the Act. The primary goals of the CCA are as follows:

- Protect, maintain, enhance and, where feasible, restore the overall quality of the Coastal Zone environment;
- Assure balanced utilization of Coastal Zone resources;
- Maximize public access and recreational opportunities consistent with resource conservation principles and private property rights;
- Assure priority for coastal-dependent development over other development; and
- Encourage state and local efforts to coordinate planning for mutually beneficially uses.

Goals and policies of the CCA are incorporated within the County of Los Angeles Marina del Rey LUP, discussed below.

4.5.2 COUNTY OF LOS ANGELES GENERAL PLAN

The project site is located in an unincorporated portion of Los Angeles County. Overall land use direction for the County is provided in the County of Los Angeles General Plan, which was adopted in November 1980 by the County Board of Supervisors. The General Plan includes all state-mandated elements and several optional elements. The various elements of the General Plan provide goals, policies and objectives to govern the location and overall pattern of development, provide for an adequate transportation network and identify areas for recreation and conservation, among many other items.

The General Plan Development Policy Map of the County of Los Angeles General Plan indicates that land use decisions on and near the project site are subject to the Marina del Rey LUP, discussed below.

4.5.3 MARINA DEL REY SPECIFIC PLAN

Pursuant to the CCA, local jurisdictions that contain land within the Coastal Zone are required to prepare an LCP for that portion of their jurisdiction. LCPs are required to contain two primary components: (1) LUPs, which guide land use within the Coastal Zone, and (2) Local Implementing Programs (LIPs), which describe methods by which local LUPs will be carried out. The California Coastal Commission's primary duty is to assist coastal communities in the preparation of the LCPs and to review and certify the LCPs once they are adopted. Any subsequent amendment to the provisions of a certified LCP must be reviewed and certified by the Coastal Commission in order become effective.

The County of Los Angeles' certified LUP, LIP and design guidelines are embodied in the Marina del Rey Specific Plan. The LUP represents the primary regulatory document governing land use decisions within Marina del Rey. The LUP specifies policies regarding coastal access and recreation, marine and land resources, circulation, development potential and industrial development and energy facilities.

As indicated in this document, development has occurred on virtually all leasehold parcels within Marina del Rey. These existing developments, most from the 1960s, are commonly referred to as Marina del Rey Phase I development. The LUP is intended to guide and encourage the recycling, intensification and conversion of Phase I Marina del Rey development. The purposes of the LUP are as follows:[7]

- Implement objectives of the CCA;
- Encourage controlled change over the next 30 years, rather than face the prospect of major simultaneous change when the bulk of the leases expire after the year 2020; and

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7 County of Los Angeles Department of Regional Planning, *Marina del Rey Land Use Plan*, February 1996, p. 8-4.

- Correct existing problems and mandate the replacement of physically obsolete structures.

In short, the LUP envisions development in Marina del Rey as an evolutionary process. This process, which builds upon the success of existing uses while creating the opportunity for selective reconstruction at higher intensities, is also intended to enhance the visitor-serving public access and coastal view opportunities within Marina del Rey.

4.5.4 EXISTING LAND USE DESIGNATIONS

The Marina del Rey LUP divides Marina del Rey into a total of 14 development zones (DZ). The Shores project site is located within the Via Marina DZ, as depicted in **Figure 4.0-2**. The LUP defines a maximum development potential (as a net increase over and above existing land uses) in each DZ. This increase in development intensity is largely based on each zone's ability to accommodate additional vehicle traffic. Development allocations presented in the LUP are predicated upon the introduction of mitigation measures to reduce project and cumulative impacts. These measures are identified as Category 1 System Wide improvements.

The majority of land within the Via Marina DZ is designated for residential uses. The Shores project site (Parcels 100 and 101) is designated as Residential V (up to 75 dwelling units/acre). The project as proposed is 13 percent below the maximum development density permitted in the certified LCP for Parcels 100 and 101 (maximum development potential on the project site is 623 units). As such, the project falls well below the LCP-allotted density for Parcels 100 and 101. No amendments to the LCP are needed to effectuate the project.

The Shores project site is not within the Waterfront Overlay Zone (WOZ) as established in the LUP.

4.5.5 PROJECT CONSISTENCY WITH ALLOCATED DEVELOPMENT POTENTIAL AS DEFINED IN THE LUP

The Shores project would entail redevelopment of Parcels 100 and 101 with a new apartment complex containing 544 apartment dwelling units (a net increase of 342 apartment units) and associated parking facilities for residents and guests. As described above, the project does not require any amendments to the LCP, the project is consistent with provisions of the Residential V land use category, The Shores project is 13 percent below the maximum development density permitted in the certified LCP for Parcels 100 and 101, and the project does not exceed defined height standards. Therefore, the project is consistent with allocated development potential as defined in the LCP.

4.5.6 PROJECT CONSISTENCY WITH POLICIES OF THE LUP

The LUP contains seven applicable policy sections that are intended to guide development within Marina del Rey. Many of these policies are general. Determination of a project's consistency with these policies is vested in the County Regional Planning Commission and ultimately the California Coastal Commission. The project's consistency with applicable policies is discussed below.

4.5.6.1 Cultural Heritage Resources Section

- CULTURAL HERITAGE RESOURCES POLICY: *Proposed project shall be reviewed for potential cultural resource impacts through the County environmental review process. Appropriate environmental documentation and reasonable mitigation measures shall be required as determined by the Department of Regional Planning and the State Historic Preservation Office. These mitigation measures shall be incorporated into any development approved pursuant to the certified local coastal program.*

  As defined by Section 30116(d) of the Coastal Act, any cultural resource found in the portion of the LCP study area planned for development shall be collected and maintained at the Los Angeles County Museum of Natural History, or other appropriate location as otherwise provided by state law.

  To ensure proper surface and site recordation, the State Historic Preservation Office shall be notified, along with Regional Planning, if any resource is discovered during any phase of development construction. A professional archaeologist shall be retained to monitor any earth-moving operations in the study area. A halt-work condition shall be in place in the event of cultural resource discovery during construction.

  As part of the application for any coastal development permit involving disturbance of native soils or vegetation, including but not limited to excavation, pile driving or grading, the applicant shall provide evidence that they have notified the Office of State Historic Preservation and the Native American Heritage Commission of the location of the proposed grading, the proposed extent of the grading and the dates on which the work is expected to take place.

Analysis: Consistent with relevant policies of the LUP, a Phase I Cultural Resource investigation was undertaken on project sites proximal to The Shores site (Boxt, Mathew, 1998). The investigations consisted of an archaeological background records search and a site survey conducted by a qualified archeologist. The results of this investigation indicate that no identifiable cultural resources (inclusive of archeological, historic or paleontological resources) exist on the project site due to the presence of hydraulic fill generated during dredging and grading of Marina del Rey. Therefore, redevelopment of the project site as proposed is not expected to disturb any cultural resource. In the unlikely event that a cultural resource is uncovered during the construction activity, mitigation has been provided (reference the "standard stop work" condition identified in the Initial Study prepared for this project (**Appendix 2.0[A]**) which requires that construction activity cease until such resources can be evaluated

by an archeologist. In that event, the requirements of the Cultural Heritage Resource Policy shall be adhered to.

Conclusion: Consistent.

4.5.6.2 Land Use Plan Section

This section of the LUP consists of two discrete components that include: (1) written objectives; and (2) mapped land use policies. The evaluation of consistency against mapped LUP policies was previously discussed in this section. The following focuses on written land use policy objectives of the LUP.

- **LAND USE PLAN POLICY:** *The Design Control Board (DCB), appointed by the Board of Supervisors, shall review all new development proposals, including renovations, for consistency with the Manual for Specifications and Minimum Standards of Architectural Treatment and Construction and the certified LCP, including the identity and accessibility of the Marina as a public boating and recreational facility, and shall recommend such modifications to the design as they deem appropriate.*

  Such review shall be completed prior to any application for development being submitted to the Department of Regional Planning for case processing.

Analysis: As required by this Land Use Policy and regulations of the County, the applicant appeared before the DCB on January 20, 2005 to present the conceptual development proposal fo: review and comment; such conceptual approval was granted by the DCB to the project on January 20, 2005. Minutes of this meeting are incorporated as part of **Appendix 4.0(A)**. The Department of Regional Planning shall review and approve the landscape plan to ensure that no invasive plant species are proposed.

Conclusion: Consistent.

- **LAND USE PLAN POLICY:** *All applications for development on a specific parcel shall provide evidence of consistency with all of the following: (1) the access and recreation policies of the Coastal Act and this LCP and (2) all policies and development standards in the certified LCP, including the amount of development potential allocated to the Development Zone in which the parcel is located, and the principle permitted land use assigned to that parcel, permitted in the Waterfront Overlay Zone, or identified in the LCP as compatible uses that may be allowed, subject to a grant of a Conditional Use Permit.*

  Actual entitlement to develop a new use, or to change or expand an existing use on a given parcel shall be determined by the coastal development permit process as contained in Part 17 of Chapter 56 of Title 22 (Planning & Zoning) of the Los Angeles County Code, which may culminate in either granting, denying or conditional approval of a Coastal Development Permit. This process shall analyze all applicable policies of this LUP, the County-wide General Plan, and Title 22 (Planning & Zoning) of the Los Angeles County Code, in determining the design, location, and intensity of development on a specific parcel. This process also shall determine the extent of off-setting mitigation measures that shall be required of an applicant.

Analysis: The Marina del Rey LUP divides Marina del Rey into a total of 15 DZs. The Shores project site is located within the Via Marina DZ, as depicted in Figure 4.0-2. The LUP defines a maximum development potential (as a net increase over and above existing land uses) in each DZ. Within the Via Marina DZ, 623 residential units are permitted should the DZ develop to its maximum theoretical potential. At this time, no other projects are known to have been applied for within the Via Marina DZ.

The Shores project would entail redevelopment of Parcels 100 and 101 with a new apartment complex containing 544 apartment dwelling units and associated parking facilities for residents and guests. As described above, The Shores project does not propose an amendment to the LCP, the project is consistent with provisions of the Residential V land use category, and is 13 percent below the maximum development density permitted in the certified LCP for Parcels 100 and 101 (623 units maximum). Further, the project would not exceed 75 feet in height (exclusive of appurtenant, screened roof-top equipment and selected architectural features [i.e., sail forms]) when measured from finished grade elevations along Via Marina; maximum allotted height per the LCP for Parcels 100 and 101 is 225 feet. Therefore, the project is consistent with allocated development potential and parcel-specific height standards as defined in the LUP.

Conclusion: Consistent.

- LAND USE PLAN POLICY: *Although construction of housing is not a priority use in the Coastal Zone, additional opportunities for coastal housing may be provided, where appropriate.*

  All development of coastal housing shall be contingent upon meeting all applicable policies and development standards of the LCP, including but not limited to adequate parking, view corridors, public access to the shoreline, provision of new usable public recreation and open space, and visitor-serving recreational uses in the plan segment, provision of adequate traffic capacity, and any provisions for low- and moderate-income and senior housing subsequently certified by the California Coastal Commission.

  New or expanded development of office commercial uses shall be discouraged and, where permitted, confined to site outside of the Waterfront Overlay Zone.

Analysis: The Shores project would redevelop land now developed with residential land uses and associated parking. The Shores project is appropriate given that it would result in the upgrading of existing housing. Similar uses exist near the subject property.

Development as proposed by the applicant is consistent with the policies of the LUP, the Asset Management Plan pertaining to the recycling of Phase I Marina del Rey development, and applicable policies and development standards. Consistency with recreation, parking, views, housing and LCP standards are discussed in this Draft EIR.

The project mitigates traffic impacts through a payment of cumulative impact development fees which the County may use for a combination of intersection improvements and provision of new traffic monitoring equipment, thus providing adequate traffic capacity to promote unimpeded circulation patterns within Marina del Rey. Please see **Section 5.6, Traffic/Access**, for a more detailed discussion of circulation and parking consistency.

Conclusion: Consistent.

- LAND USE PLAN POLICY: *Affordable and senior citizen housing projects shall be encouraged as part of Phase II development consistent with the policies and development standards of the certified LCP.*

  a) The following General Plan policies shall be applicable to the review and approval of housing projects within the existing Marina:

  1. *Encourage private sector participation in the development of low- and moderate-income housing.*

  2. *Support and facilitate the development of housing affordable to lower-income households, and encourage the dispersal of new lower-income housing throughout the unincorporated areas of the County.*

  3. *Support the design and construction of rental housing to meet the needs of lower-income households, particularly large families, senior citizens and people with disabilities.*

  b) To the extent feasible, new housing developments shall comply with Government Code Section 65590 relating to the provision of low- and moderate-income housing within the Coastal Zone.

  c) The conversion or demolition of existing residential dwelling units occupied by persons of low and moderate income shall be replaced consistent with the provisions of Government Code Section 65590.

Analysis: California Government Code Section 65590(b,c) requires the replacement of housing for low- and moderate-income families that is removed or converted in the coastal zone. The Shores project would neither remove low- and/or moderate-income housing units nor convert such existing housing to market rate units.

Section 65590 also requires new housing developments constructed within the coastal zone to provide housing units for persons and families of low or moderate income. Where it is not feasible to provide these housing units in a proposed new housing development, the local government requires developers to provide such housing, if feasible to do so, at another location within the same city or county, either within the coastal zone or within 3 miles thereof, or pay an in-lieu housing fee.

The Shores project proposes to make an affordable housing in-lieu fee payment, consistent with the County Board of Supervisors action of August 6, 2002, for the production of new affordable housing within Marina del Rey. Therefore, The Shores project is considered consistent with this policy.

Conclusion: Consistent.

4.5.6.3 Coastal Visual Resources Section

- COASTAL VISUAL RESOURCES POLICY: *No billboards or off-premise commercial signs shall be permitted in the LCP study area. On-premise signs shall be restrained in size and color and subordinate to the setting.*

Analysis: Signage on the project has not been reviewed by the DCB. However, the project is subject to the requirements identified by the DCB with respect to signing, building design, site planning and facade design. Compliance with all recommendations made by the DCB with respect to signage shall ensure that any signs located within the project is in keeping with the Marina del Rey setting.

Given the provisions of Title 22 of the Los Angeles County Code (Planning and Zoning); Part 10, Signs, Section 22.52.800), no billboards or off-premises commercial signage are proposed. Signage is permitted in residential zones. This project proposes a variance to allow for additional signage on the project site. For additional signage to be permitted, the variance application must be approved by the Los Angeles County Regional Planning Commission.

Conclusion: Consistent.

- COASTAL VISUAL RESOURCES POLICY: *Signing, building design, site planning and facade design in the existing Marina shall continue to be controlled by the Marina del Rey DCB. The DCB shall review all new development proposals, including renovations, for consistency with the policies and objectives of this LCP and shall recommend such modifications to the design as they deem necessary. Such review and a report of DCB's deliberations shall be completed prior to any application for development being submitted to the Department of Regional Planning for case processing. In reviewing signs, the DCB may refer to the Permanent Sign Controls and Regulations of September 16, 1971, as amended on July 19, 1973, and the Specifications and Minimum Standards of Architectural Treatment and Construction of this certified LCP. All approvable development shall include modifications to ensure consistency with all policies and development standards of the certified LCP.*

Analysis: The applicant appeared before the DCB January 20, 2005 to present the conceptual development proposals for review and comment. The DCB granted conceptual approval to the project on January 20, 2005. Minutes of this meeting are incorporated as **Appendix 4.0(A)**.

Signage on the project has not been reviewed by the DCB. However, the project is subject to the requirements identified by the DCB with respect to signing, building design, site planning and facade design. Compliance with all recommendations made by the DCB with respect to signage shall ensure that any signs located within the project are tasteful and in keeping with the Marina del Rey setting.

Conclusion: Consistent.

- COASTAL VISUAL RESOURCES POLICY: *The Marina del Rey Local Coastal Plan defines "particularly significant vantage points" within the Marina. The following existing views within the existing Marina shall not be significantly disturbed:*

  1. *All views from north jetty and south jetty (west of UCLA boathouse) as well as the bike path along the northern boundary of the flood control channel;*
  2. *Harbor views from Burton Chace Park, Fisherman's Village and the parking lot just northwest of the County Fire Station;*
  3. *Harbor views from Admiralty Way; and*
  4. *The ends of the moles and adjacent lands.*

Analysis: Development of the project would not interfere with views from any of the "particularly significant vantage points" identified above. The project site is located west of Via Marina (opposite from the "particularly significant vantage points"). Further, the distance and intervening structures that occur between the project site and these vantage points are such that existing uses on the site would not be readily visible from these "particularly significant vantage points." For additional information reference **Section 5.5, Visual Quality**).

As currently proposed, some views of the marina are available from the upper floors of some east-facing units. This project fronts on Via Marina. Via Marina is not currently designated as a scenic highway. Via Marina is considered a "scenic highway meriting first priority status for further study." The LCP considers those portions of Via Marina to be visually important where vistas of the marina are available. As a note, some views of the Marina del Rey small-craft harbor are available from the upper floors of some east-facing units. As proposed, the project would not block any existing vistas of water portions of Marina del Rey from existing land uses.

The size/massing of The Shores project would not substantially differ from apartments approved for development across Via Marina easterly of the subject parcels and the distance between the observation point and the project site are such that the new structures would not impede or obstruct views. Thus, existing views from these locations would remain substantially intact with site development.

Conclusion: Consistent.

- COASTAL VISUAL RESOURCES POLICY: *The height of new structures within the existing Marina shall be governed by height standards established by the applicable Land Use Category, and by the following general height standards as applied to various similarly-situated parcels in the existing Marina:*

25-Foot Standard	*Applies to accessory structures on the Marina Beach area, public open space, some public parking lots, the fueling docks, the public boat ramp site, and ancillary commercial structures in the Boat Storage land use category.*
45-Foot Standard	*Applies to moles, including all parcels adjacent to mole roads and mole ends, and to office uses seaward of the loop roads, public parking lots, and public facilities (with the exception of theme towers on public facilities).*
140-Foot Standard	*Except as noted above, applies to parcels adjacent to and seaward of Via Marina and Admiralty Way (excluding the Marina City Towers and parcels 112 and 113, which are allowed a 225-foot standard), the Marina shopping center and frontage along Washington Boulevard.*
225-Foot Standard	*Except as noted above, applies to parcels landward of Via Marina and Admiralty Way, and includes parcels 112 and 113, and the westerly portion of parcel 125.*

The Height Design Concept may be modified where a valid public benefit is achieved, such as increased views of the waterfront. For parcels adjacent to mole roads, and seaward of Admiralty Way and Via Marina, flexible height standards may apply in exchange for increased view corridors, as provided for in Policy No. 8, below.

Analysis: The LCP identifies The Shores project site as occurring within an area that is defined as "Height Category 6" with a corresponding maximum building height of 225 feet. As proposed, The Shores project would not exceed 75 feet in height (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features) when measured from finished grade elevations per County standards. Therefore, the project is consistent with coastal visual resources policy as defined in the LUP.

Conclusion: Consistent.

- COASTAL VISUAL RESOURCES POLICY: *Development shall not significantly increase infringements of wind access for boats in their berths, in the fairways, or in the Main Channel. Wind studies shall be required to determine the significant adverse impact of taller buildings on wind currents and sailing by small boats within the Marina. All structures proposed at heights greater than 45 feet shall determine the cumulative impact of taller buildings on wind currents within the Marina. Development shall only be approved if all identified significant adverse impacts, including cumulative impacts of a pattern of higher buildings, are fully mitigated.*

Consistent with LCP requirements, Rowan Williams Davies & Irwin, Inc. (RWDI) prepared a wind study for The Shores project to assess its direct and cumulative impacts on wind patterns within the small-craft harbor, the loss of surface winds used by birds and sailboats, and general air circulation. The report concluded that no significant impacts on wind currents and sailing by small boats would occur. Please refer to **Section 5.4, Air Quality**, of the Draft EIR as well as **Appendix 5.4** for the complete analysis.

Conclusion: Consistent.

- **COASTAL VISUAL RESOURCES POLICY:** ***Landscaping and plant materials may be used to screen and soften visually obtrusive elements in the study area (e.g., utilities, service areas, bulkheads, fencing, etc.).***

Analysis: Final landscape plans will be submitted for approval to the DCB and the Department of Regional Planning for review as part of the development process, which will ensure that the project is consistent with this policy.

Conclusion: Consistent.

4.5.6.4 Hazard Areas Section

- **HAZARD AREAS POLICY:** ***As a prerequisite to all development, approval of a flood control, runoff and storm drain plan by the LACDPW consistent with the Santa Monica Bay Recovery Plan shall be required.***

Analysis: A Hydrology and Water Quality Report was prepared for this project by PSOMAS and is incorporated as **Appendix 5.3.** To limit or eliminate off-site water quality impacts, The Shores project incorporates eight bio-swales that would capture and treat surface runoff before it enters the off-site storm drain system (reference the Drainage Concept incorporated as part of **Appendix 5.4**). Further, Best Management Practices are incorporated into the design and/or operation of the project that would prevent pollutants from entering the storm drain system. Therefore, the project satisfies this policy. For additional information reference **Section 5.3, Hydrology and Water Quality**. All improvements will be designed and constructed in accordance with the policies and standards of the LACDPW, Flood Control Division.

Conclusion: Consistent.

- **HAZARD AREAS POLICY:** ***Future development shall be based on thorough site-specific geologic and soils studies, including specific geotechnical studies related to mitigation of liquefaction and lateral spreading.***

  All development shall utilize earthquake resistant construction and engineering practices particularly those intended for high density of human occupancy. All development shall be designed to withstand a seismic event. All earthquake studies shall comply with the latest recommendations of the California Division of Mines and Geology and the Seismic Safety Board for seismic safety, especially for projects on unconsolidated sediments with high groundwater.

  Preliminary engineering mitigation and structural setbacks shall be designed for a bedrock acceleration of no less than 0.5g and high potential for liquefaction.

Applicants and their engineers are responsible for following all current requirements and recommendations of the LACDPW, the California Division of Mines and Geology and the California Seismic Safety Board. Accordingly, all development applications shall include a detailed geotechnical report completed by a certified engineering geologist and a registered civil engineer experienced in the field of soil mechanics, and approved by Public Works. A copy of the report, and its approval, shall be submitted. The report must include, but not be limited to:

1. *A comprehensive geologic/soils analysis showing underlying geology, soil type and structure;*
2. *Delineation and evaluation of areas prone to fault rupture, secondary effects of seismic shaking, such as lateral spreading, settlement, liquefaction, etc., and excessive ground motion, due to seismic wave amplification;*
3. *Delineation of low-lying areas which may be inundated by tsunamis, floods, or unusually high tides or may be damaged by excessive wave action;*
4. *Recommendations for development in geologically stable areas, and restriction of development in unstable or unmitigated areas;*
5. *Channels constructed in areas of liquefiable soils shall be engineered to preclude or mitigate the impacts of liquefaction; and*
6. *No development in which the hazard to life and property cannot be fully mitigated shall be approved.*

Require that marina and harbor facilities continue to be designed and constructed so as to reduce the potential impacts of tsunamis.

Analysis: According to the LUP, the closest known fault is the Newport-Inglewood fault, located approximately four miles east of the project site. Based on probability maps produced by the USGS and the CDMG, the site has an expected ground motion of 0.5 to 0.6g for a probability of 10 percent exceedance in 50 years.

The Marina del Rey LUP indicates that portions of the marina are subject to the effects of a tsunami. Using recorded tsunami heights (seven feet maximum) and maximum tide (7.5 feet mean lower low water or 4.8 feet mean sea level, tsunami run-up could affect land area in the marina occurring below elevations of approximately 12 feet. Therefore, tsunami run-up and flooding of the site under maximum tide conditions is not likely given a site elevation of 17 feet. Further, the probability of a maximum tide corresponding with a 50-year or 100-year tsunami event is small.

Based on the nature of the soils directly underlying the project site (i.e., hydraulic fill), there is the potential for secondary geotechnical hazards such as liquefaction and lateral spreading to take place during a seismic event. An updated liquefaction study was prepared in 2005 and is incorporated in **Section 5.1, Geotechnical and Soils Resources.** Mitigation has been identified for incorporation into the site preparation, preliminary design and construction of the project to address the potential geotechnical hazards posed by development on this property. With implementation of the mitigation, no significant

geotechnical hazards are posed by construction of the project. Please refer to **Section 5.1, Geotechnical and Soil Resources,** of this Draft EIR for additional information.

Conclusion: Consistent.

4.5.6.5 Circulation Section

- CIRCULATION POLICY: *Development shall not be approved that will exceed the capacity of the internal Marina del Rey street system. The total potential for additional units and amount of commercial and residential development allocated under this Local Coastal Program will generate a traffic impact within Marina del Rey that can be mitigated within the Marina by the improvements listed in Policy 2 below. Pursuant to this policy, the improvements listed in Policy 2 below shall be allocated proportionately among the development approved within the LCP area such that each approvable development constructs or contributes its fair share of the improvements which are expected to fully mitigate the direct impact the development is expected to have on traffic within Marina del Rey.*

  To improve access to the LCP study area, the following improvements to the circulation system are proposed in conjunction with development allowed under this LCP. The following circulation system improvements are shown on Map 26 (of the LCP).

  1. *Admiralty Way Widening. Improve Admiralty from its current four lanes to five lanes from Via Marina to Fiji Way to provide three through lanes in the north/west direction and two lanes in the south/east direction. This improvement shall be accomplished within the existing right-of-way by shifting the median island.*

  2. *Intersections. Make the following intersection improvements:*

     a) *Via Marina at Admiralty – widen the south side of Admiralty to accommodate a triple westbound left turn movement and two lanes eastbound on Admiralty with a right-turn merge lane from northbound Via Marina.*

     b) *Palawan Way northbound at Admiralty – restripe to provide a separate right-turn approach lane to Admiralty.*

     c) *Palawan Way southbound at Admiralty – restripe to convert one through southbound lane into a second left-turn approach lane to Admiralty.*

     d) *Lincoln southbound at Bali – widen west side north of Bali Way to provide a right-turn approach lane with a 90-foot transition at Bali.*

     e) *Lincoln northbound at Mindanao – widen west side both north and south of Mindanao Way, relocate and narrow the median island, to provide for right turn lane at Mindanao.*

     f) *Admiralty northbound at Mindanao – widen east side south from Mindanao Way to provide a right-turn approach lane with a 90-foot transition at Mindanao.*

     g) *Admiralty southbound at Fiji – widen west side north from Fiji Way to provide for three through lanes.*

     h) *Fiji Way eastbound at Lincoln – widen the south side of Fiji Way to accommodate an additional eastbound left turn lane.*

  3. *Traffic Signal Synchronization. Traffic signals at high volume intersections shall be modified to operate as part of an interconnected system of regulated signals. The synchronized system shall be designed to automatically adjust lighting cycles based upon traffic volumes.*

4. *Transportation System Management. Transportation System Management (TSM) and Transportation Demand Management (TDM) programs shall be required as a condition of approval for all development which has a significant adverse effect on traffic. TSM improvements enhance the system capacity and improve traffic flow. TDM measures encourage people to use alternative modes of transportation to eliminate automobile trips during peak demand periods.*

Phasing of Internal Marina del Rey Improvements. The following circulation improvements represent the priority of mitigation measures that were identified in the DKS study of 1991 to be necessary to mitigate internal traffic impacts of redevelopment within Marina del Rey. These improvements may be used to mitigate the increase in PM peak hour trips generated by otherwise approvable development. The estimated Level of Service (LOS) if all Phase II development and Category I traffic impact improvements are completed is shown as Figure 13 (of the LUP).

Category I Improvements - System-Wide

System-Wide Improvement. Improve existing Admiralty Way from Via Marina to Fiji Way to provide three through lanes in the north/west direction and two lanes in the south/east direction. This improvement shall be accomplished within the existing right-of-way by shifting the median island.

Intersections.

Improve the intersection of Via Marina/Admiralty Way.

Improve the intersection of Admiralty Way and Palawan Way including provision of left turn pockets at northbound and southbound approaches on Palawan Way at Admiralty Way.

Improve the following Lincoln Boulevard intersections: Bali Way, Fiji Way and Mindanao Way.

Improve the following Admiralty Way intersections: Mindanao Way and Fiji Way.

Signals.

Implement ATSAC (or other modern signal synchronization system) at the following Admiralty Way intersections: Via Marina, Palawan Way, Bali Way and Mindanao Way; and at the following Lincoln Boulevard intersections: Bali Way, Mindanao Way and Fiji Way.

Analysis: A traffic report prepared by Crain & Associates (**Appendix 5.6**) for the project evaluated potential impacts to the circulation network on both a local and regional level. This analysis used a scenario of build-out of all projects through 2008. All affected regional and local roadway segments and intersections as defined by the Los Angeles County Public Works Department were studied in this analysis, as well as the larger regional highway system. Analysis indicates that for both the "Without Project" and "With Project" development scenarios, intersection traffic conditions will primarily range between Level of Service (LOS) A and LOS D at the most congested study intersections during both the AM and PM peak hours.

With or without The Shores project, one of the study intersections, Lincoln Boulevard/Mindanao Way, is forecast to operate below County Standards (LOS E or lower) during the AM peak hour. Mitigation measures can reduce this project impact to a level that is not considered significant.

The cumulative analysis incorporated in the traffic report demonstrated changes in Level of Service and significant impacts at two intersections. Mitigation in the form of development fees have been identified in the traffic report that will reduce all vehicular circulation impacts of the project to a level considered less than significant. Mitigation fees may result in physical roadway improvements and installation of equipment to improve traffic signalization timing. Given that traffic generated by the project would not exceed the capacity of the Marina del Rey circulation system with implementation of recommended mitigation, the project can be considered consistent with these policies. For additional information reference **Section 5.6, Traffic/Access**, of the Draft EIR.

Project generated vehicle trips forecast to use the Marina Freeway would not trigger the Congestion Management Plan significance criteria for regional transportation routes.

Conclusion: Consistent.

- CIRCULATION POLICY: *Development shall not be approved that will significantly exceed the capacity of the subregional street system. Traffic impacts, generated by development in the LCP study area, upon the circulation system outside the unincorporated area of Marina del Rey, shall be mitigated by the developer prior to receiving final discretionary permits.*

  Category 3 consists of improvements which may be employed to mitigate the cumulative impacts of development in the LCP study area on the regional transportation system serving the Marina del Rey. Ninety-three percent of all trips originate or end outside Marina del Rey. All development shall contribute a calculated fair share toward construction of improvements necessary to mitigate all of the development's significant adverse cumulative traffic impacts. The traffic studies prepared as part of each project's environmental documentation shall address the project's impacts on adjacent State Highways and other regional collector streets and shall be the basis for determining the amount of cumulative impacts which the project has on regional traffic due to the increase in the number of trips that the project generates that begin or end outside of the Plan area.

  Studies prepared in compliance with this requirement shall show: 1) the number of daily and peak hour trips generated by project development, 2) the number and percentage of those trips originating and terminating outside Marina del Rey, 3) the direction of the trips upon departing the existing Marina. Based on this documentation, all development shall contribute its proportionate fair share of the Category 3 improvements that will fully mitigate the level of impact such development will have on the regional system serving the Plan area. The study shall be provided at the time of the permit application.

  Category 3 Improvements are discussed in greater detail in the Transportation Improvement Program. The improvements include, but are not limited to, the following:

  1) *Installation of ATSAC or other modern signal synchronization at intersections along Admiralty Way and Culver Boulevard.*

  2) *Redesign of the Admiralty Way/Via Marina intersection.*

  3) *Establishment of a Shuttle Bus Service to enhance coastal access.*

  4) *Acquisition and development of periphery parking lots to provide additional peak period parking.*

5) *If agreed to by the Board of Supervisors, the City of Los Angeles and Caltrans, connect Route 90 to Admiralty Way via a fly-over over Lincoln Boulevard, widen Admiralty Way by an additional westbound lane to parcel OT, thence connect Admiralty Way with Washington Boulevard through parcel OT. This improvement shall go forward only with the agreement of all three agencies.*

6) *Provision of other coastal access or public transportation improvements affected by development within the Marina LCP study area including but not limited to improvements to affected intersections on Washington and Lincoln Boulevards or Route 90.*

7) *Construction of a Lincoln Boulevard people mover system between Westchester and Santa Monica.*

8) *Construction of a light rail line from Westchester/Los Angeles International Airport to Venice.*

Analysis: The traffic study prepared for the project-utilized methodology shall be approved by the LACDPW. Information and analysis provided within the study are consistent with the requirements outlined in this policy. The County requires a trip generation-related fee to be paid by the project applicant (see discussion in **Section 5.6.6.2**)

Conclusion: Consistent.

- CIRCULATION POLICY – FUNDING - DEVELOPER AGREEMENTS AND IMPROVEMENTS PHASING: *Funding of circulation improvements shall be undertaken in the following manner:*

  a) *Developer Agreement Required.*

  Category 1 Improvements. All lessees within the existing Marina, which may propose new development pursuant to the LCP, shall enter into uniform agreements with the County upon mutually agreeable terms to complete the roadway improvements specified in Category 1 at their joint expense.

  Category 3 Improvements. All lessees within the existing Marina, which may propose new development pursuant to the LCP, shall enter into uniform agreements with the County and applicable agencies upon mutually agreeable terms to complete the sub-regional improvements specified in Category 3 at their joint expense. If the fair and proportional share of the cost of such Category 3 improvements is insufficient to complete the improvement, the applicant may mitigate the impacts of the development by payment of its proportional fair share of such improvement.

  All agreements shall provide that all cumulative and direct impacts of the development on traffic shall be fully mitigated as provided in Policies 1 and 3 above.

  b) *Agreement Prior to Coastal Development Permit Issuance. This agreement regarding new development in the existing Marina shall be in effect and all required contributions shall be made to mitigate both internal and sub-regional improvements before issuance of any coastal development permit.*

  c) *Improvement Costs Fairly Apportioned. The requirement of this policy shall not require any lessee or developer to contribute more than its fair share of the cost of the required road improvements specified in Category 1 and 3.*

d) Improvements Phasing Schedule for Internal Marina del Rey Category 1 Improvements. The uniform agreement required by this section shall prescribe a phasing schedule so that the road improvements specified in Category 1 occur in phases coinciding with new development in the existing Marina so that no development is occupied before construction of improvements which would fully mitigate the same amount of impact such development has on traffic within Marina del Rey. Before incorporating this schedule as a condition of the coastal development permit, the applicant shall obtain concurrence from the Director of Public Works concerning the feasibility of the schedule and its adequacy. Development shall not be permitted to exceed the corresponding phase of road improvements.

e) Improvement Phasing Schedule For Sub-regional Traffic Category 3 Improvements. The uniform agreement required by this section shall prescribe a phasing schedule so that the road improvements specified in Category 3 occur in phases coinciding with new development in the existing Marina. Before adopting this schedule as a condition of the coastal development permit, the applicant shall obtain concurrence from the Director of Public Works concerning the feasibility and adequacy of the schedule. Where any significant adverse cumulative traffic impacts on sub-regional traffic routes will occur, the applicant shall (1) pay a proportional fair share of necessary sub-regional traffic improvements and (2) provide information concerning the timing and capacity of planned traffic improvements which will accommodate local growth including that attributed to the development. However, if the trips generated by the development along with other previously approved development will exceed 50 percent of the total anticipated additional external trips to be generated by new or intensified Marina development, additional development that generates external trips shall not occur until a traffic improvement on the approach roads that will mitigate those trips has been approved and funded by the appropriate agencies.

f) Independent Agreements to Complete Internal Improvements

1) Phasing. Subsequent to the approval of the agreements specified in this policy, individual lessees or developers may also agree as part of a coastal development permit, to perform road improvements in advance of the phasing schedule to endure timely construction of individual development proposals.

2) Funding and Phasing. Development in the existing Marina may proceed independently upon agreement with the County, without benefit of other agreements, contingent on completion of the road improvements determined necessary by the County to mitigate the development consistent with the provisions of the certified LCP. Development project proceeding in this fashion shall be responsible for establishing reimbursement contracts with subsequent developers for road improvements which are found to mitigate other developments.

g) Independent Agreements to Complete Sub-regional Improvements

Funding and Phasing. Development in the existing Marina may proceed independently upon agreement with the County, without benefit of other agreements, contingent on completion of the road improvements determined necessary by the County, in consultation with appropriate agencies, to mitigate the development consistent with the provisions of the certified LCP. Development projects proceeding in this fashion shall be responsible for establishing reimbursement contracts with subsequent developers for road improvements which are found to mitigate other development.

- CIRCULATION POLICY – DESIGN AND STANDARDS OF IMPROVEMENTS:

a) Internal Improvements. The Director of Public Works shall approve the final design, alignment, standards, and specifications for all circulation improvements proposed in this LUP.

b) Sub-regional Improvements. Improvements required by this plan to be accomplished outside of the County area shall be coordinated with the appropriate transportation agencies having jurisdiction over the improvement.

Analysis: These policies outline a process which developers within Marina del Rey must follow to ensure that necessary circulation improvements identified in the required traffic study are adequately funded and designed in accordance with County standards. It specifies timing for the funding and construction of necessary improvements, identifies performance standards for the circulation improvements and outlines a review process with the LACDPW to ensure the feasibility of the improvements, the timing of their construction and adequacy of their design.

As described above, a comprehensive traffic study prepared for the project has identified mitigation measures that reduce project specific and cumulative impacts to less than significant levels and these measures will become conditions of approval for The Shores project. The applicant will be conditioned to follow the process described above to ensure that the timing and funding of these improvements coincides with the development of the project, and that these improvements meet all County standards. In this manner, improvements needed to mitigate circulation impacts generated by the project would be constructed concurrently with occupation of the project.

Conclusion: Consistent.

4.5.6.6 Public Works

- PUBLIC WORKS POLICY: *Public works improvements in the study area shall be designed to accommodate new development permitted in the area and provide for future public access needs.*

  This LUP includes a phasing program. Necessary public works facilities shall be provided at the same time as the development creating the need for the public facility occurs. Public improvements required in this LUP shall be completed consistent with the phasing program as described in Chapter 8, Land Use, (on pages 8-6 and 8-7 of the text, in policies 4 and 7, and outlined in the "development potential by zone" section beginning on page 8-13 [Figure 5]), and further described in Section 22.46.1090 of the Specific Plan. Phasing of development and internal traffic improvements shall take place as indicated in policies 1, 2, 3 and 4 of Chapter 11, Circulation, of this LUP, and Section 22.46.1090 of the Specific Plan, which require necessary public improvements to be constructed in a timely and orderly manner, to minimize possible adverse impacts of new development on coastal resources (such as sensitive habitat resources or recreation areas) and to protect the ability of the public to travel to coastal attractions.

Analysis: The policies identified above are intended to ensure that all necessary municipal services can be provided for a project concurrent with the need for such services. It is important to note that the project occurs in a highly urbanized area and that a full array of services are currently provided to the existing apartments on the site. The project is subject to review by the LACDPW and Department of Regional Planning, which will make recommendations on the project's design and condition the project to mitigate the demands placed on supporting infrastructure. Please refer to the impact analysis contained in

Section 1.0, Executive Summary, of this Draft EIR for a summary of potential project impacts to the public works environment and site-specific and regional mitigation measures.

Conclusion: Consistent.

- PUBLIC WORKS POLICY: ***Permission to build new and/or intensified development in the LCP area shall be contingent upon the ability to provide proof of availability of adequate water and sewerage facilities.***

  In cases where existing unused capacity cannot meet increased demand, developer-financed improvement of existing water and/or sewerage facilities shall be required before new development and/or intensification can proceed.

  Installation of new sewer and water lines shall be accomplished via the least environmentally damaging method.

Analysis: Water, drainage and wastewater infrastructure reports have been prepared in support of The Shores project. As defined in these technical studies, this project requires no improvements to off-site sewer facilities. Proposed sewer improvements associated with The Shores project are limited to the connection of new on-site sewer lines to the existing sewer collection network. As proposed, approximately 1,050 lineal feet of 10-inch water main occurring along Marquesas Way and Dell Avenue would be upgraded to a 12-inch main to satisfy the requirements of the Los Angeles County Fire Department water flow requirement of 3,500 gallons per minute. The reports also outline the alignment and capacities of existing facilities and identify improvements intended to address the demands placed on the facilities as a result of The Shores project. The project would be conditioned to make the improvements necessary to support site development as proposed. The applicant shall also pay any required connection fees that provide funds to upgrade infrastructure to accommodate additional demand for service. Please refer to **Sections 5.8, Water Service,** and **5.9, Sewer Service,** of this Draft EIR for additional information.

Conclusion: Consistent.

- PUBLIC WORKS POLICY: ***Water conservation technology shall be employed in all development, including landscaping and irrigation, that increases water use of the parcel. Design of new development requiring the installation and operation of additional water service shall be reviewed for water conservation.***

Analysis: The project is required to comply with numerous state and County regulations governing water conservation measures for development project. Specific measures include: (1) Section 17921.3 of the Health and Safety Code, which requires low-flush toilets and urinals in all new construction; (2) Title 24 of the California Administrative Code (Sections 2-5352 (i) and (j), which require insulation of water-

heating systems and pipe insulation to reduce water used before hot water reaches equipment or fixtures; and (3) Government Code Section 7800, which specifies that lavatories in all public facilities be equipped with self-closing faucets. Further, landscape and irrigation plans for the project, if greater than 2,500 square feet in size, are required to comply with the Los Angeles County Efficient Landscape Ordinance. Compliance with all of the above will ensure that the project meets the intent of this policy.

Conclusion: Consistent.

- PUBLIC WORKS POLICY: *A new fire station may be required as part of Phase II Marina del Rey development. The size, location and timing of the new station shall be determined after appropriate study by the LACFD and shall be submitted as an amendment to the LUP. The new fire facility shall be funded and constructed as its need is determined in the environmental studies. The new fire station shall not displace parks, coastal recreation support or coastal dependent uses.*

Analysis: Communication with the LACFD indicates that the existing level of fire protection service within Marina del Rey is considered adequate. However, intensification of development within Marina del Rey consistent with the policies of the LUP would increase the demand for fire protection and emergency services. The LACFD is presently unable to determine the extent of future demand and if that demand would jeopardize the adequacy of fire protection services. The LUP indicates that a new fire station may be required as part of Phase II Marina del Rey development, and it will be funded and constructed as determined by need. The Shores project would contribute funds towards the construction of this facility through increased revenue in the form of property taxes due to the increased assessed valuation of the site. The project would also be constructed consistent with Los Angeles County Building Code standards and will comply with all applicable LACFD requirements.

Conclusion: Consistent.

- PUBLIC WORKS POLICY: *All new development shall be required to provide fire sprinklers consistent with the specifications of the LACFD. Remodeling or expansion projects involving 50 percent or more of the existing floor area of the structure shall be subject to review by the LACFD for sprinkler requirements.*

  Multi-Story Buildings. Where a new building exceeds three stories or 35 feet in height, the following standards shall apply:

  a) *The maximum height of a proposed multi-story building shall be subject for review of the LACFD;*

  b) *All multi-story buildings shall have an emergency evacuation plan and, on mole roads, a safe refuge area shall be designated for multi-story occupants on the dock area;*

  c) *Emergency access (or clear zones) along the sides of all multi-story buildings shall be required to be a width of 28 feet. A lesser width may be granted where the LACFD finds such width provides sufficient emergency access; a greater width may be mandated where the LACFD finds such width to be necessary for the provision of adequate emergency access. This requirement may*

apply to the adjacent pedestrian promenades except for the viewing areas described in policy 9 above. Where a building is not more than 10 feet from the edge of a road, the zones provided on the sides of a building may count toward any linear view-corridor requirements for buildings located between the first public road and the sea; and

d) Applicants for multi-story buildings shall submit documentation in the form of a Fire Safety Plan, verifying that LACFD requirements relative to access, fire flow, sprinklers and evacuation plans have been satisfied.

Analysis: The project shall comply with all LACFD standards and will be subject to review by the LACFD to ensure compliance with these standards/requirements. Project plans have been reviewed and approved by the County of Los Angeles Fire Department (Los Angeles County Fire Department letter dated April 27, 2005).

Conclusion: Consistent.

4.5.6.7 Industrial Development and Energy Facilities Section

- INDUSTRIAL DEVELOPMENT AND ENERGY FACILITIES POLICY. *Land Use decisions shall not interfere with the Gas Company's ability to continue operation of its gas storage facility. Land use decisions shall be protective of the Company's existing and future needs for gas storage facilities and operations.*

  Development in the Marina del Rey LCP area shall not interfere with access to gas or oil wells, to observation wells associated with gas storage, nor to other facilities associated with the gas storage field operation by service personnel and servicing equipment.

  In areas where new development occurs, the developer shall provide landscaping (trees, shrubbery) to visually buffer existing or relocated gas or oil wells.

  The Department of Regional Planning and the Gas Company shall jointly determine appropriate gas well setbacks from streets and new development for existing wells associated with the gas storage project. The Los Angeles County Code, Title 22 (Planning & Zoning), regulations regarding siting and operation of oil wells shall remain in force.

  Prior to new development over old, unused or previously abandoned wells, the California Division of Oil and Gas shall be asked to determine that the wells have been abandoned in accordance with current standards. Development over wells shall not be allowed to take place until this determination has been made.

Analysis: The Southern California Gas Company storage facility is located in the Del Rey Hills area, across the Ballona Channel and approximately two miles south of Marina del Rey and The Shores project site. As proposed, site development would have no direct impact on this storage facility given the distance between the site and this facility. Research at the California Division of Oil, Gas and Geothermal Resources Division indicates that two abandoned wells occur on the project site. The California Division of Oil, Gas and Geothermal Resources Division indicates that should these wells be encountered during construction the wells, following normal procedure, may be required to be recapped and abandoned

consistent with current requirements and standards (reference comment letter in **Appendix 2.0[B]**). Soil vapor sampling conducted on and near the project site detected no methane gas.

Conclusion: Consistent.

5.0 IMPACT ANALYSIS

PURPOSE

This section provides information on The Shores project's existing conditions, impact potential, pertinent mitigation measures and cumulative issues. The existing conditions component defines the environmental conditions that currently exist on and near the project site; project impacts are defined as the project's effect on the existing environment. Mitigation measures are designed to reduce a project's impact potential. Each mitigation measure is identified as either one that is proposed as part of the project or one that is recommended by this EIR. Technical topics addressed in the EIR were defined by the Lead Agency. The purpose of this section is to inform readers of the type and magnitude of the project's environmental impact and how such impacts would affect the existing environment.

5.1 Geotechnical and Soil Resources

SUMMARY

The proposed 8.31-acre Del Rey Shores (The Shores) project is located in the unincorporated community of Marina del Rey in Los Angeles County. Existing development includes 202 rental-housing units, and associated carports and parking lots. Implementation of The Shores project would result in the development of 12 apartment buildings totaling 544 units. Development of these parcels would require the removal of existing apartment units, parking structures and lots on the site.

The existing fill and upper native soils on the project site are not suitable for support of the proposed structures. In addition, due to high groundwater, de-watering may be required within the proposed excavation area during construction.

The project site is not traversed by any known active fault. During a moderate or major earthquake occurring close to the site, however, proposed project improvements would be subject to hazards associated with seismically-induced settlement due to seismic shaking, as well as soil liquefaction within the less dense silty sand, sand and silt soils.

Unless mitigated, these impacts would have a significant effect on the environment and could expose people or structures to major geologic hazards. With implementation of the mitigation measures recommended in this section, significant geotechnical impacts of the project would be reduced to less than significant.

5.1.1 INTRODUCTION

This section of the EIR draws upon information provided in four geotechnical reports prepared for the proposed project by the URS Corporation (URS) titled, *Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California (May 8, 2001)* (URS, 2001), a recent update to this report dated May 11, 2005 (URS, 2005), a *Soil Gas Survey Letter Report, Proposed Apartment Complex Redevelopment, Del Rey Shores, Marina del Rey, California (May 12, 2005)* (URS, 2005a), and an addendum titled, *Second Addendum to the May 8, 2001 Geotechnical Report; Second Update and Response to Preliminary Review Comments Proposed Apartment Complex; The Shores, Marina del Rey, California* (URS, 2005b). Information on seismicity was also obtained from the Marina del Rey Land Use Plan (February 1996) and the Technical Report for the Los Angeles County Seismic Safety Element (November 1987). Complete copies of the URS reports and updates have been included in **Appendix 5.1** of this EIR.

5.1.2 EXISTING CONDITIONS

5.1.2.1 Project Site

The project site consists of two adjacent parcels consisting of a total of 8.31 acres. Parcels 100 and 101 are currently occupied by existing apartments and associated parking, driveways and carports, as well as landscaping. These structures would be removed to facilitate the proposed construction. The lot varies in elevation from 17 to 26 feet above mean sea level.

5.1.2.1.1 Groundwater

Groundwater levels encountered during testing for the April 2005 Soil Gas Survey showed water levels of 6 to 10 feet below grade for the majority of the site, high water levels of 3 to 5 feet below grade and low water levels greater than 10 feet below grade. This corresponds to a water table level of up to 15 feet above mean sea level (msl). Groundwater monitoring previously conducted in 2000 showed deeper groundwater elevations, ranging from 13 to 23 feet below grade, or +1.5 to +11.5 feet above mean sea level. On average, it is estimated that the water table on the project site is approximately +9 to +14 feet above mean sea level. The high water table level encountered during the 2005 survey is thought to be due to exceptionally heavy winter rains. Additionally, because of the proximity of the site to the waterfront, it is reasonable to assume the water beneath the site is influenced by tidal variations.

5.1.2.1.2 Geologic Setting

The project site is located within the coastal plain portion of the Los Angeles Basin, adjacent to Santa Monica Bay. As described in **Section 4.0, Environmental Setting**, the site consisted primarily of lagoons and tidal marshes into the 1920s. From 1928 to the early 1950s, oil and gas exploration and extraction operations existed on the project site. Development of Marina del Rey resulted in a filling of the project site. In conformance with existing regulations, oil extraction facilities were removed at that time.

The project site is generally underlain by artificial fill/hydraulic fill derived from the dredging operations that occurred during the construction of Marina del Rey. These fill materials lie at depths of 13 to 26 feet below mean sea level and consist primarily of loose- to medium-dense sand, silty sand, and clayey sand, with occasional gravel and seashells. Under these fill materials, a mixture of silts and clay of lagoonal and fluvial origin and organic-rich tidal muds with sand deposits. These tidal materials generally extend to a depth of 43 to 47 feet below grade and are generally "settled" from the pressures of the overlying soils and structures. In the middle of the site, between the layers of fill and native clays, a 5- to 7-foot-thick layer of fine grained material occurs, composed primarily of very soft to soft, wet clay and sandy

clay, and contains occasional foreign items such as wood chips, copper wire, tile pieces and roots. This layer is not encountered around the perimeter of the site.

5.1.2.1.3 Potential Geologic Hazards

Geologic hazards that could most affect the proposed development are seismic hazards. Seismic hazards include fault rupture, seismic shaking, tsunamis (a large ocean wave produced by earthquake activity), seiches (an earthquake-generated wave in an enclosed body of water), liquefaction and seismic-induced settlement. Each of these hazards is discussed below.

Fault Rupture: The Los Angeles basin is an active tectonic area and has had numerous strong ground motion events. The closest known active faults (at least at the surface) are the Palo Verdes, the Newport-Inglewood, the Hollywood, and the Santa Monica and Hollywood faults—all located less than 10 miles from the project site. The Compton-Los Alamitos Blind Thrust has a surface trace offshore to the west of the project site, and may project 4 to 5 miles beneath the site. Recent investigations indicate that this fault may be inactive. Recently, the presence of a fault termed the "Proposed Lincoln Boulevard Fault" has been postulated. More recent studies by Earth Consultants International (ECI, 2000) indicate there is no fault along this previously defined fault trace. ECI determined this fault does not meet California Geological Survey's definition of a fault that is sufficiently active and well defined. In addition, the California Geological Survey did not list this fault as a potential seismic source or as having the potential for surface rupture (URS, 2005b)

No known active faults with surficial evidence have been mapped on the project site. The site is not located within an Alquist-Priolo Earthquake Fault Zone, as currently published by the state of California. Therefore, the potential for ground rupture on the site is considered very low.

Seismic Shaking: Analysis of the potential for seismic hazard was undertaken for the project site in the geotechnical investigation. This study and recent updates to it are included in **Appendix 5.1**. Methods incorporated into the investigation included a total of nine rotary wash borings (ranging from 24.5 to 81.5 feet below grade) to evaluate soil composition and obtain seismic design parameters for liquefaction evaluation. Other methods included the use of soil and soil gas sampling and laboratory testing, and the use of an Organic Vapor Analyzer (OVA) to assess possible soil contamination.

The site is located in Seismic Zone 4 (Figure 16-2 of Unified Building Code [UBC] 97) and is located within 6.5 kilometers of a "B Fault" zone. Seismic design parameters from the UBC are shown in **Table 5.1-1, Seismic Design Parameters** (design parameters are valid for ground improvements using piles

driven into denser sand layers beneath the site; re-evaluation of the project with soil type S_F may be necessary if stone, grouting or non-driven cement columns are employed).

Table 5.1-1
Seismic Design Parameters

Parameter	Value	Source, UBC 97	Comments
Seismic Zone	4.0	Figure 16-2	
Seismic Zone Factor	0.4	Table 16-I	
Seismic Source Type	B	Table 16-U	
Near Source Factor, N_a	1.0	Table 16-S	5 km from source
Near Source Factor, N_v	1.14	Table 16-T	5 km from source
Soil Profile Type	S_D	Table 16-J	Shear wave velocity, 600 to 1,200 feet/second
Seismic Coefficient, C_a	0.44	Table 16-Q	0.4 x N_a
Seismic Coefficient, C_v	0.73	Table 16-R	0.64 x N_v

Liquefaction: Soil liquefaction during an earthquake is a process which leads to loss of soil strength, and thereby a loss of the supporting capacity of the soil. Liquefaction is most common in cohesionless soils submerged below groundwater similar to conditions existing at the site. In addition to loss of bearing capacity, liquefaction can lead to lateral spreading, sand boils and cracking of ground. Structures constructed on shallow foundations, such as conventional footing foundations, can thereby experience various degrees of settlement and tilt with associated structural damage from such movements. Degree of damage is a function of among other things the magnitude of earthquake, its duration, thickness and depth of liquefiable soil and depth to groundwater.

As documented in the geotechnical investigation, provided in **Appendix 5.1**, the property lies in an area of high liquefaction potential. This is due primarily to the fine sandy soils underlying the area, the presence of shallow groundwater and the proximity of the site to the Newport-Inglewood and Palos Verdes Faults.

Factors that influence liquefaction potential include grain size, relative density, groundwater conditions, effective confining pressures and the intensity and duration of ground shaking. Saturated, loose and medium dense, near-surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential.

The potential for liquefaction at the site was investigated in the geotechnical investigation by URS (URS, 2005b) for a design earthquake with a peak ground acceleration (pga) of 0.5g and associated magnitude of 7.3. In order to be consistent with recent groundwater levels, the design groundwater table was raised

to 10 feet below grade for the southern portion of the project site and 5 feet for the northern portion of the project site (URS, 2005b).

As discussed previously, the soils occurring between the near-surface fill layer and the deep dense to very dense native sand and silty sand and gravel deposits are the most vulnerable to liquefaction and/or significant strength loss during earthquake shaking. This stratum consists predominantly of loose to medium sands and silty sands interlayered with soft to stiff silts and sandy silts.

Results of the liquefaction analysis potential for each of the boring locations are presented in **Appendix 5.1**. Reports indicate that post-liquefaction settlement would be between 1.5 to 5.5 inches and that mitigation through the use of a deep foundation (driven pile) system is required (URS, 2005b).

Tsunamis: Seismically induced flooding, which might be considered as a potential hazard to a particular site, normally includes flooding due to tsunami (seismic sea wave), a seiche (see below) or failure of a major reservoir retention structure upstream of the site.

The tsunami hazard for coastal areas in California is not as well defined as other seismic hazards, such as fault rupture, liquefaction, or slope movement, and is the subject of ongoing research.

As discussed by D. S. McCulloch (1985), there are analytical studies that have been found to be fairly accurate in predicting tsunami wave heights from distant major earthquakes. The published estimated tsunami wave heights at Marina del Rey as the wave crosses the shoreline are 9.6 feet for a 100-year tsunami and 15.3 feet for a 500-year tsunami. These heights include the effect of astronomical tides. The predicted heights are considered to equal run-up elevations, except where steep topography at or near the shoreline is encountered which may result in higher such elevations (URS, 2005b).

More recently, research performed for FEMA focused on estimating run-up heights from potential tsunamis resulting from local offshore earthquakes (Legg, et al 2003). Major earthquakes with magnitudes in the range of 7.0 to 7.6 were considered in these studies, which fall within the appropriate range of seismic design for the project site. Not including the effect of astronomical tides, the calculated run-up height was about 1.5 meters (5 feet). However, Legg indicates that recent observations of tsunami run-up around the world following large earthquakes tend to show that run-up values predicted from similar mathematical models underestimate the actual peak run-up values by a factor of two. Consequently, the calculated run-up height would be about 10 feet, absent the effect of tides. URS, 2005b concludes that for local major earthquakes tsunami wave heights at Marina del Rey of between 9.6 feet for a 100-year tsunami and 15.3 feet for a 500-year tsunami should be considered.

Based on the available information, the possibility of the low-lying areas of Marina del Rey being inundated by a tsunami cannot be discounted. The site is located about 1/4 mile from the shore to the west, but about 500 feet from the marina to the east. Finish floor elevation of the lowest parking level is +15 feet. It is, therefore, conceivable that if the tsunamis are consistent with the maximum predicted from a 500-year return period event, there may be flooding of the basement level. The lowest finished floor elevation of the proposed residences is +35 feet, well above the wave height and anticipated run-up heights. From this perspective, mitigation of the potential tsunami hazard is more of an emergency preparedness issue rather than a design issue.

Seiche: A seiche is a wave-like oscillation of the surface of the water in an enclosed basin that may be initiated by strong earthquakes or wind. The site is located near the waters of Marina del Rey Basins A through E. The seiche height is dependent on numerous factors, such as basin depth and length. The maximum seiche in the basins is expected to be on the order of several feet. As such, the potential for a seiche developing in the basin is considered low but not impossible.

Soil Gas Hazards: Gasses trapped in the soil below buildings and surrounding their foundations can migrate through most building materials. These vapors can concentrate in structures and can be potentially hazardous, particularly concentrations of methane and vapors from volatile organic compounds (VOCs). In general, these vapors come from decomposing biological materials in or below the soils (methane), or are carried to sites by underground flows of groundwater from off-site locations. Testing of gas concentrations and compositions in soils on the project site can indicate potential hazards. Soil gas testing conducted on April 21 and 22, 2005, by URS did not find any measurable quantities of VOCs or methane in the soils of the project site (URS, May 2005).

5.1.3 ENVIRONMENTAL IMPACTS

The impacts of project implementation are discussed for each of the threshold criteria identified below. Wherever a significance threshold criterion is exceeded or wherever there is the potential for a criterion to be exceeded, mitigation is identified where it is feasible.

5.1.3.1 Project Improvements

As proposed, The Shores project would result in the removal of 202 existing apartment units and their replacement with 544 new apartment units.

5.1.3.2 Thresholds of Significance

The following thresholds for determining the significance of impacts related to geology and soils are contained in the environmental checklist form contained in Appendix G of the most recent update of the *State CEQA Guidelines*. These thresholds have been adopted by the County of Los Angeles. Impacts related to geology and soils are considered significant if the project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving: Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; strong seismic ground shaking; or landslides.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Result in substantial soil erosion or the loss of topsoil.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- Expose sensitive receptors to substantial pollutant concentrations.

5.1.3.3 Impact Analysis

5.1.3.3.1 Fault Rupture, Seismic Ground Shaking, Landslides

The project site is located in an area of high seismic activity, with several major faults in the region that could produce severe shaking at the site. Although there are no known faults traversing the site, based upon data from recent earthquakes in the area, relatively large peak ground accelerations are possible in the project area (inclusive of the project site). A seismic hazard analysis was performed to estimate the potential ground shaking at the site, resulting in a pga of 0.44g with an associated magnitude of 7.1. Mitigation measures listed below would reduce impacts associated with earthquake faults, seismic ground shaking or landslides to levels less than are considered significant and consistent with LACDPW design standards.

Given that the topography of the site is relatively flat and the surrounding parcels are developed, the potential for landslides to expose people or structures to potential substantial adverse effects are not expected.

5.1.3.3.2 Liquefaction

The project site lies in an area of high liquefaction potential due to the fine cohesionless soils underlying the area, the presence of shallow groundwater and the proximity of the site to the Newport-Inglewood and Palos Verdes Faults (URS, 2001). The potential for liquefaction at the site was investigated for a design earthquake with a pga of 0.5g and an associated magnitude of 7.3. In order to be consistent with recent groundwater levels, the design groundwater table was raised to 10 feet below grade for the southern portion of the project site and 5 feet for the northern portion of the project site. Results show that under the design earthquake, zones of loose- to medium-dense and silty sands are liquefiable.

Consequences of liquefaction on the project site include ground subsidence and lateral spread or deformation towards the low-lying areas of the project site. Liquefaction-induced subsidence could range from 1.5 to 5.5 inches. Mitigation measures listed below (derived from URS titled, *Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California [May 8, 2001])*, and an addendum titled a *Second Addendum to the May 8, 2001 Geotechnical Report; Second Update and Response to Preliminary Review Comments Proposed Apartment Complex; The Shores, Marina del Rey, California* (both in **Appendix 5.1**) would reduce impacts associated with soil liquefaction to levels less than are considered significant and consistent with LACDPW design standards.

5.1.3.3.3 Expansive Soils

The project site is not located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994). However, any import material should be tested for expansion potential prior to importing. Given the existing condition impacts associated with expansive soils are not considered significant.

5.1.3.3.4 Soil Erosion

The project site is currently developed with apartment structures. Surficial wind and water erosion on the project site would increase during construction activities. This may result in a significant construction-related short-term impact relative to soil erosion unless mitigated.

Once developed and operational, site erosion and sedimentation would decrease substantially compared to existing conditions because the site would be over-covered with non-erosive surfaces, including pavement, structures and permanent vegetation, all of which would reduce the amount of exposed soil subject to wind and water erosion. Therefore, the project would result in a long-term decrease in surficial

soil erosion and would not permanently increase wind and water erosion of the site. As a result, project impacts would be less than significant with mitigation.

5.1.3.3.5 Septic Disposal

The proposed project does not include provisions for septic tanks or alternative wastewater disposal systems. Sewer connections are available in the project area for disposal of project wastewater. Given that no septic systems are proposed or required, impacts associated with the disposal and treatment of domestic wastewater on the project site are not considered significant.

5.1.3.3.6 Soil Gas

During the geotechnical investigation, an OVA was used to test the presence and concentration of potentially hazardous vapors. The concentrations in the hardspace were low (6 to 90 ppm) although some strong hydrocarbon odors were noted from some of the soil samples encountered from well below grade. A soil gas survey was performed on the project site from April 21 to 22, 2005. The results of this survey concluded that there were no significant concentrations of VOCs or methane in soils above the water table on the site (URS, May 2005). It was concluded that there is no threat to human health for the proposed project. Therefore, impacts associated with soil gases on the project site are considered less than significant (URS, May 2005).

5.1.4 MITIGATION MEASURES

5.1.4.1 Mitigation Measures Already Incorporated into the Project

To minimize pollutants and sedimentation from entering the adjacent storm drain system, the applicant would implement accepted materials storage procedures, spill prevention and other "good housekeeping" practices. As proposed, the project proposes eight bio-swales that would capture and treat surface runoff before it enters the off-site storm drain system (reference **Appendix 5.3** and **Section 5.3, Hydrology and Water Quality**). As defined in **Section 5.3, Hydrology and Water Quality**, existing flood control facilities can accommodate storm flows during a 10-year frequency storm and would be designed and constructed in accordance with the policies and standards of the LACDPW, Flood Control Division. In addition, the project applicant must also implement any additional required Best Management Practices (BMPs).

5.1.4.1.1 Mitigation Measures Recommended by the EIR

Fault Rupture, Seismic Ground Shaking, Landslides:

5.1-1. Proposed structures shall be designed in conformance with the requirements of the 1997 edition of the UBC and the County of Los Angeles Building Code for Seismic Zone 4.

Liquefaction:

5.1-2. Remedial measures shall be taken to limit lateral deformation and subsidence by installation of ground improvements as discussed in the URS geotechnical investigation titled *Second Addendum to the May 8, 2001 Geotechnical Report; Second Update and Response to Preliminary Review Comments Proposed Apartment Complex; The Shores, Marina del Rey, California, dated September 26, 2005.* The structures shall be founded on a pile foundation system designed for static loads as well as the lateral and vertical drag loadings from earthquake-induced liquefaction and lateral deformation.

5.1-3. The proposed structures shall be placed on a pile foundation system with a minimum tip depth 45 feet below grade, or elevation –30 feet, whichever is deeper. These parameters would result in at least five feet of embedment into the site's underlying sand layer. Such piles may be designed for a dead-plus-live allowable axial compression bearing capacity of 45 ksf (factor of safety of 4) in addition to the friction values presented in the *Second Addendum to the May 8, 2001 Geotechnical Report; Second Update and Response to Preliminary Review Comments Proposed Apartment Complex; The Shores, Marina del Rey, California, dated September 26, 2005.* Piles embedded between 52 and 60 feet below grade may be designed for the allowable 60 ksf bearing capacity indicated in section 5.5 of the URS report titled *Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California [May 8, 2001].* For reference purposes, all geotechnical reports are incorporated in this Draft EIR in **Appendix 5.1**.

Expansive Soils:

5.1-4. Any import material shall be tested for expansion potential prior to importing.

5.1-5. Expansion index tests shall be performed at the completion of grading if silty subgrade soils are exposed to verify expansion potential.

Soil Erosion:

5.1-6. Precautions shall be taken during the performance of site clearing, excavations and grading to protect the project from flooding, ponding or inundation by poor or improper surface drainage.

5.1-7. Temporary provisions shall be made during the rainy season to adequately direct surface drainage away from and off the project site. Where low areas cannot be avoided, pumps shall be kept on hand to continually remove water during periods of rainfall.

5.1-8. Where necessary during periods of rainfall, the Contractor shall install checkdams, desilting basins, rip-rap, sand bags or other devices or methods necessary to control erosion and provide safe conditions, in accordance with site conditions and regulatory agency requirements.

5.1-9. Following periods of rainfall and at the request of the Geotechnical Consultant, the Contractor shall make excavations in order to evaluate the extent of rain-related subgrade damage.

5.1-10. Positive measures shall be taken to properly finish grade improvements so that drainage waters from the lot and adjacent areas are directed off the lot and away from foundations, slabs and adjacent property.

5.1-11. For earth areas adjacent to the structures, a minimum drainage gradient of 2 percent is required.

5.1-12. Drainage patterns approved at the time of fine grading shall be maintained throughout the life of the proposed structures.

5.1-13. Landscaping shall be kept to a minimum and, where used, limited to plants and vegetation requiring little watering as recommended by a registered landscape architect.

5.1-14. Roof drains shall be directed off the site.

Wastewater Disposal: No mitigation measures are proposed or are required.

Soil Gas:

5.1-15. If deemed necessary by the County Building and Safety, as defined in Los Angeles County Building Code Section 110.4, buildings or structures adjacent to or within 200 feet (60.96 meters) of active, abandoned or idle oil or gas well(s) shall be provided with methane gas-protection systems.

General Mitigation Measure:

5.1-16. The project shall incorporate any additional design recommendations as defined in the URS geotechnical investigation, dated May 8, 2001, and the update letter to this report, dated June 2, 2005.

5.1.5 CUMULATIVE IMPACTS

The geographic context of the analysis of rupture of a fault, strong seismic ground shaking, liquefaction, landslide, lateral spreading, subsidence, collapse and expansive soils are generally site-specific, rather than cumulative in nature. This is because each development site has unique geologic considerations that would be subject to uniform site development and construction standards. In this way, potential cumulative impacts resulting from geological, seismic and soil conditions would be reduced to less than significant on a site-by-site basis by modern construction methods and code requirements. Thus, cumulative impacts associated with other related projects are considered to be less than significant. In addition, The Shores project and other related projects would comply with the most stringent safety standards, consistent with all applicable local, state and federal regulations, such as the Uniform Building Code. Consequently, the contribution of the project would not be cumulatively considerable and, thus, is less than significant.

Impacts from erosion and loss of topsoil from site development and operation can be cumulative in effect within a watershed. The Ballona watershed forms the geographic context of cumulative erosion impacts. Development throughout the project area is subject to state and local runoff and erosion prevention requirements, including the applicable provisions of the National Pollutant Discharge Elimination System, as well as implementation of fugitive dust control measures of the South Coast Air Quality Management District (SCAQMD) Rule 403. These measures are implemented as conditions of approval and subject to continuing enforcement. As a result, it is anticipated that the cumulative impact on the Ballona watershed from cumulative development would be less than significant. The contribution of The Shores project would not be cumulatively considerable and, thus, is less than significant due to the extremely limited extent of ground disturbance on the project site and the implementation of measures to reduce erosion and safeguard water quality. The project's contribution is considered to be less than significant.

5.1.5.1 Cumulative Mitigation Measures

No specific cumulative mitigation measures are proposed or are required.

5.1.6 UNAVOIDABLE SIGNIFICANT IMPACTS

With mitigation, site development would not significantly impact the geologic environment either during site construction or operation. Impacts would occur in the form development in a region where severe ground shaking can occur, the adverse effects of liquefaction on building foundations, and minor impacts associated with wind and water erosion. However, mitigation measures are incorporated that would reduce these impacts to levels that are not considered significant.

5.2 Noise

SUMMARY

The project site is located in an urbanized area. Proposed development on the site and existing development in nearby off-site areas contain a variety of land uses, some of which are considered noise sensitive. On-site noise monitoring at The Shores project site indicates that average 30-minute Equivalent Noise Level (L_{eq}) ranged from 66.5 dB(A) to 68.0 dB(A), with maximum peak 30-minute L_{eq} levels ranging from 81.9 dB(A) to 82.3 dB(A). Off-site noise monitoring indicates that average 30-minute L_{eq} range from 70.3 dB(A) to 79.6 dB(A), with maximum peak 30-minute L_{eq} levels ranging from 90.3 dB(A) to 97.7 dB(A). Off-site roadway noise monitoring indicates that existing roadway noise levels range from 70.3 dB(A) along Washington Boulevard east of Via Marina to 79.6 dB(A) on Washington Boulevard east of Palawan Way. Interior noise levels on the project site were not monitored.

Construction noise would affect noise-sensitive residential uses proximal to the site and noise-sensitive uses along the haul route. Exterior noise levels during site construction of up to 94 dB(A) could be experienced at some noise-sensitive receptor locations with direct lines of sight to the construction site. Noise levels generated from the project during construction stages would occur periodically throughout the workday. To mitigate construction noise, all construction activities would comply with County of Los Angeles Plans and Policies for noise control (Ordinance No. 11743). Construction noise would be limited to normal working hours when many residents in the Marina del Rey area are away from their homes. Nevertheless, construction noise would represent a temporary but significant impact since noise levels would periodically exceed County standards for exterior noise levels.

The primary source of noise during project operation would be associated with vehicular traffic. Operation of The Shores project will introduce an additional 1,354 daily vehicle trips to roadways situated proximal to the project site. Noise-level increases generated by The Shores project generated traffic at off-site locations would be between 0.0 and 0.4 dB(A) Community Noise Equivalent Level (CNEL). Increases of less than 3 dB(A) CNEL are not usually perceptible to the human ear. However, changes from 3 to 5 dB(A) may be noticed by some individuals who are extremely sensitive to changes in noise. Because there are no noise increases in the range of human perception during project operation, there would be no significant noise impacts when measured per County-defined thresholds.

5.2.1 INTRODUCTION

5.2.1.1 Characteristics of Noise

Noise is usually defined as unwanted sound. It is an undesirable by-product of human society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. The definition of noise as unwanted sound implies that it has an adverse effect on people and their environment.

Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). The human ear does not respond uniformly to sounds at all frequencies, being less sensitive to very low and high frequencies than to medium frequencies that correspond with human speech. In response, the A-weighted noise level (or scale) has been developed. It corresponds better with people's subjective judgment of sound levels. This A-weighted sound level is called the "noise level" referenced in units of dB(A). Because noise is measured on a logarithmic scale, a doubling of sound energy results in a 3 dB(A) increase in noise levels. However, changes in a community noise level of less than 3 dB(A) are not typically noticed by the human ear.[1] Changes from 3 to 5 dB(A) may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dB(A) increase is readily noticeable, while the human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound.

Noise sources are classified in two forms: (1) point sources, such as stationary equipment; and (2) line sources, such as a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6 dB(A) for each doubling of distance from the source to the receptor at acoustically "hard" site and 7.5 dB(A) at acoustically "soft" site.[2] For example, a 60 dB(A) noise level measured at 50 feet from a point source at an acoustically hard site would be 54 dB(A) at 100 feet from the source and 48 dB(A) at 200 feet from the source. Sound generated by a line source typically attenuates at a rate of 3 dB(A) and 4.5 dB(A) per doubling of distance from the source to the receptor for hard and soft site, respectively.[3] Sound levels can also be attenuated by man-made or natural barriers, as illustrated in **Figure 5.2-1, Noise Attenuation Barriers**. Solid walls, berms, or elevation differences typically reduce noise levels by 5 to 10 dB(A).[4] The noise attenuation provided by typical structures in California is provided below in **Table 5.2-1, Outside to Inside Noise Attenuation**.

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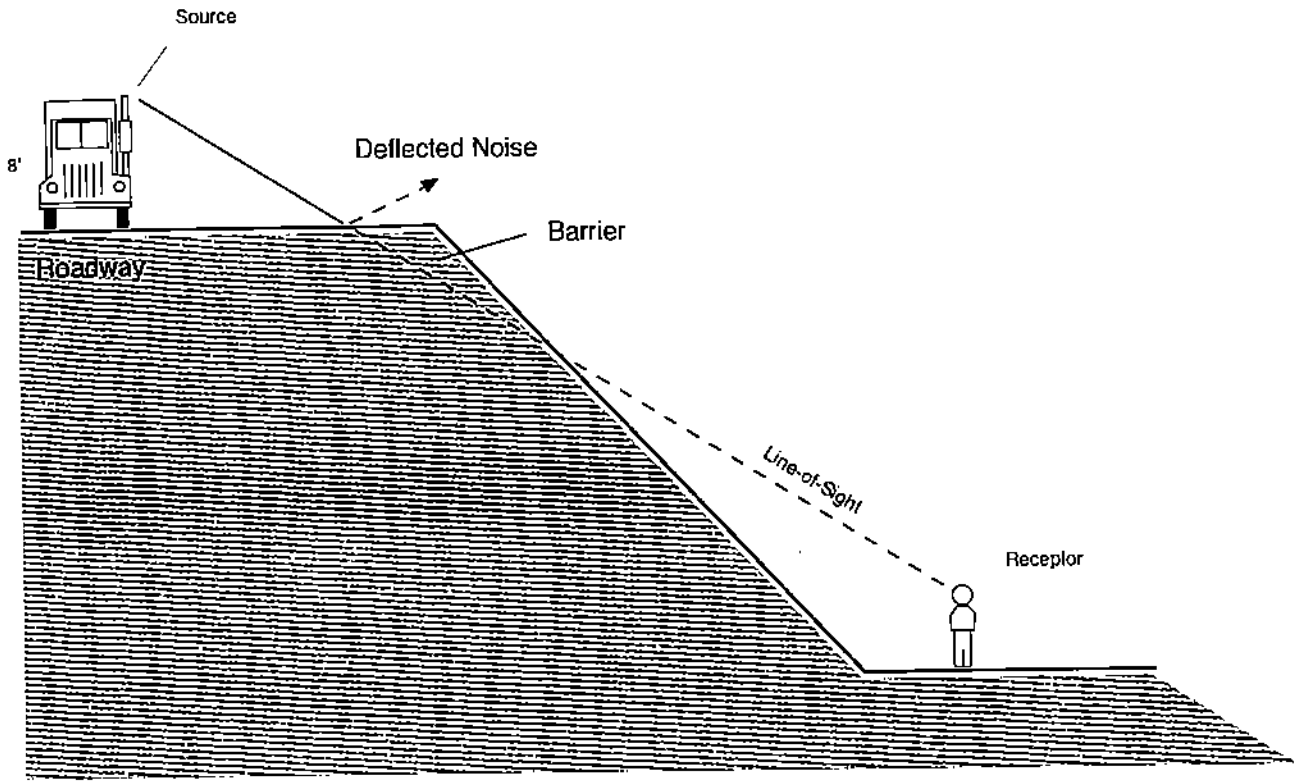
1 *Highway Noise Fundamentals,* (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980), p. 81.

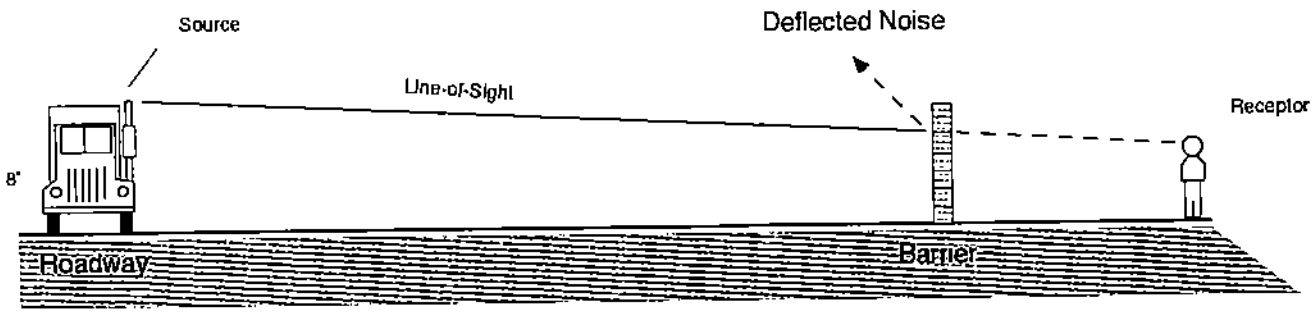
2 Ibid., p. 97. A "hard" or reflective site does not provide any excess ground-effect attenuation and is characteristic of asphalt, concrete, and very hard packed soils. An acoustically "soft" or absorptive site is characteristic of normal earth and most ground with vegetation.

3 Ibid., p. 97.

4 *Highway Noise Mitigation* (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980), p. 18.



"Barrier Effect" Resulting from Differences in Elevation.



"Barrier Effect" Resulting from Typical Soundwall.

SOURCE: Impact Sciences, Inc – June 2005

FIGURE **5.2-1**

Noise Attenuation Barriers

Table 5.2-1
Outside to Inside Noise Attenuation

	Noise Reduction – dB(A)	
Building Type	Open Windows	Closed Windows
Residences	12	25
Schools	12	25
Churches	20	30
Hospitals/Convalescent Homes	17	25
Offices		
Theaters	20	30
Hotels/Motels	17	25
	17	25

Source: Highway Noise Fundamentals, *p. 117.*

When assessing community reaction to noise, there is an obvious need for a scale that averages varying noise exposures over time and quantifies the results in terms of a single number descriptor. Several scales have been developed which address community noise levels. Those that are applicable to this analysis are the L_{eq} and the CNEL. L_{eq} is the average A-weighted sound level measured over a given time interval. L_{eq} can be measured over any time period, but is typically measured for one-minute, 15-minute, one-hour, or 24-hour periods. CNEL is another average A-weighted sound level measured over a 24-hour time period and is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 decibels to sound levels occurring during the evening from 7:00 PM to 10:00 PM, and 10 decibels to sound levels occurring during the nighttime from 10:00 PM to 7:00 AM. The 5 and 10 decibel "penalties" are applied to account for peoples' increased sensitivity during the evening and nighttime hours. For example, the logarithmic effect of these additions is that a 60 dB(A) 24-hour L_{eq} would result in a measurement of 66.7 dB(A) CNEL.

5.2.1.2 Characteristics of Vibration

Vibration is a unique form of noise in that its energy is carried through structures and the earth, whereas noise is carried through the air. Thus, vibration is generally felt and heard. Some vibration effects can be caused by noise; for example, the rattling of windows from truck pass-bys. This phenomenon is related to the coupling of the acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

In general, vibration can be described in terms of displacement, velocity or acceleration. For the purpose of this analysis, vibration will be described in terms of velocity. The peak particle velocity (PPV) or the root mean square (RMS) velocities are usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. Units for PPV and RMS are described in inches per second. Vibration in terms of velocity can also be described in a decibel notation—the purpose of which is to compress the range of numbers required to describe vibration. **Figure 5.2-2, Typical Levels of Ground-Bourne Vibration**, identifies typical ground-borne vibration levels in decibels, RMS velocity amplitude and PPV.

The effect of vibration on structures and individuals varies depending on soil type, ground strata and receptor location. Sensitivity to vibration varies from person to person. Peak velocities of 0.01 inch per second RMS are not generally noticeable, while velocities of 0.1 inch per second RMS can be troublesome to persons near the vibration source. Damage to structures can occur above 0.04 inch per second RMS.

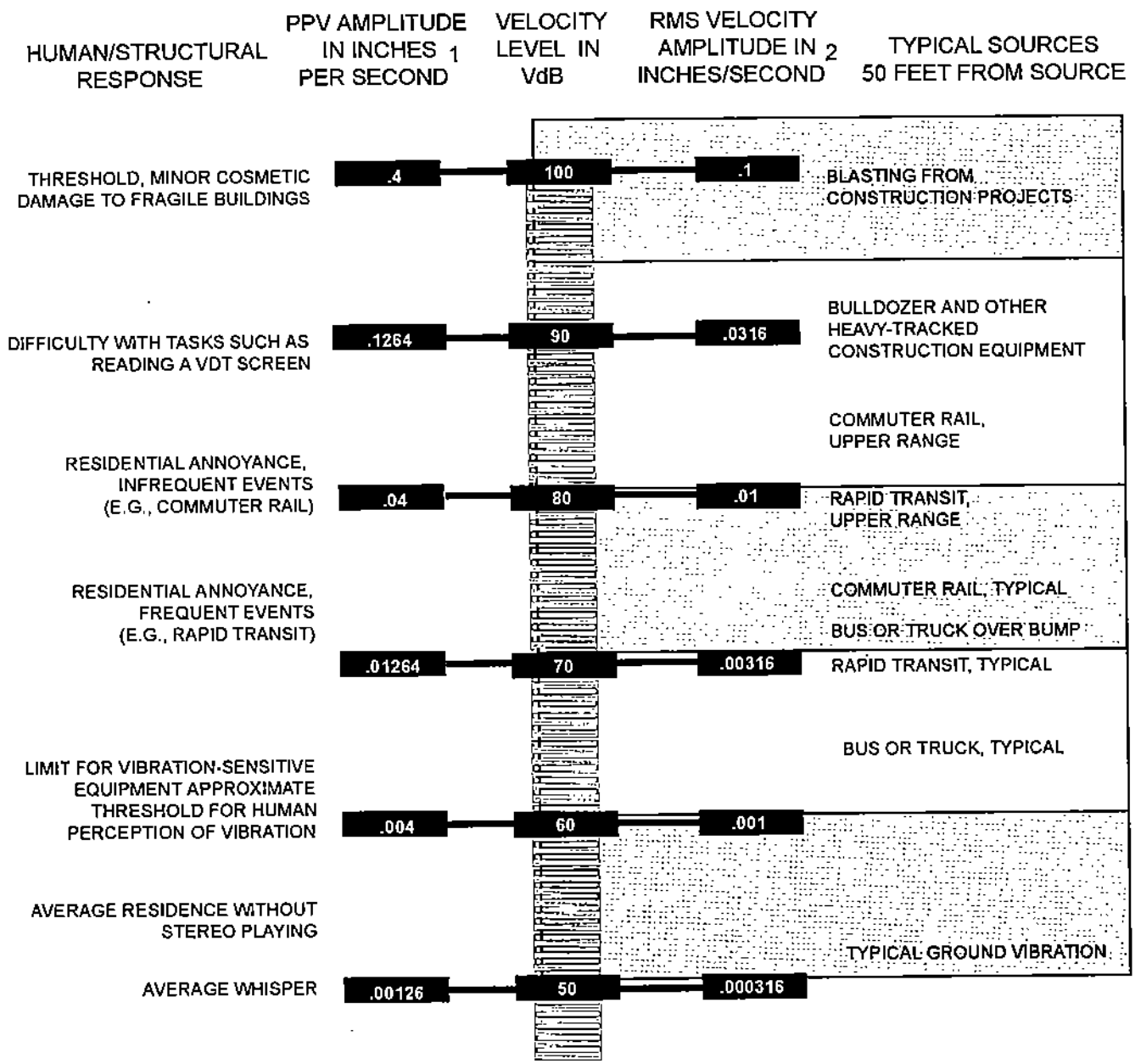
5.2.1.3 Noise Analysis Purpose and Methodology

5.2.1.3.1 Purpose of Analysis

The purpose of this noise analysis is twofold: (1) to evaluate the project in terms of its design to ensure that the proposed land uses are planned appropriately from a noise perspective; and (2) to evaluate the noise impact of the project during both construction and operation on the surrounding (off-site) area.

5.2.1.3.2 Analysis Methodology

Analysis of the existing and future noise environments presented in this EIR section is based on technical reports, noise monitoring and noise prediction modeling. Existing stationary noise data are identified based on reviews of available technical reports and noise monitoring. Noise-level monitoring was conducted by Impact Sciences on May 18, 2005, from 4:00 to 6:00 PM, using a Brüel and Kjær Type 2237 controller Integrating Sound Level Meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Future noise levels for stationary activities and equipment were estimated based on available technical reports and literature cited in this EIR section.



[1] PPV is typically a factor 1.7 to 6 times greater than RMS vibration velocity. A factor of 4 was used to calculate noise levels.

[2] Vibration levels in terms of velocity levels are defined as: $V=20 \times \log_{10} (a/r)$
V = velocity levels in decibels
a = RMS velocity amplitude
r = reference amplitude (accepted reference quantities for vibration velocity are 1×10^{-6} inches/second in the United States)

FIGURE **5.2-2**

Typical Levels of Ground-Bourne Vibration

Noise modeling procedures involved the calculation of existing and future vehicular noise levels along individual roadway segments in the vicinity of the project site. This was accomplished using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108). This model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry and site conditions. Average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by the California Department of Transportation (Caltrans).[5] Caltrans data show that California automobile noise is 0.8 to 1 dB(A) louder than national levels and that medium and heavy truck noise is 0.3 to 3 dB(A) quieter than national levels.[6] Traffic volumes utilized as data inputs to the noise prediction model were calculated based on information provided by Crain & Associates, the project traffic engineer, and are consistent with the analysis provided in **Section 5.6, Traffic/Access**, of this EIR.

The primary concern regarding on-site noise is to determine whether on-site noise levels are compatible with proposed on-site land uses and land uses surrounding the site. In addition to evaluating on-site noise, this section also evaluates off-site post-project noise conditions at noise-sensitive locations along roadways that would accommodate project traffic. Noise-sensitive locations would be those with planned and existing noise-sensitive uses, or those uses that would be most sensitive to an increase in noise levels. Noise-sensitive uses are defined as residential uses, transient lodging, schools, libraries, churches, hospitals, day-care centers and nursing homes. At these locations, noise levels were modeled both with and without the project's traffic volumes to determine whether or not project-related traffic would significantly increase noise levels at these locations.

5.2.2 REGULATORY SETTING

In advance of presenting the existing and future noise environments and the thresholds of significance utilized in this document, plans and policies which pertain to the noise conditions affecting and affected by The Shores project are discussed below. These plans and policies include: (1) the Noise Control Ordinance of the County of Los Angeles (Ord. 11773 and 11778; §12.08 of the County Code); (2)-the *California Environmental Quality Act (CEQA) Guidelines*, Appendix G, Significant Effects; (3)-The Los Angeles General Plan Noise Element; and (4) the State of California, Department of Health Services, Environmental Health Division *Guidelines for Noise and Land Use Compatibility*.

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5 Rudolf W. Hendriks, *California Vehicle Noise Emission Levels*, (Sacramento, California: California Department of Transportation, January 1987), NTIS, FHWA/CA/TL-87/03.

6 Rudolf W. Hendriks, *California Vehicle Noise Emission Levels*, (Sacramento, California: California Department of Transportation, January 1987), NTIS, FHWA/CA/TL-87/03.

5.2.2.1 County of Los Angeles General Plan Noise Element

The General Plan Noise Element outlines basic goals and policies for the County and its constituent municipalities to follow. It states as a general goal that noise mitigation costs should be assessed to the producers of the noise. Policy 16 of the Noise Element states that the county should "...encourage cities to adopt definitive noise ordinances and policies that are consistent throughout the county." The Noise Element does not prescribe any standards for acceptable noise or vibration levels. Because the Marina del Rey area is in unincorporated Los Angeles County, the applicable standards are addressed in the Noise Control Ordinance of the County of Los Angeles (County Code §12.08). The Noise Control Ordinance prescribes standards for point and stationary source noise and construction-related noise, as well as general standards for vibration.

5.2.2.2 Noise Control Ordinance of the County of Los Angeles (For Point and Stationary Source Noise)

The Noise Control Ordinance of the County of Los Angeles (County Code §12.08) provides standards for both interior and exterior noise standards and sets guidelines for a variety of activities. Section 12.08.390 identifies exterior noise standards for stationary and point noise sources, specific noise restrictions, exemptions and variances for exterior point, or stationary, noise sources. Several of these standards are applicable to the project and are discussed below.

The Noise Control Ordinance of the County of Los Angeles states that exterior noise levels caused by stationary or point noise sources shall not exceed the levels identified below in **Table 5.2-2, County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources**, or the ambient noise level,[7] whichever is greater. The Noise Control Ordinance (§12.08.400 of the County Code) also states that interior noise levels (resulting from outside point or stationary sources) within multi-family residential units shall not exceed 45 dB(A) L_{eq} between 7:00 AM and 10:00 PM, and 40 dB(A) L_{eq} between 10:00 PM and 7:00 AM. Conventional construction of buildings with the inclusion of fresh air supply systems or air conditioning will normally ensure that interior noise levels are acceptable (reference **Table 5.2-1** for noise reduction provided by conventional construction techniques).

7 Ambient noise level is defined as the existing background noise level at the time of measurement or prediction.

Table 5.2-2
County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level dB(A) L_{eq}[1]
I	Noise-Sensitive Area[2]	Anytime	45
II	Residential Properties	10:00 PM to 7:00 AM 7:00 AM to 10:00 PM	45 50
III	Commercial Properties	10:00 PM to 7:00 AM 7:00 AM to 10:00 PM	55 60
IV	Industrial Properties	Anytime	70

Source: Noise Control Ordinance of the County of Los Angeles, County Code §12.08.390.

1 ***Standard No. 1** shall be the exterior noise level, which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level; or, if the ambient L_{50} exceeds the forgoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.*
***Standard No. 2** shall be the exterior noise level, which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from Standard No. 1 plus 5 dB(A); or, if the ambient L_{25} exceeds the forgoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2.*
***Standard No. 3** shall be the exterior noise level, which may not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level from Standard No. 1 plus 10 dB(A); or, if the ambient $L_{8.3}$ exceeds the forgoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 3.*
***Standard No. 4** shall be the exterior noise level, which may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from Standard No. 1 plus 15 dB(A); or, if the ambient $L_{1.7}$ exceeds the forgoing level, then the ambient $L_{1.7}$ becomes the exterior noise level for Standard No. 4.*
***Standard No. 4** shall be the exterior noise level, which may not be exceeded for any period of time. Standard No. 4 shall be the applicable noise level from Standard No. 1 plus 20 dB(A); or, if the ambient L_0 exceeds the forgoing level, then the ambient L_0 becomes the exterior noise level for Standard No. 4.*

2 *Not defined in the County Noise Ordinance. To be designated by the County Health Officer.*

5.2.2.3 County of Los Angeles Noise Ordinance (for Construction Noise)

The Noise Control Ordinance of the County of Los Angeles (County Code §12.08.440) identifies specific restrictions regarding construction noise. The operation of equipment used in construction, drilling, repair, alteration or demolition work is prohibited between weekday hours of 7:00 PM to 7:00 AM and anytime on Sundays or legal holidays if such noise would create a noise disturbance across a residential or commercial real-property line.[8] The Noise Control Ordinance further states that the contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in **Table 5.2-3, County of Los Angeles Construction Equipment Noise Restrictions**. All mobile and stationary internal-combustion-powered equipment and machinery is also required to be equipped with suitable exhaust and air-intake silencers in proper working order.

8 Noise disturbance is not defined in the Noise Control Ordinance. The County Health Officer has the authority to define and determine the extent of a noise disturbance on a case-by-case basis.

Table 5.2-3
County of Los Angeles Construction Equipment Noise Restrictions

Residential Structures	Single-Family Residential	Multi-Family Residential	Commercial[1]
Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:			
Daily, except Sundays and legal holidays, 7:00 AM to 8:00 PM	75 dB(A) L_{eq}	80 dB(A) L_{eq}	85 dB(A) L_{eq}
Daily, 8:00 PM to 7:00 AM and all day Sunday and legal holidays	60 dB(A) L_{eq}	64 dB(A) L_{eq}	70 dB(A) L_{eq}
Stationary Equipment: Maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment:			
Daily, except Sundays and legal holidays, 7:00 AM to 8:00 PM	60 dB(A) L_{eq}	65 dB(A) L_{eq}	70 dB(A) L_{eq}
Daily, 8:00 PM to 7:00 AM and all day Sunday and legal holidays	50 dB(A) L_{eq}	55 dB(A) L_{eq}	60 dB(A) L_{eq}
Business Structures			
Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:			
Daily, including Sunday and legal holidays, all hours		85 dB(A) L_{eq}	

Source: Noise Control Ordinance of the County of Los Angeles, County Code §12.08.440.
[1] *Refers to residential structures within a commercial area. This standard does not apply to commercial structures.*

5.2.2.4 Los Angeles County Code Vibration Guidelines (§12.08.560)

The County Code prohibits the operation or permission of operation of any device that creates vibration above the vibration perception threshold (motion velocity of 0.01 in/sec over the range of 1 to 100 hertz) at or beyond the property boundary on private property, or at 150 feet from the source if on a public space or public right of way.

5.2.2.5 California Department of Health Services (For Operational Mobile Source Noise)

The County exempts all vehicles of transportation (with a few exceptions) that operate in a legal manner within the public right-of-way, railway, or air space, or on private property, from the standards of the Noise Control Ordinance of the County of Los Angeles. The County has no adopted ordinance regulating individual motor vehicle noise levels. These are regulated by the state.

The State of California, Department of Health Services, Environmental Health Division has published recommended guidelines for mobile source noise and land use compatibility. Each jurisdiction is

required to consider these guidelines when developing its general plan noise element and determining the acceptable noise levels within its community. The County of Los Angeles defers to these guidelines when assessing a land use's compatibility with motor vehicle noise sources. These guidelines are illustrated in **Figure 5.2-3, Land Use Compatibility Guidelines for Noise.**

Based on these guidelines, Los Angeles County typically considers an exterior noise level of 60 dB(A) CNEL to be an acceptable level for conventionally built single-family, duplex and mobile homes (normally acceptable noise levels). Exterior noise levels up to 65 dB(A) CNEL are typically considered acceptable for multi-family units and transient lodging without any special noise insulation requirements. Between these values and 70 dB(A) CNEL, exterior noise levels for both single family and multi-family units are typically considered acceptable only if the buildings are conditioned to include noise insulation features (conditionally acceptable noise levels). An exterior noise level of 70 dB(A) CNEL is typically the dividing line between an acceptable and unacceptable exterior noise environment for all noise-sensitive uses, including schools, libraries, churches, hospitals, day care centers and nursing homes of conventional construction. Noise levels below 75 dB(A) CNEL are typically acceptable for office and commercial buildings, while levels up to 75 dB(A) CNEL are typically acceptable for industrial uses.

5.2.3 EXISTING CONDITIONS

5.2.3.1 On-Site Noise Levels

To characterize the ambient noise environment for noise-sensitive land uses in the study area, both noise monitoring and noise prediction modeling was conducted. The existing ambient noise environment for off-site roadways was determined by calculating noise levels from vehicular traffic along specific roadway segments adjacent to various noise-sensitive locations. Roadway segments evaluated are those that have been determined by the traffic study as being potentially affected by project-related traffic. Noise monitoring was also conducted at selected locations on and off the site during evening peak traffic hours (4:00 PM and 6:00 PM) of May 18, 2005. Noise readings were taken in L_{eq} 30-minute periods with "A" frequency fast time weighting. Wind speeds during noise monitoring ranged from 5 to 7 miles per hour.

The Shores project site is located in an urban environment and is exposed to a variety of noise typical of such a setting. Visitor-serving commercial, hotel, boating and residential uses are the predominant uses in Marina del Rey. The Shores project site currently contains 202 apartment units whose residents produce noises generally associated with human activity. Residents of the current apartment buildings both generate and are the recipients of on-site noise from people talking, doors slamming, lawn care equipment operation, personal watercraft operation, stereos and domestic animal noises. These noises do

not typically exceed County criteria for residential land use. The majority of noise measured on site was generated by traffic on the adjacent roadways.

On-site monitoring for the project site was conducted at two locations. The first location is located on the southwest corner of Via Marina and Marquesas Way, approximately 50 feet west of Via Marina and north of Marquesas Way. The average 30-minute L_{eq} at this location was recorded at 66.5 dB(A). Noise sources at the time of monitoring included light traffic and human conversations.

The second noise monitoring location is located on the southwest corner of Via Marina and Panay Way, approximately 50 feet from Via Marina. The average 30-minute L_{eq} at this location was recorded at 68 dB(A). Noise sources at the time of monitoring included traffic, human conversations and a rattling flagpole.

In general, a monitored peak hour L_{eq} is typically within 3 dB(A) of the 24-hour CNEL measurement.[9] As such, existing on-site, noise-sensitive land uses that front onto Via Marina currently exceed defined County standards for residential land uses.

5.2.3.2 Off-Site Noise Levels

Figure 5.2-4, Noise-Sensitive Uses Along Studied Roadway Segments, identifies the location of noise-sensitive uses along studied roadway segments. As shown, noise-sensitive receptors near the project site include residential uses adjacent to Washington Boulevard, Venice Boulevard, Via Marina, Mindanao Way and Fiji Way and a hospital on Lincoln Boulevard. Portions of all of the noise-sensitive uses are located a minimum of 50 feet from the centerline of the roadway. Existing roadway noise levels are presented in **Table 5.2-4, Existing Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project.** Noise levels defined in this table have been calculated based on the existing traffic volumes on the studied roadways within the project area consistent with Federal Highway Administration models. As shown, existing roadway noise levels range from 52.2 dB(A) along Marquesas Way to 73.9 dB(A) on Lincoln Boulevard.

Given the County noise standard of 60 dB(A) CNEL for noise-sensitive land uses, this data identified in **Table 5.2-4, Existing Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project,** indicates that noise-sensitive land uses that occur on the mole roads are not subject to noise levels that currently exceed County standards. This is due principally to the lower traffic volumes that occur at these locations. Higher traffic volumes occur on perimeter roadways that include Via Marina, Admiralty,

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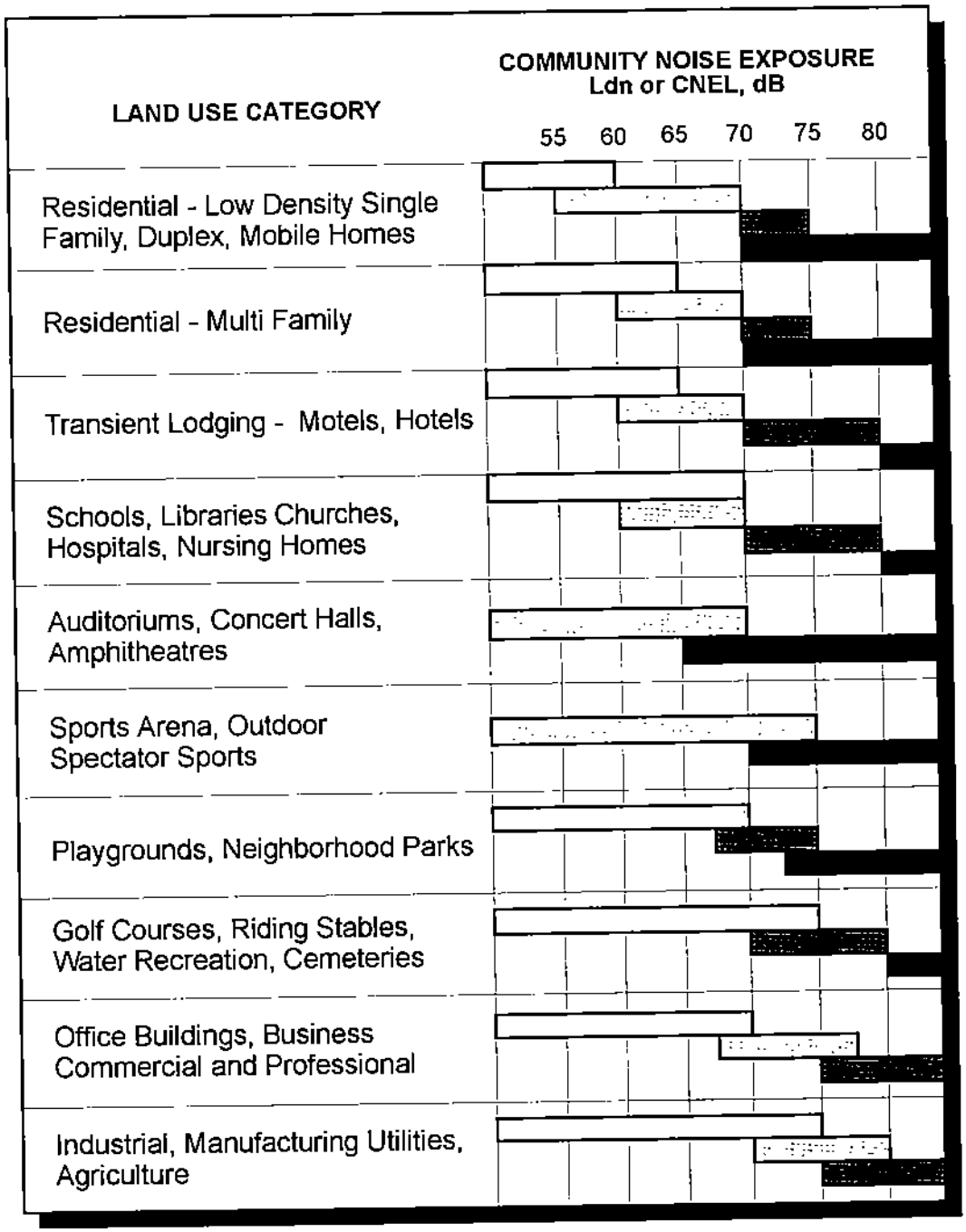
9 California Department of Transportation. *Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol*, (Sacramento, California: October 1998). pp. N51–N54.



NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

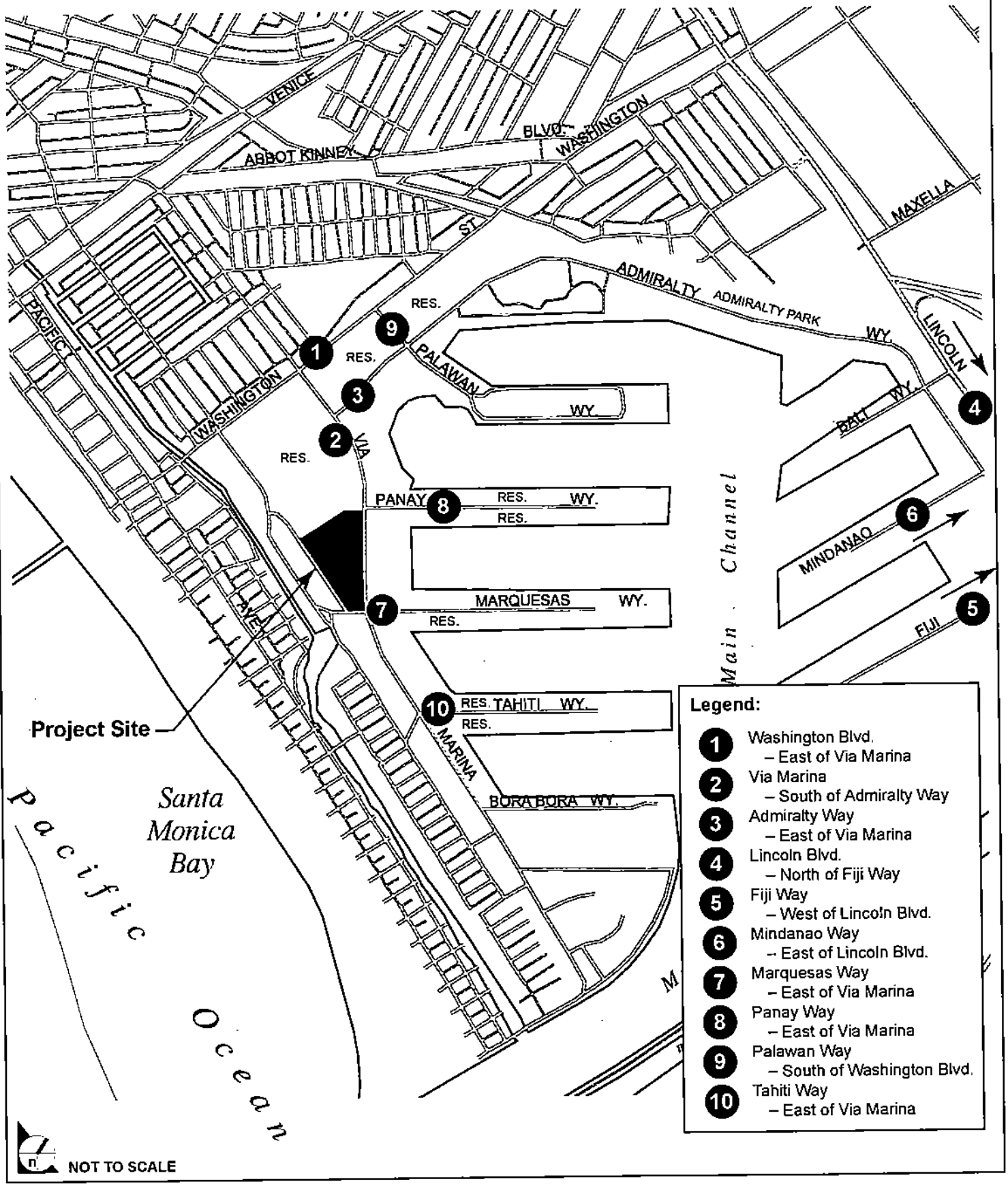
NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise reduction features included in the design.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

SOURCE: California Department of Health, Office of Health Control. Guidelines for the Preparation and Content of Noise Elements of the General Plan, February 1976.

FIGURE **5.2-3**

Land Use Compatibility Guidelines for Noise



SOURCE: Impact Sciences, Inc. – June 2005

FIGURE **5.2-4**

Noise Sensitive Uses Along Studied Roadway Segments

Washington Boulevard and Lincoln Boulevard. Where noise-sensitive land uses occur proximal to these roadways, the existing County noise standard of 60 dB(A) CNEL is exceeded.

Table 5.2-4
Existing Off-Site Roadway Noise Levels at Noise-Sensitive Locations
The Shores Project

ROADWAY • Segment	Existing and Planned Noise-Sensitive Land Uses	dB(A) CNEL
WASHINGTON BOULEVARD • east of Via Marina	Residential (50 feet)	67.0
VIA MARINA • south of Admiralty Way	Residential (50 feet)	66.3
ADMIRALTY WAY • east of Via Marina	Admiralty Park (50 feet)	67.4
LINCOLN BOULEVARD • north of Fiji Way	Daniel Freeman Hospital (50 feet)	73.9
FIJI WAY • west of Lincoln Boulevard	Residential (50 feet)	64.1
MINDANAO WAY • east of Lincoln Boulevard	Residential (50 feet)	65.6
MARQUESAS WAY • east of Via Marina	Residential	52.2
PANAY WAY • east of Via Marina	Residential/Recreational	57.5
PALAWAN WAY • south of Washington Boulevard	Recreational	59.7
TAHITI WAY • east of Via Marina	Residential (50 feet)	55.2

Source: Impact Sciences, Inc. Calculations are provided in ***Appendix 5.2****. Noise levels are calculated for the nearest edge of the nearest existing building to the roadway.*
* *Roadway segments which exceed the County* Land Use Compatibility Guidelines for Noise.

5.2.4 ENVIRONMENTAL IMPACTS

The applicable thresholds of significance are listed below followed by analysis of the significance of any potential impacts. Mitigation measures are also identified which would lessen or avoid potential impacts.

5.2.4.1 Project Improvements

Implementation of The Shores project would result in the development of 544 residential units and 1,114 parking spaces. As there are 202 existing apartments on site, completion of The Shores project would

result in a net increase of 342 apartment units. A total of 12, five-story wood-framed structures would house the residential units, with parking provided in two-level parking garages below the residences.

5.2.4.2 Thresholds of Significance

Based on Appendix G of the most recent update of the *CEQA Guidelines*, impacts related to noise and vibration are considered significant if the project would result in:

- exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance.
- a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

5.2.4.3 Impact Analysis: County Standards for Off-Site Receptors

County Standards are provided in the Noise Control Ordinance of the County of Los Angeles. If off-site uses are subject to point source noise levels originating from the project site that are above County Noise Control Ordinance standards (identified in **Tables 5.2-2** and **5.2-3**), a significant noise impact would occur. The areas abutting the project site are considered a Noise Zone II (residential properties) and have exterior standards of 45 dB(A) L_{eq} for the hours of 10:00 PM to 7:00 AM and 50 dB(A) L_{eq} for the hours of 7:00 AM to 10:00 PM. Existing noise measurements already slightly exceed these standards.

According to the Noise Ordinance, in cases where existing conditions exceed established exterior standards, a new standard of the existing L_{50} measurement becomes the exterior noise level by which to evaluate impacts. A project is considered to have a significant impact if it exceeds this level for more than 30 minutes in any hour (Standard No. 1), or by 5 dB(A) for more than 15 minutes in any hour (Standard No. 2), 10 dB(A) for more than 15 minutes in any hour (Standard No. 3), or 15 dB(A) for more than one minute in any hour (Standard No. 4).

The Shores project and the existing land use on the site are both residential apartments. On-site noise generators would be typical of a residential apartment complex and could include noises such as people talking, slamming doors, car starting and door noises, music from apartments, and noises from the operation of building HVAC machinery and landscaping maintenance equipment. The project would be

built around a contained central courtyard, and parking would be partially subterranean and enclosed. Because of these building designs and the project's consistency with existing uses, it is not anticipated that The Shores project would create conditions during operation whereby existing noise levels would be significantly exceeded. Therefore, County noise Standard No. 1 through Standard No. 4 would not be exceeded, and there would not be a significant impact.

5.2.4.4 Operation Impacts; On-Site Point and Stationary Source Noise

The significance of on-site noise impacts is based on both the *Land Use Compatibility Guidelines* identified in **Figure 5.2-3**, and typical community responses to changes in noise levels. Changes in a noise level of less than 3 dB(A) are not typically noticed by the human ear. Changes from 3 to 5 dB(A) may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dB(A) increase is readily noticeable. Based on this information, significant noise impacts would occur when:

1. an increase of 5 dB(A) or greater in noise level occurs from project-related activities if levels remain within the same land use compatibility classification (e.g., noise levels remain within the normally acceptable range); or
2. an increase of 3 dB(A) or greater in noise level occurs from project-related activities which results in a change in land use compatibility classification (e.g., noise levels change from normally acceptable to conditionally acceptable).

New on-site residential uses would be considered sensitive and could be affected by on-site and off-site point source noise. Operation of The Shores project is expected to result in increased noise due to the net increase in resident population on the site to both future on-site receptors and existing off-site receptors. Noise experienced at on-site and off-site locations would consist of intermittent sounds associated with human activity, such as people talking, doors slamming, lawn care equipment operation, stereos, domestic animals, etc. Noise levels generated by these sources are typically 52 to 62 dB(A) CNEL. Such noises are typical of a residential area and are comparable to the types of noise presently experienced at the site. It is not expected that these noises in The Shores project would exceed normally acceptable noise levels. Therefore, there would not be a significant on-site operational noise impact.

5.2.4.5 Operation Impacts; Mobile Source Noise

Development of the project would increase the traffic volumes along local roadways inclusive of Via Marina. To evaluate potential impacts associated with increased vehicle trips, noise prediction modeling was conducted for study roadway segments that are bordered by noise-sensitive land uses. Roadway segments include Washington Boulevard east of Via Marina, Via Marina south of Admiralty Way,

Admiralty Way east of Via Marina, Lincoln Boulevard north of Fiji Way, Panay Way east of Via Marina, Tahiti Way east of Via Marina, Marquesas Way east of Via Marina and Palawan Way east of Via Marina. Roadway geometrics and traffic volumes segments were obtained from Crain and Associates, the preparers of the traffic study for The Shores project. Scenarios modeled for these roadways are: (1) existing (2004) traffic volumes; (2) existing plus project traffic volumes; and (3) future (year 2009) traffic volumes plus project and without project. The results of the noise modeling are shown in the **Table 5.2-5, Predicted Future Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project.**

Table 5.2-5
Predicted Future Off-Site Roadway Noise Levels at Noise-Sensitive Locations
The Shores Project

Roadway Segment	Sensitive Land Uses Adjacent to Roadway, Distance from Roadway Centerline	Existing dB(A) CNEL	Existing Plus Project dB(A) CNEL	Increase in CNEL	Future Without Project CNEL	Future With Project CNEL	Increase in CNEL	Significant Impact?
Washington Boulevard (east of Via Marina)	Residential, 50 feet	67.0	67.1	0.1	67.1	67.2	0.1	No
Via Marina (south of Admiralty Way)	Residential, 50 feet	66.3	66.7	0.4	66.4	66.8	0.4	No
Admiralty Way (east of Via Marina)	Admiralty Park, 50 feet	67.4	67.6	0.2	67.5	67.7	0.2	No
Lincoln Boulevard (north of Fiji Way)	Daniel Freeman Hospital, 50 feet	73.9	73.9	0.0	74.0	74.0	0.0	No
Marquesas Way (east of Via Marina)	Residential 50 feet	52.2	52.2	0.0	52.3	52.3	0.0	No
Panay Way (east of Via Marina	Residential 50 feet	57.5	57.5	0.0	57.6	57.6	0.0	No
Palawan Way (south of Washington Blvd.)	Recreation	59.7	59.7	0.0	59.8	59.8	0.0	No
Tahiti Way (east of Via Marina)	Residential 50 feet	55.2	55.2	0.0	55.3	55.3	0.0	No

Source: Impact Sciences, Inc. Calculations are provided in Appendix 5.2. Noise levels are calculated for the nearest edge of the nearest existing building to the roadway.
* *Roadway segments which exceed the County* Land Use Compatibility Guidelines for Noise.

5.2.4.6 Temporary or Periodic Impacts; Construction Noise Impacts

Demolition activities on The Shores project site are expected to occur over a two- to three-month period. Construction for The Shores project is anticipated to take 25 months. Demolition and construction of the project would require a total of approximately 28 months to complete. Anticipated build-out would occur in July of 2008. Construction of The Shores project would result in increases in ambient noise levels in the project area on an intermittent basis. This temporary increase in noise will likely be noticeable to nearby residents and on- and off-site employees, as well as visitors to Marina del Rey. It must be emphasized that noise levels would fluctuate depending on construction activity, equipment type and duration of use, the distance between the noise source and receptor, and the presence or absence of noise attenuation barriers.

Construction of the project would involve the temporary use of heavy equipment, such as tractors, loaders, concrete mixers and cranes. Smaller equipment, such as jackhammers, pneumatic tools, saws and hammers would also likely be used throughout the site during demolition and construction stages.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise-generating characteristics of specific types of construction equipment. Based on this data, **Table 5.2-6, Noise Levels of Typical Construction Equipment**, presents noise levels of typical construction equipment, which could be used on site during various phases of construction. As shown, noise levels generated by heavy equipment can range from approximately 68 dB(A) to noise levels in excess of 100 dB(A) when measured at 50 feet. However, much of this noise would diminish rapidly with distance from the construction site at a rate of approximately 6 dB(A) per doubling of distance.

Based on a review of the site plan, construction activity would occur as close as 50 feet from existing noise-sensitive residential uses located east of the project site. Uses at these locations could experience noise levels that reach 94 dB(A). Construction activity on The Shores project site will also occur as close as 125 feet from existing residential uses located north of the project site along Via Marina. These, as well as any other locations that experience an uninterrupted line of sight to the construction noise sources, could be temporarily exposed to exterior noise levels which could exceed the County's Noise Control Ordinance standards for construction equipment noise levels identified earlier in **Table 5.2-3**. Therefore, construction noise is considered a temporary significant impact.

Construction noise would represent a short-term significant impact based on the potential to exceed County noise standards and the two-plus-years construction period.

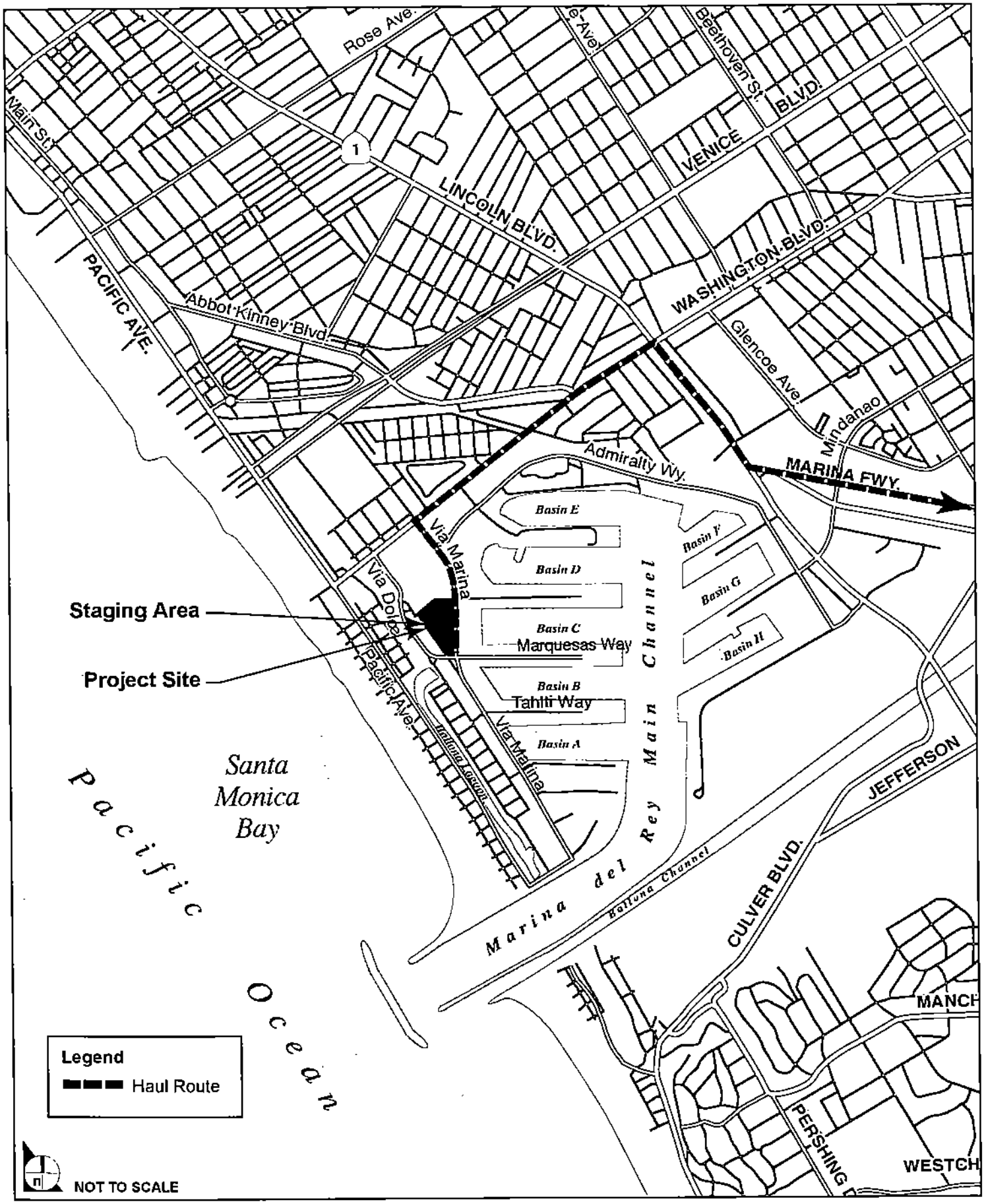
Table 5.2-6
Noise Levels of Typical Construction Equipment

Equipment Type	Typical Equipment at 50 Feet (dB(A))	Quieted Equipment at 50 Feet (dB(A))[1]
Air Compressor	81	71
Backhoe	85	80
Concrete Pump	82	80
Concrete Vibrator	76	70
Truck Crane	88	80
Dozer	87	83
Generator	78	71
Loader	84	80
Paver	88	80
Pneumatic Tools	85	75
Pile Driver	100	NA
Water Pump	76	71
Power Hand Saw	78	70
Shovel	82	80
Trucks	88	83

[1] *Quieted equipment can be designed with enclosures, mufflers, or other noise-reducing features.*

Haul Route Noise Impacts: Project construction will require the use of heavy trucks to haul equipment and materials to the site, as well as transport debris and earth excavated during demolition of existing structures and grading of the site. To limit noise impacts associated with construction traffic on nearby land uses, truck haul routes have been established which route vehicles away from sensitive uses to the maximum extent feasible. As depicted in **Figure 5.2-5, Haul Route**, the proposed haul route will be as follows: Project trucks will exit the project site northerly onto Via Marina and will make a right turn onto Washington Boulevard (heading easterly); trucks will take Washington Boulevard easterly and make a right turn onto Lincoln Boulevard (heading southerly); trucks will transition off of Lincoln Boulevard onto the 90 "Marina" Freeway (heading easterly); trucks will transition from the 90 Freeway onto the 405 Freeway (heading northerly); project trucks will transition from the 405 Freeway (I-405) onto Interstate 10 (I-10) eastbound; trucks will transition from I-10 eastbound onto the 60 Freeway eastbound; trucks will transition from the 60 Freeway onto Crossroads Parkway (heading northerly) and will enter the Puente Hills Landfill (construction debris receptor location) at 13130 Crossroads Parkway, City of Industry, California 91746.

To minimize potential neighborhood disruption and conflicts between construction activity and through-traffic, a construction traffic control plan will be developed for use during construction. All vehicles will



SOURCE: Impact Sciences, Inc – June 2005

FIGURE 5.2-5

Truck Haul Route

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be staged either within the property lines or at designated areas as established by a County-approved haul route plan.

Noise impacts from construction traffic would be greatest during the demolition phase of project development, when trucks are expected to make up to 100 (round-) trips on average per working day[10] to haul debris from the site. Over the two years of project construction, approximately five construction vehicles per week would enter and leave the site.[11] This construction traffic would only be traveling to and from the site during working hours. The Los Angeles County Department of Public Works (LACDPW), Construction Division, limits construction activities to between the hours of 6:30 AM and 8:00 PM daily and prohibits work on Sundays and legal holidays. This reduces the impact on local residents by restricting most construction-based noise generation to hours when most residents are at work and not generally home. The number of truck trips traveling along the designated haul route will vary daily, depending on the nature of the construction activity. Employment of standard noise attenuation practices would be implemented as required by the LACDPW. As previously discussed, noise-sensitive land uses located along the haul route are primarily residential in nature. Based on the information contained in **Table 5.2-6**, uses within 50 feet of the haul route could experience temporary noise events ranging from 83 to 88 dB(A), which exceeds County standards outlined above. Therefore, a temporary significant impact would result from trucks traveling to and from the project site along the haul route during the projected buildout of the project.

5.2.4.7 Vibration Impacts

The primary vibration source associated with development involves the use of pile drivers during foundation construction. Pile drivers are the only machine used for construction that could cause potential off-site impacts. Pile divers create a high intensity, repetitious noise that is disturbing and can result in substantial ground vibrations. Usually, peak ground vibrations occur during the initial blows of the pile driving through the compacted soil zone. Once the compacted soil layer at the surface is penetrated, the pile typically slides more easily through the groundwater-saturated zone. It may be necessary for The Shores project to utilize pile drivers during construction activities. Therefore, vibration impacts may be significant and unavoidable, but temporary in nature.

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10 Based on 20-cubic-yard haul trucks removing 88,000 cubic yards of debris over 44 working days over two months.

11 Exclusive of transportation for construction workers. Information provided by Tim Connelly of American Constructors, Inc., in a phone conversation with Impact Sciences, Inc., on June 6, 2005.

5.2.5 MITIGATION MEASURES

5.2.5.1 Existing Regulations and Standards Applicable to the Project

The LACDPW, Construction Division, limits construction activities to between the hours of 6:30 AM and 8:00 PM daily and prohibits work on Sundays and legal holidays. The County Department of Health Services has the authority to further restrict construction activities to between the hours of 7:00 AM and 7:00 PM and any time on Sundays or legal holidays if such noise would create a noise disturbance across a residential or commercial real-property line. A construction staging area will be identified within The Shores project site as far as possible from existing residential uses for the storage of equipment and material. With regard to operations, all stationary and point sources of noise occurring on the project site must adhere to the requirements of the County of Los Angeles Ordinance No. 11743, §12.08.390.

5.2.5.2 Mitigation Measures Recommended by the EIR

5.2-1. All construction equipment, fixed or mobile, that is utilized on the site for more than two working days shall be in proper operating condition and fitted with standard factory silencing features. To ensure that mobile and stationary equipment is properly maintained and meets all federal, state and local standards, the applicant shall maintain an equipment log. The log shall document the condition of equipment relative to factory specifications and identify the measures taken to ensure that all construction equipment is in proper tune and fitted with an adequate muffling device. The log shall be submitted to the LACDPW for review and approval on a quarterly basis. In areas where construction equipment (such as generators and air compressors) is left stationary and operating for more than one day within 100 feet of residential land uses, temporary portable noise structures shall be built. These barriers shall be located between the piece of equipment and sensitive land uses that preclude all sight-lines from the equipment to the residential land use(s). As the project is constructed, the use of building structures as noise barriers would be sufficient. The County Building Official or a designee should spot check to ensure compliance.

5.2-2. Construction activities shall be restricted to between the hours of 8:00 AM and 5:00 PM in order to minimize construction and haul route activities that would create noise disturbance on surrounding residential and commercial real property line.

5.2-3. Occupants/tenants of the surrounding sensitive land uses shall be informed of the anticipated duration of the project, noise impact and any other pertinent information where people can register complaints or questions regarding project activities.

5.2-4. The project applicant shall post a notice at the construction site and along the proposed truck haul route. The notice shall contain contact information, the type of project, anticipated duration of construction activity and a hotline phone number to register complaints.

5.2-5. Grading work shall be kept between the hours of 8:00 AM and 5:00 PM Monday through Friday. Noise generated by the project shall attempt to remain within standards dictated by the Los Angeles County Code, Title 12, Environmental Protection, Section 12.08.440. However, the noise level shall not exceed a cumulative 15 minute noise level of 85 dB(A) (L25) during any hour that construction activities are in operation. This standard shall apply for any period of time during construction that compliance is technically and economically feasible.

5.2-6. All construction equipment, fixed and mobile, shall be in proper operating condition and fitted with standard silencing devices. Proper engineering noise controls should be implemented when necessary on fixed equipment. It is recommended that a monitoring program be implemented by the applicant in conjunction with the County of Los Angeles Sheriff's Department to monitor mobile sources as necessary, contingent upon the Sheriff's Department acceptance of a monitoring agreement.

5.2-7. Vibration associated with the operation of any device capable of exceeding the vibration perception threshold (motion velocity) of 0.01 in/sec over the range of 1 to 100 hertz) at or beyond the property boundary on private property, or at 150 feet from the source if on a public space or public right of way is prohibited.

5.2-8. The project applicant shall consult with an engineer regarding available technology for the noise attenuation of the Pile Driver equipment. Past operation of this device has resulted in levels above 105 dB(A) 75 feet away from the equipment. Reports shall be provided to the County of Los Angeles Department of Health Services, Public Health Division, prior to grading.

5.2.6 CUMULATIVE IMPACTS

Cumulative noise impacts would occur as a result of construction activity taking place within Marina del Rey, as well as increased vehicle traffic generated by cumulative development. All construction activities would be subject to the requirements of the "County of Los Angeles Construction Equipment Noise Standards," Noise Control Ordinance of the County of Los Angeles (County Code §12.08.440) as

identified earlier in **Table 5.2-3**. Compliance with the ordinance along with incorporation of mitigation recommended as part of each project's environmental review would adequately mitigate cumulative construction-related noise impacts.

Cumulative noise impacts would primarily occur as a result of increased traffic on local roadways due to The Shores project and other developments in the area as identified in **Section 5.6, Traffic/Access**, of this EIR. The noise levels that would be generated by these traffic volumes adjacent to noise-sensitive land uses within the project study area are identified in **Table 5.2-7, Predicted Cumulative Roadway Noise Levels at Noise-Sensitive Locations**.

As demonstrated in **Table 5.2-7**, there may be an increase in noise levels along one road segment (Marquesas Way, east of Via Marina) that could be perceptible to persons with extreme noise sensitivity. However, even with the increase in noise due to cumulative development, noise levels along this road segment still fall below County guidelines for multi-family residential uses (65 dB(A) CNEL). Therefore, there is no significant noise impact with cumulative development.

Table 5.2-7
Predicted Cumulative Roadway Noise Levels at Noise-Sensitive Locations
(Measured at 50 Feet from Center of Roadway)

Roadway Segment	Sensitive Land Uses Adjacent to Roadway and Distance from Roadway Centerline	Existing dB(A) CNEL	Future (2009) with Project plus related projects dB(A) CNEL	Change in dB(A) CNEL
Washington Boulevard (east of Via Marina)*	Residential, 50 feet	67.0	67.6	0.6
Via Marina (south of Admiralty Way)*	Residential, 50 feet	66.3	68.1	1.8
Admirally Way (east of Via Marina)	Admiralty Park, 50 feet	67.4	68.5	1.1
Lincoln Boulevard (north of Fiji Way)*	Daniel Freeman Hospital, 50 feet	73.9	72.0	-1.9
Marquesas Way (east of via marina)	Residential, 50 feet	52.2	56.9	4.7
Panay Way (east of Via Marina	Residential, 50 feet	57.5	59.0	1.5
Palawan Way (south of Washington Blvd.)	Recreational	59.7	61.0	1.3
Tahiti Way (east of Via Marina)	Residential, 50 feet	55.2	57.8	2.6

Source: Impact Sciences, Inc. Calculations are provided in Appendix 5.2. Noise levels are calculated for the nearest edge of the nearest existing building to the roadway.
* *Roadway segments which exceed the County* Land Use Compatibility Guidelines for Noise.

5.2.7 UNAVOIDABLE SIGNIFICANT IMPACTS

The Shores project would not have a project specific or cumulative impact with respect to operational noise but will have an impact during construction of the project for noise and potentially for vibration.

Construction activity associated with The Shores project may expose nearby sensitive receptors to periodic noise levels in excess of the County's Noise Control Ordinance standards for construction equipment. While mitigation measures have been provided to reduce this impact to the maximum degree feasible, this impact would remain unavoidably significant.

5.3 Hydrology and Water Quality

SUMMARY

The proposed 8.31-acre The Shores project site is currently developed and generates surface runoff that is discharged to an existing storm water drainage collection and conveyance system in the Dell Avenue alley and Via Marina. Due to the incorporation of eight bio-swales in the proposed project, a decrease in surface water runoff during a 25-year storm event is anticipated as a result of project implementation. During a 25-year storm event in the existing condition, the site generates approximately 13 cubic feet per second (cfs) of site runoff. Post-project runoff would total 11 cfs. Future on-site storm drainage improvements would be designed to accommodate post-development flows during a 25-year storm event. No significant flood impact is expected.

The project would result in potentially significant impacts with respect to erosion, sedimentation and water quality impacts (pollution from non-point sources) during demolition, construction, and operation. The project would be subject to Section 402(p) of the Federal Clean Water Act (CWA) that regulates construction storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. With implementation of the measures identified in this section, no unavoidably significant flooding, erosion, sedimentation, or water quality impacts from the proposed project would occur.

5.3.1 INTRODUCTION

This section summarizes a hydrology study prepared for the project by PSOMAS in April 2005. The study, which is included in its entirety in **Appendix 5.3**, was prepared in conformance with the Los Angeles County Department of Public Works (LACDPW) *Hydrology Manual*.

Other references used to prepare this section include the following:

- *Water Quality Control Plan (Basin Plan) [for the] Los Angeles Region (4)* prepared by the California Regional Water Quality Control Board, Los Angeles Region (dated June 13, 1994, and approved February 23, 1995);
- LACDPW *Sedimentation Manual* (June 1993).

The following terms and their definitions are provided to assist the reader:

Best Management Practice (BMP)	In water pollution control, the best means available to control pollution of waterways from non-point sources, as opposed to best available technology, which applies to pollution control for point sources.
Erosion	The wearing away of land surfaces by water, wind, and ice, or by gravity (as in landslides).
First Flush Storm	The first storm after a dry period which is large enough to contain the accumulated pollutants from a watershed; assumed to be the first 0.7 inch of runoff from the impervious portion of the project site.
Impervious	Description of a substance that will not permit water to flow through it.
Infiltration	Downward entry of water into soil.
Runoff	The portion of rainfall, melted snow, or irrigation water that flows across the ground surface rather than infiltrating into the soil.
Sedimentation	Deposition of waterborne sediments due to a decrease in water velocity and a corresponding reduction in the size and amount of sediment that can be carried by the flowing water.
Sheet Flow	The movement of runoff across the ground surface in a thin, unchanneled sheet.
Ten-Year Storm Event	Peak runoff from a 25-year rainfall intensity storm from developed or undeveloped areas.

5.3.2 EXISTING CONDITIONS

5.3.2.1 Project Area

The Shores project site is situated in Marina del Rey, the Los Angeles Coastal Plain and occurs within the 83,200-acre Ballona Creek watershed. A variety of surface water bodies are located in the project area and include the Santa Monica Bay, Marina del Rey, the Ballona Channel, and the Ballona and Del Rey lagoon. The small-craft harbor serves as the outlet for an improved drainage network that collects and conveys storm water from the surrounding urbanized area where it is discharged directly into the small-craft harbor and ultimately to Santa Monica Bay without treatment. No natural watercourses occur on or in

the vicinity of The Shores project site, although the Ballona Channel is located south of the site. This waterway is channelized and conveys urban runoff from metropolitan Los Angeles to a discharge point at the mouth of the small-craft harbor.

5.3.2.2 Project Site

Approximately 2.50 acres of the site drain west to a v-ditch in the Dell Avenue alley and then to a catch basin where it joins Via Dolce. The remaining 5.81 acres flow east where it drains to Via Marina, which connects to Marquesas Way at the southeast corner of the project site. From this point, storm water travels by gutter until it reaches a catch basin on Via Dolce a few hundred feet north of Marquesas Way (PSOMAS, 2005 in **Appendix 5.3**). From Via Dolce, drainage is to the Grand Canal.

Based on calculations consistent with the Los Angeles County *Hydrology Manual*, runoff from the project site during a 25-year frequency storm is estimated to be approximately 13 cfs. No capacity problems occur on or adjacent to the project site (PSOMAS, 2005 in **Appendix 5.3**).

A Phase I Environmental Site Assessment for the project site concluded that no indications of hazardous materials use, storage, or disposal were observed on the property. Existing sources of pollutants that may occur on site would result from primarily land erosion, landscape runoff (pesticides, herbicides, fertilizers) and pavement runoff (these sources are discussed later in this section).

5.3.2.3 Regulatory Setting

The proposed project is subject to the requirements of the California Regional Water Quality Control Board Los Angeles Region (RWQCBLAR) pursuant to the CWA and the Flood Control Division of the LACDPW.

5.3.2.3.1 Federal Clean Water Act

The project would be subject to federal permit requirements under the CWA.[1] In 1987, the CWA was amended by adding Section 402(p), which established regulations for municipal and industrial storm water discharges under the NPDES program. Section 402, as amended, requires NPDES permits for

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1 Since surface water in the project area is not used as drinking water, it is not subject to the drinking water standards enforced by state and federal agencies.

storm water discharges from storm drain systems[2] to "waters of the United States." Section 402(p)(3)(B) requires that permits for storm drain systems "(i) may be issued on a system- or jurisdiction-wide basis; (ii) shall include a requirement to effectively prohibit non-storm water discharges into the storm sewers; and (iii) shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design, and engineering methods, and other such provisions as the administrator or the state determines appropriate for the control of such pollutants."

While the U.S. Environmental Protection Agency (U.S. EPA) is responsible for implementing the NPDES program at the federal level,[3] the State Water Quality Control Board (SWQCB) is responsible for implementing the federal NPDES requirements within California.[4] The SWQCB elected to issue a statewide General Permit for storm water discharges associated with construction activities requiring a NPDES permit and, in 1992, the SWQCB issued two statewide NPDES General Permits: one for storm water from industrial sites (NPDES No. CAS000001), and the other for storm water from construction sites (NPDES No. CAS000002).

In 1990, the U.S. EPA published final regulations that established storm water permit application requirements for specified categories of industries. Regulations require that discharges of storm water associated with construction activities (storm water discharges), from soil disturbance of five acres or more, are regulated as an industrial activity and are required to obtain individual NPDES permits for storm water discharges, or be covered by the statewide General Permits. Developers planning construction greater than 1 acre must file a Notice of Intent (NOI) to discharge under this permit. Once an NOI has been submitted, the discharger is obligated to comply with the specific provisions of the statewide General Permit. The major provisions of the statewide General Permit require construction storm water dischargers to eliminate non-storm discharges to the storm drainage system, develop and implement a Storm Water Pollution Prevention Plan (SWPPP), and to perform monitoring of discharges to the storm water system from their project site. Each of these components must be completed in conformance with the specific conditions outlined in the statewide General Permit.

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2 Storm drain systems are described as Municipal Separate Storm Sewer Systems (MS4s) and include streets, gutters, conduits, natural or artificial drains, channels and water courses or other facilities that are owned, operated, maintained or controlled by any permittee (cities and counties) and used for the purpose of collecting, storing, transporting or disposing of storm water.

3 On November 16, 1990, pursuant to Section 402(p) of the CWA, the U.S. EPA promulgated federal regulations (40 Code of Federal Regulations (CFR) Part 122.26) establishing requirements for storm water discharges under the NPDES program. The regulations recognize that certain categories of non-storm water discharges may not need to be prohibited if they have been determined not to be significant sources of pollutants.

4 The federal regulations allow states which are authorized to implement the NPDES program and have general permit authority to issue general permits or individual permits in order to regulate storm water discharges associated with industrial activity within their jurisdiction. In California, the SWRCBhas responsibility for implementing the NPDES program for storm water discharges.

The Los Angeles County NPDES Storm Water Permit was issued by the RWQCBLAR in December 2001, and is a joint permit, with the LACDPW as the primary permittee and the cities of Los Angeles and Santa Monica, as well as other local agencies and entities as co-permittees. As required by the permit, the County has established and is implementing a County-wide storm water pollution prevention program[5] with which all dischargers within the County are expected to comply. All discharges are required to submit a Standard Urban Storm Water Mitigation Plan (SUSWMP), which would need to be approved by the permittee/co-permittee prior to issuance of grading or building permits.

Demolition and construction activities, which would disturb more than one acre, would require an NPDES permit and the project applicant would need to identify and implement Best Management Practices (BMPs) to control water quality impacts via a SUSWMP.

5.3.2.3.2 Regional Water Quality Control Board, Los Angeles Region

All the activities required under the NPDES program focus on meeting water quality objectives of receiving waters, including coastal waters, which abut multiple counties and cities. The RWQCBLAR adopted an updated Water Quality Control Plan (Basin Plan) for the Los Angeles Region on February 23, 1995. The Basin Plan is designed to preserve and enhance water quality, and to protect the beneficial uses of all regional waters. Specifically, the Basin Plan designates beneficial uses for surface and groundwater, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and to conform to the state's anti-degradation policy, and describes implementation programs to protect all waters in the region. The Basin Plan is incorporated by reference as a part of the 2001 Los Angeles County NPDES Municipal Permit No. CAS614001.

5.3.2.3.3 Los Angeles County Flood Control Division

In addition to meeting the requirements of the LACDPW *Hydrology Manual* (December 1991) as amended and *Sedimentation Manual* (June 1993) for preparing the hydrologic analysis for this project, this analysis complies with a 1986 LACDPW memorandum entitled "Level of Flood Protection and Drainage Protection Standards" for development projects in Los Angeles County. The memorandum, which established Los Angeles County policy on levels of flood protection, requires that projects, such as the one proposed, be designed for the urban flood, or runoff from a 25-year storm event.

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5 Telephone interview with Terri Grant, Supervising Civil Engineer III, Los Angeles County Department of Public Works, Flood Control Division, 13 October 1998.

5.3.3 ENVIRONMENTAL IMPACTS

The impacts of project implementation are discussed for each of the threshold criteria identified below. Wherever a significance threshold criterion is exceeded or wherever there is the potential for a criterion to be exceeded, mitigation is identified where it is feasible.

5.3.3.1 Project Improvements

As proposed, The Shores project would result in the removal of 202 existing apartment units and their replacement with 544 new apartment units. The drainage concept for the proposed project is similar to the existing condition. Runoff would continue as sheet flow across the site to both the Dell Avenue alley and Via Marina. In the post project condition, site runoff would be directed into eight bio-swales before site runoff is discharged to the surrounding roadways. Future on-site storm drain improvements would be designed to accommodate post-development flows during a 25-year storm event and would be designed to meet all LACDPW standards.

5.3.3.2 Thresholds of Significance

According to the County of Los Angeles *Environmental Document Reporting Procedures and Guidelines*, County staff are concerned with any development subject to flood hazards and debris flows, including (1) flooding due to its location within a major drainage course, (2) flooding due to its location within a flood plain, and (3) high debris transport and deposition potential.

Therefore, if any of the following events would occur as a result of project implementation, project-related drainage and flooding impacts would be considered significant:

1. flooding (on- and off-site),
2. increased erosion, and/or
3. increased sedimentation and debris production.

In addition to thresholds of significance for flood-related impacts, the proposed project is also evaluated relative to its water quality impacts associated with construction and storm runoff. The revised *California Environmental Quality Act (CEQA) Guidelines* state that a project would normally have a significant effect on the environment if it would substantially degrade water quality.

5.3.3.3 Impacts Associated with Flooding

No flood impacts are known to occur on or near the project site. Based on calculations consistent with the Los Angeles County *Hydrology Manual*, runoff during a 25-year storm event would decrease should The Shores project be implemented. Given project implementation, site runoff would be collected and graded into eight planned bio-swales in order to treat the surface flow from The Shores proposed project site. The location of the proposed bio-swales are illustrated in **Appendix 5.3**, reference Sheet 1 of 1, Del Rey Shores Proposed Hydrology exhibit. As defined above, existing runoff from The Shores project site is approximately 13 cfs and sheet flow to the Dell Avenue Alley and Via Marina. Proposed runoff from The Shores project site is calculated to be approximately 11 cfs and would also sheet flow to the Dell Avenue Alley and Via Marina via eight proposed bio-swales. Future on-site storm drainage improvements would be designed to accommodate post-development flows during a 25-year storm event. No on- or off-site flood hazard impact would occur.

Construction of the partially subterranean parking facility may require dewatering during excavation only. Dewatering would be required when groundwater is found at an elevation above the depth of grading. If necessary, dewatering wells would be drilled and pumps would be placed in the wells as needed to draw down the water table as necessary. Excess groundwater would be treated as directed by the conditions associated with the NPDES permit and discharged to the local storm drain system. Once complete, the partially subterranean parking structure would consist of structural slabs that are designed as to be "water tight." No flooding of the garage is anticipated during project operation.

5.3.3.4 Impacts Associated with Erosion and Siltation

Demolition of the existing apartment complex and parking lot, grading/excavation operations, and project construction could result in increased water and wind erosion and a potential for the off-site discharge of sediment during storm events. Increased sedimentation may result in a significant erosion and sedimentation impact unless mitigated.

Temporary dewatering systems for the proposed partially subterranean parking garages (if required) also have the potential to discharge sediments during excavation operations. The project applicant would be required to prepare an SWPPP pursuant to the NPDES that would identify the various BMPs that would be implemented at the construction sites (see below for a detailed discussion on BMPs).

Upon completion of the proposed project, the site would be covered (65 percent imperviousness) with non-erosive surfaces, including roofs, pavement, and permanent vegetation, which would reduce

sediment in site runoff. As a result, the potential for post-development sedimentation would be reduced or eliminated and impacts associated with erosion and siltation during project generation are not considered significant.

5.3.3.5 Storm Water Quality Impacts

Demolition and Construction Water Quality Impacts: Temporary dewatering systems for the partially subterranean parking structures may require an NPDES Permit for ground water discharge from the RWQCBLAR. This permit would ensure that water discharged from the site would meet all NPDES requirements for suspended solids, organic material, and other water quality parameters, thereby reducing water quality impacts associated with this activity to less than significant.

Demolition and construction activities, which would disturb more than five acres, would require an NPDES permit to mitigate demolition- and construction-related water quality impacts. Pollutants typical of demolition and construction activities include demolition debris that may be directed to the local storm drain system from wind and water erosion, nutrients from fertilizing new landscaping, trace metals, pesticides, toxic chemicals (e.g., adhesives, cleaners, sealants, solvents, etc.), and miscellaneous wastes (e.g., debris, wash water from concrete mixers, paints, solid wastes, etc.). Because existing site improvements were originally constructed in the early 1960s, there is potential for asbestos and lead paint debris to enter storm flows unless the project contractor takes the required steps to remove and dispose of such materials pursuant to federal and state law. Pollutants that may occur within water collected from the parking structure or exterior parking lots may include petroleum products, including gasoline and oil, rubber and other car fluids. As such, the project applicant would be required to prepare an SWPPP pursuant to the NPDES that would identify the various BMPs that would be implemented on the site during demolition and construction (see below for a detailed discussion on BMPs). The project applicant is responsible for obtaining the necessary NPDES construction permit for the project site from the RWQCBLAR, Wastewater Division. With compliance with the requirements of the NPDES construction permit, demolition- and construction-related water quality impacts would be less than significant.

Post-Construction Water Quality Impacts: Common concerns related to surface water quality include the potential deposition of pollutants generated by motor vehicles and the maintenance and operation of landscape areas. Urban runoff contains almost every type of water pollutant, including suspended solids, bacteria, heavy metals, oxygen-demanding substances, nutrients, and oil and grease. Primary sources of urban runoff pollutants include land erosion, landscape runoff (pesticides, herbicides,

fertilizers) and pavement runoff.[6] These pollutant sources are described below. More minor sources of pollutants on the site would include animal droppings and atmospheric fallout.

Land Erosion: Land erosion can affect water quality by contributing biochemical oxygen demand (BOD), suspended solids and heavy metals. The potential for erosion was discussed previously in this impact section.

Landscape Runoff: Runoff from landscaped areas can contribute BOD, pesticides/herbicides/ fungicides, and nitrates to surface and subsurface water bodies. Approximately 35 percent of the project site would be landscaped. Thus, there is a minor potential for quantities of these substances to enter and incrementally degrade surface water if runoff were to enter the drainage system. To mitigate these potential impacts eight bio-swales are proposed that would capture and treat these pollutants before they enter the off-site storm drain system. Landscaped areas would help control runoff by allowing some percolation into the soil rather than allowing direct runoff into surface water bodies as do paved surfaces. Based on the above, water quality impacts from landscape runoff are not considered significant.

Pavement Runoff: Runoff from paved surfaces can contribute BOD, suspended solids, and heavy metals to water bodies. Oil and grease (hydrocarbons), in particular, represent a low-level, chronic release of pollutants into water bodies and may originate from a number of small, non-point sources: vehicle exhausts, crankcase oils, fuel oils, etc. Since a portion of the project site is presently developed, existing surface runoff from the project site contains such material, which discharges directly to the adjacent storm drain system. However, the proposed project would place most parking within covered parking structures, where such pollutants are less likely to be transported by rainfall into the storm drain system. As a result, pollutants from pavement runoff are likely to be less than that experienced under the existing condition and would be considered as less than significant.

5.3.3.5.1 Best Management Practices

Best Management Practices (BMPs) to minimize pollutants entering the off-site storm drain system may be required by the County. Best Management Practices are actions and procedures established to reduce the pollutant loadings in storm drain systems. The two main categories of BMPs, which may be part of public agency activities or, in some cases, applicable to development projects, are "source control" and "treatment control." Source control BMPs are usually the most effective and economical in preventing

6 Robert A. Corbitt, *Standard Handbook of Environmental Engineering*, (New York City: McGraw-Hill Publishing Company, 1989), p. 753.

pollutants from entering storm and non-storm runoff. Examples of source control BMPs that are relevant to the project include:

- Public Education/Participation activities which make information available to renters.
- Materials Management activities, such as:

    1. Materials Use Controls, which include good housekeeping practices (storage, use and cleanup) when handling potentially harmful materials, such as cleaning materials, fertilizers, paint, pool chemicals and, where possible, using safer alternative products;

    2. Material Exposure Controls, which prevent and reduce pollutant discharge to storm water by minimizing the storage of hazardous materials (such as pesticides) on site, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors; and

    3. Material Disposal and Recycling, which includes storm drain system signs and stenciling with language to discourage illegal dumping of unwanted materials. Household hazardous waste and used oil recycling at collection centers and round-up activities are very productive BMPs.

- Spill Prevention and Cleanup activities which are directed toward reducing the risk of spills during the outdoor handling and transport of chemicals, and toward developing plans and programs to contain and rapidly clean up spills before they get into the storm drain system.
- Street and Storm Drain Maintenance activities that control the movement of pollutants and remove them from pavement through catch basin cleaning, street sweeping, and by regularly removing illegally-dumped material.
- Site design alternatives (e.g., roofs over dumpsters, spill containment curbs around stored material, etc.).

Treatment Control BMPs involve physical treatment of the runoff, usually through structural means. A variety of treatment control measures have been utilized throughout the country for storm water quality. However, the effectiveness of these controls are highly dependent on local conditions, such as climate, hydrology, soils, groundwater conditions and extent of surrounding urbanization.

The Shores project proposes the use of eight bio-swales that would capture and treat surface runoff before it enters the off-site storm drain system. With implementation of the eight bio-swales and other required BMPs, and considering project design, water quality impacts of the proposed project would not be significant.

5.3.4 MITIGATION MEASURES

5.3.4.1 Mitigation Measures Already Incorporated into the Project (The Shores Project)

To minimize pollutants and sedimentation from entering the adjacent storm drain system, the applicant would implement accepted materials storage procedures, spill prevention and other "good housekeeping" practices. As proposed, The Shores project proposes eight bio-swales that would capture and treat surface runoff before it enters the off-site storm drain system. The location of the proposed bio-swales are illustrated in **Appendix 5.3**, reference Sheet 1 of 1, Del Rey Shores Proposed Hydrology exhibit. As defined above, existing flood control facilities can accommodate storm flows during a 25-year frequency storm and would be designed and constructed in accordance with the policies and standards of the LACDPW, Flood Control Division. In addition, the project applicant must also implement any additional required BMPs.

5.3.4.1.1 Mitigation Measures Recommended by the EIR

No further mitigation measures are proposed or are required.

5.3.5 CUMULATIVE IMPACTS

5.3.5.1 The Shores Project and Other Related Projects

Cumulative impacts for this analysis are discussed relative to the build-out of the upstream tributary watershed in which the project lies. Development and redevelopment projects in the watershed must comply with storm drainage design criteria that prohibit significant increases in post-development storm flows into the small-craft harbor and significant increases in storm flow velocities. As a result, overall storm runoff discharge quantities into the regional storm drain system would be no greater than under existing conditions.

Because on-site drainage facilities would have adequate capacity to capture and convey off-site flows from the site and from developed upstream areas, no significant increases in velocity and related scouring, and no significant cumulative project flooding impacts are expected to occur downstream of the site.

Furthermore, the development and redevelopment of the remainder of the watershed would result in water quality impacts similar to those of the proposed project, and would be subject to the same types of

water quality requirements as the project. Therefore, no cumulative water quality impacts are anticipated.

5.3.5.2 Cumulative Mitigation Measures

All cumulative projects within the tributary watershed are required to meet the same general flood control and water quality requirements as the proposed project, and other site-specific requirements that the affected jurisdiction and RWQCBLAR would specifically identify for those projects. Implementation of these requirements would serve to avoid the potential for creating flooding, erosion, siltation and water quality impacts in the small-craft harbor.

5.3.6 UNAVOIDABLE SIGNIFICANT IMPACTS

5.3.6.1 The Shores Project

Implementation of the identified mitigation measures in accordance with LACDPW and RWQCBLAR requirements would reduce erosion, sedimentation, and water quality impacts to less than significant levels. Therefore, no unavoidable significant project impacts are anticipated with respect to hydrology or water quality.

5.3.6.2 Cumulative Development

Assuming that all development within the tributary watershed complies with jurisdictional requirements to ensure that upstream or downstream flooding does not occur and to ensure that downstream erosion and sedimentation do not occur, no unavoidable significant cumulative flooding, erosion, or sedimentation impacts would be created. These developments must also comply with the water quality requirements of the RWQCBLAR. Therefore, no unavoidable significant cumulative water quality impacts would occur.

5.4 Air Quality

SUMMARY

Implementation of The Shores project would result in the development of 12 apartment buildings totaling 544 units. The Shores project would consist of a total of 12, five-story wood-framed structures, which will house the residential units, with 1,114 parking spaces provided in two-level parking garages below residences. The project will require the removal of 202 existing residential units. Recommended thresholds for construction emissions would be exceeded for oxides of nitrogen (NO_x) and volatile organic compounds (VOC) during construction of the project. In addition, localized ambient air quality impacts may occur during construction of the project. However, recommended thresholds for operational emissions will not be exceeded.

5.4.1 INTRODUCTION

The Southern California area has been divided into a number of geographical air Basins. The project site is located within the South Coast Air Basin (herein referred to as the Basin), which includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino and Riverside Counties. This area consistently generates the highest levels of smog in the United States and is, therefore, considered to have the worst air quality in the nation. The factors that influence this determination are discussed below.

5.4.1.1 Smog and its Causes

Smog is a general term, based on the words smoke and fog, which is used to describe dense, visible air pollution. Although some air pollutants are colorless, smog is commonly used to describe the general concentrations of pollutants in the air. Smog is formed when combustion emissions and gaseous emissions, such as VOC and NO_x, undergo photochemical reactions in sunlight to form ozone (O_3). Ozone is a gas that, in the upper atmosphere, helps to shield the earth from harmful radiation. However, in the lower atmosphere where people live, O_3 poses health risks and damages crops, rubber and other materials. Particulates, such as soil and dust materials and vehicle exhaust particulates often mix with nitrogen dioxide (NO_2) and other compounds and create a brownish haze in the air. "Smog episode" warnings occur when an occurrence of high concentrations of O_3 is predicted that could endanger or cause harm to the public.

The topography and climate of the Basin combine to make it an area of high smog potential. During the summer months, a warm air mass frequently descends over the lower, cool, moist marine air layer. The

warm upper layer forms a cap over the marine layer and inhibits the air pollutants generated near the ground from dispersing upward. Light summer winds and the surrounding mountains further limit the horizontal disbursement of the pollutants. Concentrating volumes of pollutants in this manner allows the summer sunlight to generate high levels of smog. In the winter, cool ground temperatures and very light winds cause extremely low inversions and air stagnation, which trap carbon monoxide (CO) and NO_x during the late night and early morning hours. On days when no inversions occur, or when winds average 25 miles per hour (mph) or more, there will be no important smog effects. A summary of local climatic conditions is provided later in this section.

The air pollutants within the Basin are generated by both stationary and mobile sources. Stationary sources are known as "point sources," which have one or more emission sources at a single facility. "Area sources," which are widely distributed, produce many small emissions. Point sources are usually associated with manufacturing and industrial uses, and include sources that produce electricity or process heat, such as refinery boilers or combustion equipment. Examples of area sources include residential water heaters, painting operations, lawn mowers, agricultural fields, landfills and consumer products, such as barbecue lighter fluid or hair spray. "Mobile sources" refer to operational and evaporative emissions from motor vehicles. They account for over 95 percent of the CO emissions, approximately two-thirds of the sulfur oxide (SO_x) emissions, three-quarters of the NO_x emissions and one-half of the VOC found within the Basin.[1]

5.4.2 REGULATORY SETTING

The South Coast Air Quality Management District (SCAQMD) has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino Counties) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The project site is located within the Basin, which is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto mountains to the north and east (see **Figure 5.4-1, South Coast Air Basin**).

Air quality within the Basin is addressed through the efforts of various federal, state, regional and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy making, education and a variety of programs. The agencies primarily responsible for improving the air quality within the Basin are discussed below along with their individual responsibilities.

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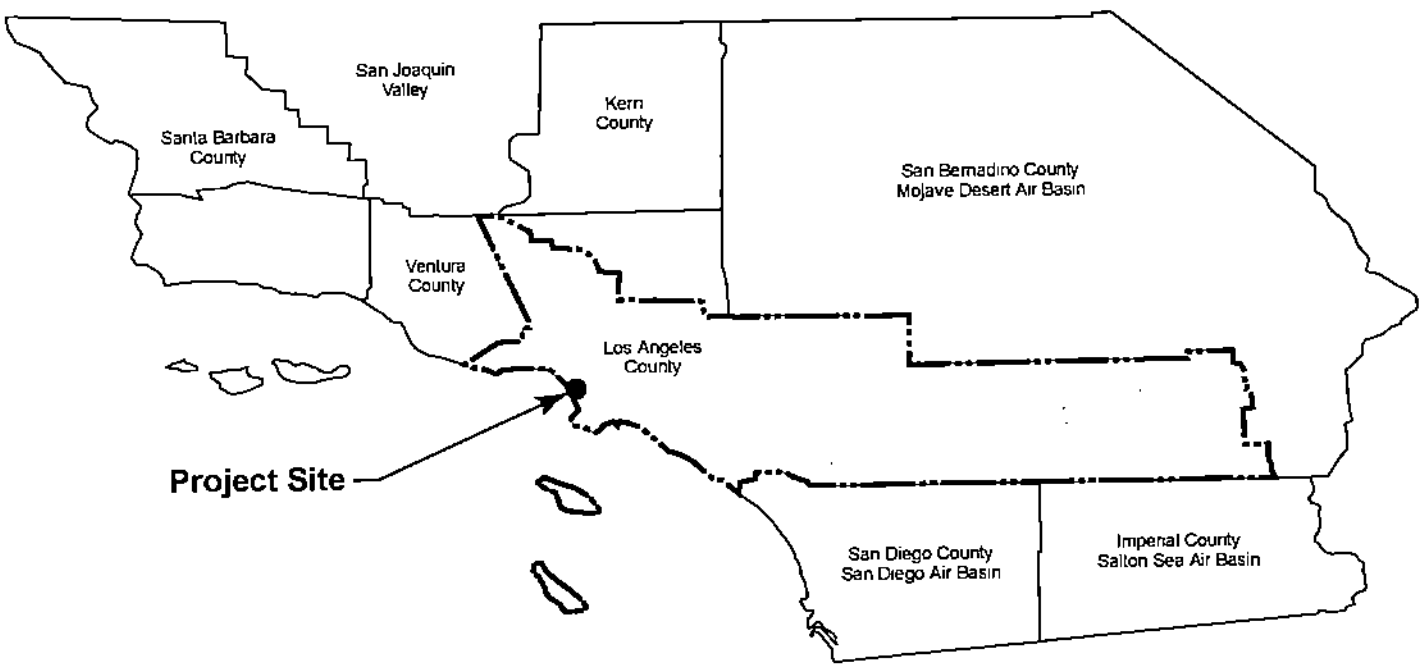
1 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 3-4.



Legend.
SCAQMD Jurisdiction

NOT TO SCALE

SOURCE: Impact Sciences, Inc. – June 2005

FIGURE **5.4-1**

South Coast Air Basin

779-02-09/05

5.4.2.1 U.S. Environmental Protection Agency (U.S. EPA)

The U.S. EPA is responsible for enforcing the 1990 amendments to the federal Clean Air Act (CAA) and the National Ambient Air Quality Standards (NAAQS) that it establishes. These standards identify levels of air quality for seven "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The seven criteria pollutants include O_3, CO, nitrogen dioxide (NO_2 [a form of NO_x]), sulfur dioxide (SO_2 [a form of SO_x]), particulate matter (PM_{10}, $PM_{2.5}$) and lead.

In response to its enforcement responsibilities, the U.S. EPA requires each state to prepare and submit a State Implementation Plan (SIP) that describes how the state will achieve the federal standards by specified dates, depending on the severity of the air quality within the state or air Basin. The Basin is classified by the U.S. EPA as an extreme nonattainment area with respect to the one-hour O_3 standard (the only area in the nation to be classified as such), a serious nonattainment area for CO and a serious nonattainment area for PM_{10}. In July 1997, the U.S. EPA announced new health-based standards for O_3. The SCAQMD now has until 2012 at the latest to meet the O_3 standard, but the SCAQMD's 2003 *Air Quality Management Plan* (discussed below) projects attainment of this standard by 2010. For the other nonattainment pollutants, the Basin must achieve attainment status by the most expeditious date that can be achieved, but no later than five years from the date the area was designated nonattainment. If the Basin experiences difficulty doing so, the U.S. EPA may extend the period for attainment for an additional 10 years.

On April 30, 2004, the U.S. EPA published designations of nonattainment areas with respect to the eight-hour O_3 standard. The Basin was designated as "severe-17" nonattainment for the purposes of this standard. Severe-17 nonattainment areas have an attainment date of June 15, 2021 (17 years after the effective date of the designation) to comply with the eight-hour O_3 standard. This designation commences a new round of planning to demonstrate compliance with the eight-hour standard.

The status of the Basin with respect to attainment with the NAAQS is summarized in **Table 5.4-1, National Ambient Air Quality Standards and Status – South Coast Air Basin (Los Angeles County)**.

Table 5.4-1
National Ambient Air Quality Standards and Status
South Coast Air Basin (Los Angeles County)

Pollutant	Averaging Time	Designation/Classification
Ozone (O_3)	8 Hour	Nonattainment/Severe 17
	1 Hour [1]	Nonattainment/Extreme
Carbon Monoxide (CO)	8 Hour	Nonattainment/Serious
	1 Hour	Nonattainment/Serious
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	Attainment/Unclassifiable
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	Attainment/Unclassifiable
	24 Hour	Attainment/Unclassifiable
Suspended Particulate Matter (PM_{10})	Annual Arithmetic Mean	Nonattainment/Serious
	24 Hour	Nonattainment/Serious
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	Nonattainment
	24 Hour	Nonattainment
Lead (Pb)	Calendar Quarter	Attainment

Source: Environmental Protection Agency, "Region 9: Air Programs, Air Quality Maps." [Online] [July 14, 2005]. <http://www.epa.gov/region9/air/maps/maps_top.html>.

[1]. The national 1-hour O_3 standard was revoked on June 15, 2005. The previous attainment designation/classification is shown for informational purposes.

5.4.2.2 California Air Resources Board (ARB)

The California Air Resources Board (ARB), a department of the California Environmental Protection Agency (CalEPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the California Clean Air Act (CCAA), responding to the federal CAA requirements and for regulating emissions from motor vehicles and consumer products within the state. The ARB has established emission standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

The CCAA established a legal mandate to achieve the California ambient air quality standards by the earliest practicable date. These standards apply to the same seven criteria pollutants as the federal CAA and also include sulfates, visibility reducing particles, hydrogen sulfide and vinyl chloride. They are also more stringent than the federal standards and, in the case of PM_{10} and SO_2, far more stringent.

Health and Safety Code Section 39607(e) requires the ARB to establish and periodically review area designation criteria. These designation criteria provide the basis for the ARB to designate areas of the state as "attainment," "nonattainment," or "unclassified" for the state standards. In addition, Health and Safety Code Section 39608 requires the ARB to use the designation criteria to designate areas of California

and to annually review those area designations. The ARB makes area designations for 10 criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, sulfates, lead, hydrogen sulfide and visibility-reducing particles.[2] The status of the Basin with respect to attainment with the CAAQS is summarized in **Table 5.4-2, California Ambient Air Quality Standards and Status – South Coast Air Basin (Los Angeles County)**.

Table 5.4-2
California Ambient Air Quality Standards and Status
South Coast Air Basin (Los Angeles County)

Pollutant	Averaging Time	Designation/Classification
Ozone (O_3)	1 Hour	Nonattainment/Extreme
Carbon Monoxide (CO)	8 Hour	Attainment
	1 Hour	Attainment
Nitrogen Dioxide (NO_2)	1 Hour	Attainment
Sulfur Dioxide (SO_2)	24 Hour	Attainment
	1 Hour	Attainment
Suspended Particulate Matter (PM_{10})	Annual Arithmetic Mean	Nonattainment
	24 Hour	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	Nonattainment
Lead (Pb)[1]	30 Day Average	Attainment
Sulfates (SO_4)	24 Hour	Attainment
Hydrogen Sulfide (H_2S)	1 Hour	Unclassified
Vinyl Chloride[1]	24 Hour	Unclassified
Visibility Reducing Particles	8 Hour (10:00 AM to 6:00 PM)	Unclassified

Source: California Air Resources Board. "Area Designations (Activities and Maps)." [Online] [July 21, 2005]. <http://www.arb.ca.gov/desig/desig.htm>.
[1] *The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined.*

5.4.2.3 Southern California Association of Governments (SCAG)

SCAG is a council of governments for the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. As a regional planning agency, SCAG serves as a forum for regional issues relating to transportation, the economy, community development and the environment. SCAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and state law. In this role, SCAG reviews projects to analyze their impacts on SCAG's regional planning efforts.

[2] California Air Resources Board. "Area Designations (Activities and Maps)." [Online] 22 December 2003. <http://www.arb.ca.gov/desig/desig.htm>; Written communication with Marcy Nystrom, California Air Resources Board, 24 December 2003, stating that state law states requires ARB to make area designations for pollutants with state standards listed in California Code of Regulations, Title 17, Section 70200. However, vinyl chloride is not included in this section of the California Code of Regulations; therefore, the ARB does not make area designations for vinyl chloride.

Although SCAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization (MPO) for the Southern California region, it is responsible, pursuant to §176(c) of the 1990 amendments to the CAA, for providing current population, employment, travel and congestion projections for regional air quality planning efforts.

5.4.2.4 South Coast Air Quality Management District (SCAQMD)

The management of air quality in the Basin is the responsibility of the SCAQMD. This responsibility was given to SCAQMD by the California Legislature's adoption of the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Lewis-Presley Air Quality Act, SCAQMD is responsible for bringing air quality in the areas under its jurisdiction into conformity with federal and state air quality standards. Specifically, SCAQMD is responsible for monitoring ambient air pollutant levels throughout the Basin and for developing and implementing attainment strategies to ensure that future emissions will be within federal and state standards.

5.4.2.4.1 SCAQMD Air Quality Management Plan (2003 AQMP)

The federal and state CAAs require the preparation of plans to bring air emissions within healthful levels. The SCAQMD has responded to this requirement by preparing a series of air quality management plans, the most recent of which was adopted by the governing board on August 1, 2003. The purpose of the 2003 AQMP for the Basin (and those portions of the SSAB under the SCAQMD's jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with all federal and state air quality planning requirements. The 2003 AQMP has been approved by the ARB, and it has been submitted to the U.S. EPA for review and approval as a SIP revision.

5.4.2.4.2 SCAQMD Rules and Regulations

The SCAQMD is responsible for limiting the amount of emissions that can be generated throughout the Basin by various stationary, area and mobile sources. Specific rules and regulations have been adopted by the SCAQMD Governing Board, which limit the emissions that can be generated by various uses/activities and that identify specific pollution reduction measures which must be implemented in association with various uses and activities. These rules not only regulate the emissions of the federal and state criteria pollutants, but also TACs and acutely hazardous materials. The rules are also subject to on-going refinement by SCAQMD.

Stationary emissions sources subject to these rules are regulated through SCAQMD's permitting process. Through this permitting process, SCAQMD also monitors the amount of stationary emissions being generated and uses this information in developing the 2003 AQMP. The project would be subject to SCAQMD rules and regulations to reduce specific emissions and to mitigate potential air quality impacts.

5.4.2.5 Local Governments

Local governments have the authority and responsibility to reduce air pollution through their police power and land use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of transportation control measures as outlined in the AQMP.[3] The AQMP assigns local governments certain responsibilities to assist the Basin in meeting air quality goals and policies. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies and implementation measures in its general plan, such as the air quality section in the County of Los Angeles General Plan. Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality, by requiring such improvements as bus turnouts, energy-efficient streetlights and synchronized traffic signals.[4] In accordance with California Environmental Quality Act (CEQA) requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits and monitor and enforce implementation of such mitigation.[5]

5.4.3 EXISTING CONDITIONS

5.4.3.1 Existing Local Climate

The project site lies within the western portion of the 6,600-square-mile air Basin. The predominant meteorological conditions in the Basin are primarily light winds and shallow vertical mixing due to low-altitude temperature inversion. These conditions, when coupled with the surrounding mountain ranges, hinder the regional dispersion of air pollutants. The strength and location of a semi-permanent, high-pressure cell over the northern Pacific Ocean is the primary climatological influence on the Basin, as is the ocean, which moderates the local climate by acting like a large heat reservoir. As a result of these influences, warm summers, mild winters, infrequent rainfall and moderate humidity typify climatic

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3 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 2-2.

4 Ibid.

5 Ibid.

conditions through most of the Basin. These meteorological conditions, in combination with regional topography, are also conducive to the formation and retention of O_3.

In the immediate project vicinity, climatic conditions are characterized by mild summers, mild winters, infrequent rainfall, moderate afternoon breezes and generally fair weather. The average annual temperature ranges from the low- to mid-60 degrees Fahrenheit (F). Summer daytime temperatures often reach over 76 degrees F, and winter daytime temperatures often drop to 45 degrees F. Due to its proximity to the coast, temperatures in the project vicinity are lower than further inland due to the moderating effect of the ocean.

This microclimate is influenced by a marine layer that is characterized by fog or low stratus clouds. This marine layer occurs frequently throughout the year but is most prevalent during the non-summer months. The stratus clouds generally recede seaward (or "burn off") during the morning and afternoon and then return during the late afternoon and evening. The project site also experiences a high annual mean relative humidity of 71 percent as compared with some of the more inland areas that have mean relative humidities in the 60s. Average rainfall at Los Angeles International Airport, located within 2 miles of the project site, is approximately 12.5 inches per year.

Daytime wind patterns exhibit relatively strong on-shore winds from the west and southwest at 3 to 12 mph in July and January. Daytime wind velocities are on average lower in the months around January as compared with July. Nighttime wind patterns differ from those during the day and are characterized by lower wind velocities and a change in wind direction. Nighttime winds in January flow offshore to the south and southwest at 2 to 8 mph. During many days in July, the onshore wind directions occurring during the day continue throughout the night at 2 to 5 mph, with the exception of the areas near the San Gabriel Mountains where the winds blow down the slopes of the mountains in response to radiational cooling.

Long-term diurnal wind patterns in the general vicinity of the project site are dominated by higher-velocity on-shore daytime winds of 5 to 12 mph from the south and southeast. Diurnal winds from the south and southeast are created by pressure differences between the relatively cold ocean and the unevenly heated land. Nocturnal winds are weaker and flow at speeds of 3 to 5 mph from the north and northeast. Nocturnal winds are created when air along the mountain slopes cools and descends into the lower elevations of the Basin towards the ocean. These diurnal and nocturnal wind patterns play an

important role in dispersing air pollutants and moderating the temperatures throughout the Basin and the project vicinity.[6]

5.4.3.2 Existing Ambient Air Quality

5.4.3.2.1 Regional Air Quality

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to national and state standards. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$ and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM_{10} and SO_2, much more stringent. California has also established standards for sulfates, visibility-reducing particles, hydrogen sulfide and vinyl chloride. The state and national ambient air quality standards for each of the monitored pollutants and their effects on health are summarized in **Table 5.4-3, Ambient Air Quality Standards.**

Air quality of a region is considered to be in attainment of the state standards if the measured ambient air pollutant levels for O_3, CO, SO_2 (one- and 24-hour), NO_2, PM_{10}, $PM_{2.5}$ and visibility reducing particles are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three-year period. The National Ambient Air Quality Standards (other than O_3, PM_{10}, $PM_{2.5}$ and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, PM_{10} and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant.

Despite the substantial improvement over historical air quality in the past few decades, some areas in the Basin still exceed the one-hour federal standard for O_3 more frequently than any other area of the U.S. In 2001, nine out of 10 locations in the nation that exceeded the standard most frequently were located in the Basin.

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6 Because of these wind patterns, the South Coast Air Basin both transports and receives air pollutants from the coastal portions of Ventura and Santa Barbara counties, which are located in the South Central Coast Air Basin. The South Central Coast Air Basin also receives air pollutants from oil and gas development operations on the outer continental shelf. The 1997 AQMP does not specifically address the control requirements for these adjacent areas. However, the control measures in this plan meet both the CAA and CCAA transport requirements and will assist downwind areas in complying with the federal ozone air quality standard (South Coast Air Quality Management District, 1997 AQMP, November 1996, p. I-23.).

Table 5.4-3
Ambient Air Quality Standards

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard	Federal Primary Standard	
Ozone (O_3)	0.09 ppm, 1-hr. avg.	0.12 ppm, 1-hr avg. (revoked 6/15/05) 0.08 ppm, 8-hr avg. (3-year average of annual 4th-highest daily maximum)	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide (CO)	9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.	9 ppm, 8-hr avg. 35 ppm, 1-hr avg.	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide (NO_2)	0.25 ppm, 1-hr avg.	0.053 ppm, annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide (SO_2)	0.04 ppm, 24-hr avg. 0.25 ppm, 1-hr. avg.	0.030 ppm, annual arithmetic mean 0.14 ppm, 24-hr avg.	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})*	20 $\mu g/m^3$, annual arithmetic mean 50 $\mu g/m^3$, 24-hr avg.	50 $\mu g/m^3$, annual arithmetic mean 150 $\mu g/m^3$, 24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter ($PM_{2.5}$)*	12 $\mu g/m^3$, annual arithmetic mean	15 $\mu g/m^3$, annual arithmetic mean (3-year average) 65 $\mu g/m^3$, 24-hr avg. (3-year average of 98th percentile)	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decrease lung functions and premature death
Sulfates	25 $\mu g/m^3$, 24-hr avg.	None	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardiopulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead* (Pb)	1.5 $\mu g/m^3$, 30-day avg.	1.5 $\mu g/m^3$, calendar quarterly average	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hour average (10 AM–6 PM)	None	Visibility impairment on days when relative humidity is less than 70%

Air Pollutant	Concentration/Averaging Time: State Standard	Federal Primary Standard	Most Relevant Health Effects
Hydrogen Sulfide	0.03 ppm (42 $\mu g/m^3$), 1-hr avg.	None	Odor annoyance
Vinyl Chloride*	0.01 ppm (26 $\mu g/m^3$), 24-hr avg.	None	Known carcinogen

Source: South Coast Air Quality Management District. Final Program Environmental Impact Report to the 2003 Draft AQMP *(Diamond Bar, California: South Coast Air Quality Management District, August 2003), Table 3.1-1, p. 3.1-2. This report may be reviewed on the SCAQMD website at http://www.aqmd.gov/ceqa/documents/2003/aqmd/finalEA/.aqmp/AQMP_FEIR.html.*

$\mu g/m^3$ = microgram per cubic meter; ppm = parts per million by volume.

* *The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

The Basin is also among the few areas in the nation that are still classified as nonattainment for CO. (The Basin has technically met the CO standards in 2002, and the Basin is expected to be reclassified as attainment next year.)

5.4.3.2.2 Local Ambient Air Quality

To monitor the concentrations of the pollutants, the SCAQMD has divided the Basin into Source Receptor Areas (SRAs) in which 33 air quality monitoring stations are operated. The project site is located in the Northwest Coastal Los Angeles County SRA (SRA 2). The monitoring station for this area is located at the Veterans Administration Hospital in West Los Angeles. This station monitors emission levels of O_3, CO, NO_2 and sulfate. The nearest station that monitors SO_2, PM_{10} and lead is the Hawthorne station in the Southwest Coastal Los Angeles County SRA (SRA 3). The nearest station monitoring $PM_{2.5}$ is the North Main Street station in the Central Los Angeles County SRA (SRA 1).

Table 5.4-4, Ambient Pollutant Concentrations Registered in SRA 2, lists the ambient pollutant concentrations registered and the violations of state and federal standards that have occurred at the Veterans Administration Hospital in Northwest Coastal Los Angeles County, the Hawthorne monitoring station in Southwest Coastal Los Angeles County and the North Main Street in Central Los Angeles County from 2000 through 2004. As shown, the monitoring station has registered values above state and federal standards for O_3 and the state standard for CO, NO_2 and PM_{10}. Concentrations of sulfur dioxide and lead, have not been exceeded anywhere within the Basin for several years.

Table 5.4-4
Ambient Pollutant Concentrations Registered in SRA 2

Pollutant	Standards[1]	Year 2000	2001	2002	2003	2004
Northwest Coastal LA County						
OZONE (O_3)						
Maximum 1-hr concentration (ppm)		0.100	0.099	0.118	0.134	0.107
Maximum 8-hr concentration (ppm)		0.079	0.080	0.078	0.104	0.089
Number of days exceeding federal 1-hour standard[2]	0.12 ppm	0	0	0	1	0
Number of days exceeding state 1-hr std.	0.09 ppm	2	1	1	11	5
Number of days exceeding federal 8-hr std.	0.08 ppm	0	0	0	1	1
CARBON MONOXIDE (CO)						
Maximum 1-hr concentration (ppm)		6.0	4.0	4.0	5.1	4.0
Maximum 8-hr concentration (ppm)		4.3	3.0	2.7	2.79	2.33
Number of days exceeding federal 8-hr std.	9.0 ppm	0	0	0	0	0
Number of days exceeding state 8-hr std.	9.0 ppm	0	0	0	0	0
NITROGEN DIOXIDE (NO_2)						
Maximum 1-hr concentration (ppm)		0.162	0.109	0.113	0.119	0.086
Annual arithmetic mean concentration (ppm)		0.026	0.024	0.024	0.023	0.020
Number of days exceeding state 1-hr std.	0.25 ppm	0	0	0	0	0
SULFUR DIOXIDE (SO_2)[3]						
Maximum 1-hr concentration in ppm		0.165	0.040	0.067	0.029	0.027
Maximum 24-hr concentration in ppm		0.016	0.009	0.007	0.004	0.004
Annual arithmetic mean concentration (ppm)		0.003	0.004	0.001	0.001	0.001
Number of days exceeding state 1-hr std.	0.25 ppm	0	0	0	0	0
Number of days exceeding state 24-hr std.	0.04 ppm	0	0	0	0	0
Number of days exceeding federal 24-hr std.	0.14 ppm	0	0	0	0	0
PARTICULATE MATTER (PM_{10})[3]						
Maximum 24-hr concentration ($\mu g/m^3$) (using state methods for sampling)		74.0	75.0	121.0	58.0	52.0
Maximum 24-hr concentration ($\mu g/m^3$) (using federal methods for sampling)		74.0	75.0	121.0	58.0	52.0
Annual arithmetic mean concentration ($\mu g/m^3$) (using federal methods for sampling)		36.0	37.1	37.4	29.8	30.0
Number of samples exceeding federal 24-hr std.	150 $\mu g/m^3$	0	0	0	0	0
Number of samples exceeding state 24-hr std.	50 $\mu g/m^3$	9	8	12	3	2
PARTICULATE MATTER ($PM_{2.5}$)[4]						
Maximum 24-hr concentration ($\mu g/m^3$)		87.8	73.4	66.3	83.7	75.0
Annual arithmetic mean concentration ($\mu g/m^3$)		22.0	22.9	21.8	21.3	19.7
Number of samples exceeding federal 24-hr std.	65 $\mu g/m^3$	11	4	1	4	2
LEAD[3]						
Maximum 30-day average concentration ($\mu g/m^3$)		0.08	0.04	0.02	0.6	N/A
Maximum quarterly average concentration ($\mu g/m^3$)		0.05	0.04	0.02	0.07	0.01
Number of months exceeding the state std.	1.5 $\mu g/m^3$	0	0	0	0	N/A
SULFATE						
Maximum 24-hr concentration ($\mu g/m^3$)		14.1	15.6	14.6	14.3	11.0
Number of days exceeding state std.	25 $\mu g/m^3$	0	0	0	0	0

N/A = not available

** Less than 12 full months of data, may not be representative.*

Sources:

(i) South Coast Air Quality Management District, Air Quality Data (for 1999, 2000, 2001 and 2002), (Diamond Bar, California: South Coast Air Quality Management District, 1999, 2000, 2001 and 2002); http://www.aqmd.gov/smog/historicaldata.htm.

(ii) California Air Resources Board Air Quality Database http://www.arb.ca.gov/adam/welcome.html.

(iii) U.S Environmental Protection Agency Air Quality Database http://www.epa.gov/air/data/.

[1] Parts by volume per million of air (ppm), micrograms per cubic meter of air ($\mu g/m^3$), or annual arithmetic mean (aam).

[2] Federal 1-hour ozone standard was revoked on June 15, 2005. Data are shown for informational purposes.

[3] Pollutant is monitored at Southwest Coastal L.A. County (SRA 3), which is the nearest monitoring station to monitor the particular pollutant.

[4] Pollutant is monitored at Central L.A. County, which is the nearest monitoring station to monitor the particular pollutant.

Hydrogen sulfide, vinyl chloride and visibility reducing particles were not monitored by the ARB or the SCAQMD in Los Angeles County during the period of 1999 to 2003.

The vicinity of the project site is characterized by residential and visitor-serving commercial uses, including a number of hotels, restaurants and marine-oriented commercial development. Emissions sources include stationary activities, such as space heating, cooking and water heating, and mobile activities, primarily automobile and truck traffic.

Motor vehicles are the primary sources of pollutants within the project vicinity. Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed state and/or federal standards are termed CO "hotspots." There are no notable stationary sources generating CO emissions in the local area; thus, local area CO emissions result primarily from vehicles traveling along local roadways.

Section 9.4 of the *CEQA Air Quality Handbook* identifies CO as a localized problem requiring additional analysis when a project is likely to subject sensitive receptors to CO hotspots. Sensitive receptors are populations that are more susceptible to the effects of air pollution than is the population at large.[7] The SCAQMD identifies the following as sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers and athletic facilities.[8]

This impact analysis evaluates seven intersections located in the project study area for the presence of existing CO hotspots. These intersections, identified by the project traffic engineer as those that are affected adversely by project-related traffic include the following:

1. Washington Boulevard/Palawan Way;
2. Lincoln Boulevard/Washington Boulevard;
3. Lincoln Boulevard/Marina Expressway (SR-90);
4. Lincoln Boulevard/Mindanao Way;
5. Admiralty Way/Mindanao Way;
6. Marina Expressway (SR-90) eastbound/Mindanao Way; and
7. Washington Boulevard/Ocean Avenue.

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7 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 5-1.

8 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 5-7.

Maximum existing CO concentrations for project study intersections were calculated for peak hour traffic volumes at each of these intersections using CALINE4, a dispersion model for predicting CO concentrations near roadways. For this analysis, CO concentrations were calculated based on a simplified CALINE4 screening model developed by the Bay Area Air Quality Management District (BAAQMD). The simplified model is intended as a screening analysis that identifies a potential CO hotspot. If a hotspot is identified, the complete CALINE4 model is then utilized to determine precisely the CO concentrations predicted at the intersections in question. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway and 90 degrees to the secondary road, wind speed of less than one meter per second and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations. According to the *BAAQMD CEQA Guidelines Assessing the Air Quality Impacts of Projects and Plans*, the simplified approach is acceptable for projects and plans that generate fewer than 10,000 new trips per day.[9] The simplified approach is acceptable to the SCAQMD as long as it is used consistently with the *BAAQMD Guidelines*.[10]

The results of these calculations are presented in **Table 5.4-5, Existing Carbon Monoxide Concentrations at Project Study Area Intersections**, for representative receptors located 25 and 50 feet from each roadway. As shown, the CALINE4 screening model predicts that, under worst-case conditions, existing CO concentrations would not exceed the state and federal one- and eight-hour CO standards near these intersections.

Table 5.4-5
Existing Carbon Monoxide Concentrations at Project Study Area Intersections

	25 Feet		50 Feet	
Intersection	1-Hour[1]	8-Hour[2]	1-Hour[1]	8-Hour[2]
Washington Blvd./Palawan Way	7.2	4.7	6.7	4.3
Lincoln Blvd./Washington Blvd.	10.5	7.0	9.3	6.2
Lincoln Blvd./Marina Expressway (SR 90)	9.5	6.3	8.6	5.7
Lincoln Blvd./Mindanao Way	8.1	5.3	7.5	4.9
Admiralty Way/Mindanao Way	8.0	5.2	7.4	4.8
Marina Expressway (SR 90) EB/Mindanao Way	7.8	5.1	7.2	4.7
Washington Boulevard/Ocean Avenue	7.3	4.8	6.9	4.4

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 5.4.
[1] *State standard is 20.0 parts per million. Federal standard is 35 parts per million.*
[2] *State standard is 9.0 parts per million. Federal standard is 9 parts per million.*

9 Bay Area Air Quality Management District, *BAAQMD CEQA Guidelines Assessing the Air Quality Impacts of Projects and Plans* (San Francisco, California: Bay Area Air Quality Management District, December 1999), p. 37.

10 Personal communication with Steve Smith, Program Supervisor, South Coast Air Quality Management District, Diamond Bar, California, 12 May 2004.

5.4.4 ENVIRONMENTAL IMPACTS

5.4.4.1 Site-Specific Emissions

The Shores site is currently developed with 202 apartment units (all of which would be demolished in order to construct The Shores project). Under existing conditions, The Shores site generates the following air emissions summarized in **Table 5.4-6, Existing Project Site Air Emissions.**

Table 5.4-6
Existing Project Site Air Emissions

	Emissions in Pounds per Day				
Emissions Source	**CO**	**VOC**	**NO_x**	**SO_x**	**PM_{10}**
Summertime Emissions[1]					
Operational	95.46	10.53	8.50	0.08	7.12
Area Sources	1.43	13.37	1.53	0.00	0.01
Totals:	96.89	23.90	10.03	0.08	7.12
Wintertime Emissions[2]					
Operational	91.90	7.96	12.34	0.07	7.12
Area Sources	0.65	13.25	1.52	0.00	0.00
Totals:	92.55	21.21	13.87	0.07	7.12

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 5.4.
Totals in table may not appear to add exactly due to rounding in the computer model calculations.
[1] *"Summertime Emissions" are representative of worst-case conditions that may occur during the ozone season (May 1 to October 31).*
[2] *"Wintertime Emissions" are representative of worst-case conditions that may occur during the balance of the year (November 1 to April 30).*

5.4.4.2 Project Implementation

Implementation of The Shores project would result in the development of 12 apartment buildings totaling 544 units with 1,114 parking spaces. Development of The Shores project will require the removal of 202 existing multi-family residential units. The net increase associated with development of The Shores project is 342 apartment units. Overall, building height for the residential uses is 75 feet (exclusive of appurtenant, screened rooftop equipment).

The project would be constructed in about 25 months following a two- to three-month demolition period. Grading would be conducted over five months. A variety of equipment will be employed during the demolition phase, including cranes, tractors, scrapers, pneumatic hammers, drills and similar types of equipment. A staging area would be identified within the project site for the storage of equipment and material. Demolition and construction debris would be trucked from the site for disposal at an approved landfill site or recovery facility for recycling.

5.4.4.3 Thresholds of Significance

New and modified projects will often affect regional air quality, both directly and indirectly. When determining the extent of a project's environmental impact and the significance of such impact, the project should be compared with established thresholds of significance. The following discusses the thresholds set forth by the SCAQMD for both construction and operational emissions that would be generated by the project.

5.4.4.3.1 Construction Emission Thresholds

The SCAQMD recommends that projects with construction-related emissions that exceed any of the following emissions thresholds should be considered significant:

- 24.75 tons per quarter or 550 pounds per day of CO;
- 2.5 tons per quarter or 75 pounds per day of VOC;
- 2.5 tons per quarter or 100 pounds per day of NO_x;
- 6.75 tons per quarter or 150 pounds per day of SO_x; and/or
- 6.75 tons per quarter or 150 pounds per day of PM_{10}.

In addition to the above listed emission-based thresholds, the SCAQMD also recommends that the potential impacts on ambient air concentrations due to construction emissions be evaluated. This evaluation requires that anticipated ambient air concentrations, determined using a computer-based air quality dispersion model, be compared to localized significance thresholds for PM_{10}, nitrogen dioxide (NO_2) and CO.[11] The significance threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust), while the thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of the project that would not cause or contribute to an exceedance of the relevant ambient air quality standards. The localized significance thresholds for SRA 2 (Northwest Coastal Los Angeles County), along with the relevant CAAQS, are shown in **Table 5.4-7, Localized Significance Criteria for SRA 2.**

11 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology* (Diamond Bar, California: South Coast Air Quality Management District, June 2003). This methodology includes "lookup tables" that can be used to determine the maximum allowable emissions that would satisfy the localized significance criteria; however, these tables may be used only for project sites less than 5 acres in overall area.

Table 5.4-7
Localized Significance Criteria for SRA 2

Pollutant	Averaging Period	LST Criteria µg/m³	LST Criteria ppm	CAAQS µg/m³	CAAQS ppm
Respirable Particulate Matter (PM_{10})	24 hours	10.4	NA	50	NA
Nitrogen Dioxide (NO_2)	1 hour	244	0.13	470	0.25
Carbon Monoxide (CO)	1 hour	17,165	15	23,000	20
	8 hours	7,209	6.3	10,000	9.0

Source: South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, *June 2003, Table B-1, p. B-1.*

5.4.4.3.2 Operational Emission Thresholds

The SCAQMD has recommended two types of air pollution thresholds to assist lead agencies in determining whether or not the operational phase of a project's development would be significant. These are identified in the following discussion under **Emission Significance Thresholds** and **Other Indicators of Potential Air Quality Impacts.** The SCAQMD recommends that a project's impacts be considered significant if either of these thresholds is exceeded.

5.4.4.3.2.1 Emission Significance Thresholds

The SCAQMD has established these thresholds, in part based on Section 182(e) of the federal CAA which identifies 10 tons a year of VOC or NO_x as the significance threshold for stationary sources of emissions in extreme non-attainment areas for O_3.[12] As discussed earlier, VOC and NO_x undergo photochemical reactions in sunlight to form O_3, and the Basin is one of two extreme non-attainment areas for O_3 in the United States. This emission threshold has been converted to a pound-per-day threshold for the operational phase of a project. Thresholds for other emissions have been identified based on regulatory limits in SCAQMD. Because they are converted from a CAA threshold, the SCAQMD believes that these thresholds are based on scientific and factual data.[13] Therefore, the District recommends that the following thresholds be used by lead agencies in making a determination of operation-related project significance:

- 550 pounds per day of CO;
- 55 pounds per day of VOC;
- 55 pounds per day of NO_x;

12 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 6-1.

13 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 6-1.

- 150 pounds per day of SO_x; and
- 150 pounds per day of PM_{10}.

5.4.4.3.2.2 Other Indicators of Potential Air Quality Impacts

The SCAQMD recommends that projects meeting any of the following criteria also be considered to have significant air quality impacts:

- The project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation;
- The project could result in population increases within an area which would be in excess of that projected by SCAG in the AQMP, or increase the population in an area where SCAG has not projected that growth for the project's build-out year;
- The project could generate vehicle trips that cause a CO hotspot or project could be occupied by sensitive receptors that are exposed to a CO hotspot;
- The project will have the potential to create, or be subjected to, an objectionable odor that could impact sensitive receptors;
- The project will have hazardous materials on site and could result in an accidental release of toxic air emissions or acutely hazardous materials posing a threat to public health and safety;
- The project could emit a toxic air contaminant regulated by SCAQMD rules or that is on a federal or state air toxic list;
- The project could be occupied by sensitive receptors within one quarter mile of an existing facility that emits air toxics identified in SCAQMD Rule 1401; or
- The project could emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in one million.

The following discussion reviews the project's potential impacts relative to each of the recommended significance criteria identified above.

5.4.4.3.2.3 Wind Impacts

The Marina del Rey/Ballona Land Use Plan restricts the development of structures that would significantly impede wind access to the boats in Marina del Rey. Therefore, if The Shores project significantly affects wind patterns in the small-craft harbor to the disadvantage of boat traffic, it would result in a significant wind impact.

5.4.4.4 Impact Analysis

Development of the project would generate air emissions from a wide variety of stationary and mobile sources. Stationary source emissions, such as PM_{10}, would be generated by on-site construction activities. Once the proposed uses are occupied, emissions would be generated by stationary area sources such as water and space heaters, landscape maintenance equipment and consumer products. Mobile source emissions would be generated by motor vehicle travel associated with construction activities and occupancy of the proposed development. A discussion of recommended significance criteria and an assessment of construction and operational emissions are presented below based on the methodologies recommended in the SCAQMD's *CEQA Air Quality Handbook*.

5.4.4.4.1 Demolition, Excavation/Grading and Construction Impacts

Development of The Shores project would require removal of existing uses, site excavation and grading and construction of the proposed improvements. These activities would occur over a 28-month period and, during this time, emissions would be generated by on-site stationary sources, heavy-duty construction vehicles, construction worker vehicles and generators. Fugitive dust would also be generated during all project development phases (i.e., demolition, excavation, grading and construction). In addition, for structures built before 1978, microscopic asbestos fibers may also pose an air quality concern.

Because of the duration of project development and the normal day-to-day variability in construction activities, it is difficult to precisely quantify the daily and quarterly emissions associated with each phase of the proposed construction activities. **Table 5.4-8, Estimated Unmitigated Demolition, Excavation/Grading and Construction Emissions – The Shores**, identifies daily emissions associated with typical equipment for different construction phases based on information provided by the project applicant. These emissions assume that all of the construction equipment and activities would occur continuously over an eight-hour period. In reality, this would not occur, as most equipment would operate only a fraction of each workday. Therefore, **Table 5.4-8** represents a worst-case scenario for the construction phase of the project.

Table 5.4-8
Estimated Unmitigated Demolition, Excavation/Grading and Construction Emissions

	Emissions in Pounds per Day				
Year	CO	VOC	NO_x	SO_x	PM_{10}
2006	214.93	27.23	203.12	0.52	23.09
2007	101.42	11.85	69.01	0.00	2.62
2008	114.44	537.76	68.05	0.00	2.67
Maximum Emissions in Any Year	214.93	537.76	203.12	0.52	23.09
SCAQMD Thresholds	550	75	100	150	150
Exceeds Thresholds?	NO	YES	YES	NO	NO

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 5.4.
Totals in table may not appear to add exactly due to rounding in the computer model calculations.

As shown, recommended thresholds for NO_x would likely be exceeded most of the time during the demolition and grading phases due to the operation of heavy-duty vehicles. During the finishing phases of development, emissions of VOC would exceed recommended thresholds. These emissions would consist of evaporative emissions from architectural coatings and building materials (i.e., paints, solvents, roofing materials, etc.). This analysis assumes that only readily-available surface-coating materials meeting all current SCAQMD rules would be used to paint the surfaces of the proposed structures (materials not meeting SCAQMD rules are not available for sale or use within the Basin). While such emissions would be no different and no more severe than any other coating activities (e.g., repainting an existing structure), these emissions do exceed the SCAQMD's thresholds, and construction-related finishing impacts would be considered significant.

5.4.4.4.2 Demolition, Excavation/Grading and Construction Impacts – Localized Significance Thresholds

An analysis of the impacts of The Shores' construction emissions on ambient concentrations of PM_{10}, NO_2 and CO was conducted. This analysis determined the ambient air quality impacts on the day with the highest estimated daily mass emission rates. The methodology and results are described in detail in **Appendix 5.4**. The results of the dispersion modeling analysis are compared to the localized significance thresholds in **Table 5.4-9, Localized Significance Thresholds Analysis During Construction.**

Table 5.4-9
Localized Significance Thresholds Analysis During Construction

Pollutant	Averaging Period	Modeling Results µg/m³	Modeling Results ppm	LST Criteria[1] µg/m³	LST Criteria[1] ppm	Exceeds Threshold?
Respirable Particulate Matter (PM_{10})	24 hours	183	NA	10.4	NA	YES
Nitrogen Dioxide (NO_2)	1 hour	242	0.13	244	0.13	NO
Carbon Monoxide (CO)	1 hour	4,859	4.3	17,165	15	NO
	8 hours	3,589	3.1	7,209	6.3	NO

Source: Impact Sciences, Inc.
[1] *South Coast Air Quality Management District*, Final Localized Significance Threshold Methodology, *June 2003, Table B-1, p. B-1.*

As shown in **Table 5.4-9**, the construction of The Shores project would cause localized significant impacts for PM_{10} and NO_2.

5.4.4.4.3 Operational Impacts; Daily Emissions

Operational emissions would be generated by area and mobile, and possibly, by stationary sources as a result of normal day-to-day activities on the project site after occupation. The emissions from such sources are primarily associated with fuel combustion, which is addressed in the area and mobile source emission calculations by URBEMIS 2002 discussed below. Area sources emissions would be generated by the consumption of natural gas for space and water heating devices and food preparation and from the operation of gasoline-powered landscape maintenance equipment and consumer products (e.g., hair spray, deodorants, lighter fluid, air fresheners, automotive products and household cleaners). Mobile emissions would be generated by the motor vehicles traveling to and from the residential units. The Shores project area and mobile source emissions as estimated using URBEMIS 2002 are shown in **Table 5.4-10, Estimated Operational Emissions without Mitigation**. Because the existing apartments would be demolished, the emissions associated with the existing structures and the net emissions are also shown in **Table 5.4-10**.

Table 5.4-10
Estimated Operational Emissions without Mitigation

Emissions Source	Emissions in Pounds per Day				
	CO	VOC	NO_x	SO_x	PM_{10}
Summertime Emissions[1]					
Operational (Mobile) Sources	188.79	21.96	17.08	0.13	19.15
Area Sources	2.41	35.78	4.11	0.00	0.01
Summertime Emission Totals:	191.19	57.73	21.19	0.13	19.16
Emissions Due To Existing Structures:	96.89	23.90	10.03	0.08	7.13
Net Increase In Emissions	94.30	33.83	11.16	0.05	12.03
Recommended Threshold:	550	55	55	150	150
Exceeds Threshold?	NO	NO	NO	NO	NO
Wintertime Emissions[2]					
Operational (Mobile) Sources	181.20	15.93	24.65	0.10	19.15
Area Sources	1.75	35.68	4.10	0.00	0.01
Wintertime Emission Totals:	182.94	51.61	28.75	0.10	19.16
Emissions Due To Existing Structures:	92.55	21.21	13.87	0.07	7.12
Net Emissions	90.39	30.40	14.88	0.03	12.04
Recommended Threshold:	550	55	55	150	150
Exceeds Threshold?	NO	NO	NO	NO	NO

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 5.4.
Totals in table may not appear to add exactly due to rounding in the computer model calculations.
[1] *"Summertime Emissions" are representative of worst-case conditions that may occur during the ozone season (May 1 to October 31).*
[2] *"Wintertime Emissions" are representative of worst-case conditions that may occur during the balance of the year (November 1 to April 30).*

As shown, The Shores project at buildout and in full operation would not generate a net increase in emissions that would exceed SCAQMD recommended thresholds. Therefore, the operation of The Shores project would not result in a significant air quality impact.

5.4.4.4.4 Operation Impacts; Wind

Rowan Williams Davies & Irwin, Inc. (RWDI) prepared a wind study for The Shores project to assess the project's development and/or building placement on wind patterns within the marina, loss of surface winds used by birds and sailboats and general air circulation (this report is included in **Appendix 5.4** in its entirety). The study concluded:

> *"From the results of this wind study, it has been concluded that the proposed Del Rey Shores Apartments will not affect the existing wind patterns in Marina del Rey. Some variations in wind speed and direction were observed when the expected future developments were in place.*

The overall wind conditions predicted with the proposed development in place are similar to those presently experienced in and around the marina...."[14]

5.4.4.4.5 Operation Impacts; Additional Indicators

As previously discussed, the SCAQMD lists criteria indicating when a project may create potential air quality impacts. These criteria are listed below along with an analysis of whether or not the project meets any of them. If a project meets any one of the criteria, project air quality impacts would be significant relative to that criterion.

- The project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation.

SCAQMD's *CEQA Air Quality Handbook* indicates that an air quality modeling analysis that identifies the project's impact on ambient air quality would need to be performed.[15] In order for a project to be found consistent, the analysis would have to demonstrate that the project's emissions would not increase the frequency or the severity of existing air quality violations, or contribute to a new violation.[16] The CO analysis for traffic emissions described below assesses the potential ambient air quality impacts with respect to this pollutant. URBEMIS 2002 is used to calculate project emissions for comparison with thresholds addressing regional significance, and it is concluded that the operational emissions due to The Shores project are less than significant. Hence, the project is not expected to violate ambient air quality standards or contribute to an existing or projected air quality violation.

- The project could result in population increases within an area, which would be in excess of that projected by SCAG in the AQMP, or increase the population in an area where SCAG has not projected that growth for the project's build-out year.

As discussed earlier in this analysis, the 1997 AQMP is designed to accommodate growth, to reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, to return clean air to the region by 2010 and to minimize the impact on the economy. Projects that are considered to be consistent with the AQMP do not interfere with attainment and do not contribute to the exceedance of an existing air quality violation because this growth is included in the projections utilized in the formulation of the AQMP. Therefore, projects, uses and activities that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in

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14 Rowan Williams Davies & Irwin, Inc., *Wind Study, Del Rey Shores Apartments, Marina del Rey* (Guelph, Ontario, Canada: RWDI, March 30, 2005), p. 4.

15 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 12-3.

16 Ibid.

the AQMP, even if they exceed the SCAQMD's recommended thresholds. The following analysis discusses the project's consistency with the AQMP.

Projects that are consistent with the projections of population forecasts identified in the Growth Management Chapter of the *Regional Comprehensive Plan and Guide* (RCPG) are considered consistent with the AQMP growth projections. This is because the Growth Management Chapter forms the basis of the land use and transportation control portions of the AQMP.

As discussed in **Section 4.0, Environmental Setting**, the project is considered to be consistent with the future population and employment figures projected for the site's census tract. The project would not increase population over those that have been planned for the area, would be consistent with the AQMP forecasts for this area, would be considered consistent with the air quality-related regional plans and should not jeopardize attainment of state and federal ambient air quality standards in the Basin.

Another measurement tool in determining AQMP consistency is to determine how a project accommodates the expected increase in population and employment. Generally, if a project is planned in a way that results in the minimization of vehicle miles traveled (VMT) both within the project and in the community in which it is located and consequently the minimization of air pollutant emissions, that project is consistent with the AQMP.[17]

The nature of the project and its location within an urban area with supporting commercial and office uses would minimize the need for or distance of some automobile trips, thereby, reducing automotive emissions from such trips. This type of development is consistent with the goals of the AQMP for reducing motor vehicle emissions. In addition, the project site is located in proximity to existing job centers that provide employment opportunities to many Marina del Rey residents. With these job centers, many local residents do not have to commute to distant employment centers. The project site is also linked to various employment, shopping and recreation areas throughout the Los Angeles Basin through the local transit system. Use of these facilities could reduce the need for some motor vehicle trips. As a result of reduced commutes and other vehicle trips, VMT and, consequently, air pollutant emissions could be further reduced.

- The project could generate vehicle trips that cause a CO hotspot or project could be occupied by sensitive receptors that are exposed to a CO hotspot.

As was done to assess existing CO concentrations, the simplified CALINE4 screening procedure was used to predict future CO concentrations 25 and 50 feet from the intersections in the study area. The

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17 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 12-5.

results of air emissions modeling for the project study area are shown in **Table 5.4-11, Carbon Monoxide Concentrations Cumulative with Project Traffic (2009)**. The values in this table reflect the ambient air quality impacts of emissions resulting from cumulative traffic increases due to growth in the area along with traffic resulting from The Shores project as predicted in the traffic impact analysis for the project.[18] Because SCAQMD projects reductions in future one-hour concentrations for SRA 2, projected CO concentrations at some intersections in **Table 5.4-11** may be less than the existing concentrations listed in **Table 5.4-5**. (Project traffic volumes would diminish outside of the project study area, thereby reducing the potential for project-related CO hotspots outside the study area.)

Table 5.4-11
Carbon Monoxide Concentrations Cumulative with Project Traffic (2009)
(Parts Per Million)

Intersection	25 Feet		50 Feet	
	1-Hour[1]	8-Hour[2]	1-Hour[1]	8-Hour[2]
Washington Blvd. & Palawan Way	6.0	3.9	5.7	3.7
Lincoln Blvd. & Washington Blvd.	8.1	5.4	7.4	5.0
Lincoln Blvd. & Marina Expressway (SR-90)	8.0	5.3	7.3	4.9
Lincoln Blvd. & Mindanao Way	7.8	5.2	7.2	4.8
Admiralty Way & Mindanao Way	7.0	4.7	6.5	4.3
Marina Expressway (SR 90) EB / Mindanao Way	6.7	4.5	6.2	4.1
Washington Blvd. & Ocean Avenue	5.8	3.8	5.5	3.6

Source: Impact Sciences, Inc. The CO concentration calculations are provided in Appendix 5.4.
[1] *State standard is 20.0 parts per million. Federal standard is 35 parts per million.*
[2] *State standard is 9.0 parts per million. Federal standard is nine parts per million.*

As shown, the state and federal one- and eight-hour CO standards would not be exceeded at any of the modeled intersections at project buildout. Therefore, CO hotspots are not predicted to occur near these intersections in the future and the contribution of project traffic-related CO at these intersections would not be considered significant.

It should be noted that the project would not be wholly responsible for all of the traffic at these intersections; rather, at most intersections, the project would contribute only a fraction of the traffic. The remaining traffic would be existing (ambient) traffic and traffic from other projects that would be developed and on-line by project buildout and which would contribute to the carbon monoxide concentrations at these intersections (see Figure 7 of the project traffic study in **Appendix 5.6** for a listing of the projects that have been included in the project build-out year traffic modeling by Crain & Associates).

18 Crain & Associates, *Traffic Analysis for a Proposed 544-Unit Residential Development in Parcels 100 and 101 in Marina del Rey* (Los Angeles, California: Crain & Associates, February 2005).

- The project will have the potential to create, or be subjected to, an objectionable odor that could impact sensitive receptors.

The residential uses associated with The Shores project are not expected to be a source of odors. The adjacent land uses are such that the project residents would not be subjected to objectionable odors from any surrounding land use. Consequently, no significant impacts from such odors are anticipated.

- The project will have hazardous materials on site and could result in an accidental release of toxic air emissions or acutely hazardous materials posing a threat to public health and safety;
- The project could emit a toxic air contaminant regulated by SCAQMD rules or that is on a federal or state air toxic list;
- The project could be occupied by sensitive receptors within one quarter mile of an existing facility that emits air toxics identified in SCAQMD Rule 1401; or
- The project could emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in one million.

The proposed land use of The Shores project is not anticipated to use hazardous materials or emit toxic air contaminants in appreciable quantities. Adjacent land uses would not subject project site residents, employees, or visitors to toxic air emissions. Accordingly, no significant impacts with respect to the criteria listed above are expected to occur.

Operational Impacts; Conclusion: Net emissions generated primarily from project operations would not exceed SCAQMD recommended emission thresholds of significance and, for that reason, they are not considered significant. Based on the assessment of project vehicular traffic emissions demonstrating that the project would not jeopardize attainment of the air quality standards predicted in the AQMP, the project would be consistent with the AQMP.

5.4.5 MITIGATION MEASURES

Mitigation for Demolition, Excavation/Grading and Construction Impacts: The SCAQMD has prepared a list of measures to reduce the impacts of construction-related emissions to the greatest extent possible. Those that could be feasibly implemented during the development of the project to mitigate NO_x and VOC emissions and to mitigate the ambient air impacts for PM_{10} are as follows:

5.4-1. Develop and implement a construction management plan, as approved by the County, which includes the following measures recommended by the SCAQMD, or equivalently effective measures approved by the SCAQMD:

a. Configure construction parking to minimize traffic interference.

b. Provide temporary traffic controls during all phases of construction activities to maintain traffic flow (e.g., flag person).

c. Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the degree practicable.

d. Re-route construction trucks away from congested streets.

e. Consolidate truck deliveries when possible.

f. Provide dedicated turn lanes for movement of construction trucks and equipment on and off site.

g. Maintain equipment and vehicle engines in good condition and in proper tune according to manufacturers' specifications and per SCAQMD rules, to minimize exhaust emissions.

h. Suspend use of all construction equipment operations during second stage smog alerts. Contact the SCAQMD at 800/242-4022 for daily forecasts.

i. Use electricity from power poles rather than temporary diesel- or gasoline-powered generators.

j. Use methanol- or natural gas-powered mobile equipment and pile drivers instead of diesel if readily available at competitive prices.

k. Use propane- or butane-powered on-site mobile equipment instead of gasoline if readily available at competitive prices.

5.4-2. Develop and implement a dust control plan, as approved by the County, which includes the following measures recommended by the SCAQMD, or equivalently effective measures approved by the SCAQMD:

a. Apply approved non-toxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas inactive for four days or more).

b. Replace ground cover in disturbed areas as quickly as possible.

c. Enclose, cover, water twice daily, or apply approved soil binders to exposed piles (i.e., gravel, sand, dirt) according to manufacturers' specifications.

d. Water active grading sites at least twice daily (SCAQMD Rule 403).

e. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph.

f. Provide temporary wind fencing consisting of 3- to 5-foot barriers with 50 percent or less porosity along the perimeter of sites that have been cleared or are being graded.

g. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code.

h. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads (recommend water sweepers using reclaimed water if readily available).

i. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.

j. Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces.

k. Enforce traffic speed limits of 15 mph or less on all unpaved roads.

l. Pave construction roads when the specific roadway path would be utilized for 120 days or more.

5.4-3. In the event asbestos is identified within existing on-site structures, the project applicant/developer shall comply with SCAQMD Rule 1403 (Asbestos Emissions From Demolition/Renovation Activities). Compliance with Rule 1403 is considered to mitigate asbestos-related impacts to less than significant.

Construction mitigation measures recommended in the SCAQMD's *CEQA Air Quality Handbook* that were rejected for The Shores project are listed below along with a discussion of why each measure was rejected:

- Prohibit truck idling in excess of two minutes: The nature of diesel engines does not lend them to constant turning on and off during construction activities. Premature wear and increased air emissions are common results.
- Develop a trip reduction plan to achieve a 1.5 average vehicle ridership (AVR) for construction employees: SCAQMD Rule 2202 applies to all employers who meet certain criteria for implementing trip reduction measures. The requirement to achieve a specific AVR has been ruled unlawful by the federal government and is no longer recommended.
- Implement a shuttle service to and from retail services and food establishments during lunch hours: Construction workers typically take a half-hour lunch at various times of the day and eat on-site food that was either brought by the workers (brown bag) or purchased from mobile caterers who travel to the site.

Mitigation Measures for Operational Impacts: Because The Shores project would not result in significant net operational air quality impacts, no mitigation for project operations is required or recommended.

5.4.6 CUMULATIVE IMPACTS

The *CEQA Air Quality Handbook* identifies possible methods to determine the cumulative significance of land use projects.[19] All of the SCAQMD's methods are based on performance standards and emission reduction targets necessary to attain the federal and state air quality standards identified in the 2003

19 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. 9-12; Written communication with Steve Smith, South Coast Air Quality Management District, 20 November 2003.

AQMP. This EIR evaluates the following methods: (1) the SCAQMD method of whether the project shows a 1 percent per year reduction in project emissions of CO, VOC, NO_x, SO_x and PM_{10}; (2) the SCAQMD method of whether the rate of growth in average daily trips exceeds the rate of growth in population; and (3) whether or not the project is consistent with 2003 AQMP and, thus, would not jeopardize attainment of state and federal ambient air quality standards in the Basin.

The assessment of whether or not the project shows a 1 percent per year reduction in project emissions of CO, VOC, NO_x, SO_x and PM_{10} differs from the cumulative impacts analysis methodology used in other sections of this EIR in which all foreseeable future development within a given service boundary or geographical area is predicted and its impacts measured. However, this SCAQMD assessment method is consistent with the SCAQMD's overall goal to reduce emissions within the Basin in order to meet the standards set in the 2003 AQMP. As discussed previously, no additional mitigation measures have been recommended because the project's operational emissions were found to be less than significant. Feasible mitigation measures to enhance pedestrian travel and transit use would be incorporated into the project design as outlined in the land use plan. Accordingly, because there is no need for further emission reductions (operational project impacts are considered less than significant), the Specific Plan would not meet the annual emission reduction target of 1 percent pursuant to the SCAQMD's recommended approach.

Another SCAQMD approach is to compare the rate of growth in VMT and trips is held to the rate of population growth. As specified in the *CEQA Air Quality Handbook*, the ratio of project VMT or average daily trips (AMT) to anticipated VMT or ADT in the city or country is compared to the ratio of the project population to the anticipated population in the city or county.[20] If the growth of VMT or ADT is less than the population growth, then the project is not considered to have a significant cumulative air quality impact. The relevant values are shown in **Table 5.4-12, Comparison of Growth of ADT to Population Growth**. As shown in **Table 5.4-12**, this criterion has been met, and the project would not be considered to have significant cumulative impacts.

20 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (Diamond Bar, California: South Coast Air Quality Management District, April 1993), p. A9-126.

Table 5.4-12
Comparison of Growth of ADT to Population Growth

	Average Daily Trips	Population
The Shores Project	2,154[1]	816[2]
Los Angeles County	38,539,400[3]	10,718,007[4]
Ratio of Project to Los Angeles County	0.000056	0.000076

Source: Impact Sciences, Inc.
[1] *Average daily trips at a rate of 3.96 trips per apartment unit per the project traffic impact analysis.*
[2] *Number of residents associated with 544-unit apartment complex at The Shores.*
[3] *Estimated ADT in Los Angeles County in 2009 (project build-out year) as determined by EMFAC2002.*
[4] *Aggregated population in Los Angeles County in 2010. Source: Southern California Association of Governments. "City Projections." [Online] [April 28, 2005]. <http://scag.ca.gov/forecast/index.htm>.*

Although the following method is not included in the *CEQA Air Quality Handbook* as a way to assess cumulative air quality impacts, it is determined the project is within growth forecasts contained in the Growth Management Chapter of SCAG's RCPG, which forms the basis for the land use and transportation control portions of the 2003 AQMP. Therefore, it would be consistent with the 2003 AQMP, indicating that it would not jeopardize attainment of state and federal ambient air quality standards in the Basin.

Based on the results of the latter two approaches discussed above, the project would not cause significant cumulative impacts on air quality.

5.4.6.1 Cumulative Mitigation Measures

Cumulative impacts are not considered significant. Accordingly, no mitigation measures have been recommended for the cumulative impacts.

5.4.7 UNAVOIDABLE SIGNIFICANT IMPACTS

The recommended mitigation measures would reduce the magnitude of construction-related emissions to some extent; however, no feasible mitigation exists which would reduce these emissions to below the SCAQMD's recommended thresholds of significance. The construction-related emissions for The Shores project, although short term in nature, would be considered unavoidably significant.

5.5 Visual Quality

SUMMARY

Two viewing locations of the project site were identified based on the presence of a large permanent or mobile viewing audience. Views of the existing condition from each viewing location are defined. Computer simulations were then prepared for each viewing location to illustrate the future condition and to define potential significant impacts.

The project is consistent with height and mass standards defined in the Marina del Rey Land Use Plan (LUP). As defined in the plan, replacement of Phase I marina development is to be more intensive, both in height and density, and the project is anticipated to be similar to future projects proposed and ultimately developed in the marina. The height and mass of proposed structures are not in character with existing uses proximal to the project site to the south and west. However, tall structures are present north of the project site and are approved to the east. The character of the proposed project would be typical of the future visual character of the marina as subsequent projects are developed and recycle existing land uses.

5.5.1 METHODOLOGY

This section of the EIR evaluates potential project-related changes in the visual character of the project site and surrounding environment. Methods of analysis include: (1) identification of "viewsheds" through which the project can be observed; (2) identification of "prominent visual features" within those viewsheds; and (3) simulation of post-development changes in the viewsheds through the preparation of renderings of post-development conditions.

Viewsheds are defined herein as views available from a particular viewing point. The viewsheds selected for this analysis are ones that are visible to:

- a relatively large mobile viewing audience; and/or
- a permanent-resident population (from existing residential uses); and/or
- a location designated as scenic by either the Los Angeles General Plan or Marina del Rey LUP.

"Prominent visual features" are defined as visual elements that stand out in relation to their surroundings.

If portions of the proposed development area cannot be observed, or if views of the development area are so far away as to make them visually obscure, those views are not considered visually prominent and are not emphasized as part of this analysis. It is not the intent of this analysis to suggest that the project site is visible from only the viewing locations discussed in this section. Rather, an attempt was made to identify viewsheds that are representative of the most prominent views available in the project area.

For each of the viewsheds used in this analysis, view orientations were selected which would display the maximum amount of the proposed development area possible within that range of view. Using project information, a graphic artist then rendered "wire diagrams" that illustrate the size and mass of post-project elements visible within each viewshed (the architect for the proposed project was consulted prior to and during the preparation of these renderings to ensure their accuracy). These illustrations are presented in the impact analysis of this section.

To provide a standard frame of reference for the reader, the visual character of each viewing location is described in terms of foreground, midground, and farground views. Each view represents a portion of the total viewshed based on distance from the viewer. Foreground views represent the closest views available, midground views represent the next distinguishable range of view, while farground views represent distant landscape elements and typically form backdrops for the mid- and foreground scenes. Delineation of the viewing ranges is largely subjective and is based on landscape transitions.

Upon completion of the simulations, developed post-project conditions for each viewshed were evaluated using adopted Los Angeles County threshold criteria for significant visual impacts. Exceedance of these criteria would result in a significant visual impact. As part of this analysis, shade and shadow impacts and light and glare impacts associated with The Shores project was included. Please reference **Sections 5.5.3.4.2** and **5.5.3.4.3**.

5.5.2 EXISTING CONDITIONS

5.5.2.1 Landscape

Marina del Rey is part of the Los Angeles coastal plain, which is generally characterized by relatively flat and low-lying topographic features. Elevations on the site and surrounding area range from 10 to 20 feet above mean sea level.

The visual character of the site and region is currently dominated by urban uses associated with Marina del Rey, the County of Los Angeles, and the Cities of Los Angeles, Santa Monica and Culver City.

Natural views only occur occasionally in the distance and may include the Santa Monica Mountains and the more proximal Del Rey bluffs. Views of the Pacific Ocean and marine uses within the small-craft harbor from surrounding roadways are largely obscured by intervening structures and landscape vegetation. The Marina del Rey LUP indicates that marine-related elements of the harbor (boat masts, sails, slips, water) represent the primary visual resource within Marina del Rey.[1]

5.5.2.2 Scenic Resources

In the vicinity of the project site, Via Marina is defined as a "scenic highway meriting first priority status for further study" in the Marina del Rey LUP. However, no information is incorporated within the Marina del Rey LUP that defines the resources that are considered scenic. To compile information regarding this issue, contact was made with County of Los Angeles Department of Regional Planning staff to determine those features or resources that were the source of the County's decision to call out this road as a scenic highway.

The Marina del Rey LUP indicates that areas most frequented by visitors along Via Marina could be designated as a "Scenic Drive." At this time, however, Via Marina has not received such designation. Further, no follow-up study has been completed since that defines what scenic features in particular were to be maintained, or what areas are most frequented by visitors. Common sense dictates that these areas of frequent visitation would be proximal to scenic waterside features (i.e., waterside features that are part of the marina complex). These areas occur along the eastern side of Via Marina and likely formed the basis of the decision to call out this roadway as a "scenic highway meriting first priority status for further study." This assumption has been made in order to complete this analysis of aesthetic impacts of the proposed project.

Based on this information, this report acknowledges that scenic resources occur east of the project site. To define the scenic resources that occur in the project area, Impact Sciences staff conducted several field investigations. The purpose of these investigations was to define scenic resources or features that occur on or near the project site. Scenic resources are defined here as large area landscape features such as undeveloped natural open space, vegetation or a combination of these features that provide for a pleasing or unique scenic vista. Scenic features are defined as specific places with unusual or rare visual features. Examples of scenic features proximal to the project site include the water and boating operations that occur within Marina del Rey. Surveys conducted by Impact Sciences indicated that these features are not visible from the project site but that scenic features and resources occur in area adjacent to the proposed

1 County of Los Angeles Department of Regional Planning, *Marina del Rey Land Use Plan*, February 1996, pg. 9-1.

project. No defined "significant vantage points" occurring on or near the project site are defined in the Marina del Rey LUP.

The project site occurs west of Via Marina, in an area dominated by several three-story apartment complexes to the south and west and higher structures (up to 15 stories) to the north. Buildings in the immediate project vicinity vary in height from linear, low-lying structures to multi-story towers (inclusive of the 15-story Kingswood apartment building). As defined above, direct vistas of the marina are not available from the project site.

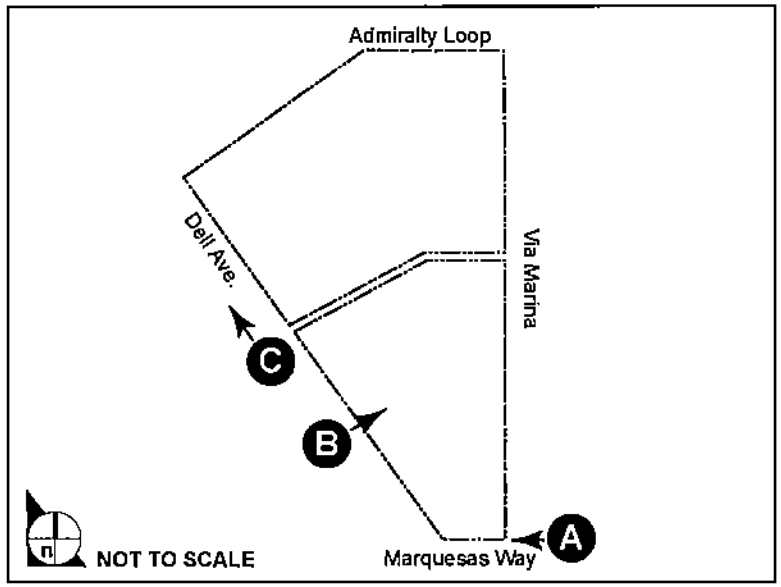
5.5.2.3 Project Site

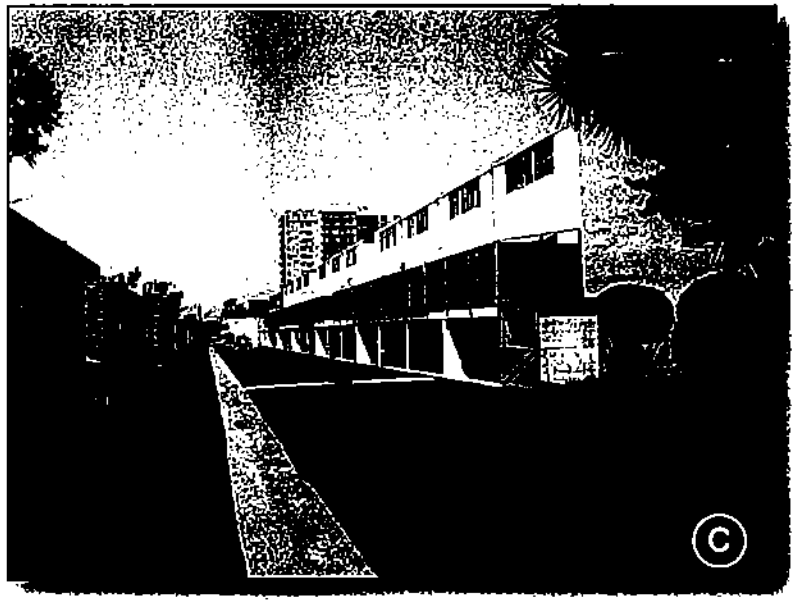
The project site (Parcels 100 and 101) is presently developed with two-story stucco structures with covered, paved surface parking and mature landscaping. Existing structures were constructed in the early 1960s as part of Phase I Marina del Rey development and, while older, the structures are generally well maintained. The apartment buildings are low-lying and rectangular in nature and are typical of other existing development. Generally, the buildings extend in a linear fashion along the frontage of Via Marina and, in most cases, completely obscure the remaining structures that are situated in the project interior.

Figure 5.5-1, Representative Site Vistas, presents a representative view of the project site and an associated viewshed key map. Visible in the photos are the interior courtyards, parking areas situated along the Dell Avenue alley, perimeter views of the existing structures and perimeter landscaping. Perimeter landscaping has, over the years, matured and now obscures most of the perimeter structures from Via Marina and Marquesas Way.

5.5.2.3.1 Viewshed Descriptions

Based on observations of the project site and surrounding area, two viewsheds were selected. The characteristics of each viewshed are described below. As previously stated, emphasis has been placed on locations where a large viewing audience is present. **Figure 5.5-2, Viewshed Photo Key Map**, provides a photo index key depicting the viewing locations.



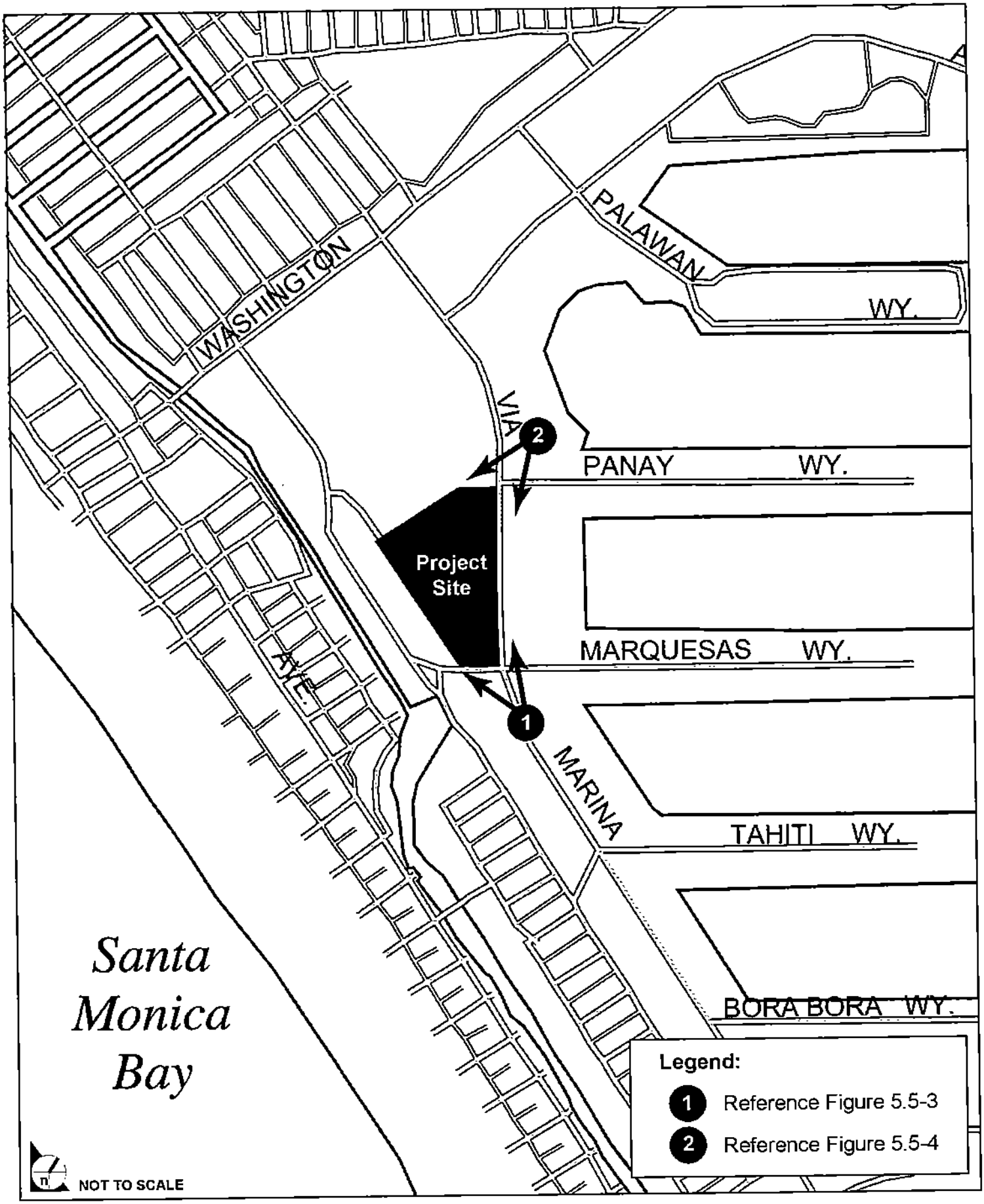


SOURCE: Impact Sciences, Inc, – June 2005

FIGURE 5.5-1

Representitive Site Vistas

778-02-09/05



SOURCE: Impact Sciences, Inc – June 2005

FIGURE **5.5-2**

Viewshed Photo Key Map

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Viewing Northbound on Via Marina South of Marquesas Way

As illustrated on **Figure 5.5-3, Pre- and Post-Development View of Site; Viewing Northbound on Via Marina South of Marquesas Way**, substantial views of the western and southern perimeter of the site and surrounding area are visible. Foreground views are of the Via Marina/Marquesas Way intersection, the associated street and signal light standards and perimeter landscaping, while midground views are of the existing two-story apartment structures. However, as illustrated, landscaping surrounding the site is approximately 35 years old, and the height of the vegetation obscures most direct vistas of the existing structures (this vegetation would be removed during site grading). Farground views are limited due to the height of the perimeter landscaping. However, the 15-story Kingswood apartment building dominates farground vistas.

Prominent Visual Features: Given the existing condition, perimeter ornamental landscaping represents the dominant visual feature observed from this viewing location in the fore- and midground. Farground views are dominated by the 15-story Kingswood apartment building.

Viewing Audience: Primarily vehicular traffic on Via Marina.

Viewing Southbound on Via Marina North of Panay Way

As illustrated on **Figure 5.5-4, Pre- and Post-Development View of Site; Viewing Southbound on Via Marina North of Panay Way**, substantial views of the western and northern perimeter of the site and surrounding area are visible. Foreground views are of the Via Marina/Panay Way intersection, the associated street and signal light standards, a flagpole and perimeter landscaping. Foreground vistas also include the leasing office, a small surface parking lot as well as a low perimeter wall (less than 4 feet in height) that extends parallel to Via Marina. Midground views are of the existing two-story apartment structures. However, as defined previously, landscaping surrounding the site is approximately 35 years old, and the height and mass of this perimeter landscaping obscures almost all direct vistas of the existing structures (this vegetation would be removed during site grading). Farground views are limited due to the taller palm trees and other ornamental trees that occur on and off the project site.

Prominent Visual Features: Given the existing condition, perimeter ornamental landscaping as well as taller palm trees and other ornamental trees that occur on and off the project site represent the dominant visual feature observed from this viewing location.

Viewing Audience: Primarily from vehicular traffic on Via Marina and users of visitor serving commercial uses that occur northeast of the project site.

5.5.2.3.2 Shade/Shadow/Light and Glare

The site is presently developed and contains a variety of surface night lighting. Principal light sources include perimeter street lighting, lighting associated with the nearby residential and commercial uses and vehicle headlights. None of these light sources are considered exceptionally bright or unique. All are considered typical in most urban settings.

Because the sun is lowest in the southern sky during the winter, shadows would be the longest during this season (worst-case condition). During the summer months, the sun is directly overhead, and shadow length is very limited. Shadows during the winter season, either during the morning or evening, do not extend from the project site onto off-site existing residential or commercial uses. Shadows do extend onto Via Marina and the Dell Avenue Alley.

5.5.3 ENVIRONMENTAL IMPACTS

5.5.3.1 Project Improvements

Implementation of The Shores proposed project would result in the development of 12 apartment buildings totaling 544 units. Development of The Shores project would require the removal of 202 existing residential units and all existing interior and perimeter landscaping. A total of 1,114 parking spaces would be provided throughout The Shores project in structured parking garages below the apartment buildings. The net increase associated with residential development on The Shores project site is 342 apartment units. Renderings of the completed project are illustrated in **Figure 5.5-5, Site Renderings**.

Pre-Development

Post-Development

SOURCE: Impact Sciences, Inc. – June 2005

FIGURE 5.5-3

Pre- and Post-Development View of Site – Viewing Northbound on Via Marina South of Marquesas Way

Pre-Development

Post-Development

SOURCE: Impact Sciences, Inc, – June 2005

FIGURE 5.5-4

Pre- and Post-Development View of Site – Viewing Southbound on Via Marina North of Panay Way

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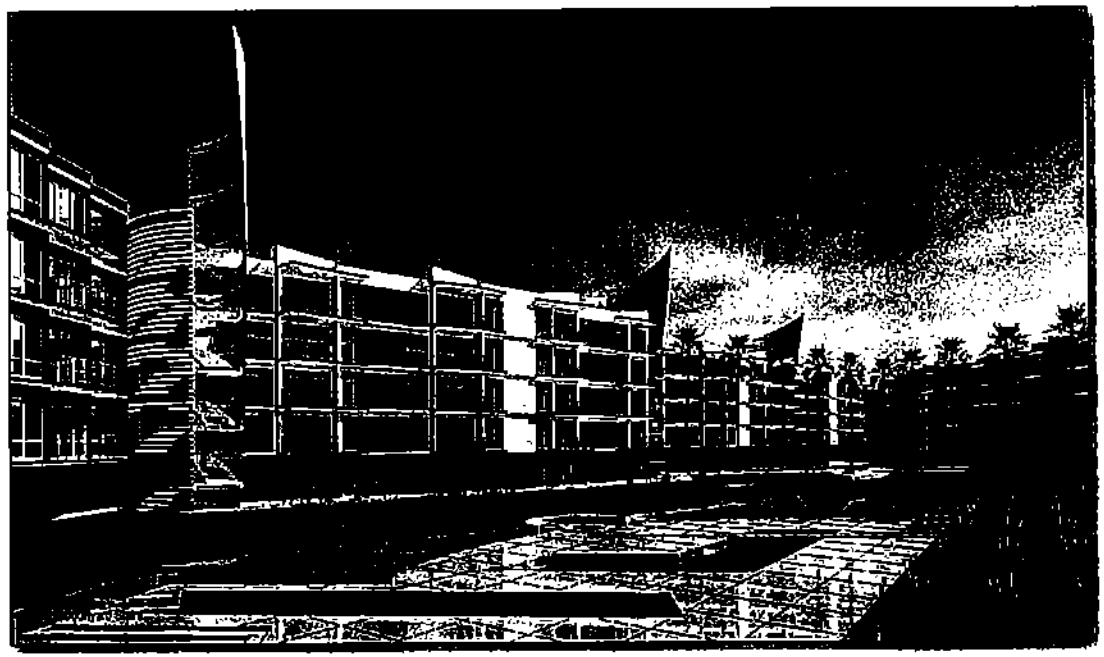


SOURCE: Nadel Architects, Inc. – January 2005

FIGURE 5.5-5

Site Renderings

5.5.3.2 Thresholds of Significance

The County of Los Angeles *Environmental Document Reporting and Procedures Guidelines* provide the following criteria to determine whether or not a project's changes in the existing landscape could be considered significantly adverse. If a project meets one or more of the listed criteria to a substantial degree, it can be concluded that the project could result in a significant visual impact. The County criteria include consideration of the following:

1) Is the project adjacent to a visual corridor? [and would the project substantially affect views from a significant vantage point?]

The Marina del Rey LUP considers Via Marina, Burton Chace Park, and the end of each mole to be significant vantage points.

2) Does the project obstruct unique views from other developments or vantage points?

For this criterion, unique views or vantage points are considered to exist for the residents located adjacent to the project. Viewsheds defined above are analyzed for this criterion.

3) Is the project out of character in an area with unique aesthetic features?

Under this criterion, a determination was made as to whether the project would result in a substantial change in the existing views of the site from the viewing locations.

4) Does the scale (height, mass) of the project exceed that existing in the surrounding area? [This criterion usually applies within already urbanized areas.]

Proposed building height and mass are compared to existing development in the vicinity of the site and height limits defined in the Marina del Rey LUP.

5) Does the project result in sun/shadow effects on adjacent land uses?

This criterion is applied to adjacent land use where the project would be next to existing development. In addition, potential daytime and nighttime light, glare (light reflection) or shadow impacts of the project are also analyzed.

Each of these criteria is discussed below in relation to the proposed project.

5.5.3.3 Impact Analysis

5.5.3.3.1 Demolition and Construction Impacts

Development of the project would require the removal of all existing structures, interior and perimeter landscaping, excavation and earth movement to allow construction of the partially subterranean parking

lot, landscaped areas, develop drainage patterns and provide for necessary infrastructure. During this time, construction workers and equipment will be visible throughout the project site. Chain-link fencing would likely be installed that would surround the perimeter of the project site. During construction, frames of the structures would be raised and finished, and hardscape and landscaping would be completed. As the structures are constructed and finished, the scale of the project and changes in the visual character of the project site would become evident. The duration of these construction activities would be short term. Although the visual character of the project site will be altered from its current condition, this impact is not considered significant due to its short-term nature and given the urbanized visual character of the surroundings.

Project improvements would contribute to the changing character of Marina del Rey. New (Phase II) development in the marina is more intensive than the existing Phase I marina development. Phase II marina development allows for a greater development intensity that is generally achieved through an increase in available building height limits. The Marina del Rey LUP defines the project site as "Residential V," which permits up to 75 units per acre. Further, the maximum building height limit on Parcels 100 and 101 is 225 feet (Height Category 6). As proposed, the 12 structures proposed as part of The Shores project would not exceed 75 feet (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features). Parapets and architectural features are expected to be approximately 25 feet in height. Therefore, proposed building heights would be approximately 150 feet lower, or roughly 15 stories, than permitted by the 225-foot permitted building height limit as defined in Height Category 6.

5.5.3.3.2 Impacts to Visual Corridors (Threshold Criteria 1)

The Marina del Rey LUP considers Via Marina, Burton Chace Park and ends of each mole to be significant vantage points in Marina del Rey. None of these vantage points, except Via Marina, afford views of the project site.

In the vicinity of the project site, Via Marina is defined as a "scenic highway meriting first priority status for further study" in the County of Los Angeles Marina del Rey LUP. As documented above, no information is available in the plan or in County records that defines scenic resources along this route, and no further study has been completed. Therefore, for the purpose of this analysis, the areas most frequented by visitors and those that contain scenic features (i.e., waterside features that are part of the marina complex) are studied. These occur along the eastern side of Via Marina.

Vistas of the marina are not generally available from the portion of Via Marina that fronts the project site, and no uses occur along the western margin of Via Marina that are frequented by visitors. As such, this portion of Via Marina is not considered or designated as a Scenic Highway or Scenic Drive.

To further ensure visual resource protection, the Marina del Rey LUP requires that the project site plan and architectural design be reviewed and approved by the Design Control Board (DCB). The DCB has the authority to regulate signage, building architectural design, site planning and facade design for all new development proposals. The DCB reviewed and approved The Shores proposed project on January 20, 2005, and, as part of that action, ensured compliance with the development standards and policies outlined in the LUP with the development standards under its purview. Therefore, project impacts to visual corridors as defined in the Marina del Rey LUP are not considered significant.

5.5.3.3.3 Impacts to Viewsheds (Threshold Criteria 2, 3, 4)

Viewing Northbound on Via Marina South of Marquesas Way

As illustrated on **Figure 5.5-3, Pre- and Post-Development View of Site; Viewing Northbound on Via Marina South of Marquesas Way**, the 75-foot-tall residential structure would be clearly visible in the foreground viewshed. Due to the close proximity of this viewing location to the site, building shape, color and architectural style would be readily distinguishable. As illustrated, the proposed project would be perceived as a project with greater mass and on-site building intensity than existing condominium structures currently located to the south. This increased height and mass would make on-site uses appear more observable and visually prominent than in the viewshed presently experienced. The height of the proposed structures would obscure vistas of the 15-story Kingswood apartment building that is currently observable in the farground viewshed.

Prominent Visual Features: Currently, the most noticeable features visible from this viewpoint include the perimeter ornamental landscaping and the more distant 15-story Kingswood apartment building. As part of site construction, existing landscape vegetation would be removed and replaced. As defined above, the height of the proposed structures would obscure vistas of the 15-story Kingswood apartment building that is currently observable in the farground viewshed. Once complete, the most dominant visual feature would be the new apartment structures. Over time, perimeter landscaping proposed as part of this project would partially ameliorate the visual impact of new site construction.

Level of Impact: Site development would alter the visual character of the property to a more intensive developed use. The height and mass of proposed structures would represent a more observable

component of the background when compared to the existing conditions. However, as proposed, maximum building heights are 150 feet less than are permitted as part of the Marina del Rey LUP, and the project would not obstruct views of the small-craft harbor or other natural visual elements. Further, proposed structures would be similar in scale to new structures constructed or new structures that are proposed, in construction or that are recently completed in the marina given the Phase II standards defined in the Marina del Rey LUP. For these reasons, impacts to the visual resources environment when viewed from this location are not considered significant.

Viewing Southbound on Via Marina North of Panay Way

As illustrated on **Figure 5.5-4, Pre- and Post-Development View of Site; Viewing Southbound on Via Marina North of Panay Way**, the proposed 75-foot-tall residential structure would be clearly visible in the foreground viewshed. Due to the close proximity of this viewing location to the site, building shape, color, and architectural style would be readily distinguishable. As illustrated, the proposed project would be perceived as a project with a mass and on-site building intensity more similar to the existing structures currently located north of the project site. The increased height and mass would make on-site uses appear more observable and visually prominent than in the viewshed presently experienced. As proposed, the height of the proposed structures would not obscure any farground vistas.

Prominent Visual Features: Currently, the most noticeable features visible from this viewpoint include the perimeter ornamental landscaping located in the fore- and midground viewsheds. During site construction, existing landscape vegetation would be removed and replaced. As defined above, the height of the proposed structures would not obscure farground viewsheds. As proposed, the most dominant visual feature would be the new apartment structures. Over time, perimeter landscaping proposed as part of this project would ameliorate the visual impact of new site construction.

Level of Impact: Similar to that described above, site development would alter the visual character of the property to a more intensive developed use. The height and mass of proposed structures would represent a more observable component of the background when compared to the existing conditions. However, as proposed, maximum building heights are 150 feet less than are permitted as part of the Marina del Rey LUP, and the project would not obstruct views of the small-craft harbor or other natural visual elements. Further, proposed structures would be similar in scale to existing structures located north of the site as well as new structures constructed or new structures proposed, in construction, or that are recently completed in the marina given Phase II development standards defined in the Marina del Rey LUP. For these reasons, impacts to the visual resources environment when viewed from this location are not considered significant.

5.5.3.4 Operational Impacts Due to Scale (height, mass) of Project and Sun/Shadow Effects (Threshold Criteria 5)

5.5.3.4.1 Height and Mass of Project

Existing uses in the vicinity of the project include several apartment complexes, condominiums and commercial structures that range from structures of similar height to structures as high as 15 stories. Buildings in the immediate project vicinity vary in height from linear, low-lying structures to multi-story towers (inclusive of the 15-story Kingswood apartment building). In comparison, the project would construct 75-foot-high structures replacing the existing two-story apartment buildings. As defined above, the Marina del Rey LUP defines the maximum building height limit on Parcels 100 and 101 to be 225 feet (Height Category 6). As proposed, the 12 five-story structures proposed as part of The Shores project would not exceed 75 feet in height (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features).

5.5.3.4.2 Sun/Shadow Effects

The shade and shadow created by an object blocking sunlight varies dependent upon the time of year and time of day. This variation is a result of the sun's seasonal position in relation to the earth given the earth's annual orbit and the altitude of the sun relative to the earth. Because the sun is lowest in the southern sky during the winter, project development would cast the longest shadows during this season (worst-case condition). During the summer months, the sun is more directly overhead, and the shadow length is more limited. Thus, the following analysis is directed towards the winter condition in the early morning and afternoon when the sun is lowest.

Figure 5.5-6, Shade Shadow Effects, depicts post-development site conditions during 9:00 AM and 3:00 PM in the winter solstice (December 21) when shadow effects would be greatest. As shown, shadows cast at 9:00 AM affect the Dell Avenue alley and partially cover storage units that occur along the western margin of the Dell Avenue Alley. Residential structures situated further west are not affected by shadow effects during the AM period. Shadows also affect portions of the interior courtyard.

Shadows cast at 3:00 PM affect portions of Via Marina and Admiralty Loop that are located to the west. Due to the sun angle in relation to the project, residential structures situated to the north and south are not affected by the shading associated with the proposed project. Shadows also affect portions of the interior courtyard, and in the afternoon the shading affects a larger area of the interior courtyard than during the AM time period.

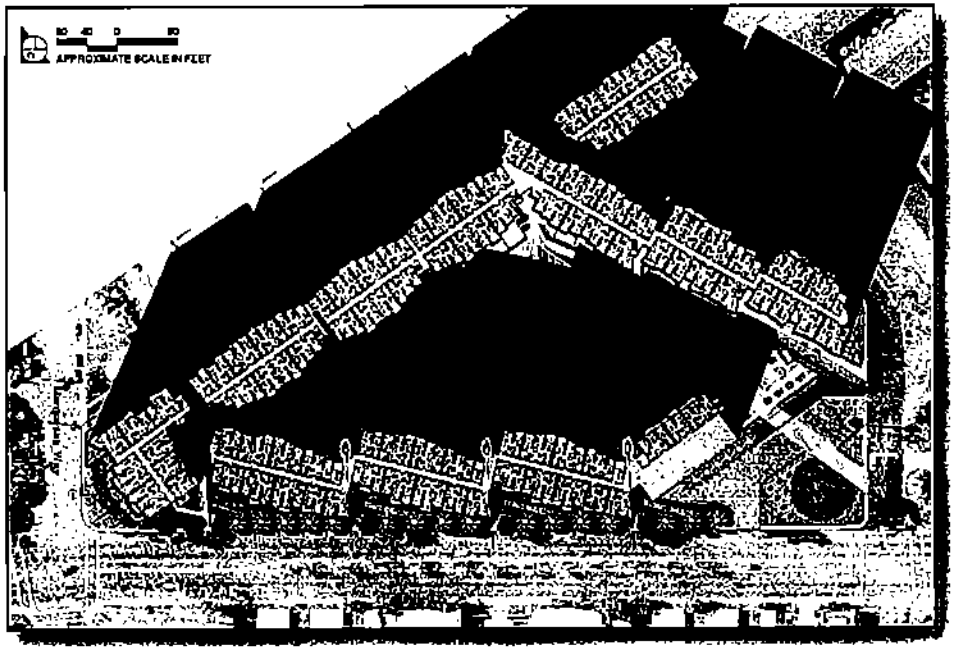
Exposure of adjacent uses to shadows cast by the project would be limited in duration to winter months and would vary dependent upon the time of day. No single use would be exposed to shadows cast by the project during the entire day. Given the limited duration and intermittent nature of the impact, shade and shadow impacts associated with the proposed project are not considered significant.

5.5.3.4.3 Light and Glare Impacts

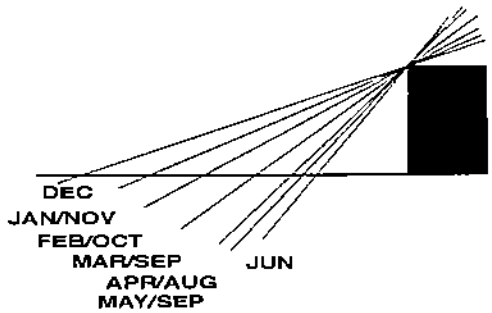
The proposed project would not increase the type of light and glare (including reflected light) generated by the project. As proposed, the project would incorporate a combined wood, stucco and glass façade similar to the existing condition. However, given the increased height of the proposed project when compared with the existing uses and the more limited effect of perimeter landscaping, an incremental increase the amount of light and glare generated during the day and at night would be incrementally increased. Daytime sources of glare are primarily generated by sun reflecting off glass windows of structures, automobiles and trucks. Nighttime sources of light include lights fixed to poles in commercial and residential areas, lighted signs mounted to commercial buildings, the headlights of automobiles and trucks, and parking lot lighting. Given that the proposed project site is similar in type and incorporates no unusual design element that would foster nighttime light or glare, the light and glare impact on the surrounding area is not considered substantial.

5.5.3.5 Consistency with Marina del Rey LUP

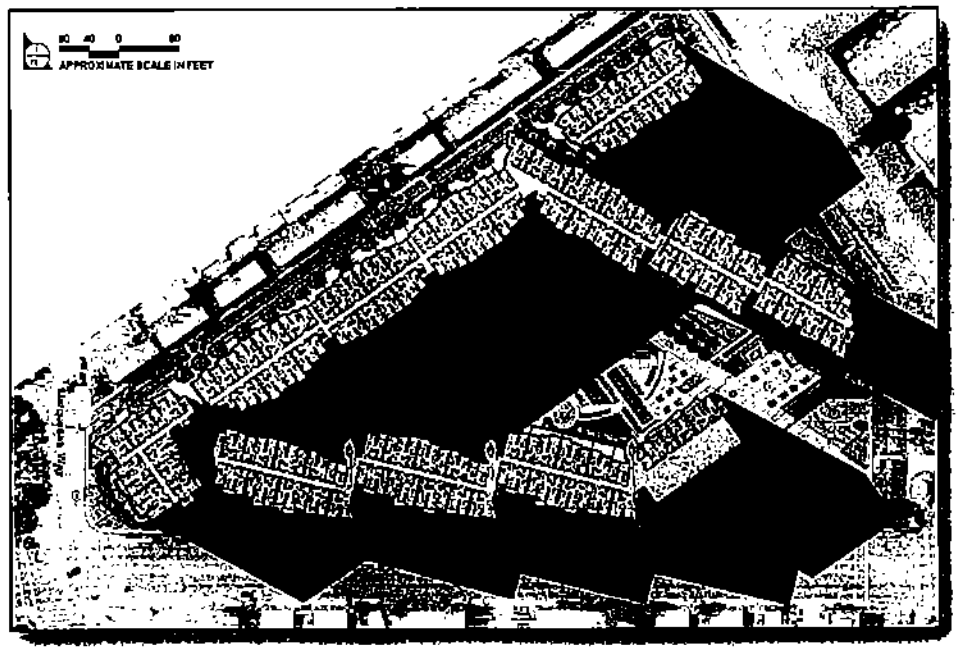
As evaluated in **Section 4.0, Environmental Setting**, of this Draft EIR, the Marina del Rey LUP defines the maximum building height limit on Parcels 100 and 101 to be 225 feet (Height Category 6). As proposed, the 12 five-story structures proposed as part of The Shores project would not exceed 75 feet in height (exclusive of appurtenant, screened roof-top equipment, parapets and architectural features). Therefore, proposed building heights would be approximately 150 feet lower, or roughly 15 stories, than permitted by the 225-foot permitted building height limit as defined in Height Category 6.



Winter Solstice at 9:00 AM



Winter Solstice at 3:00 PM



SOURCE: Nadel Architects, Inc. – January 2005, Impact Sciences, Inc. – June 2005

FIGURE 5.5-6

Shade Shadow Effects

5.5.4 MITIGATION MEASURES

5.5.4.1 Mitigation Measures Already Incorporated into the Project

As noted, the Marina del Rey LUP requires that the project site plan and architectural design be reviewed by the DCB, which is charged with the authority to regulate signage, building architectural design, site planning and façade design for all new development proposals. The DCB has reviewed The Shores proposed project on January 20, 2005, and gave the project its conceptual approval. This process has generally ensured compliance with the various applicable development standards and policies outlined in the LUP relative to the aesthetic value of the proposed project and the project's consistency with pertinent building height and mass requirements.

Perimeter landscaping is proposed that would reduce the exposure of the building façades, eliminate off-site views of upper portions of the parking structure and incrementally reduce the light and glare effects of the project.

5.5.4.2 Mitigation Measures Recommended by the EIR

No further mitigation is proposed or is required.

5.5.5 CUMULATIVE IMPACTS

As Phase II Marina del Rey development becomes more prominent, the existing visual character of the marina will be altered. Larger structures will become more commonplace within Marina del Rey, which will increase the development intensity. Over time, the project's height and mass will become more consistent with the character of the area as new uses build out. As a means of mitigating visual impacts, all proposed development within the marina shall be subject to the review and approval of the DCB, which is responsible for the enforcement of development standards within Marina del Rey. Given that the marina is fully developed and that the Marina del Rey LUP encourages greater development intensity, it is acknowledged that development intensity associated with Phase II development will be more visually intensive. The visual impacts associated with this change are substantial, but given the provisions of the DCB, the County Department of Regional Planning and review by the California Coastal Commission, cumulative visual impacts are not considered significant.

5.5.5.1 Cumulative Mitigation Measures

Impacts to visual qualities are largely created on the sites of the individual cumulative projects. As such, the developers of the proposed project cannot mitigate the impacts created on the other properties. The developers of those cumulative projects would be required to mitigate their cumulative impacts. Therefore, no measures for cumulative impacts are identified in this EIR.

5.5.6 UNAVOIDABLE SIGNIFICANT IMPACTS

Site development would alter the visual character of the site by incrementally increasing building height and mass. The project would also be visible along Via Marina, a roadway that is designated as "first priority for study scenic highway" by the Marina del Rey LUP. However, because (1) the project does not exceed the 225-foot building height limit defined as part of Marina del Rey LUP (The Shores project would not exceed 75 feet exclusive of appurtenant, screened roof-top equipment, parapets and architectural features) and building heights would be approximately 150 feet lower, or roughly 15 stories, than permitted by the 225-foot permitted building height limit as defined in Height Category 6; (2) the project would not directly or indirectly affect water views of the marina or any other natural visual feature; (3) the project has been reviewed and approved by the Design Control Board; and (4) the project is consistent in the scale and character of development envisioned as part of Marina del Rey Phase II development proximal to Via Marina, impacts of The Shores proposed project on the visual resource environment are not considered significant.

5.6 Traffic/Access

SUMMARY

The Shores project would generate approximately 1,354 net new daily trips, with approximately 120 net new trips occurring during the AM peak hour and approximately 111 net new trips occurring during the PM peak hour. A total of 1,114 resident and visitor parking spaces, which is 27 spaces above County requirements, would be provided for the 544 apartment units.

Prior to mitigation, project traffic volumes for The Shores project could produce a significant traffic impact at the intersection of Lincoln Boulevard/Mindanao Way. Mitigation measures are recommended in this section to reduce this potential impact to a less than significant level.

The Shores project would be required to pay the traffic mitigation fees to the County of Los Angeles pursuant to the Marina del Rey Specific Plan Transportation Improvement Program (TIP). This fee is intended to address regionally significant impacts and/or impacts resulting from cumulative development in and around the Marina, by providing "fair share" contributions to planned roadway improvements identified in the Marina del Rey Land Use Plan (LUP). The fee is based on the amount of project PM peak-hour trips generated in the Marina, as well as the trips which leave the Marina (regional trips).

The County's traffic mitigation fee structure is currently $5,690 per PM peak-hour trip. Based on the expected project trip generation for The Shores project of 111 net PM peak-hour trips, the proposed project would be required to pay $631,590.00 in trip mitigation fees. After payment of the mitigation fees, impacts for The Shores project would be less than significant.

5.6.1 INTRODUCTION

This section presents an overview of the existing traffic and access characteristics in the Marina del Rey area. It also discusses the potential impacts associated with development of The Shores project. Existing conditions are described followed by an impact analysis for the project. This section also includes a discussion of the cumulative impacts of The Shores project in conjunction with other related projects. Where impacts are identified, mitigation measures are recommended to reduce such impacts to acceptable levels.

5.6.2 METHODOLOGY

This section summarizes the findings of the traffic report prepared for The Shores project in February 2005. A complete copy of this traffic report is included in **Appendix 5.6** of this EIR.

Traffic volume count data were obtained from recent counts conducted by Wiltec, Accutek and The Traffic Solution, all independent traffic data collection companies. Additionally, San Diego Freeway and Marina Freeway/Expressway count data were obtained from the California Department of Transportation (Caltrans) publication. Where necessary, counts were supplemented by traffic data collected by the Los Angeles County Department of Public Works (LACDPW) or the Los Angeles City Department of Transportation (LADOT). Other data pertaining to intersection geometrics, parking restrictions and signal operations were obtained through recent field surveys of the project study area.

5.6.2.1 Traffic Study Intersections

An analysis of current traffic conditions was conducted on the streets and highways serving the project area. Detailed traffic analyses for the project were performed at the following 18 intersections.

1. Via Marina/Tahiti Way
2. Via Marina/Marquesas Way
3. Via Marina/Panay Way
4. Admiralty Way/Via Marina
5. Washington Boulevard/Ocean Avenue/Via Marina
6. Admiralty Way/Palawan Way
7. Washington Boulevard/Palawan Way
8. Lincoln Boulevard/Washington Boulevard
9. Lincoln Boulevard/Marina Expressway (SR 90)
10. Lincoln Boulevard/Bali Way
11. Lincoln Boulevard/Mindanao Way
12. Lincoln Boulevard/Fiji Way
13. Admiralty Way/Bali Way
14. Admiralty Way/Mindanao Way
15. Admiralty Way/Fiji Way
16. Marina Expressway (SR 90) westbound/Mindanao Way
17. Marina Expressway (SR 90) eastbound/Mindanao Way
18. Washington Boulevard/Dell Avenue/Via Dolce

These project area intersections (see **Figure 5.6-1, Study Intersection Locations**) are expected to be most directly affected by the proposed project traffic generation. Intersections in the project area are within the jurisdiction of both the County and City of Los Angeles, which have jurisdiction over some portions of the Marina del Rey area. All intersections are traffic signal controlled and exhibit typical two- or three-signal phases, with the exception of the intersection of Washington Boulevard and Palawan Way, which is a "tee" intersection, STOP sign controlled along Palawan Way.

The methodology used to study traffic operations at each project study area intersection was based on procedures outlined in Circular Number 212 of the Transportation Research Board.[1]

5.6.2.2 Traffic Generation Methodology

Vehicle trip generation rates for various types of developments within Marina del Rey are specified in Appendix G (Transportation Implementation Program [TIP]) of the Marina del Rey Local Implementation Program (LIP), which is in effect for the project site. This document provides the PM peak-hour trip rates for the proposed project's residential (apartment) uses. The TIP does not specify daily or AM peak-hour trip generation rates for the proposed uses. However, the traffic study upon which the TIP PM peak-hour rates were derived does identify AM peak-hour rates.[2] As these rates are consistent with the trip generation methodology utilized for the PM peak hour, the AM rates from the traffic study were also used. Daily trip rates were calculated based on the 6th Edition of the *Trip Generation Manual*, published by the Institute of Transportation Engineers (ITE),[3] which is the current industry standard for trip generation data. Daily trip generation factors for the proposed project uses were calculated based on the ratio of peak-hour-to-daily rates for the ITE data, applied to the peak-hour TIP rates.

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1 Transportation Research Board, *Interim Materials on Highway Capacity*, Circular Number 212, Washington, D.C., 1980.

2 DKS Associates in Association with Gruen Associates, Table 2-11, *Marina del Rey Traffic Study Final Report*, January 17, 1991.

3 Institute of Transportation Engineers, *Trip Generation*, 6th Edition, Washington, D.C., 1997.

Trip rates used in the traffic analysis for the proposed projects are listed in **Table 5.6-1**, below.

Table 5.6-1
Project Trip Generation Rates

	Apartments (per dwelling unit)		
Daily:	T = 3.960(U)		
AM Peak Hour	T = 0.349(U)	I/B = 18%	O/B = 82%
PM Peak Hour	T = 0.326(U)	I/B = 68%	O/B = 32%

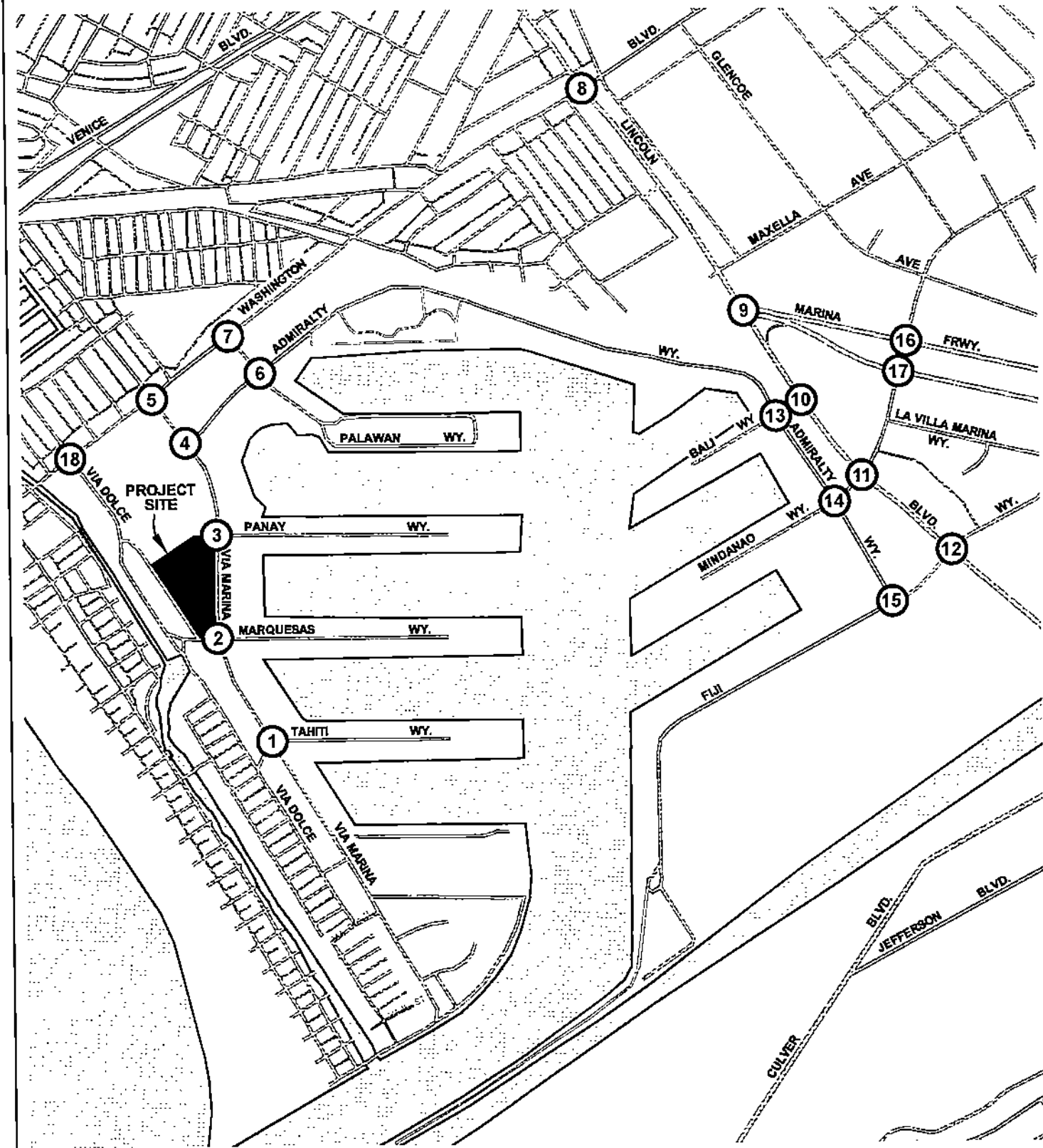
T = Trip Ends; U = Dwelling Unit; I/B = Inbound Trip Percent; O/B = Outbound Trip Percent.

5.6.2.3 Critical Movement Analysis Methodology

Impacts for the 18 intersections listed above were assessed using Critical Movement Analysis (CMA). In the discussion of CMA for signalized intersections, procedures have been developed for determining operating characteristics of an intersection in terms of the "Level of Service" provided for different levels of traffic volume and other variables, such as the number of signal phases. The term "Level of Service" (LOS) describes the quality of traffic flow. The following is a description of the operating characteristics for each LOS category.

As shown in **Table 5.6-2, Level of Service Operating Characteristics**, LOS A to C operate quite well. LOS D typically is the level for which a metropolitan area street system is designed. Level E represents volumes at or near the capacity of the highway, which might result in stoppages of momentary duration and fairly unstable flow. Level F occurs when a facility is overloaded and is characterized by stop-and-go traffic with stoppages of long duration.

Critical movement volumes determine the LOS of an intersection. The values indicated in **Table 5.6-3, Critical Movement Volume Ranges for Determining Levels of Service**, were used in this impact analysis to determine the applicable LOS.



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SOURCE: Crain & Associates – May 2005

FIGURE **5.6-1**

Study Intersection Locations

779-02-09/05

Table 5.6-2
Level of Service Operating Characteristics

Level of Service	Range of Description of Operating Characteristics
A	Uncongested operations; all vehicles clear in a single cycle.
B	Same as above.
C	Light congestion; occasional backups on critical approaches.
D	Congestion on critical approaches, but intersection functional. Vehicles required to wait through more than one cycle during short peaks. No long-standing lines formed.
E	Severe congestion with some long-standing lines on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements.
F	Forced flow with stoppages of long duration.

Table 5.6-3
Critical Movement Volume Ranges[1] for Determining Levels of Service

Level of Service	Two Phase	Three Phase	Four or More Phases
A	900	855	825
B	1,050	1,000	965
C	1,200	1,140	1,100
D	1,350	1,275	1,225
E	1,500	1,425	1,375
F	---------- Not Applicable ----------		

[1] *For planning applications only (i.e., not appropriate for operations and design applications).*

"Capacity" represents the maximum total hourly vehicle volume movement in the critical lanes which have a reasonable expectation of passing through an intersection under prevailing roadway and traffic conditions. The CMA indices used in this study were calculated by dividing the sum of critical movement volumes (**Table 5.6-3**, above) by the appropriate capacity value for the type of signal control present or proposed at the study area intersections. The LOS corresponding to a range of CMA values is shown in **Table 5.6-4, Level of Service as a Function of CMA Values.**

Table 5.6-4
Level of Service as a Function of CMA Values

Level of Service	CMA Values
A	≤0.60
B	>0.60 ≤0.70
C	>0.70 ≤0.80
D	>0.80 ≤0.90
E	>0.90 ≤1.00
F	>1.00

5.6.3 PROJECT SETTING

Below is a summary of the existing roadways in the vicinity of the proposed project area. For a more detailed description on these roadways, see the Traffic Report prepared by Crain & Associates and provided in **Appendix 5.6**.

5.6.3.1 Freeways

- The San Diego Freeway (Interstate 405). This freeway traverses north-south through the Greater Los Angeles metropolitan area and currently carries in excess of 298,000 vehicles per day (VPD). This freeway provides convenient project access, via the regional freeway system, to all other areas of the Los Angeles region.
- The Marina Freeway/Expressway (State Route 90). This portion of the Marina Freeway carries more than 75,000 VPD and is a short regional facility serving a roughly east-west alignment between Slauson Avenue (east of Sepulveda Boulevard) and Lincoln Boulevard.

With the exception of High Occupancy Vehicle (HOV) lane additions, no significant highway improvements in the project area were identified by either the County or City of Los Angeles as ongoing or likely to be completed within the year 2009 project development timeline. Therefore, for purposes of analysis of the future traffic conditions, as discussed in the following section, no improvements to the existing roadway system in the study area were assumed. This assumption results in a "worst-case" analysis and more readily identifies locations where improvements should be made in order to provide sufficient roadway capacity to accommodate project traffic.

5.6.3.2 Streets and Highways

All of the study intersections are traffic signal controlled, with the exception of Washington Boulevard and Palawan Way, which is a "tee" intersection, STOP sign controlled along Palawan Way.

- Washington Boulevard. An east-west Major Highway located to the north of the project site.
- Admiralty Way. A four-lane collector facility, serving as a "frontage road" around the north and east portions of the Marina, between Via Marina on the west and Fiji Way on the southeast.
- Via Marina. A north-south facility that serves the western portion of Marina del Rey. This roadway also forms the western boundary of the project site and serves as the main access roadway for the project.
- Lincoln Boulevard. In the project area, this roadway is striped to provide a six-lane roadway with left-turn channelization (designated or permissive left-turn lanes) at most intersections.
- Tahiti Way. A short two-lane local street that provides access to the Marina del Rey "Basin A" and "Basin B" areas.
- Marquesas Way. This two-lane facility is located opposite Via Dolce at Via Marina and provides access to the "Basin B" and "Basin C" areas.
- Panay Way. Designated a local street, provides one lane in each direction and access to the Marina del Rey "Basin C" and "Basin D" areas.
- Palawan Way. Designated a local street, provides two lanes per direction on the segment between Admiralty Way and Washington Boulevard, separated by a raised median island.
- Bali Way. A short local street providing access from Lincoln Boulevard and Admiralty Way to the Marina del Rey "Basin F" and "Basin G" areas. Bali Way provides a single lane in each direction.
- Mindanao Way. A Secondary Highway providing two lanes in each direction, although some sections are widened to permit additional traffic lanes and/or turn-lane channelization, particularly at the SR 90 and Lincoln Boulevard intersections.
- Fiji Way. Designated a local street, provides one lane per direction plus on-street parking from east of Lincoln Boulevard to the eastern terminus at La Villa Marina.

5.6.3.3 Public Transit

The Los Angeles County Metropolitan Transportation Authority (MTA) has established an extensive grid system of bus routes throughout the Los Angeles region. Marina del Rey and adjacent communities, as well as the cities of Culver City and Santa Monica are particularly well served by public transit. The most important bus routes serving the project area are described below.

- MTA Line 108. This bus line provides service between Marina del Rey on the west and the Pico Rivera community on the east. In the study area, Line 108 operates on a loop route through the Marina. Between the Marina and Pico Rivera, this line travels primarily along Mindanao Way/Short Avenue, Centinela Avenue, Jefferson Boulevard and Slauson Avenue. The route travels to Fox Hills Mall and through the office development area between Centinela Avenue and Slauson Avenue, east

of Sepulveda Boulevard, providing a link between the proposed project and potential shopping and employment locations. Buses operate on this line on weekdays with headways of approximately 30 to 45 minutes. Weekend and holiday service is also provided on a limited schedule. Headways on the weekend and holidays are approximately 60 minutes throughout the day.

- LADOT Express Line 437. This line, a service of the LADOT, operates between Marina del Rey on the west and Downtown Los Angeles on the east. In the project vicinity, Line 437 has several bus stops along Via Marina including a stop at Marquesas Way. In the vicinity of Marina del Rey, this line travels along Pacific Avenue, Via Marina and Admiralty Way. Buses on this route continue on Mindanao Way and Alla Road to Culver Boulevard through Culver City. This line operates in the eastbound to Downtown Los Angeles during the morning peak period and in the westbound from Downtown Los Angeles to Culver City, Marina del Rey and Venice during the afternoon peak periods. Headways for this bus route near the project site are generally about 15 to 30 minutes.

- Culver City Bus Line 1. This bus line runs between the Venice community on the west and the West Los Angeles Transit Center at Fairfax Avenue on the east. Line 1 travels south from Windward Avenue along Pacific Avenue to Washington Boulevard, turning east and continuing along Washington Boulevard through Mar Vista and Culver City to the West Los Angeles Transit Center. In the project vicinity, this line provides a stop along Washington Boulevard at Via Marina. Line 1 buses operate on weekdays, with limited weekend and holiday service. Weekday headways at the Washington Boulevard/Via Marina stop are approximately every 15 to 30 minutes throughout the day.

In addition to these key transit routes, which serve the immediate project vicinity, many more bus routes are available via transfers to other routes or transit providers. When these transfer opportunities are considered, all areas within the Los Angeles region are accessible via public transit. Thus, it is possible that some of the trips generated by the proposed project could utilize public transit.

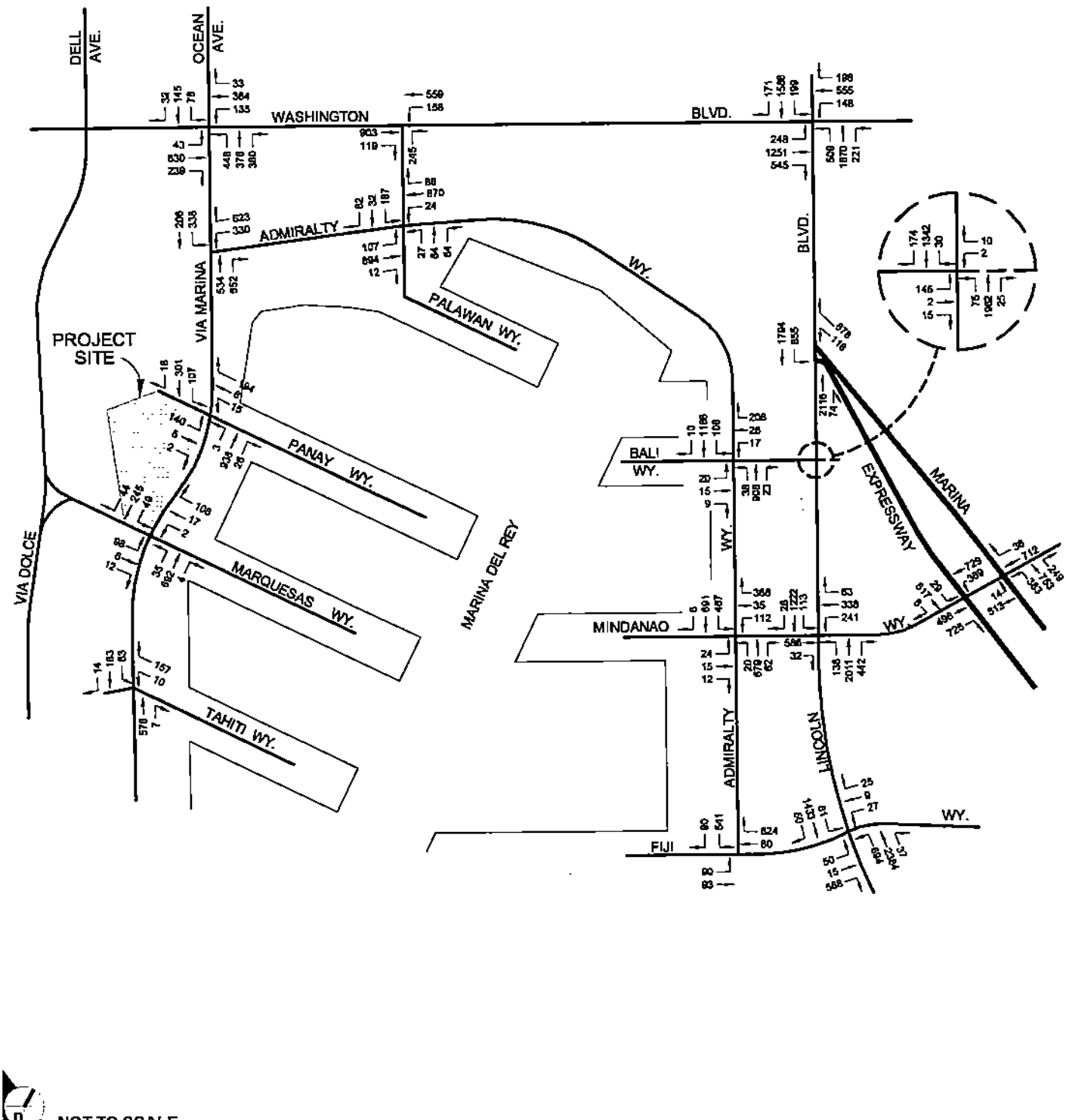
5.6.4 EXISTING CONDITIONS

5.6.4.1 Existing Traffic Volumes

Existing (2005) traffic volumes during the AM and PM peak periods for the study intersections are shown on **Figure 5.6-2, Existing (2005) Traffic Volumes – AM Peak Hour**, and **Figure 5.6-3, Existing (2005) Traffic Volumes – PM Peak Hour**, respectively.

5.6.4.2 Project Trip Distribution and Traffic Assignment

Primary factors affecting trip distribution are the relative distribution of employment, educational and retail centers that would be used by the residents and guests of the project. Another key factor in trip distribution is the availability of roadway access to and from the site. Data from the Los Angeles Regional Transportation Study (LARTS) forecasts, as well as information presented in the current Los Angeles County Congestion Management Plan (CMP), were analyzed in order to estimate regional traffic distribution. Lastly, actual vehicle turning movements in and around the project vicinity were observed and general geographic trip distribution characteristics were developed.



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SOURCE: Crain & Associates – May 2005

FIGURE **5.6-2**

Existing (2005) Traffic Volumes – AM Peak Hour

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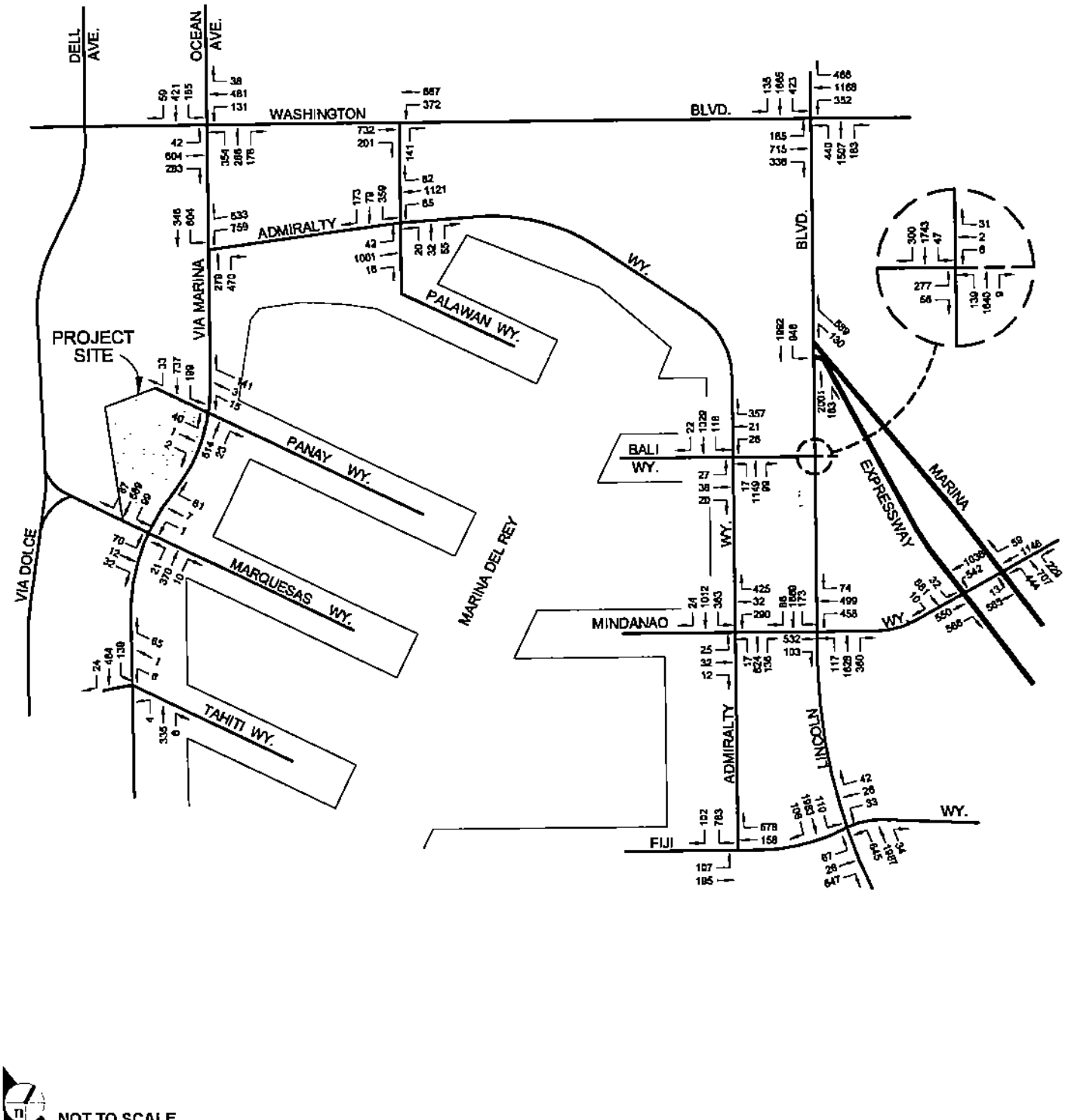

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SOURCE: Crain & Associates – May 2005

FIGURE **5.6-3**

Existing (2005) Traffic Volumes – PM Peak Hour

779-02-06/05

The percentage split of trips which are applicable to The Shores project, by direction, is shown in Table 5.6-5, below.

Table 5.6-5
Directional Trip Distribution

Direction	Percentage of Trips
North	25%
East	35%
South	35%
West	5%
Total	**100%**

5.6.4.3 Critical Movement Analysis

CMA values and the corresponding LOS for existing (2005) traffic conditions for AM and PM peak-hour conditions for the 18 intersections identified earlier are shown below in **Table 5.6-6, Critical Movement Analysis (2005) Summary**. The values in **Table 5.6-6** show that most intersections in the project study area are operating at acceptable levels of service. However, several key locations, particularly the intersection of Lincoln Boulevard and Washington Boulevard and at the intersection of Lincoln Boulevard and Mindanao Way, exhibit conditions at or near capacity, creating several "bottlenecks" to smooth traffic flow along this important transportation corridor.

5.6.4.4 Traffic Capacity of Marina del Rey

As described in the Environmental Setting, all new development within Marina del Rey is regulated by the LUP, which is a component of the Los Angeles County Local Coastal Program.[4] This document specifies the amount of allowable new development within Marina del Rey, based on the amount of additional traffic generated and mitigation measures to be installed incrementally with the new development. Marina del Rey development, as defined by the LUP, is divided into two phases: Phase I and Phase II. Phase I defines the existing condition and is the amount of development considered to be "existing" at the present time. Phase II defines the future conditions and defines development intensities above and beyond the amount of existing Marina del Rey development.

4 *Marina del Rey Land Use Plan*, County of Los Angeles Development of Regional Planning, Certified February 8, 1996.

Table 5.6-6
Critical Movement Analysis (2005) Summary

No.	Intersection	AM Peak Hour		PM Peak Hour	
		CMA	LOS	CMA	LOS
1.	Via Marina/Tahiti Way	0.256	A	0.172	A
2.	Via Marina/Marquesas Way	0.247	A	0.173	A
3.	Via Marina/Panay Way	0.378	A	0.245	A
4.	Admiralty Way/Via Marina	0.544	A	0.715	C
5.	Washington Blvd./Ocean Ave./Via Marina	0.604	A	0.727	C
6.	Admiralty Way/Palawan Way	0.463	A	0.605	B
7.	Washington Blvd./Palawan Way	0.647	B	0.615	B
8.	Lincoln Blvd./Washington Blvd.	1.044	F	1.011	F
9.	Lincoln Blvd./Marina Expwy (SR 90)	0.788	C	0.821	D
10.	Lincoln Blvd./Bali Way	0.471	A	0.625	B
11.	Lincoln Blvd./Mindanao Way	0.899	D	0.923	E
12.	Lincoln Blvd./Fiji Way	0.579	A	0.720	C
13.	Admiralty Way/Bali Way	0.405	A	0.531	A
14.	Admiralty Way/Mindanao Way	0.599	A	0.693	B
15.	Admiralty Way/Fiji Way	0.250	A	0.371	A
16.	Marina Expwy (SR 90) WB/Mindanao Way	0.438	A	0.601	B
17.	Marina Expwy (SR 90) EB/Mindanao Way	0.734	C	0.854	D
18.	Washington Blvd./Dell Ave./Via Dolce	0.391	A	0.368	A

Phase II development is allocated to 14 "development zones" within Marina del Rey, with the development potential within each development zone based upon each zone's capacity to accommodate traffic. This determination is, in turn, based upon a traffic study conducted to assess development potential within Marina del Rey, and to identify traffic and circulation improvements necessary to accommodate the increased traffic levels.[5] The Shores project is located in Development Zone 12 (DZ 12). The total allowable Phase II (or future) development in the Marina del Rey is summarized in **Table 5.6-7, Total Allowable Phase II Marina del Rey Development**, while the amount of development potential within DZ 12 is specified in **Table 5.6-8, Phase II Development Potential Allocated to Development Zone 12.**

5 *Marina del Rey Traffic Study, Final Report*, Prepared for Los Angeles County Department of Regional Planning, DKS Associates in Association with Gruen Associates, January 12, 1991.

Table 5.6-7
Total Allowable Phase II Marina del Rey Development

Land Use	Units
Residential	2,420
Congregate Care	75 rooms
Hotel	1,070 rooms
Specialty Retail	208,500 sq. ft.
Restaurant	1,875 seats
Boat Slip	348 slips
Office: Regular	32,000 sq. ft.
DBH	26,000 sq. ft.
Conference Room (within Hotel)	40,000 sq. ft.
Marine Science	3,000 sq. ft.
Library	3,000 sq. ft.

Table 5.6-8
Phase II Development Potential Allocated to Development Zone 12

Via Marina Development Zone 12
530 Dwelling Units 30,000 sq. ft. Visitor-Serving Retail/Commercial 340 Restaurant Seats

Notes: Non-Priority coastal development may be converted to Hotel, Visitor-Serving Commercial or Marina Commercial uses consistent with the conversion provisions of subsection C5 of Section 22.46.1090.

The determination of compliance with the LUP's development levels, and consequently, the Circulation Element of the Plan, are based upon a comparison of the amount of trips generated by the allowable development for DZ 12 (shown in **Table 5.6-8**) to the number of trips generated by the proposed project as well as any other development approved or proposed within those zones.

Since the adoption of the Marina del Rey LUP, approvals for or actual construction of various projects throughout the Marina has occurred, "using up" some of the originally allowable Phase II development potential. Some of this approved development has occurred within DZ 12, site of The Shores project. As shown in **Table 5.6-8**, the original development allowances for DZ 12 included a total of 530 dwelling units, a total of 30,000 square feet of visitor-serving retail and 340 restaurant seats.

However, in late 2000, the County approved a retail/commercial development on Parcel 95 within DZ 12. This retail/commercial project was approved to develop a total of 15,250 square feet of retail, 405 seats of restaurant use, a 4,250-square-foot drive-in bank and 7,888 square feet of office on Parcel 95, replacing the

existing uses on the site, which consist of a total of 9,180 square feet of office, 165 seats of restaurant use and 7,500 square feet of drive-in bank.

The net effect of the approved retail/commercial project on the DZ 12 allowable development is a net reduction of 10,708 square feet of commercial use and 240 restaurant seats, resulting in a remaining allowable development potential for DZ 12 of 19,292 square feet of commercial use and 100 seats of restaurant use. However, no change in the allowable development potential for the number of dwelling units occurred due to the retail/commercial project, since no dwelling units were proposed. Allowable Phase II development amounts for residential uses for DZ 12 remain at 530 dwelling units.

5.6.4.5 Related Projects in the Marina del Rey Area

Listings of potential related projects located in the study area were obtained from the Los Angeles Regional Planning Department, the LADOT, and from the Cities of Santa Monica and Culver City. From a review of these lists, it was determined that traffic from 24 projects near the study site could produce additional traffic at the study intersections for The Shores project. These related projects are shown in **Figure 5.6-4, Related Projects Locations**, and are described below in **Table 5.6-9, Related Projects Descriptions and Trip Generation**. Estimates of the daily and peak-hour traffic expected to be generated by these related projects are summarized in the table as well. The trip-making estimates for the related projects are based on Coastal Transportation Corridor Specific Plan (CTCSP) PM trip rates, supplemented by data obtained from the 6th Edition ITE *Trip Generation Manual*[6] rates and equations, or from previously prepared traffic studies or other environmental documentation. Related project traffic was assigned to the area roadway system using a procedure identical to the methodology described previously for determining the proposed project's traffic assignments.

6 Institute of Transportation Engineers, *Trip Generation Manual*, 6th Edition, Washington, D.C., 1997.

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-4**

Related Projects Locations

779-02-06/05

Table 5.6-9
Related Projects Descriptions and Trip Generation

Map No.	Description	Daily	AM Peak Hour		PM Peak Hour	
			I/B	O/B	I/B	O/B
1.	8,800 sf Shopping Center Addition	378	5	4	61	67
2.	197,000 sf Retail	10,542	146	93	505	548
	280 du Apartment	1,856	23	120	131	65
	Net Total	12,398	169	213	636	613
3.	6 p Service Station w/720 sf conv. store	977	30	30	40	40
4.	25,656 sf Mar Vista Postal Station	1,412	20	8	79	86
5.	134,557 sf Warehouse	667	50	11	52	163
	1,357 sf Office	49	5	1	1	3
	(58,323 sf University of CA laundry bldg.)	(223)	(33)	(10)	(17)	(30)
	Net Total	493	22	2	36	136
6.	1,623 sf Fast-food rest. w/drive-thru	805	41	40	27	24
7.	20 du Senior care facility (9,970 sf)	43	1	0	2	1
	(9,970 sf Furniture manu./warehouse)	0	(5)	(2)	(3)	(5)
	Net Total	43	(4)	(2)	(1)	(4)
8.	70 du Assisted-living/Alzheimer's care facility	151	2	2	7	5
9.	22,000 sf Office	415	49	7	11	51
	20,000 sf Mini-warehouse	50	2	1	3	3
	(42,000 sf Mini-warehouse)	(105)	(4)	(2)	(7)	(6)
	Net Total	360	47	6	7	48
10.	42,270 sf Retail/motorcycle/office	975	0	0	49	33
	1,000 sf Café					
	8,200 sf Restaurant					
11.	120 du Apartment expansion	796	10	51	9	12
12.	298 du Apartment	860	(70)	103	47	(79)
	(24,000 sf Light Manufacturing)					
	(21,600 sf Office)					
	(40,000 sf Auto Service/Repair)					
13.	15,180 sf Office	312	37	5	7	36
14.	6,236 sf Retail	18	1	0	1	1
	(5,750 sf Retail)					
15.	15,250 sf Retail	367	(4)	3	(19)	(34)
	405 sf Restaurant					
	4,250 sf Drive-in Bank					
	7,888 sf Office					
	(9,180 sf Office)					
	(165 sf Restaurant)					
	(7,500 sf Drive-in Bank)					
16.	133 rm Motel expansion	749	22	38	34	29
17.	600 du Condominium	3,516	45	219	44	62
18.	E/S Via Marina (Parcels FF and 10R)	1,478	24	110	85	39
	526 du Apartment expansion					
	161 sl Boat					
	(136 du Apartment)					
	(184 sl Boat)					

Map No.	Description	Daily	AM Peak Hour		PM Peak Hour	
			I/B	O/B	I/B	O/B
19.	940 du Apartment 82 du Senior apartment 4,000 sf Retail 6,000 sf Commercial 439 sl Boat	1,785	31	140	106	46
20.	100 du Apartment 6,885 sf Commercial	614	14	37	35	27
21.	65 du Apartment 75 du Congregate care facility	425	7	22	22	13
22.	179 du Apartment (64 rm Apartment) Net Total	650 (233) 417	11 (4) 7	51 (18) 33	34 (12) 22	24 (9) 15
23.	175,000 sf Office 2,600 du Apartment 150,000 sf Retail 40,000 sf Community Serving Uses	24,220	557	1,049	1,275	1,027
24.	288 rm Hotel 2 ac Public park	2,420	63	54	46	56

I/B = inbound trips; O/B = outbound trips sf = square foot; du = dwelling unit; rm = room; ac = acre; sl = slips; p = pump.

5.6.5 ENVIRONMENTAL IMPACTS

5.6.5.1 Project Improvements

Implementation of The Shores project would result in the development of 544 residential units and 1,114 parking spaces. As there are 202 existing apartments on site, completion of the proposed project would result in a net increase of 342 apartment units. A total of 12 five-story wood-framed structures would house the residential units, with parking provided in two-level parking garages below the residences.

5.6.5.2 Thresholds of Significance

California Environmental Quality Act (CEQA) Guidelines, Appendix G, identifies criteria for determining whether a project's impacts are considered to have a significant effect on the environment. One of these criteria states that a project's traffic and circulation impacts are significant when the project will:

1) cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system.

2) exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads and highways.

The LACDPW defines a significant traffic impact based on a "stepped scale" as defined in the "Traffic Impact Analysis Report Guidelines." The impact definition recognizes that intersections at high volume-to-capacity ratios are more sensitive to additional traffic than those operating with available surplus capacity. A significant traffic impact is identified as:

- an increase in the CMA value of 0.010 or more, when the final ("With Project") LOS is E or F (CMA > 0.900);
- a CMA increase of 0.020 or more at LOS D (CMA > 0.800 to 0.900); and
- a CMA increase of 0.040 or more at LOS C (CMA > 0.700 to 0.800).

Additionally, the Los Angeles County EIR Guidelines considers a project to have an adverse impact on traffic when:

1) traffic generated by a project considered alone or cumulatively with other projects, if added to existing traffic volumes, exceeds the design capacity of an intersection or roadway, contributes to an unacceptable LOS, or exacerbates an existing congested condition; and/or
2) project-generated traffic interferes with the existing traffic flow (e.g., due to the location of access roads, driveways, parking facilities); and/or
3) proposed access locations do not provide for adequate safety (e.g., due to limited visibility on curving roadways); and/or
4) non-residential uses generate commuter or truck traffic through a residential area; and/or
5) project-generated traffic significantly increases on a residential street and alters its residential character.

With regard to Criterion Items 4 and 5 under the County EIR Guidelines, these criteria are not applicable to the project because the project does not contain non-residential uses which would generate commuter or significant truck traffic through a residential area, and because project-generated traffic would not significantly increase on residential streets or alter the character of residential streets. Criterion Items 2 and 3 are also not applicable because the project's driveways and parking facilities are designed consistent with the applicable design standards of the County. Therefore, this project is evaluated relative to Criterion Item 1 using the standard of significance defined in the "Traffic Impact Analysis Report Guidelines."

This analysis of the proposed project also looks at the potential impacts on the regional transportation system and uses the guidelines set forth in the CMP. The intent of the CMP is to provide the analytical basis for transportation decisions through the State Transportation Improvement Program (STIP) process. According to the CMP, a traffic analysis is required at all arterial monitoring intersections where the proposed project would add 50 or more trips during either the AM or PM weekday peak hours. In

addition, a traffic analysis is also required at all mainline freeway monitoring locations where the project would add 150 or more trips, in either direction, during either the AM or PM weekday peak hours.

5.6.5.3 Impact Analysis

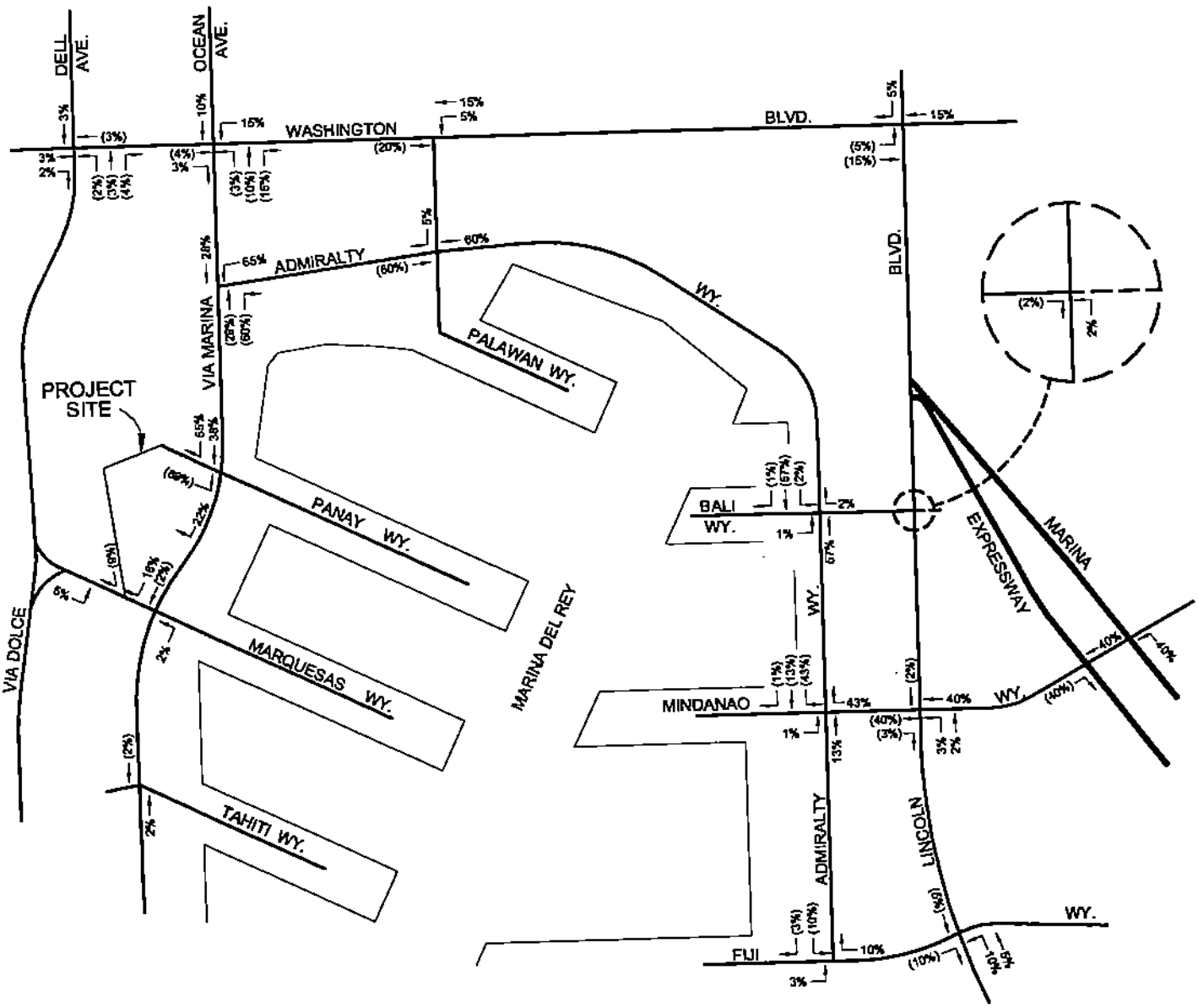
5.6.5.3.1 Traffic Generation

Using the trip generation rates provided in **Table 5.6-1**, above, the project is expected to generate approximately 1,354 net new trips per day. Of this total, an estimated 120 trips would occur during the morning peak hour, and 111 new trips would occur during the evening peak hour. These new trips would be added to the project area roadway network once the existing development on the sites is demolished and the proposed project is completed and fully occupied. Estimated trip generation figures for The Shores project are provided in **Table 5.6-10**, below.

Table 5.6-10
Project Trip Generation

Land Uses	Daily	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Proposed Land Uses					
544 Apartments Units	2,154	34	156	120	57
Subtotal New Trips	**2,154**	**34**	**156**	**120**	**57**
Existing Land Uses (Removed)					
202 Apartments Units	800	13	57	45	21
Subtotal Existing Trips	**800**	**13**	**57**	**45**	**21**
Net New Trips	**1,354**	**21**	**99**	**75**	**36**
Net New Peak-hour Trips		**120**		**111**	

These general geographic trip distribution percentages from **Table 5.6-5** were then assigned to specific travel routes in the study area and are assumed to be the same during both the AM and PM peak hours. Using the directional distribution percentages shown in **Figure 5.6-5, Trip Distribution Percentages**, the number of trips along each roadway was calculated. These "roadway" trips were then assigned to specific routes serving the project. The results of this traffic assignment provide the necessary level of detail to conduct the traffic analysis. The traffic assignments for the AM and PM peak-hour project traffic on the nearby street system are shown in **Figure 5.6-6, Traffic Volumes – Net Shores Project Traffic – AM Peak Hour**, and **Figure 5.6-7, Traffic Volumes – Net Shores Project Traffic – PM Peak Hour.**



00% - INBOUND PERCENTAGES
(00%) - OUTBOUND PERCENTAGES

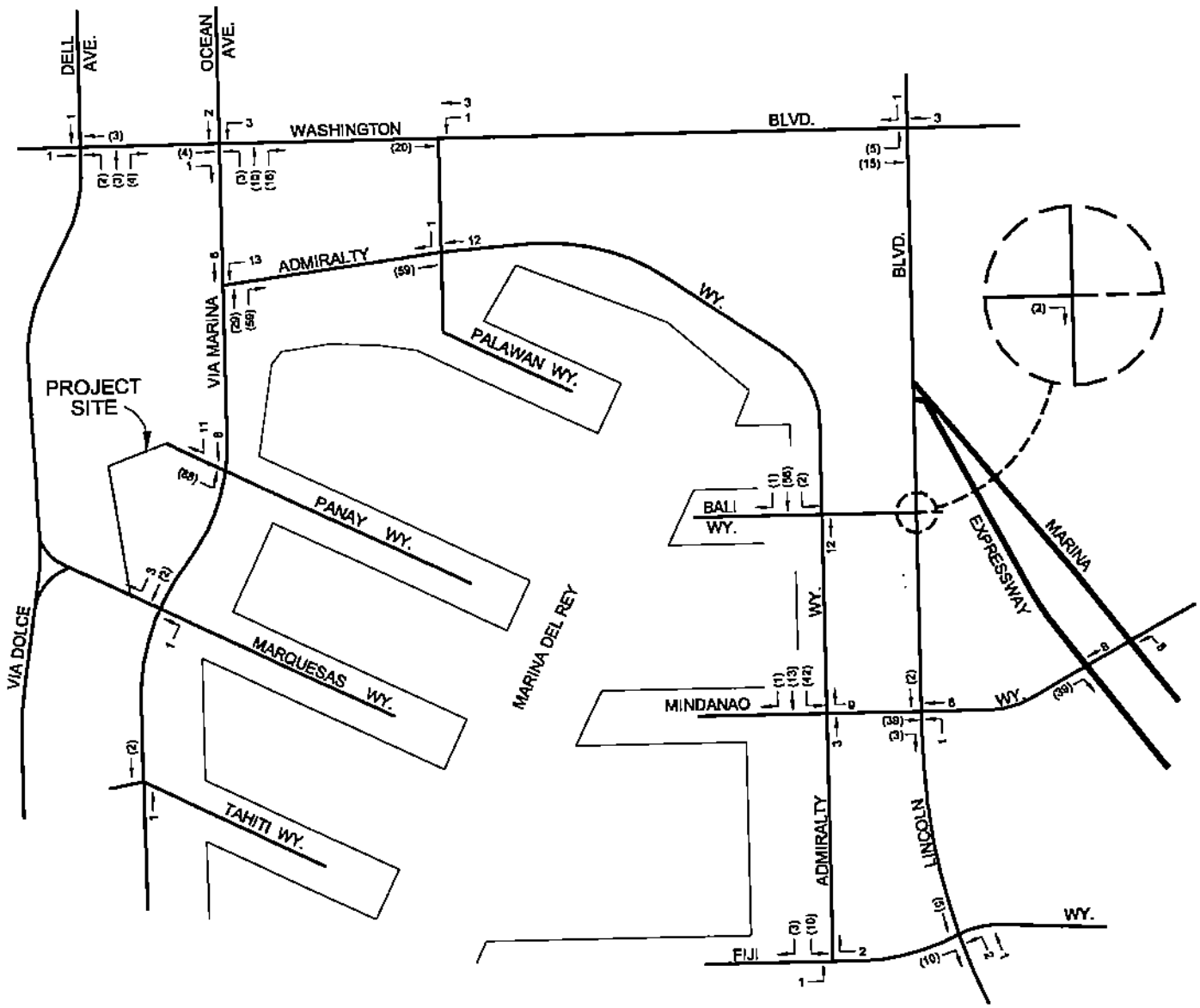
NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-5**

Trip Distribution Percentages

779-02-06/05

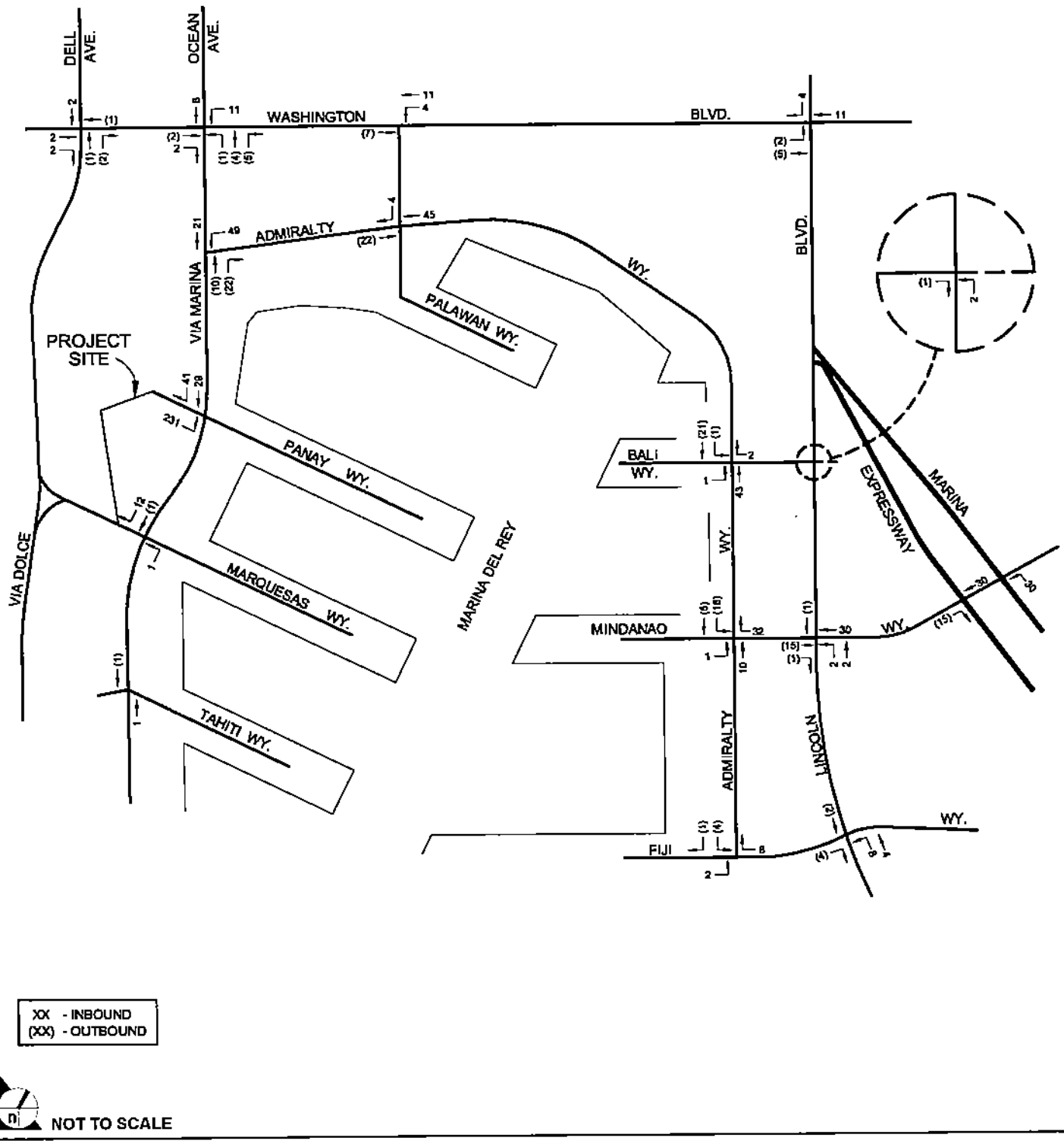


SOURCE: Crain & Associates – May 2005

FIGURE **5.6-6**

Traffic Volumes – Net Shores Project Traffic – AM Peak Hour

779-02-06/05



SOURCE: Crain & Associates – May 2005

FIGURE **5.6-7**

Traffic Volumes – Net Shores Project Traffic – PM Peak Hour

770-02-06/05

5.6.5.3.2 Future Traffic Conditions

The analysis of future conditions in the project area was performed using the same CMA procedures described previously in this report. For future project conditions, the roadway system was considered to have no improvements beyond existing conditions. Traffic volumes for the analysis were developed as follows:

- Future-year traffic volumes for the project vicinity were determined by applying a 0.6 percent per year ambient growth factor to the 2005 traffic counts, to estimate area traffic growth.
- Traffic volumes generated by the project were combined with these benchmark "Without Project" volumes to form the "With Project" traffic conditions and to determine traffic impacts directly attributable to the proposed development.
- Finally, traffic generated by the 24 identified related projects was added to the "With Project" condition traffic volumes described above, to produce an estimate of the potential future cumulative traffic conditions within the study area.

The 2009 baseline "Without Project" AM and PM peak-hour traffic volumes for The Shores project are shown in **Figure 5.6-8, Future (2009) Traffic Volumes without Project (Ambient Growth) – AM Peak Hour**, and **Figure 5.6-9, Future (2009) Traffic Volumes without Project (Ambient Growth) – PM Peak Hour**, respectively. Future year 2009 "With Project" traffic volumes are shown in **Figure 5.6-10, Future (2009) Traffic Volumes with Project – AM Peak Hour**, and **Figure 5.6-11, Future (2009) Traffic Volumes with Project – PM Peak Hour**, for the AM and PM peak hours, respectively.

5.6.5.3.3 Study Area Intersection Impacts

The results of the CMA for future traffic conditions at the 18 study area intersections are summarized in **Table 5.6-11, Summary of Critical Movement Analysis Future (2009) Traffic Conditions – Without and With Project – AM Peak Hour**, and **Table 5.6-12, Summary of Critical Movement Analysis Future (2009) Traffic Conditions – Without and With Project – PM Peak Hour**. The table shows that both the "Without Project" and "With Project" intersection traffic conditions would range between LOS A and LOS D at the most congested study intersections during both the AM and PM peak hours. However, two of the congested study intersections, Lincoln Boulevard/Washington Boulevard and Lincoln Boulevard/ Mindanao Way are forecast to operate at LOS E or worse during both the AM and PM peak hours. It should be noted that the incremental project traffic would not change the LOS forecasts at any of the study intersections.

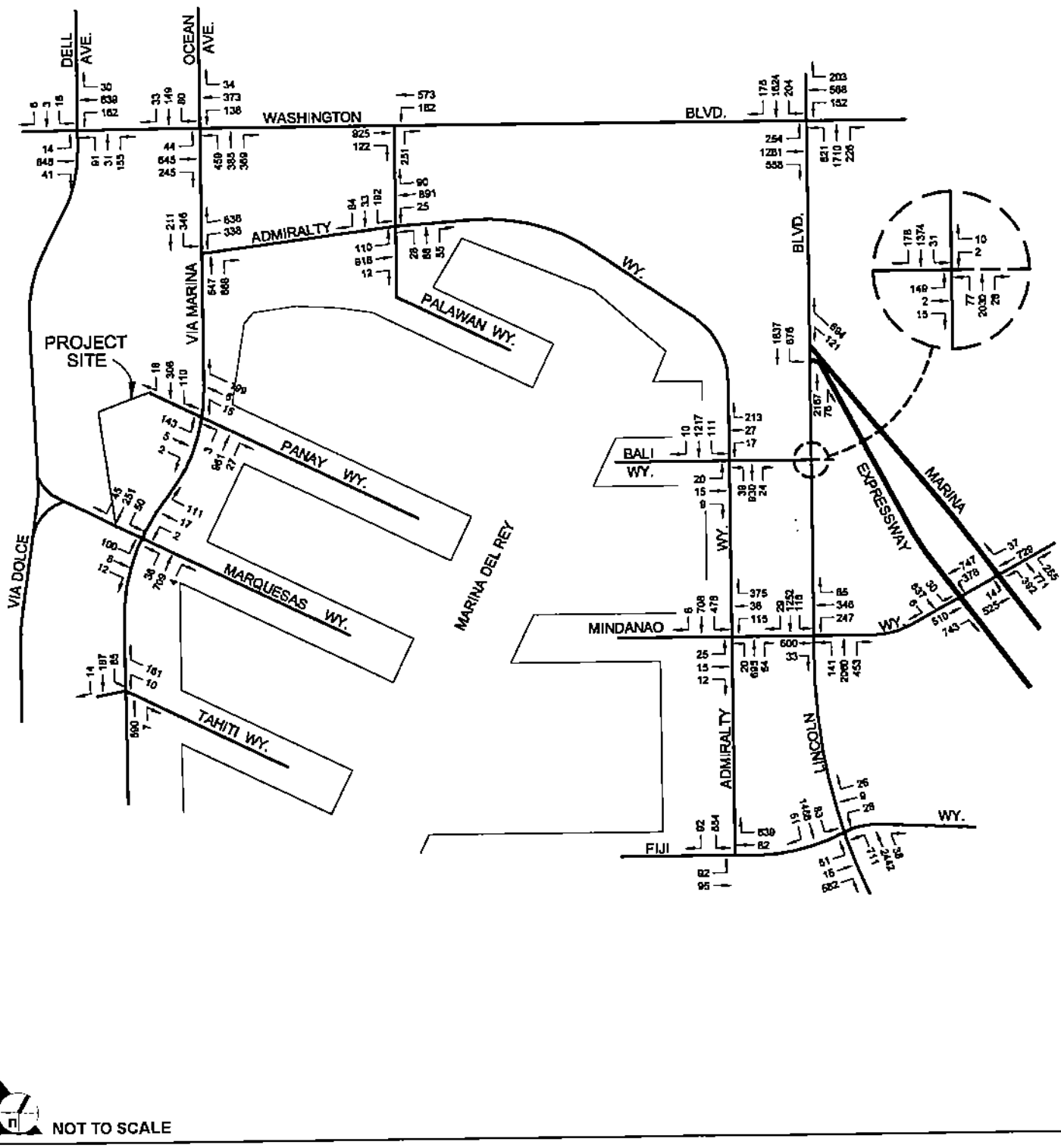
Table 5.6-11
Summary of Critical Movement Analysis Future (2009) Traffic Conditions
Without and With Project – AM Peak Hour

No.	Intersection	Without Project		With Project		
		CMA	LOS	CMA	LOS	Impact
1.	Via Marina/Tahiti Way	0.262	A	0.263	A	+0.001
2.	Via Marina/Marquesas Way	0.253	A	0.253	A	+0.000
3.	Via Marina/Panay Way	0.387	A	0.443	A	+0.056
4.	Admiralty Way/Via Marina	0.559	A	0.569	A	+0.010
5.	Washington Blvd./Ocean Ave./Via Marina	0.621	B	0.632	B	+0.011
6.	Admiralty Way/Palawan Way	0.477	A	0.481	A	+0.004
7.	Washington Blvd./Palawan Way	0.662	B	0.670	B	+0.008
8.	Lincoln Blvd./Washington Blvd.	1.072	F	1.077	F	+0.005
9.	Lincoln Blvd./Marina Expwy (SR 90)	0.810	D	0.810	D	+0.000
10.	Lincoln Blvd./Bali Way	0.485	A	0.485	A	+0.000
11.	Lincoln Blvd./Mindanao Way	0.923	E	0.939	E	+0.016*
12.	Lincoln Blvd./Fiji Way	0.597	A	0.597	A	+0.000
13.	Admiralty Way/Bali Way	0.417	A	0.437	A	+0.020
14.	Admiralty Way/Mindanao Way	0.616	B	0.638	B	+0.022
15.	Admiralty Way/Fiji Way	0.255	A	0.259	A	+0.004
16.	Marina Expwy (SR 90) WB/Mindanao Way	0.451	A	0.452	A	+0.001
17.	Marina Expwy (SR 90) EB/Mindanao Way	0.755	C	0.764	C	+0.009
18.	Via Dolce/Dell Ave./Washington Blvd.	0.400	A	0.403	A	+0.003

* *Denotes significant impact, prior to mitigation.*

Table 5.6-12
Summary of Critical Movement Analysis Future (2009) Traffic Conditions
Without and With Project – PM Peak Hour

No.	Intersection	Without Project		With Project		
		CMA	LOS	CMA	LOS	Impact
1.	Via Marina/Tahiti Way	0.175	A	0.176	A	+0.001
2.	Via Marina/Marquesas Way	0.206	A	0.209	A	+0.002
3.	Via Marina/Panay Way	0.251	A	0.268	A	+0.017
4.	Admiralty Way/Via Marina	0.734	C	0.757	C	+0.023
5.	Washington Blvd./Ocean Ave./Via Marina	0.747	C	0.762	C	+0.015
6.	Admiralty Way/Palawan Way	0.622	B	0.637	B	+0.015
7.	Washington Blvd./Palawan Way	0.630	B	0.636	B	+0.006
8.	Lincoln Blvd./Washington Blvd.	1.037	F	1.044	F	+0.007
9.	Lincoln Blvd./Marina Expwy (SR 90)	0.844	D	0.844	D	+0.000
10.	Lincoln Blvd./Bali Way	0.643	B	0.644	B	+0.001
11.	Lincoln Blvd./Mindanao Way	0.947	E	0.952	E	+0.005
12.	Lincoln Blvd./Fiji Way	0.741	C	0.744	C	+0.003
13.	Admiralty Way/Bali Way	0.547	A	0.563	A	+0.016
14.	Admiralty Way/Mindanao Way	0.713	C	0.744	C	+0.031
15.	Admiralty Way/Fiji Way	0.380	A	0.382	A	+0.002
16.	Marina Expwy (SR 90) WB/Mindanao Way	0.618	B	0.625	B	+0.007
17.	Marina Expwy (SR 90) EB/Mindanao Way	0.877	D	0.880	D	+0.003
18.	Via Dolce/Dell Ave./Washington Blvd.	0.375	A	0.377	A	+0.002



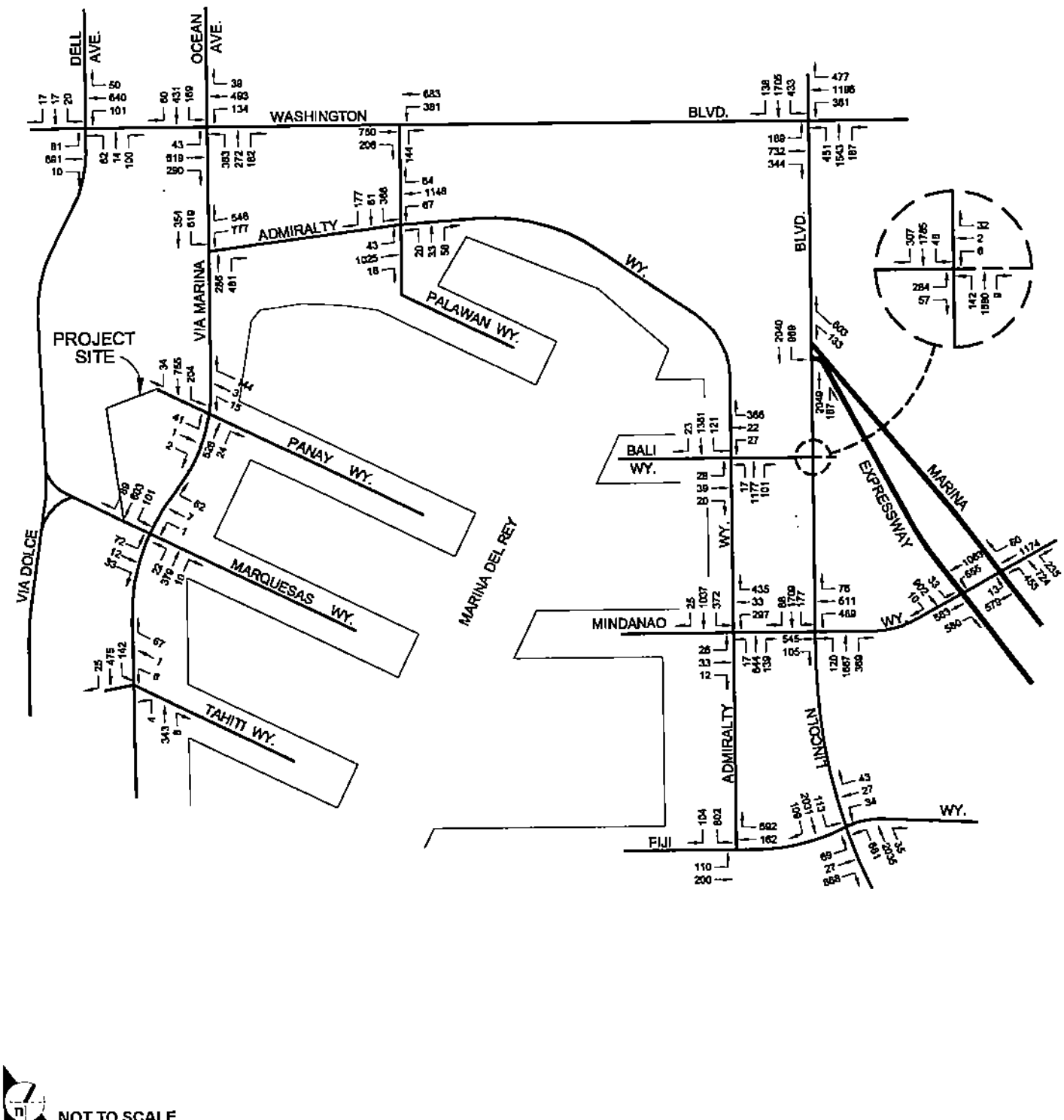
NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-8**

Future (2009) Traffic Volumes without Project (Ambient Growth) – AM Peak Hour

770-02-06/05



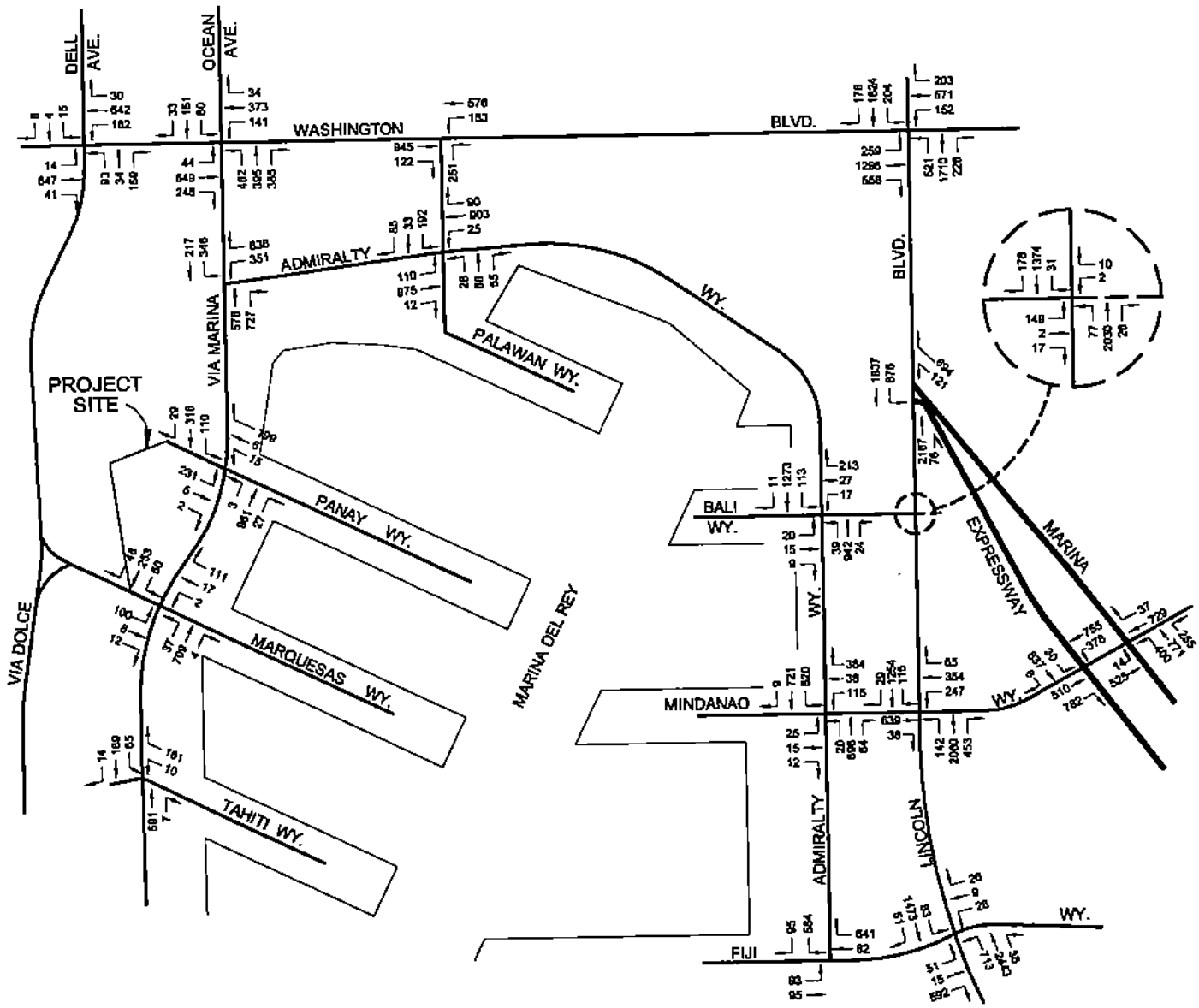
NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-9**

Future (2009) Traffic Volumes without Project (Ambient Growth) – PM Peak Hour

779-02-06/05

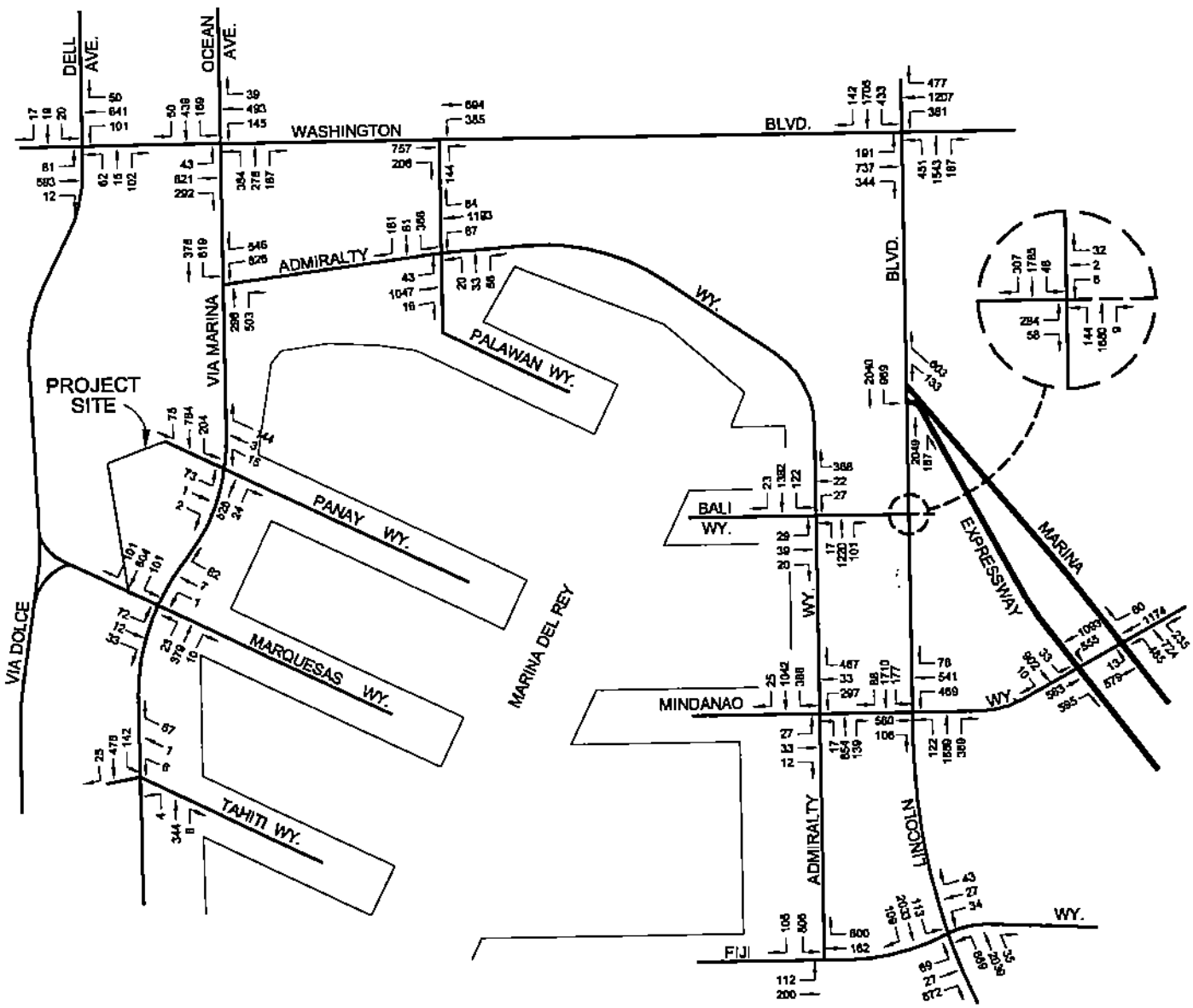


NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-10**

Future (2009) Traffic Volumes with Project – AM Peak Hour



NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-11**

Future (2009) Traffic Volumes with Project – PM Peak Hour

As shown in **Tables 5.6-11** and **5.6-12**, The Shores project is expected to result in one significant traffic impact, at the study intersection of Lincoln Boulevard/Mindanao Way, during the AM peak hour, prior to mitigation. Measures to reduce this impact are discussed under heading **5.6.6, Mitigation Measures.**

5.6.5.3.4 Impacts on the Regional Transportation System

As mentioned previously, a traffic analysis is required at all arterial monitoring intersections where the proposed project would add 50 or more trips during either the AM or PM weekday peak hours. In addition, a traffic analysis is also required at all mainline freeway monitoring locations where the project would add 150 or more trips, in either direction, during either the AM or PM weekday peak hours.

Only one CMP intersection (located at Lincoln Boulevard and SR 90) was identified in the project area. The proposed project is not expected to add 50 or more trips to this intersection during either the AM or PM weekday peak hours. However, this intersection was analyzed due to its close proximity to the project site. A review of the project's net trip generation assignments, as shown above in **Figures 5.6-10** and **5.6-11**, indicates that the project is not expected to add substantial traffic volumes to the regional transportation system. The project itself would only result in net peak-hour trip generation of 120 trips during the AM peak hour and 111 trips during the PM peak hour, significantly less than the CMP threshold of 150 peak-hour trips added to any segment of any freeway in a single direction.

The Shores project is not expected to add substantial traffic volumes to the regional transportation system. The maximum amount of project traffic added to any particular freeway segment would occur along the westbound SR 90 east of Mindanao Way during the AM peak hour. During this time, The Shores project would add 39 trips, which is significantly less than the CMP threshold of 150 peak-hour trips added to any segment of any freeway in a single direction. Based on this information, the impact criterion would not be exceeded, no significant regional impacts would occur and no further CMP analysis was conducted.

With regard to public transportation, an extensive network of transit lines is located in the project area. Volumes of passengers per hour are not anticipated to significantly impact the extensive transit service operating with the study area.

5.6.5.3.5 Parking Impacts

Access to The Shores project would be provided from Via Marina, Marquesas Way via Dell Avenue and Admiralty Loop. Access locations include one driveway along Via Marina, two driveways along Admiralty Loop and three driveways along Dell Avenue. The driveway on Via Marina would provide

ingress and egress right-turn-only access, as a median island on Via Marina currently exists at that approximate location. All other driveways would provide full left- and right-turn access.

Parking for The Shores project is generally provided via a series of parking structures located beneath or adjacent to each building, although approximately four surface parking spaces are planned. The amount of parking provided for the project is summarized in **Table 5.6-13, Parking Tabulation for the Proposed Project.**

As shown in **Table 5.6-13,** the project would require a total of 951 parking spaces for the residents and 136 parking spaces for the guests of the 544 apartments, for a total of 1,087 spaces. The project would provide a minimum of 1,114 spaces, exceeding the required number of spaces by 27 spaces. The amount of parking provided by The Shores project exceeds the County of Los Angeles Marina del Rey Local Implementation Plan and would be sufficient to meet the required parking for the project. Because the project would exceed its parking requirements, no parking spillover onto area streets or into the nearby neighborhoods is anticipated. As a result, parking-related impacts are less than significant.

Table 5.6-13
Parking Tabulation for the Proposed Project

Type of Unit	Number of Units	Spaces Per Unit[1]	Total
1 Bedroom	273	1.50	409
2 Bedroom	271	2.00	542
		Subtotal Resident Only	**951**
Apartment Guests	544	0.25	136
		Subtotal Guests only	**136**
		Total Required	**1,087**
		Total Parking Provided	**1,114**
		Total Surplus Parking	**27**

[1] *Pursuant to Los Angeles County Code.*

5.6.5.3.6 Marina del Rey Traffic Capacity Impacts

In order to receive approval for new development, all projects within the Marina must demonstrate compliance and compatibility with the Marina del Rey LUP. As described previously, The Shores project would result in the development of 544 residential units and 1,114 parking spaces. As there are 202 existing apartments on site, completion of the proposed project would result in a net increase of 342 apartment

units. As discussed above, the allowable Phase II development amounts for residential uses are 530 dwelling units. Thus, the project is within the allowable development capacity in DZ 12.

The LUP also requires that proposed projects demonstrate compatibility with the Circulation Element of the Plan, based upon a comparison of the amount of trips generated by the allowable development and the trips generated by the proposed project. As noted previously, the Phase II development potential for each zone is based upon the Marina's ultimate capacity to accommodate traffic. To determine the compatibility of The Shores project with the Circulation Element, the PM peak-hour trip generation potentials for both the proposed and allowable land use were computed. The trip generation rates used in this comparison are specified in Table 2 of Appendix G, (TIP), of the Marina del Rey LIP, which is part of the LUP. These trip rates were used to determine the number of trips attributable to the allowed Phase II development levels, and to assess the need for and effectiveness of the roadway improvements required as part of the Phase II development. The calculation of the number of allowable and proposed PM peak-hour trips for DZ 12 is summarized in **Table 5.6-14, Development Zone 12 PM Peak-hour Trips.**

Table 5.6-14 shows that the original Phase II development allowances for DZ 12 would allow a total of 390.98 net new PM trips. The development potential for each zone is granted on a "first-come, first-served" basis and, as noted earlier, the retail/commercial project on Parcel 95 is currently approved for development within DZ 12. The retail/commercial results in a net total of 53.16 trips, leaving 444.14 trips remaining for DZ 12 development. The Shores project would produce a total of 111.49 net new PM peak-hour trips, resulting in a net total of 332.65 trips remaining for other development within DZ 12. Therefore, The Shores project is compatible with the trip generation limits identified in the Marina del Rey LUP for DZ 12.

Table 5.6-14
Development Zone 12 PM Peak-Hour Trips

Allowable Phase II Development		
530 dwelling units x 0.326 trips/unit		172.78 trip
30,000 sq. ft. visitor-serving retail x 4.44 trips/KSF	=	133.20 trips
340 restaurant seats x 0.25 trips/seat	=	85.00 trips
Total Allowable Trips		*390.98 trips*
Approved Phase II Development (Parcel 95)		
15,250 sq. ft. retail x 4.44 trips/KSF	=	67.71 trips
405 restaurant seats x 0.25 trips/seat	=	101.25 trips
4,250 sq. ft. drive-in bank x 54.77 trips/KSF	=	232.77 trips
7,888 sq. ft. office x 2.21 trips/KSF	=	17.43 trips
		419.16 trips
Less 9,180 sq. ft. existing office x 2.21 trips/KSF	=	*-20.29 trips*
Less 165 existing restaurant seats x 0.25 trips/seat	=	-41.25 trips
Less 7,500 sq. ft. existing drive-in bank x 54.77 trips/KSF	=	-410.78 trips
Net Approved Project Trips		-53.16 trips
Remaining Allowable Phase II Trips		*444.14 trips*
Proposed Development (Parcels 100 and 101)		
544 new dwelling units x 0.326 trips/unit	=	177.34 trips
Less 202 existing dwelling units x 0.326 trips/unit	=	*-65.85 trips*
Net Proposed Project Trips		111.49 trips
Surplus/(Deficit) Development Zone 12 Allowable Trips		**332.65 trips**

Additionally, overall development within the Marina is projected to remain well within acceptable limits. The Marina del Rey Phase II "Buildout" development allowed by the LUP and the TIP, as summarized in Table 3 of Appendix C, (TIP) of the Marina del Rey Local Implementation Plan, produces a total of 2,750 net new PM peak-hour trips for the Marina, beyond those trips occurring at the time those documents were certified. The LUP and its supporting documents were updated and certified most recently in February 1996. Only one project has been developed to-date under the allowed Phase II development, although several additional developments are pending, approved or are currently underway. The developed project (Dolphin Marina, within DZ 4) generates a net 28.17 PM peak-hour trips, slightly more than one percent of the total allowable Phase II trips. However, several development proposals, including the subject project, have been approved, are under construction or are currently proceeding through the approval process. These projects will also contribute toward the overall Marina trip cap.

As shown in Table 5.6-14, the proposed project will generate approximately 111.49 net PM peak-hour trips (about four percent of the total allowable). The other currently approved, proposed or potential

projects within the Marina include the Marina Two project (150.92 total trips on both Parcels 12 and 15), the ongoing lease extension proposals for Parcels 18 and 20 in DZ 4 (30.97 trips) and for Parcel 112 in DZ 1 (39.12 trips), the approved redevelopments of Parcel 95 (-53.16 trips) and Parcel 97 (2.16 trips), the Parcel 140 residential project (37.49 trips), the Marina Harbor expansion project (107.91 trips), the proposed Parcel 9U Hotel and Public Park (101.66 trips), and the proposed residential development on Parcels FF and 10R (124.25 trips). These developments could potentially add a total of approximately 569.49 net new trips to the Marina and, including The Shores project, would result in a net total addition of about 680.98 PM trips, or less than 25 percent of the total of 2,750 PM peak-hour trips allowed under the development and mitigation scenarios approved for Marina del Rey.

This level of overall trip generation from the approved/proposed Marina projects does not significantly affect the operations of the Marina del Rey traffic infrastructure, and is less than one-half of the 50 percent development level at which Category 1 System-Wide Improvements (as described in the LCP). Road modifications, such as the Admiralty Way improvement to five lanes are warranted before any additional development can occur. It should also be noted that the proposed project has identified several Category 1 improvements as mitigation measures for its project-specific traffic impacts, described in detail earlier in this report. Thus, if approved, the proposed project will contribute to the implementation of the Category 1 traffic mitigation measures far in advance of their anticipated need.

5.6.6 MITIGATION MEASURES

5.6.6.1 Mitigation Measures Already Incorporated into Project

The project applicant would construct all on-site circulation improvements to LACDPW and LADOT standards.

5.6.6.2 Mitigation Measures Recommended by the EIR

Development of The Shores project would result in one significant project impact, at Lincoln Boulevard and Mindanao Way. This impact would be fully mitigated through the implementation of area traffic improvement measures recommended in the adopted Marina del Rey Specific Plan TIP. The TIP includes specific detailed transportation and circulation improvements designed to fully mitigate the traffic generation of the Phase II development in Marina del Rey.

5.6-1. In order to fund the recommended TIP roadway improvements, all projects within the Marina, including the proposed project are required to pay the traffic mitigation fee imposed by the County of Los Angeles, pursuant to the Marina del Rey Specific Plan TIP. This fee is intended to fund the Category 1 (local Marina) and Category 3 (regional) roadway improvements described in the TIP, by providing "fair share" contributions toward the improvements, based on the amount of project PM peak-hour trips. These improvements address local traffic generated in and confined to the Marina, as well as trips, which leave the Marina (regional trips). The County's traffic mitigation fee structure is currently $5,690 per PM peak-hour trip. Based on the expected project trip generation of 111 net new PM peak-hour trips, the project would be required to pay $631,590.00 in trip mitigation fees. Of the $631,590.00, $176,712 shall go toward Category 1 transportation improvements and the remaining $454,878.00 will go toward Category 3 transportation improvements.

The LACDPW has expressed that it prefers to implement the Marina del Rey roadway improvements funded by the trip mitigation fees as a single major project in order to minimize traffic disruptions and construction time. Therefore, payment of the fee described previously is the recommended mitigation over the partial construction by this project of portions of the significant TIP roadway improvements. However, should the County decide that some roadway improvement measures are necessary immediately, the following measure is recommended to reduce the significant project traffic impact identified in this study to less than significant levels:

5.6-2. Lincoln Boulevard and Mindanao Way – Widen Lincoln Boulevard, and relocate and narrow the existing median island to provide a northbound right-turn only or through lane at Mindanao Way. This measure is identical to the improvement described in Appendix G (TIP) of the Marina del Rey LIP.

The measure listed above is recommended to address the potential project-specific traffic impact identified in this report. This measure is identified as an area-wide roadway improvement described in Appendix G (TIP) of the Marina del Rey LIP. To determine the quantitative effect of this mitigation measure on the significantly impacted study intersection located at Lincoln Boulevard and Mindanao Way, a supplemental analysis was performed. The results of this analysis are presented in **Table 5.6-15, Summary of Critical Movement Analysis, Future (2009) Traffic Conditions – With Project Plus Mitigation**, below, and show that, once in place, this mitigation measure would reduce the traffic impact of the proposed project at the impacted intersection to less than significant levels.

Table 5.6-15
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions – With Project Plus Mitigation

		Without Project		With Project			With Mitigation		
No.	Intersection	CMA	LOS	CMA	LOS	Impact	CMA	LOS	Impact
11.	Lincoln Blvd./Mindanao Way								
	AM Peak Hour	0.923	E	0.939	E	+0.016*	0.829	D	-0.094
	PM Peak Hour	0.947	E	0.952	E	+0.005	0.863	D	-0.084

* *Denotes significant impact, prior to mitigation.*

5.6.7 CUMULATIVE IMPACTS

5.6.7.1 Study Area Intersection Impacts

Traffic resulting from the previously identified 24 related projects would also contribute to impacts at the study intersections which are part of the proposed projects. In order to gauge the effects of this additional traffic, an additional level of analysis was conducted. Although the 0.6 percent annual growth factor is expected to fully represent all area traffic increases, for the purposes of conservative analysis, traffic generated from nearby "related projects" was added to these future baseline traffic volumes, to form the basis for the "Without Project" conditions. Further, in order to present a conservative analysis of future conditions, most of the 24 related projects were assumed to be completed and fully occupied by the study year (2009), although in reality, many of the related projects are still speculative, have not yet been approved, or are sufficiently large or complicated that they will not be constructed within the assumed study timeframe.

Figure 5.6-12, Related Project Traffic Volumes – AM Peak Hour, and **Figure 5.6-13, Related Project Traffic Volumes – PM Peak Hour** show the anticipated AM and PM peak-hour traffic at the study intersections resulting from the expected cumulative development in the study area. The related project traffic volumes were added to the future (2009) "With Project" traffic conditions shown previously in **Figure 5.6-10** and **Figure 5.6-11** to obtain projections of the ultimate expected future year 2009 traffic. These cumulative traffic volumes are shown in **Figure 5.6-14, Future (2009) Traffic Volumes – With Project and Related Projects – AM Peak Hour**, and **Figure 5.6-15, Future (2009) Traffic Volumes – With Project and Related Project Traffic – PM Peak Hour**. The analysis of the cumulative traffic conditions was performed using the same CMA methodology described earlier.

The results of the cumulative development analysis are summarized in **Table 5.6-16, Summary of Critical Movement Analysis Future (2009) Traffic Conditions – With Cumulative Development – AM Peak Hour**, and **Table 5.6-17, Summary of Critical Movement Analysis Future (2009) Traffic**

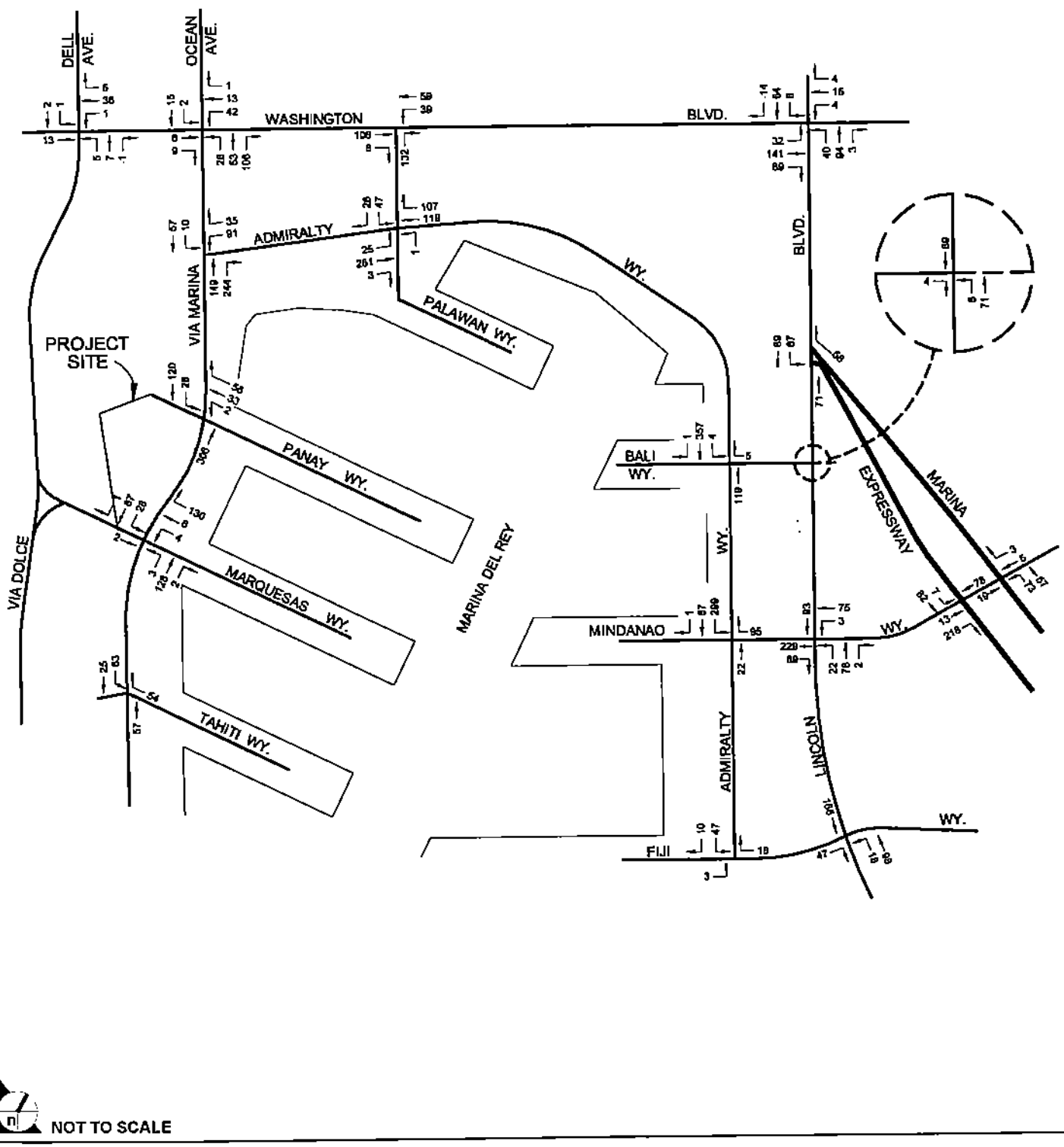
Conditions – With Cumulative Development – PM Peak Hour, and show that the potential additional traffic resulting from area-wide development would significantly impact ten of the 18 study intersections, resulting in several locations nearing or exceeding capacity. The Shores project would also contribute incrementally to these cumulative impacts. However, as shown in **Tables 5.6-16** and **5.6-17**, project contributions would be five percent or less of the intersection capacity at all project locations.

With implementation of the project-specific mitigation measures identified previously, the project-related impacts in this cumulative impact scenario would be less than significant. Nonetheless, cumulative impacts would be significant at 10 of the 18 study intersections without additional mitigation measures assignable to the cumulative development projects. Only these 10 intersections and their impacts are summarized below.

Table 5.6-16
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions – With Cumulative Development
AM Peak Hour

		Without Project		With Project			With Project Plus Cumulative Development			Project % of Total
No.	Intersection	CMA	LOS	CMA	LOS	Impact	CMA	LOS	Impact	Impact
1.	Via Dolce/Dell Ave. & Tahiti Wy.	0.400	A	0.403	A	+0.003	0.413	A	+0.013	23.1%
2.	Via Marina & Tahiti Wy.	0.262	A	0.263	A	+0.001	0.324	A	+0.062	1.6%
3.	Via Marina & Marquesas Wy.	0.253	A	0.253	A	+0.000	0.353	A	+0.100	0.0%
4.	Via Marina & Panay Wy.	0.387	A	0.443	A	+0.056	0.556	A	+0.169	33.1%
5.	Admiralty Wy. & Via Marina	0.559	A	0.569	A	+0.010	0.640	B	+0.081	12.3%
6.	Washington Blvd. & Ocean Ave./Via Marina	0.621	B	0.632	B	+0.011	0.712	C	+0.091*	12.1%
7.	Admiralty Wy. & Palawan Wy.	0.477	A	0.481	A	+0.004	0.606	B	+0.129	3.1%
8.	Washington Blvd. & Palawan Wy.	0.662	B	0.670	B	+0.008	0.842	D	+0.180*	4.4%
9.	Lincoln Blvd. & Washington Blvd.	1.072	F	1.077	F	+0.005	1.158	F	+0.086*	5.8%
10.	Lincoln Blvd. & Marina Expwy. (SR-90)	0.810	D	0.810	D	+0.000	0.860	D	+0.050*	0.0%
11.	Lincoln Blvd. & Bali Wy.	0.485	A	0.485	A	+0.000	0.502	A	+0.017	0.0%
12.	Lincoln Blvd. & Mindanao Wy.	0.923	E	0.939	E	+0.016*	1.066	F	+0.143*	11.2%
13.	Lincoln Blvd. & Fiji Wy.	0.597	A	0.597	A	+0.000	0.635	B	+0.038	0.0%
14.	Admiralty Wy. & Bali Wy.	0.417	A	0.437	A	+0.020	0.562	A	+0.145	13.8%
15.	Admiralty Wy. & Mindanao Wy.	0.616	B	0.638	B	+0.022	0.822	D	+0.206*	10.7%
16.	Admiralty Wy. & Fiji Wy.	0.255	A	0.259	A	+0.004	0.274	A	+0.019	21.1%
17.	Marina Expwy. (SR-90) WB/Mindanao Wy.	0.451	A	0.452	A	+0.001	0.486	A	+0.035	2.9%
18.	Marina Expwy. (SR-90) EB/Mindanao Wy.	0.755	C	0.764	C	+0.009	0.846	D	+0.091*	9.9%

* *Denotes significant impact, prior to mitigation.*

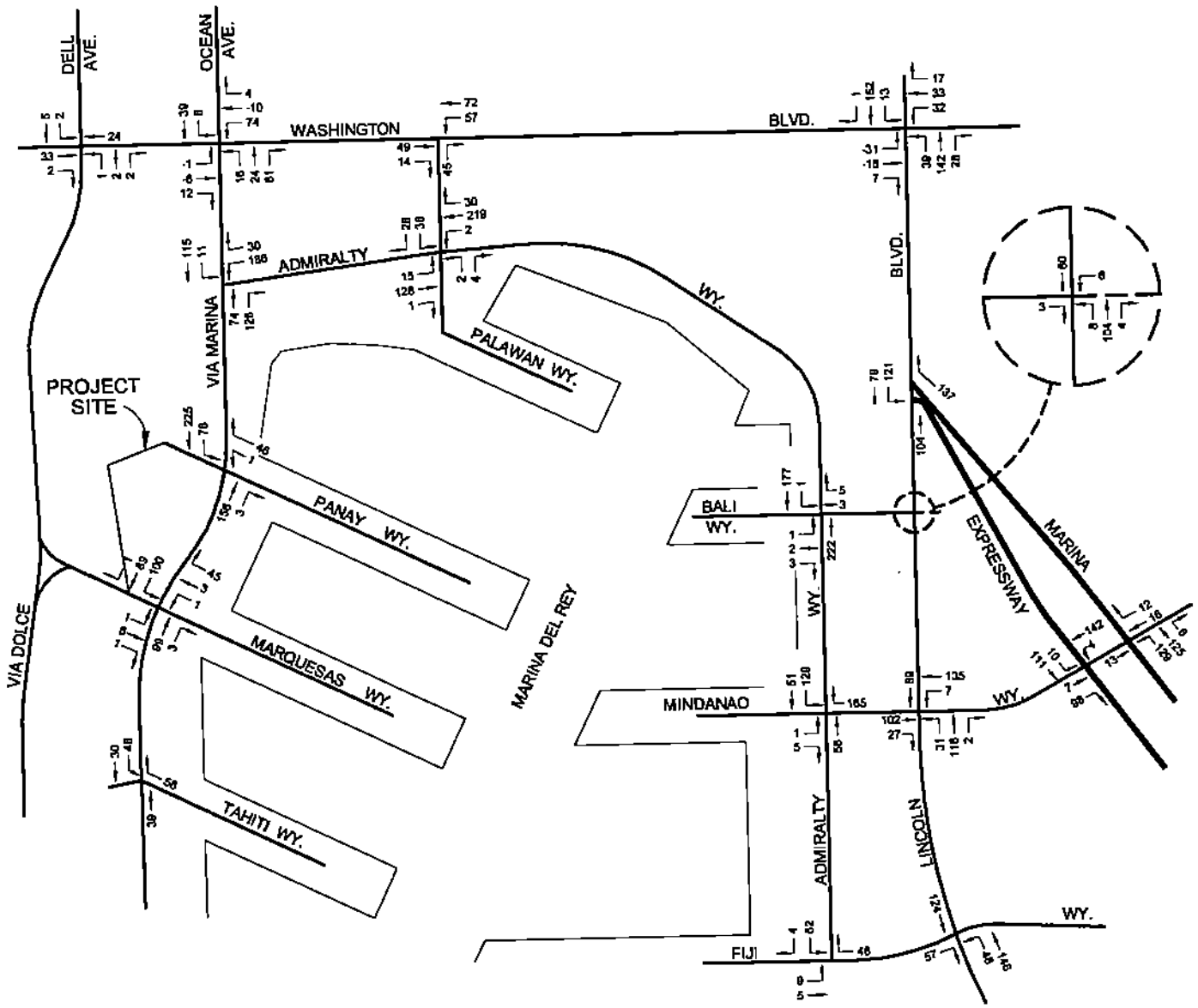


NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-12**

Related Project Traffic Volumes – AM Peak Hour

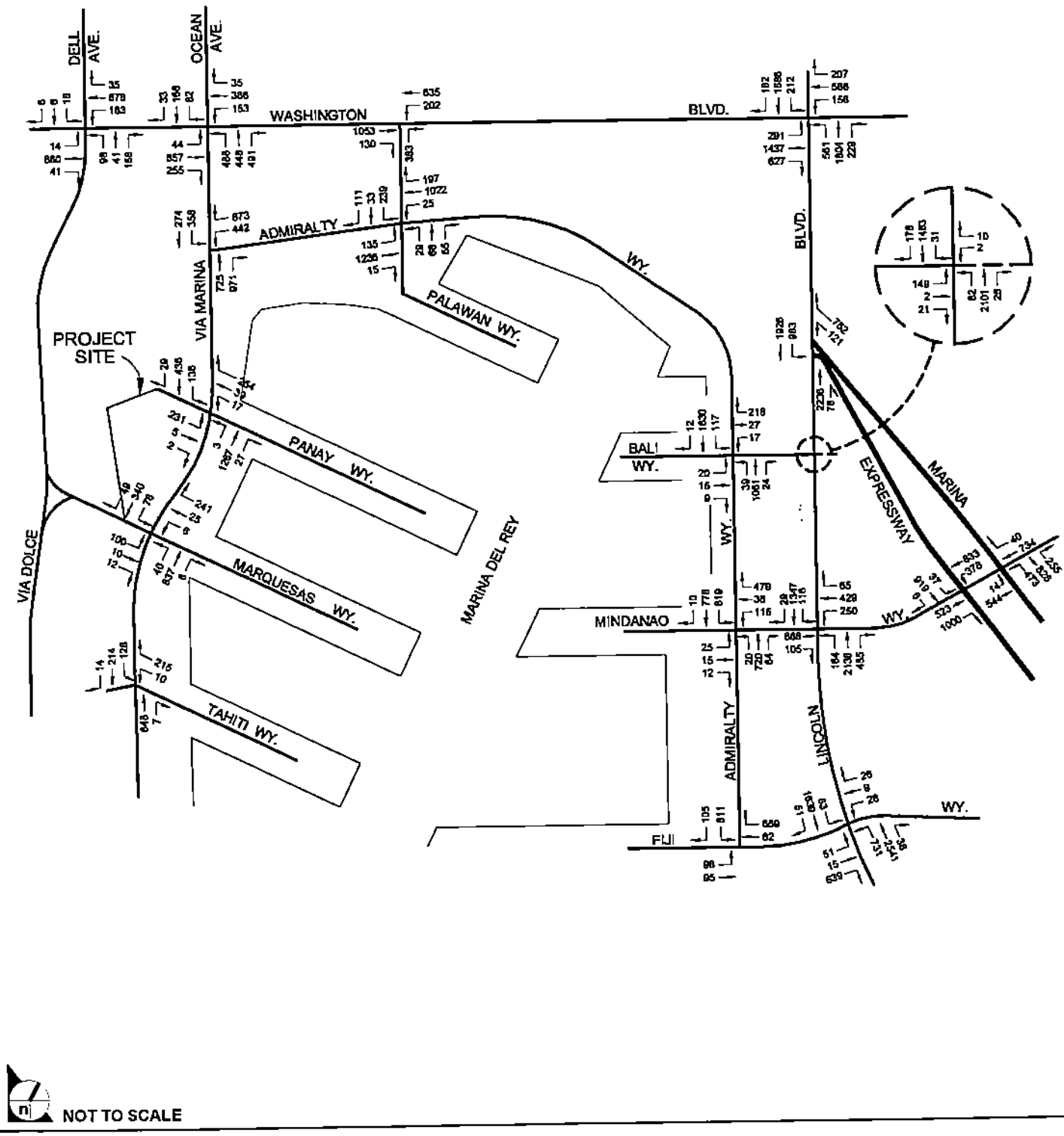


NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-13**

Related Project Traffic Volumes – PM Peak Hour



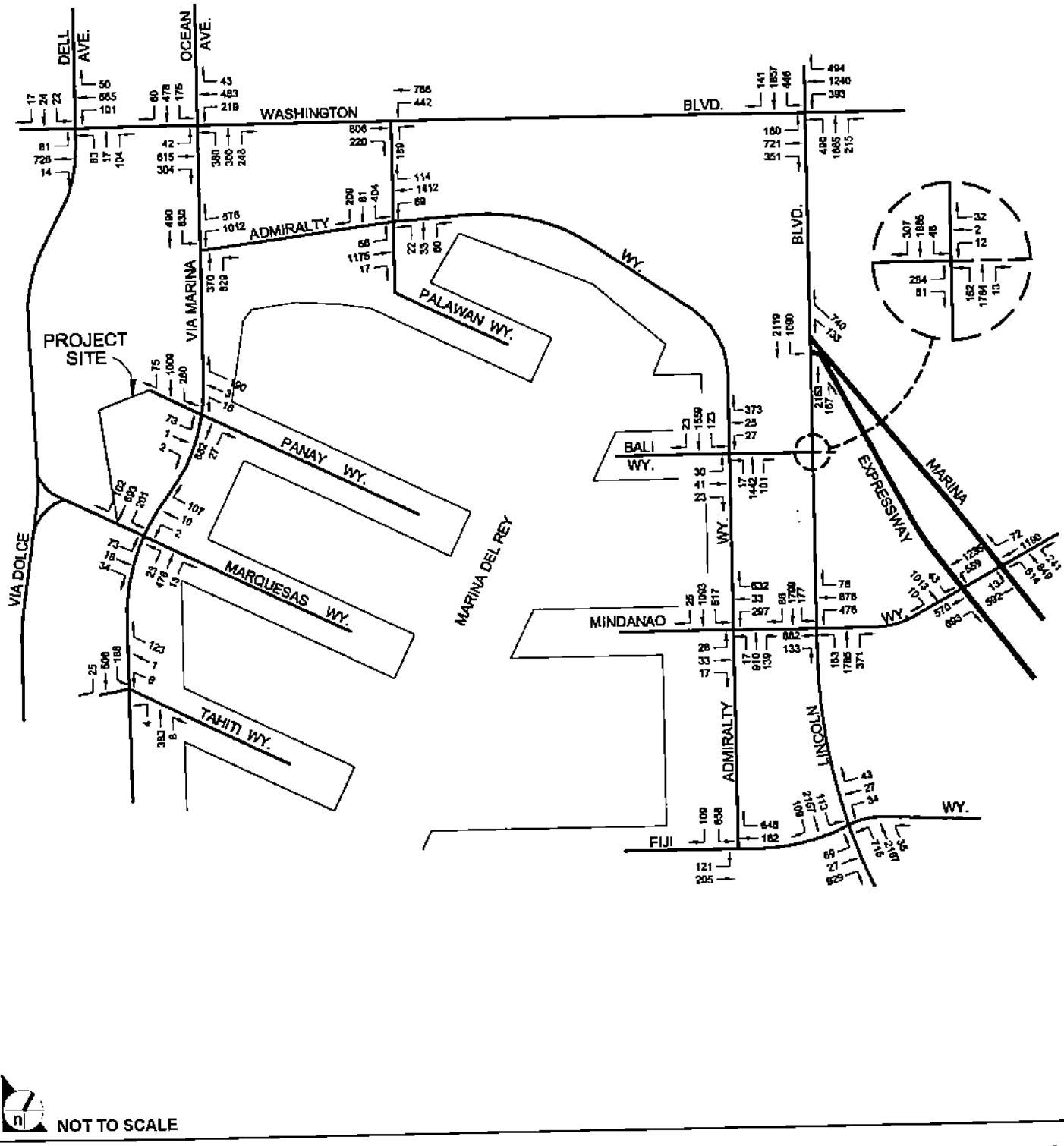
NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-14**

Future (2009) Traffic Volumes – with Project and Related Projects – AM Peak Hour

779-02-06/05



NOT TO SCALE

SOURCE: Crain & Associates – May 2005

FIGURE **5.6-15**

Future (2009) Traffic Volumes – with Project and Related Projects – PM Peak Hour

779-02-06/05

Table 5.6-17
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions – With Cumulative Development
PM Peak Hour

No.	Intersection	Without Project		With Project			With Project Plus Cumulative Development			Project % of Total Impact
		CMA	LOS	CMA	LOS	Impact	CMA	LOS	Impact	
1.	Via Dolce/Dell Ave. & Tahiti Wy.	0.375	A	0.377	A	+0.002	0.393	A	+0.018	11.1%
2.	Via Marina & Tahiti Wy.	0.175	A	0.176	A	+0.001	0.223	A	+0.048	2.1%
3.	Via Marina & Marquesas Wy.	0.206	A	0.209	A	+0.003	0.291	A	+0.085	3.5%
4.	Via Marina & Panay Wy.	0.251	A	0.268	A	+0.017	0.341	A	+0.090	18.9%
5.	Admiralty Wy. & Via Marina	0.734	C	0.757	C	+0.023	0.863	D	+0.129*	17.8%
6.	Washington Blvd. & Ocean Ave./Via Marina	0.747	C	0.762	C	+0.015	0.857	D	+0.110*	13.6%
7.	Admiralty Wy. & Palawan Wy.	0.622	B	0.637	B	+0.015	0.757	C	+0.135*	11.1%
8.	Washington Blvd. & Palawan Wy.	0.630	B	0.636	B	+0.006	0.704	C	+0.074*	8.1%
9.	Lincoln Blvd. & Washington Blvd.	1.037	F	1.044	F	+0.007	1.096	F	+0.059*	11.9%
10.	Lincoln Blvd. & Marina Expwy. (SR-90)	0.844	D	0.844	D	+0.000	0.915	E	+0.071*	0.0%
11.	Lincoln Blvd. & Bali Wy.	0.643	B	0.644	B	+0.001	0.674	B	+0.031	3.2%
12.	Lincoln Blvd. & Mindanao Wy.	0.947	E	0.952	E	+0.005	1.032	F	+0.085*	5.9%
13.	Lincoln Blvd. & Fiji Wy.	0.741	C	0.744	C	+0.003	0.791	C	+0.050*	6.0%
14.	Admiralty Wy. & Bali Wy.	0.547	A	0.563	A	+0.016	0.646	B	+0.099	16.2%
15.	Admiralty Wy. & Mindanao Wy.	0.713	C	0.744	C	+0.031	0.928	E	+0.215*	14.4%
16.	Admiralty Wy. & Fiji Wy.	0.380	A	0.382	A	+0.002	0.403	A	+0.023	8.7%
17.	Marina Expwy. (SR-90) WB/Mindanao Wy.	0.618	B	0.625	B	+0.007	0.694	B	+0.076	9.2%
18.	Marina Expwy. (SR-90) EB/Mindanao Wy.	0.877	D	0.880	D	+0.003	0.947	E	+0.070*	4.3%

**Denotes significant impact, prior to mitigation.*

5.6.7.2 Traffic Capacity of Marina Del Rey

Additionally, overall development within the Marina is projected to remain well within acceptable limits. The Marina del Rey Phase II "Buildout" development allowed by the LUP and the TIP produces a total of 2,750 net new PM peak-hour trips for the Marina, beyond those trips occurring at the time those documents were certified. The LUP and its supporting documents were updated and certified most recently in February 1996. Only one project has been developed to-date under the allowed Phase II development, although several additional developments are pending, approved or are currently underway. The developed project (Dolphin Marina, within DZ 4) generates a net 28.17 PM peak-hour trips, slightly more than one percent of the total allowable Phase II trips. However, several development

proposals, including the subject project, have been approved or are currently proceeding through the approval process. These projects would also contribute toward the overall Marina trip cap.

The Shores project would generate approximately 111.49 net PM peak-hour trips (about four percent of the total allowable). The other currently approved, proposed or potential projects within the Marina include the Marina II project (150.92 total trips on both Parcels 12 and 15), the ongoing lease extension proposals for Parcels 18 and 20 in DZ 4 (30.97 trips) and for Parcel 112 in DZ 1 (39.12 trips), the approved redevelopments of Parcel 95 (-53.16 trips) and Parcel 97 (2.16 trips), the Parcel 140 residential project (37.49 trips), the Marina Harbor expansion project (107.91 trips), the proposed Parcel 9U Hotel and Public Park (101.66 trips), and the proposed residential development on Parcels FF and 10R (124.25 trips). These developments could potentially add a total of approximately 569.49 net new trips to the Marina, and including the subject project, would result in a net total addition of about 680.98 PM trips, or less than 25 percent of the total of 2,750 PM peak-hour trips allowed under the development and mitigation scenarios approved for Marina del Rey.

This level of overall trip generation from the approved/proposed Marina projects does not significantly affect the operations of the Marina del Rey traffic infrastructure, and is less than one-half of the 50 percent development level at which Category 1 System-Wide Improvements (as described in the LCP), such as the Admiralty Way improvement to five lanes, are warranted before any additional development can occur. It should also be noted that The Shores project has identified several Category 1 improvements as mitigation measures for its project-specific traffic impacts, described in detail earlier in this section. Thus, if approved, The Shores project would contribute to the implementation of the Category 1 traffic mitigation measures far in advance of their anticipated need.

5.6.7.3 Cumulative Mitigation Measures

All 24 projects identified in the cumulative projects list would be required to undergo a traffic impact analysis similar to the analysis prepared for this project. Such analyses would include mitigation measures (similar to those recommended for this project) that would reduce their traffic impacts to less than significant, both on a project level as well as on a cumulative projects level. With these cumulative mitigation measures in place, no long-term cumulative significant traffic impacts would be expected to occur.

As defined by the LACDPW in their letter of November 3, 2005: "The (The Shores) project is within the Marina del Rey Local Coastal Plan. The project, as well as the identified related projects within the Marina, are well within the MDR LCP potential development entitlement of 2,750 PM peak-hour trips.

The proposed project is within the development zone (DZ) 12 and is consistent with the development potential identified in the current MDR Land Use Plan."

Cumulative traffic impacts would affect five intersections that occur within Marina del Rey. To implement mitigation measures at these intersections the LACDPW has established a transportation improvement fund. As defined in this report, based on the expected project trip generation of 111 net new PM peak-hour trips, the project would be required to pay $631,590.00 in trip mitigation fees. Of the $631,590.00, $176,712 shall go toward Category 1 transportation improvements, and the remaining $454,878.00 will go toward Category 3 transportation improvements. The intersections and specific mitigation measures that would be funded by either Category 1 or Category 3 transportation improvements are defined below.

- Admiralty Way and Via Marina – Participate in the reconstruction of the intersection to provide for a realignment of Admiralty Way as a "through roadway," with Via Marina intersecting into Admiralty Way in a "tee" configuration. All turning movements at the intersection will be constructed as dual- or right-turning movements. This improvement is identified in the Marina del Rey TIP and will enhance flow within the Marina.

- Admiralty Way and Palawan Way – Restripe the southbound approach to convert the through lane into a left/through shared lane; restripe the northbound approach to provide an exclusive right-turn only lane, in addition to a shared left-turn/through lane. This improvement is currently being investigated by the County for implementation as a new TIP-type measure, funded by fair-share contributions by projects within Marina del Rey. Also, add a third westbound through lane to Admiralty Way within the existing right-of-way by moving the median and restriping Admiralty Way, as identified in the TIP.

- Lincoln Boulevard and Mindanao Way – In addition to the project-specific mitigation improvement described earlier (installation of a northbound right-turn only lane), restripe Lincoln Boulevard at Mindanao Way to provide dual left-turn lanes in the southbound direction. This improvement may require additional widening along southbound Lincoln Boulevard. Acquisition of additional rights-of-way to implement this improvement could be funded through payment of the applicable Marina del Rey traffic impact assessment fees described earlier.

- Lincoln Boulevard and Fiji Way – Widen the eastbound Fiji Way approach to Lincoln Boulevard to provide an additional left-turn lane at Lincoln Boulevard. This measure is identical to the improvement described in Appendix G (TIP) of the Marina del Rey LIP.

- Admiralty Way and Mindanao Way – Widen northbound Admiralty Way to provide a right-turn lane at Mindanao Way. Install dual left-turn lanes on Admiralty Way for southbound travel at the approach to Mindanao Way. In addition, modify the traffic signal to provide a westbound right-turn phase concurrent with the southbound left-turn movement. The dual left-turn lanes on Admiralty Way will enhance egress from the Marina at Mindanao Way and has already been approved as part of a previous project (Marina Two).

The analysis of cumulative traffic impacts also defines impacts at five intersections that occur wholly outside or that have shared jurisdiction with the City of Los Angeles or Caltrans. For these intersections, physical improvements are infeasible as there are no reasonable, enforceable plans or programs

sufficiently tied to the actual mitigation of the traffic impacts at issue. Intersection improvement measures recommended to address these cumulative traffic impacts at this intersection are described below.

- Washington Boulevard and Via Marina/Ocean Avenue – The northbound approach on Palawan Way at Washington Boulevard shall be reconstructed to allow for a dual northbound left-turn lane onto westbound Washington Boulevard. Install a new traffic signal and, as necessary, modify the traffic signal at the intersection of Admiralty Way at Palawan Way. The applicant's pro-rata share is 13 percent which is $39,650.00 based on a total improvement cost estimated at $305,000.00.

- Washington Boulevard and Palawan Way – Install a new traffic signal at this intersection. The northbound approach should be realigned to reduce the angle of the right-turn only lane and provide a more perpendicular approach. This improvement is also currently being assessed by the County as a new fair-share-funded Marina improvement.

- Lincoln Boulevard and Washington Boulevard – No feasible physical improvements have been identified for this intersection.

- Lincoln Boulevard and Marina Expressway (SR 90) – Extend SR 90 to connect to Admiralty Way via a fly-over across Lincoln Boulevard. The project should contribute its fair share to the applicable traffic impact assessment fees toward this key regional improvement.

- Marina Expressway (SR 90) Eastbound and Mindanao Way – Implement a second left-turn lane in the east approach from on Mindanao Way from the Marina Expressway. Implementation of this measure(s) shall occur at the discretion and approval of the City of Los Angeles and Caltrans.

Should the County, the City of Los Angeles and Caltrans agree on a funding mechanism to implement the recommended traffic improvements prior to building occupancy, it is recommended that the applicant, where appropriate, pay its fair share of required transportation improvements.

The effectiveness of these recommended cumulative mitigation measures/transportation improvements, was evaluated in a supplemental analysis. This "With Cumulative Development Plus Mitigation" analysis utilized the same methodologies and assumptions as described previously, with the exception that the recommended improvement measures described above were assumed to be "in place."

As shown in **Table 5.6-18**, if implemented, the cumulative mitigation measures/recommended traffic improvements would reduce all cumulative impacts to less than significant levels. These cumulative mitigation measures and recommended traffic improvements are identical to or consistent with the area-wide roadway improvements described in Appendix G (TIP) of the Marina del Rey LIP, and include funding for larger long-term improvements such as widening the Lincoln Boulevard Corridor and the planned Marine Expressway extension to Admiralty Way that will increase area-wide traffic capacity and help alleviate existing and future congestion in the study area.

Table 5.6-18
Summary of Critical Movement Analysis
Future (2009) With Cumulative Development Traffic Conditions

No.	Intersection	Peak Hour	Without Project		With Cumulative Development			With Cumulative Development Plus Mitigation		
			CMA	LOS	CMA	LOS	Impact	CMA	LOS	Impact
4.	Admiralty Way/ Via Marina	AM	0.559	A	0.640	B	0.081	0.520	A	-0.039
		PM	0.734	C	0.863	D	0.129*	0.522	A	-0.212
5.	Washington Blvd./ Ocean Ave./ Via Marina	AM	0.621	B	0.712	C	0.091*	0.671	B	0.050
		PM	0.747	C	0.857	D	0.110*	0.729	C	-0.018
6.	Admiralty Way/ Palawan Way	AM	0.477	A	0.606	B	0.129	0.518	A	0.041
		PM	0.622	B	0.757	C	0.135*	0.574	A	-0.048
7.	Washington Blvd./ Palawan Way	AM	0.662	B	0.842	D	0.180*	0.673	B	0.011
		PM	0.630	B	0.704	C	0.074*	0.563	A	-0.067
8.	Lincoln Blvd./ Washington Blvd.	AM	1.072	F	1.158	F	0.086*	1.045	F	-0.027
		PM	1.037	F	1.096	F	0.059*	0.975	E	-0.062
9.	Lincoln Blvd./ Marina Expwy. (SR 90)	AM	0.810	D	0.860	D	0.050*	N/A	N/A	N/A
		PM	0.844	D	0.915	E	0.071*	N/A	N/A	N/A
11.	Lincoln Blvd./ Mindanao Way	AM	0.923	E	1.066	F	0.143*	0.917	E	-0.006
		PM	0.947	E	1.032	F	0.085*	0.949	E	0.002
12.	Lincoln Blvd./ Fiji Way	AM	0.597	A	0.635	B	0.038	0.619	B	0.022
		PM	0.741	C	0.791	C	0.050*	0.769	C	0.028
14.	Admiralty Way/ Mindanao Way	AM	0.616	B	0.822	D	0.206*	0.564	A	-0.052
		PM	0.713	C	0.928	E	0.215*	0.727	C	0.014
17.	Marina Expwy. (SR 90) EB/ Mindanao Way	AM	0.755	C	0.846	D	0.091*	0.727	C	-0.028
		PM	0.877	D	0.947	E	0.070*	0.770	C	-0.107

** Indicates significant impact, prior to mitigation.*
N/A = Design of future extension of SR 90 to Admiralty Way not finalized. CMA value could not be calculated.

5.6.8 UNAVOIDABLE SIGNIFICANT IMPACTS

Pursuant to *State CEQA Guidelines* Section 15130(d), the project's cumulative impacts may be found to be less than cumulatively considerable/less than significant because they are consistent with (and indeed less severe than predicted in) the cumulative traffic analysis in the Certified LCP (a "comparable programmatic plan...") that is hereby incorporated by reference.

As defined by the LACDPW in their letter of November 3, 2005: "The (The Shores) project is within the MDR LCP. The project, as well as the identified related projects within the Marina, is well within the MDR LCP potential development entitlement of 2,750 PM peak-hour trips. The proposed project is within the development zone (DZ) 12 and is consistent with the development potential identified in the current MDR Land Use Plan."

As to intersections within the County and LCP, the project's significant cumulative impacts are rendered less than cumulatively considerable (less than significant) because the project is required to pay the MDR traffic fees (i.e., its fair share of improvements designed to alleviate the cumulative impacts at the five intersections within Marina del Rey and that are controlled by the LACDPW). However, as to the stated intersection wholly outside or that have shared jurisdiction with the City of Los Angeles or Caltrans, physical improvements are infeasible as these jurisdictions have no reasonable, enforceable plans or programs sufficiently tied to the actual mitigation of the traffic impacts at issue. Therefore, in an abundance of caution, this Draft EIR finds that although the applicant will mitigate the project's contribution wherever possible, cumulative impacts will remain significant at some intersections outside the County.

5.7 Solid Waste

SUMMARY

Residential, commercial and industrial trash collection in the unincorporated areas of Los Angeles County, including the Marina del Rey area, is handled by private haulers who contract with property owners. When collected, the waste may be taken to any landfill or processing center that is willing to accept it. Private haulers are free to operate in any of the unincorporated areas of the County and may transfer waste to a variety of sites both inside and outside of the County.

Demolition of existing uses on The Shores project site would generate approximately 88,000 cubic yards (cy) of solid waste. Construction debris would result in approximately 4,576 cy of solid waste. In total, demolition and construction activities on the site would generate approximately 92,576 cy of solid waste, assuming no recycling, or approximately 46,288 cy assuming a mandatory 50 percent diversion rate. During project operation, The Shores project would generate a net increase of solid waste generation of approximately 2,193 pounds per day, or approximately 400 tons per year, assuming no solid wastes from the project would be recycled (a worst-case scenario).

The project will also generate some hazardous wastes consistent with typical residential land uses. Los Angeles County's landfills have adequate capacity to service the existing population and planned growth until the year 2017, and capacity will likely extend well beyond the year 2017. Therefore, it is reasonable to assume that solid waste disposal facilities and other options will be available in the future. Hazardous debris generated during construction and operation can be accommodated by the permitted Class I and II landfills currently in operation within southern and central California. Mitigation to reduce the amount of project-generated solid waste disposed of at landfills is recommended in the Draft EIR. After mitigation, project construction and operation solid waste impacts would be reduced to less than significant levels.

It is reasonable to assume the market forces that drive the waste disposal industry will place pressure on the industry and governmental agencies to continually identify new economically feasible means of waste disposal in the future to accommodate this growth. However, because an adequate supply of landfill space has not been approved for beyond 2017 and because existing solid and hazardous waste management facilities in the County are inadequate, the project and cumulative increase in solid and hazardous waste generation would cause a significant impact unless additional landfill space or other disposal alternatives are approved.

5.7.1 INTRODUCTION

This section evaluates the potential impacts of The Shores project on solid waste disposal services. Information is provided for project development, operation and the cumulative effect of this project and related projects as described in **Section 4.0, Environmental Setting**. Where impacts are identified as significant, mitigation measures are recommended to reduce these impacts. Information in this section was derived from the Los Angeles County Department of Public Works (LACDPW), the County Sanitation Districts of Los Angeles County, the California Integrated Waste Management Board and a variety of documents including: *Los Angeles County Integrated Waste Management Plan; 2002 Annual Report on the Countywide Summary Plan and Countywide Siting Element; 2002 Annual Report on the Source Reduction and Recycling Element; Household Hazardous Waste Element,* and *2004 Nondisposal Facility Element for the County of Los Angeles Unincorporated Areas.*

5.7.2 EXISTING CONDITIONS

The LACDPW has the responsibility to develop plans and strategies to manage solid waste generated (including hazardous waste) in the County's unincorporated areas and to address the disposal needs of Los Angeles County as a whole. In the past, solid waste was simply collected and disposed of at landfills in the local vicinity. More recently, many jurisdictions, including the County of Los Angeles, have maintained that existing local landfill space may reach capacity in the very near future. While solid waste (including hazardous waste) continues to be generated and the public expects it to be collected and disposed of, the public has paradoxically strongly opposed opening new facilities or expanding existing ones. Even with waste reduction and recycling efforts, many jurisdictions are having difficulty siting new landfills or alternative means of disposal to address the anticipated shortage.

Options to reduce the amount of waste disposed of in landfills have traditionally included curbside pickup of recyclable materials and separate processing of these materials at recycling facilities. Solid waste collection has become highly privatized in recent years, and a number of companies have created sophisticated recycling facilities that can process and sort recyclables from other wastes. In this free-enterprise system, private industries now compete for contracts to collect and dispose of solid waste. After materials separation, these private haulers dispose of the remaining solid waste at whatever landfill they choose that can accept the materials. These facilities may be within the local geographic region, outside the County, or even outside the state. The LACDPW maintains that prudent public policy includes a balance of in-County and out-of-County disposal capacity to provide for the long-term disposal needs of the County. Without multiple options, the County would have little negotiating leverage against unfavorable pricing structures.

Landfills in the Los Angeles County area are nearing capacity. It is unlikely, however, that all existing landfill space will reach capacity and that no new landfill space or disposal options will be made available. Because untreated solid waste is a public health risk (e.g., from disease), it will be necessary for either local agencies or the state to intervene to assist with implementing new landfills and/or other disposal options. Discussion of such intervention is currently taking place at the state level.

Because of the difficulty in predicting what facilities private haulers will use, or predicting future waste disposal sites or methods, it was necessary in this EIR to formulate a method to evaluate impacts on the landfills that are most likely at present to serve the project site. Specifically, this EIR section compares the solid waste generation of the proposed project with the capacity of the existing landfills operating within Los Angeles County that accept waste from unincorporated areas. This is considered a worst-case scenario, as it does not assume the development of any new landfills or the implementation of any other disposal options.

5.7.2.1 Plans and Policies for Solid Waste Disposal

5.7.2.1.1 California Integrated Waste Management Act

In response to reduced landfill capacity, the state of California passed in 1989 the California Integrated Waste Management Act (CIWMA). This legislation (generally known by the name of the enacting bill Assembly Bill 939 [AB 939]) requires cities and counties to reduce the amount of solid wastes entering existing landfills, through recycling, reuse and waste prevention efforts.

AB 939 requires every city and county in the state to prepare a Source Reduction and Recycling Element (SRRE) to its Solid Waste Management Plan that identifies how each jurisdiction planned to meet mandatory state waste diversion goals of 25 percent by the year 1995 and 50 percent by the year 2000. The purpose of AB 939 is to "reduce, recycle, and re-use solid waste generated in the state to the maximum extent feasible." Noncompliance with the goals and timelines set forth within the act can be severe, as the bill imposes fines up to $10,000 per day on jurisdictions not meeting these recycling and planning goals.

AB 939 requires jurisdictions to utilize "integrated waste management"—a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment. The act establishes the following waste management hierarchy:

- **Source Reduction** – "Source reduction" means any action that causes a net reduction in the generation of solid waste. "Source reduction" includes, but is not limited to, reducing the use of nonrecyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, reducing the amount of yard wastes generated, establishing garbage rate structures with incentives to reduce the amount of wastes that generators produce, and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic and other materials. "Source reduction" does not include steps taken after the material becomes solid waste.[1]

- **Recycling** – "Recycling" means the process of collecting, sorting, cleansing, treating and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new, reused or reconstituted products which meet the quality standards necessary to be used in the marketplace. "Recycling" does not include transformation.[2]

- **Composting** – "Compost" means the product resulting from the controlled biological decomposition of organic wastes that are source separated from the municipal solid waste stream or which are separated at a centralized facility. "Compost" includes vegetable, yard and wood wastes which are not hazardous waste.[3]

- **Transformation** – "Transformation" means incineration, pyrolysis, distillation or biological conversion other than composting. "Transformation" does not include composting, gasification or biomass conversion.[4]

- **Disposal** – "Solid waste disposal" or "disposal" means the final deposition of solid wastes onto land, into the atmosphere or into the waters of the state.[5]

5.7.2.1.2 California Integrated Waste Management Board Model Ordinance

Subsequent to the passage of CIWMA, additional legislation was passed to assist local jurisdictions in accomplishing the goals of AB 939. The California Solid Waste Reuse and Recycling Access Act of 1991 (§42900–42911 of the Public Resources Code) directs the California Integrated Waste Management Board (CIWMB) to draft a "model ordinance" for the provision of adequate areas for collecting and loading recyclable materials in development project. If, by September 1, 1994, a local agency did not adopt its own ordinance based on the CIWMB model, the CIWMB model ordinance took effect for that local agency. The County of Los Angeles chose to use the CIWMB model ordinance.

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1 Public Resources Code, Section 40196.
2 Public Resources Code, Section 40180.
3 Public Resources Code, Section 40116.
4 Public Resources Code, Section 40201.
5 Public Resources Code, Section 40192.

5.7.2.1.3 County of Los Angeles Solid Waste Management Action Plan

In 1988, the County of Los Angeles Board of Supervisors approved the Los Angeles County *Solid Waste Management Action Plan* to provide long-range management of the solid waste generated within the County. This plan includes such approaches as source reduction, recycling and composting programs, household hazardous waste management programs and public education awareness programs. The plan concludes that landfilling will remain an integral part of the waste management system and calls for the establishment of 50 years of in-County permitted landfill capacity, as well as the County's support for the development of disposal facilities out of the County.

5.7.2.1.4 County of Los Angeles Source Reduction and Recycling Element

The SRRE was prepared in response to AB 939 (August 1993). It describes policies and programs that will be implemented by the County for the County's unincorporated areas to achieve the state's mandates of 25 and 50 percent waste disposal reductions by the years 1995 and 2000, respectively. Per the Integrated Waste Management Act of 1989, the SRRE project disposal capacity needs for a 15-year period. The current SRRE 15-year period commenced in 2002.

5.7.2.1.5 County of Los Angeles Household Hazardous Waste Element

AB 939 requires every city and county within the state to prepare a Household Hazardous Waste Element (HHWE) and to provide for management of household hazardous waste generated by the residents within its jurisdiction. The Countywide household hazardous waste management program, consisting of collection and public education/information services, has been formulated to serve residents throughout the County in a convenient and cost-effective manner. In addition to reducing the amount of waste that might otherwise be sent to a landfill, these programs are important facets in the County's effort to "clean up" the solid waste stream.

5.7.2.1.6 County of Los Angeles Non-Disposal Facility Element

AB 939 requires every city and county within the state to prepare and adopt a Non-Disposal Facility Element (NDFE) to identify all existing, proposed expansions of and proposed new non-disposal facilities. These include source reduction and recycling facilities that are needed to implement the local jurisdiction's SRRE. Los Angeles County's NDFE identifies 20 existing materials recovery facilities/transfer stations, and nine proposed material recovery facilities as non-disposal facilities. In addition, the County's NDFE also identifies the utilization of four landfill facilities, operated by the

County Sanitation Districts of Los Angeles County, for diversion of yard/green waste which is intended to be used as alternative daily cover at the landfills.

5.7.2.1.7 County of Los Angeles Construction and Demolition Debris Recycling and Reuse Ordinance

The County considers recycling and reuse of construction and demolition debris essential in order to further the effort to comply with the goals of the California Integrated Waste Management Act of 1989. This is due to the fact that recycling and reuse of construction and demolition debris has been proven to significantly reduce the amount of material that is disposed in landfills. Except in unusual circumstances, County Ordinance 2005-0004 § 1, 2005 requires the recycling or reuse of at least 50 percent of all construction and demolition debris.

5.7.3 FUTURE SOLID WASTE MANAGEMENT CONDITIONS

Currently, most solid waste is disposed of in local landfills. In the future, the amount of waste diverted from landfills is expected to increase as jurisdictions throughout the state achieve compliance with the provisions of AB 939. This diversion will increase the life expectancy of landfills but not eliminate the need for new landfills. As growth occurs throughout Southern California, new landfills will need to be developed and/or other waste disposal alternatives will need to be implemented.

Options that have been discussed include expanding existing landfills, developing new landfills locally, transferring solid waste out of the County or state by truck or rail car, or the incineration of solid waste in co-generation plants that generate electricity. New and expanded landfills are expected to be approved as part of a comprehensive solid waste program.

The transfer of solid waste either out of the County, or even out of the state, is also an option. Two landfills, which would receive Los Angeles area waste by rail car, have proposed to provide some long-term solid waste disposal for Los Angeles County. The Mesquite Regional Landfill in southern Imperial County and the Eagle Mountain Landfill in Riverside County are both owned by the Sanitation Districts of Los Angeles County (Sanitation Districts). The operation of the site can provide more than 100 years of disposal capacity for Los Angeles County.[6] The Mesquite Regional Landfill is scheduled to be operational in 2008 and is permitted to accept up to 20,000 tons of waste each day.[7] The Sanitation Districts are

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6 Sanitation Districts of Los Angeles County, *Fiscal Year 2003–2004 in Review.*

7 Ibid.

currently performing due diligence examination of the Eagle Mountain Landfill. However, pending federal litigation could overturn this facility's current landfill permit.[8]

Though some landfills are currently restricted to accept solid waste from limited geographical areas, the U.S. Supreme Court has held that restrictions limiting inter-jurisdictional transfers to landfills willing to accept solid waste are unconstitutional because such restrictions infringe on the landfill operator's ability to actively participate in interstate commerce.[9] It is therefore likely that inter-jurisdictional transfers will increase as a method of managing solid waste.

Incineration facilities provide a dual function of disposing of solid waste and generating regional power supplies; their use may increase in the future as new plants are built.

Because the siting of future landfills, expansions of recycling efforts and construction of co-generation plants is at this time speculative, this EIR methodology will focus only on the present conditions within Los Angeles County.

5.7.3.1 Existing Solid Waste Generation

5.7.3.1.1 Statewide Solid Waste Generation

In the state of California, 71.8 million tons of solid waste was generated in 2002.[10] Some of the solid waste stream was diverted from landfills through various source reduction, recycling and re-use efforts. The diversion rate in the state was 48 percent in 2000.[11]

5.7.3.1.2 Regional Solid Waste Generation

A total of 1.1 million tons of solid waste was collected within unincorporated Los Angeles County for the year 2000.[12] Some of the solid waste stream was diverted from landfills through various source reduction, recycling and re-use efforts. The diversion rate in unincorporated Los Angeles County has increased since 1995. The diversion rate was 27 percent in 1995, 29 percent in 1996, 40 percent in 1998,

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8 Ibid.

9 Philadelphia vs. New Jersey, 98 Supreme Court 2531, 1978.

10 California Integrated Waste Management Board website, March 23, 2005. http//www.ciwmb.ca.gov.

11 Ibid.

12 California Integrated Waste Management Board, Jurisdiction Diversion and Disposal Profile: Los Angeles County at http://www.ciwmb.ca.gov/Profiles, March 23, 2005.

and 40 percent in 1999.[13] The preliminary report prepared by the California Integrated Waste Management Board (CIWMB) indicates that the 2000 diversion rate was 31 percent.[14] The CIWMB made the determination that the County's 2000 diversion rate is acceptable for now and granted the County an extension to December 2004 to comply with the required 50 percent diversion rate.[15]

5.7.3.1.3 Site-Specific Solid Waste Generation

The Shores project site is currently developed with 202 residential units. As shown in **Table 5.7-1, The Shores Project Site – Existing Solid Waste Generation (No Recycling)**, operation of the 202 existing apartments on the project site generates a total of 1,295 pounds per day, or 236 tons per year, of solid waste. These quantities represent a worst-case scenario for solid waste sent to landfills as information on the quantity diverted through recycling is not available. Using the 1999 County average of 40-percent diversion, actual quantities of solid waste being sent to landfills are likely 40-percent lower than what is shown below. Please see **Appendix** 5.7 for calculation worksheets.

Table 5.7-1
The Shores Project Site
Existing Solid Waste Generation (No Recycling)

Land Use	Units	Quantity	Generation Factor[1] (lbs./day/per unit)	Daily Generation (lbs./day)	Annual Generation (tons./year)
Residential	du	202	6.41	1,295	236
Total:		**202**	**6.41**	**1,295**	**236**

Source: Impact Sciences, Inc., May 2005.
Du = dwelling unit.
[1] *Generation factor provided by the solid waste daily generation rates in tons per year are derived from the Los Angeles County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts.*

5.7.3.2 Existing Solid Waste Collection

Residential, commercial and industrial trash collection in unincorporated Los Angeles County, including the Marina del Rey area, is handled by private haulers. Currently, about 120 haulers are permitted by the County of Los Angeles Department of Health Services to collect residential, commercial and industrial

13 Ibid.
14 Ibid.
15 Ibid.

waste in unincorporated Los Angeles County.[16] Once collected, the waste may be taken to any landfill that is willing to accept it.

5.7.3.3 Existing Solid Waste Disposal

Four types of solid waste facilities occur within Los Angeles County: (1) Class III Landfills; (2) Unclassified Landfills; (3) Transformation Facilities; and (4) Materials Recovery Facilities (MFR). A Class III landfill is a facility that accepts household waste and where site characteristics and containment structures isolate non-hazardous solid waste from the waters of the state. Unclassified landfills are facilities that accept materials such as soil, concrete, asphalt and other construction and demolition debris. Transformation facilities involve the incineration of municipal solid waste in order to generate energy. Materials Recovery Facilities (MRF) recover recyclable materials from other waste to provide for the efficient transfer of the residual waste to permitted landfills for proper disposal.

Currently, most solid waste collected within Los Angeles County by private haulers is disposed of within the County. However, it is likely that independent solid waste haulers do and will continue to take solid waste to facilities over the County line. Greater inter-County transfer of solid waste may occur in the near future if landfills outside of Los Angeles County provide greater economic advantages to haulers, or if landfills within the County reach capacity.

There are eight landfills in Los Angeles County that may accept solid waste from The Shores project site. **Figure 5.7-1** illustrates the locations of Los Angeles County landfills in relation to the project site.[17]

Table 5.7-2, Existing Landfill Capacity and Regional Needs Analysis for Los Angeles County, identifies the anticipated remaining capacity and anticipated remaining years of operation of the major landfills in Los Angeles County. The landfills in **Table 5.7-2** are classified as major landfills, which are defined as those facilities that receive more than 50,000 tons of solid waste per year. These landfills are classified as Class III landfills and are only permitted to accept non-hazardous wastes.

Recent expansions at the Antelope Valley, Bradley, Chiquita Canyon, Lancaster and Puente Hills Landfills are reflected in **Table 5.7-2**. As shown in **Table 5.7-2**, Los Angeles County's landfills have

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16 Telecommunication with Carlos Ruiz, Supervising Civil Engineer III, Head, Planning Section, Environmental Programs Division, Los Angeles County Department of Public Works, July 15, 2003.

17 **Table 5.7-1** is based on the Los Angeles County Department of Public Works, *Los Angeles County Integrated Waste Management Plan, 2002 Annual Report on the Countywide Summary Plan and Countywide Siting Element*, February 2004.

adequate capacity to service the existing population and planned growth until the year 2017. However, capacity will likely extend well beyond the year 2017.

A number of landfills in **Table 5.7-2** have an anticipated life expectancy that extends beyond 2017. For example, the Lancaster Landfill was approved for expansion to extend the life of this landfill to 2030,[18] and the Burbank, Chiquita Canyon, Pebbly Beach, San Clemente, Scholl and Whittier (Savage Canyon) Landfills are permitted until 2054, 2019, 2033, 2032, 2019 and 2025, respectively.[19]

Other recent events have expanded landfill capacity within Los Angeles County. An agreement between Orange County and Waste Management, Inc. (WMI) diverts 168,000 tons per year of San Diego County's waste to Orange County instead of to Los Angeles County landfills. Also, an agreement between Orange County and Taormina Industries, which mainly serves Los Angeles County, calls for 2,000 tons of solid waste per day to be diverted to Orange County landfills.[20]

5.7.3.3.1 Site-Specific Solid Waste Disposal

Residential, commercial and industrial trash collection in the unincorporated areas of Los Angeles County, including the Marina del Rey area, is handled by private haulers. When collected, the waste may be taken to any landfill that is willing to accept it. Thus, solid wastes from the Marina del Rey area may be disposed of at any of the landfills described above.[21]

5.7.3.3.2 Hazardous Materials Collection and Disposal

Certain uses and activities generate hazardous waste that cannot be disposed of at Class III or unclassified landfills. The California Hazardous Waste Control Law (Health and Safety Code §25100 through §25249) requires that these hazardous materials be transported and disposed of or treated at a licensed facility. The disposal and transport of hazardous materials is complicated by the fact that there are many forms of hazardous materials. Operations that use hazardous materials and/or generate hazardous waste are responsible for the disposal of the waste.

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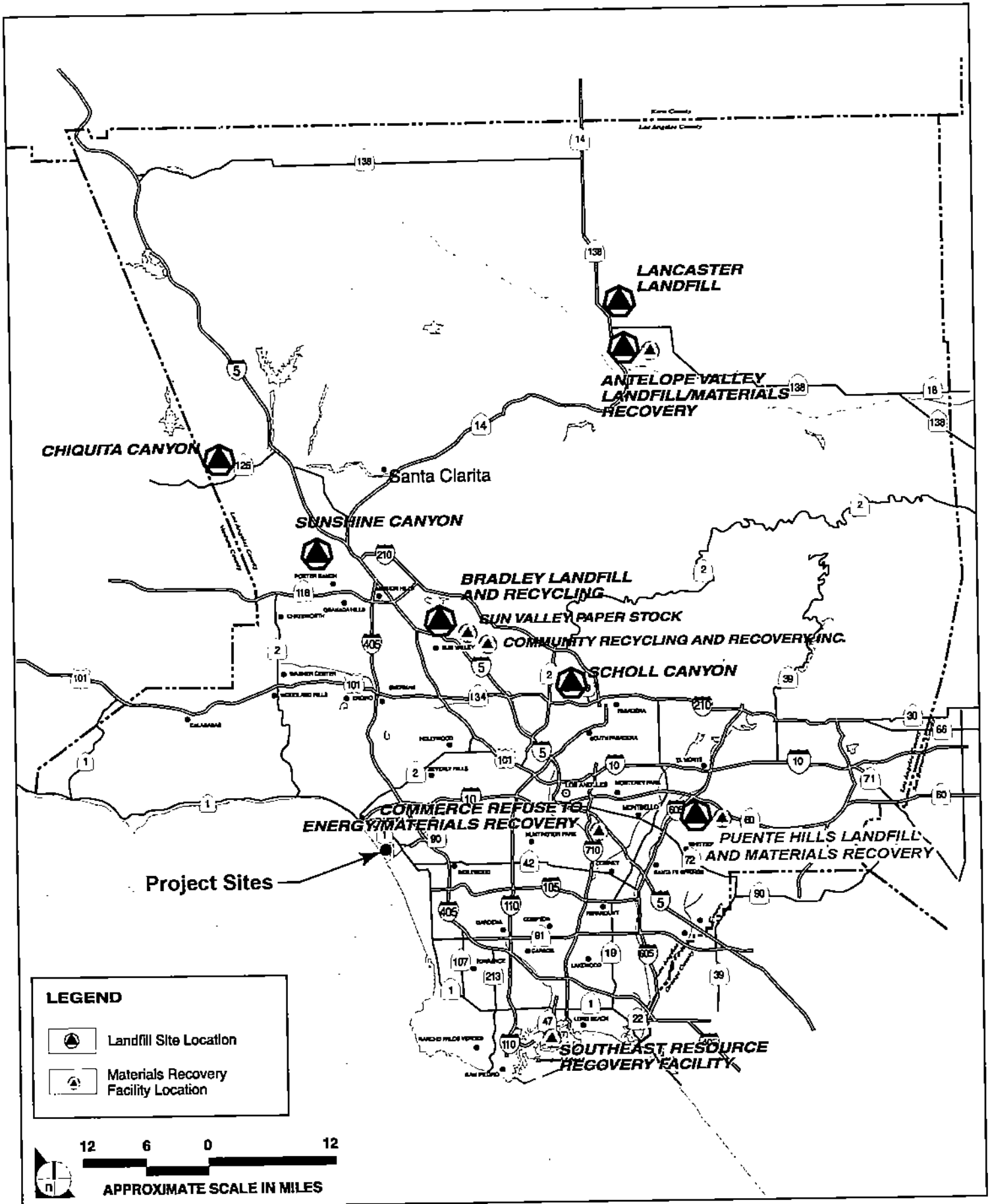
18 Telecommunication with Kay Krumwied, Lancaster Landfill, December 4, 2002. A life expectancy to 2030 assumes the acceptance of the maximum daily tonnage of 1,700 tons of solid waste.

19 California Integrated Waste Management Board website, July 30, 2004.

20 *Approaching an Integrated Solid Waste Management System for Los Angeles County, California*, May 2, 1997, GBB, Solid Waste Management Consultants.

21 Telecommunication with Carlos Ruiz, Assistant Division Engineer, Planning Section, Environmental Programs Division, Los Angeles County Department of Public Works, August 30, 2004.



SOURCE: Impact Sciences, Inc – June 2005

FIGURE **5.7-1**

Locations of Major Los Angeles County Landfill Sites

779-02-09/05

Table 5.7-2
Existing Landfill Capacity and Regional Needs Analysis for Los Angeles County

Year	Waste Generation Rate (tpd-6)	Percent Diversion	Total Disposal Need (tpd-6)	Maximum Daily Transformation Capacity (tpd-6)	Class III Landfill Disposal Need (tpd-6)	EXISTING LANDFILLS												Class III Landfill Daily Disposal Capacity Shortfall (Excess) (tpd-6)
						1	2	3	4	5	6	7	8	9	10	11	12	
						Antelope Valley	Bradley	R Burbank*	R Calabasas	Chiquita*	Lancaster	Pebbly Beach*	L Puente Hills	R San Clemente*	R Scholl*	Sunshine	Whittier*	
						Expected Daily Tonnage 6 Day Average (tpd-6)												
						Remaining Permitted Landfill Capacity at Year's End (Million Tons)												
2002	73,866	50.00%	36,933			847	2,245	128	1,041	4,681	864	14.3	11,761	2.3	1,194	5,714	269	
						9.2	1.1	3.5	11.0	17.2	13.8	0.102	3.1	0.013	8.2	8.1	4.8	
2003	74,422	50.00%	37,211	2,069	35,142	1,800	1,800	129	1,049	5,000	1,700	14.4	12,000 E	2.3	1,203	6,000	271	4,172
						8.6	0.6	3.5	10.7	15.7	13.3	0.098	40.6	0.012	7.8	6.2	4.8	
2004	75,217	50.00%	37,609	2,069	35,539	1,800	1,500	131	1,060	5,000	1,700	14.5	13,200	2.4	1,216	11,000 E	274	(1,359)
						8.0	0.1	3.4	10.3	14.1	12.8	0.093	36.5	0.011	7.4	75.8	4.7	
2005	76,798	50.00%	38,399	2,069	36,330	1,800	2,000 E	134	1,082	5,000	1,700	14.8	13,200	2.4	1,242	11,000	280	(1,125)
						7.5	3.2	3.4	10.0	12.6	12.3	0.088	32.3	0.011	7.1	72.4	4.6	
2006	78,944	50.00%	39,472	2,069	37,403	1,800	5,000	137	1,112	5,000	1,700	15.2	13,200	2.5	1,277	11,000	288	(3,129)
						6.9	1.7	3.3	9.7	11.0	11.7	0.084	28.2	0.010	6.7	68.9	4.5	
2007	81,099	50.00%	40,550	2,069	38,480	1,800	5,000	141	1,143	5,000	1,700	15.7	13,200	2.5	1,311	11,000	296	(2,129)
						6.4	C	3.3	9.3	9.4	11.2	0.079	24.1	0.009	6.3	65.5	4.4	
2008	83,351	50.00%	41,675	2,069	39,606	1,800		145	1,175	5,000	1,700	16.1	13,200	2.6	1,348	11,000	304	3,916
						5.8		3.2	8.9	7.9	10.7	0.074	20.0	0.0083	5.8	62.1	4.3	
2009	85,470	50.00%	42,735	2,069	40,666	1,800		149	1,204	5,000	1,700	16.5	13,200	2.7	1,382	11,000	312	4,900
						5.2		3.2	8.6	6.3	10.1	0.069	15.9	0.074	5.4	58.6	4.2	
2010	87,522	50.00%	43,761	2,069	41,692	1,800		152	1,233	5,000	1,700	16.9	13,200	2.7	1,415	11,000	319	5,852
						4.7		3.2	8.2	4.8	9.6	0.063	11.7	0.0066	5.0	55.2	4.1	
2011	89,614	50.00%	44,807	2,069	42,738	1,800		156	1,263	5,000	1,700	17.3	13,200	2.8	1,449	11,000	327	6,823
						4.1		3.1	7.8	3.2	9.1	0.058	7.6	0.0054	4.5	51.8	4.0	
2012	91,623	50.00%	45,811	2,069	43,742	1,800		159	1,291	5,000	1,700	17.7	13,200	2.9	1,482	11,000	334	7,755
						3.5		3.1	7.4	1.6	8.5	0.052	3.5	0.0048	4.0	48.3	3.9	
2013	93,589	50.00%	46,795	2,069	44,726	1,800		163	1,319	5,000	1,700	18.1	13,200	2.9	1,513	11,000	341	8,668
						3.0		3.0	7.0	0.1	8.0	0.047	C	0.0039	3.6	44.9	3.8	
2014	95,838	50.00%	47,919	2,069	45,850	1,800		167	1,350	C	1,700	18.5		3.0	1,550	11,000	350	27,912
						2.4		3.0	6.5		7.5	0.041		0.0029	3.1	41.5	3.7	
2015	98,073	50.00%	49,036	2,069	46,967	1,800		163	1,319		1,700	18.1		2.9	1,5133	11,000	341	28,949
						1.9		2.9	6.1		7.0	0.035		0.0020	2.6	38.0	3.6	
2016	100,318	50.00%	50,159	2,069	48,090	1,800		174	1,414		1,700	19.4		3.1	1,622	11,000	366	29,991
						1.3		2.8	5.7		6.4	0.029		0.0011	2.1	34.6	3.5	
2017	102,300	50.00%	51,150	2,069	49,081	1,800		178	1,442		1,700	19.7		3.2	1,654	11,000	373	30,911
						0.7		2.8	5.2		5.9	0.023		0.0001	1.6	31.2	3.4	

ASSUMPTIONS:

1. *The Waste Generation Rate (excluding the inert waste being handled at permitted unclassified landfills) was estimated using the CIWMB's Adjustment Methodology, utilizing population projection available from State Department of Transportation, and employment and taxable sales projections available from UCLA.*
2. *Diversion Rate is 50 percent for years 2002 through 2017.*
3. *Expected Daily Tonnage Rates are based on permitted daily capacity for the Antelope Valley, Chiquita, Lancaster, Puente Hills, and Sunshine Landfills. The expected daily tonnage rate for Burbank, Calabasas, Pebbly Beach, San Clemente, Scholl, and Whittier (Savage) Landfills are based on the average daily tonnages for the period of 1/1/02 to 12/31/02.*
4. *Expected Daily Tonnage Rate for Bradley Landfill Expansion is based on the historical use of this landfill.*
5. *"tpd-6": tons per day, 6 day per week average.*
6. *Anticipated closures per CIWMB website, <http://www.ciwmb.ca.gov/swis>, accessed July 30, 2004: Burbank-2054; Chiquita-2019; Pebbly Beach-2033; San Clemente-2032; Scholl-2019; Whittier-2025.*
7. *Anticipated closure 2030, per telecommunication with Kay Krumwied, Lancaster Landfill, December 4, 2002.*

LEGEND:

C Closure due to exhausted capacity
E Expansion becomes effective
L Does not accept waste from the City of Los Angeles and Orange County
R Restricted Wasteshed
CIWMB California Integrated Waste Management Board

Source: Los Angeles County Department of Public Works, Los Angeles County Countywide Integrated Waste Management Plan 2002 Annual Report – Part II: Siting Element Assessment, Appendix E-2.7, February 2004.

LACDPW has indicated that existing hazardous waste management facilities within the County are inadequate to meet the waste currently generated within Los Angeles County. However, there are several Class I and II landfills that exist in southern and central California that can accept hazardous waste generated within the County. Each is identified briefly below.

- Laidlaw Landfill, Buttonwillow, Kern County, California: This facility accepts hazardous and non-hazardous waste and is permitted as a Class I landfill. The facility has no restrictions for the amount of waste that can be accepted on a daily basis.
- Kettleman Hills Landfill, Kettleman City, Kings County, California: This is a Class I-permitted landfill that accepts hazardous and non-hazardous waste with no capacity restrictions.
- McKittrick Waste Treatment Site, McKittrick, Kern County, California: This facility is a Class II-permitted landfill that accepts hazardous and non-hazardous waste. The facility has a capacity restriction of 412 cubic meters daily.

As discussed above, Los Angeles County has prepared a Household Hazardous Waste Element (HHWE) to provide for management of household hazardous waste generated by the residents within its jurisdiction.

5.7.4 ENVIRONMENTAL IMPACTS

5.7.4.1 Project Improvements

Implementation of The Shores project would result in the development of 544 residential units and 1,114 parking spaces. As there are 202 existing apartments on site, completion of the proposed project would result in a net increase of 342 apartment units. A total of 12 five-story, wood-framed structures would house the residential units, with parking provided in two-level parking garages below the residences.

5.7.4.2 Thresholds of Significance

Based on Appendix G of the most recent update of the *California Environmental Quality Act* (CEQA) *Guidelines*, impacts related to solid waste services are considered significant if the project would:

- be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; and
- not comply with federal, state, and local statutes and regulations related to solid waste.

The Los Angeles County Code does not establish thresholds for determining the significance of a project's solid waste impacts.

5.7.4.3 Impact Analysis

The applicable thresholds of significance are listed below followed by analysis of the significance of any potential impacts. Mitigation measures are also identified which would reduce potential impacts.

Threshold: **Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; and**

Threshold: **Not comply with federal, state, and local statutes and regulations related to solid waste.**

Construction Impacts: Demolition activities on The Shores project site are expected to occur over a two- to three-month period, beginning in April 2006. Construction for The Shores project is anticipated to take 25 months. Demolition and construction of the project would require a total of approximately 28 months to complete. Anticipated build-out would occur in July 2008.

As proposed, the project would require the removal of the existing apartment buildings and the existing surface parking lot. Demolition of existing uses would generate approximately 88,000 cy of solid waste. Construction debris would result in approximately 4,576 cy of solid waste. In total, demolition, excavation and construction activities on the site would generate approximately 46,288 cy assuming a 50-percent diversion rate.[22]

Prior to the commencement of demolition, appropriate testing for asbestos containing materials and lead-based paint within the existing structures shall be completed. Abatement of identified materials will occur prior to building removal. Building materials containing asbestos, if any, would be handled, transported and disposed of in accordance with applicable laws and regulations prior to building removal.

Waste materials generated during construction and operation are expected to be typical construction debris, including concrete, stucco, asphalt, rocks, building materials, wood, paper, glass, plastic, metals, cardboard, other inert wastes (i.e., wastes that are not likely to produce leachates of environmental concern) and green wastes.

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22 Based on information from a telephone conversation with Tim Connelly, American Constructors, Inc. on June 6, 2005. Construction debris from framing and drywall contractors is handled by the appropriate subcontractors and is recycled. Other construction debris totals roughly 44 cubic yards per week. 44 cy x 104 weeks of work = 4,576 cy over term of construction.

Los Angeles County recently adopted an amendment to Title 20, Utilities, of the Los Angeles County Code, to add Chapter 20.87, Construction and Demolition Debris Recycling, to provide for the recycling and reuse of construction and demolition debris in the unincorporated areas of the County of Los Angeles. The Shores project would comply with this amendment. The project proponent would prepare a Recycling and Reuse Plan to recycle, at a minimum, 50 percent of the construction and demolition debris, and reports would be submitted to the Los Angeles County Environmental Programs Division.

Wastes generated during demolition and construction would result in an incremental and intermittent increase in solid waste disposal at landfills and other waste disposal facilities within Los Angeles County. Debris will be trucked from the site for disposal at unclassified landfills that accept these waste materials including, but not limited to, the Azusa Land Reclamation Co. Landfill in Azusa, Nu Way Live Oak and Reliance Pit #2 Landfills in Irwindale, Peck Road Gravel Pit in Monrovia or other appropriate landfills located within reasonable hauling distance from the project site that may be located outside Los Angeles County. The estimated closure dates for the Azusa Land Reclamation Co. Landfill, Nu Way Live Oak Landfill, Reliance Pit #2 Landfill, and Peck Road Gravel Pit are 2025, 2010, 2025 and 2008, respectively.[23] As discussed above, the construction of the proposed project would generate a total of 4,576 cy of waste, assuming no recycling, or 2,288 cy, assuming 50 percent recycling. The one-time disposal of the 88,000 cy generated during demolition could be accommodated at the facilities listed above. Therefore, with mitigation, the construction-related impacts of the project are reduced to a less than significant level.

Operation Impacts; Solid Waste Generation and Disposal: As shown in **Table 5.7-3, The Shores Proposed Project Solid Waste Generation (No Recycling)**, The Shores project would generate a net increase over existing uses of approximately 2,193 pounds per day, or about 400 tons per year, of solid waste. These quantities represent a worst-case scenario, with no recycling activities in place. However, the project uses would be required to provide adequate areas for collecting and loading recyclable materials in accordance with the County's model ordinance to reduce the volume of solid waste entering landfills. This recycling, implemented in concert with the Countywide efforts and programs, would substantially reduce the volume of solid waste generated by the project and entering landfills. Although the project would generate approximately 400 tons per year, it can also be assumed that the project would at least meet the 1999 recycling levels of Los Angeles County and, in actuality, only generate approximately 200 tons per year. If the project succeeds in achieving the 50-percent reduction level mandated for the County by CIWMA, it will divert at least 200 tons of solid waste per year. Please see **Appendix 5.7** for calculation worksheets.

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23 California Integrated Waste Management Board website, Solid Waste Information System, Facility/Site Search, April 19, 2005.

Table 5.7-3
The Shores Proposed Project Solid Waste Generation (No Recycling)

Land Use	Units	Quantity	Generation Factor[1] (lbs./day/per unit)	Daily Generation (lbs./day)	Annual Generation (tons./year)
Proposed Residential	du	544	6.41	3,488	636
Less Existing Residential	du	202	6.41	1,295	-236
Net Project Total:	**du**	**342**	**6.41**	**2,193**	**400**

Source: Impact Sciences, Inc., May 2005.
Du = dwelling unit.
[1] *Generation factor provided by the solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts.*

The County of Los Angeles identifies landfill capacity in 15-year planning periods.[24] As discussed above, Los Angeles County's landfills have adequate capacity to service the existing population and planned growth until the year 2017, and capacity will likely extend well beyond the year 2017. Therefore, it is reasonable to assume that solid waste disposal facilities and other options will be available in the future. Mitigation to reduce the amount of project-generated solid waste disposed of at landfills is recommended. Based upon this information and the inclusion of mitigation measures, project solid waste impacts would be reduced to less than significant levels.

Hazardous waste generation and disposal would be handled and disposed of in accordance with all appropriate state and federal laws. Because of the many laws and regulations associated with the disposal of hazardous waste, it would have to be determined at the time of disposal where any certain hazardous waste would be taken. At this time, hazardous wastes cannot be disposed of within Los Angeles County. However, hazardous debris generated during construction and operation can be accommodated by the permitted Class I and II landfills currently in operation within southern and central California. No significant impacts to hazardous waste disposal facilities are expected as a result of The Shores project.

24 Los Angeles County Department of Public Works, Los Angeles County Integrated Waste Management Plan, 2002 Annual Report on the Countywide Summary Plan and Countywide Siting Element, p. 38, February 2004.

5.7.5 MITIGATION MEASURES

The following mitigation measures are recommended by the EIR:

5.7-1. Consistent with Title 20, Chapter 20.87 of the Los Angeles County Code, the project proponent shall provide a Recycling and Reuse Plan to recycle, at a minimum, 50 percent of the construction and demolition debris. Documentation of this recycling program will be provided to the LACDPW, prior to the issuance of the Demolition and Grading permits.

5.7-2. To reduce the volume of solid and hazardous waste generated by the operation of the project, a solid waste management plan shall be developed by The Shores project applicant. This plan shall be reviewed and approved by the LACDPW. The plan shall identify methods to promote recycling and reuse of materials, as well as safe disposal consistent with the policies and programs contained within the County of Los Angeles SRRE. Methods could include locating recycling bins in proximity to dumpsters used by future on-site residents.

5.7-3. The Shores project applicant shall arrange with a hazardous materials hauling company for materials collection and transport to an appropriate disposal or treatment facility located outside of Los Angeles County.

5.7.6 CUMULATIVE IMPACTS

As discussed earlier in this section, new landfills must be developed and other waste disposal options implemented to accommodate future growth. These options may include diversion or transformation as the preferred methods for addressing solid waste and specific and practical applications (e.g., market development, public education and public policy initiatives).[25] Solid waste haulers will continue to have flexibility to determine where solid waste is ultimately disposed of based on economic factors.

Because solid waste (including hazardous waste) can be disposed of outside of Los Angeles County and because solid waste disposal is driven by a free-enterprise system, it is reasonable to assume that, to some degree, solid waste generated by cumulative development would be disposed of outside Los Angeles County and, possibly, outside of the state of California. Given this assumption, the cumulative project area could encompass a geographic area beyond the jurisdictional boundaries of Los Angeles County and could, conceivably, extend beyond state boundaries. It is beyond the scope of this EIR and too

25 *Approaching an Integrated Solid Waste Management System for Los Angeles County, California,* (May 2, 1997) GBB, Solid Waste Management Consultants.

speculative to attempt to quantify the solid waste that could be generated by cumulative development that is proposed in greater Los Angeles County or the region beyond, or to assess the landfills that might be available or, more importantly, other solid waste disposal options which could be available. Therefore, the focus of this cumulative impact analysis is the cumulative impacts of The Shores project in conjunction with the related/approved projects identified in **Section 4.0, Environmental Setting**. The applicable thresholds are listed below in bold followed by an analysis of the cumulative impacts and their potential significance.

Threshold: **Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; and**

Threshold: **Not comply with federal, state, and local statutes and regulations related to solid waste.**

5.7.6.1 Cumulative Analysis

As shown in **Table 5.7-4, Cumulative Solid Waste Generation (No Recycling) – Proposed Project and Related Projects**, build-out of The Shores and other related projects would generate an estimated 33,553 pounds per day, or 6,124 tons per year, of solid waste. These quantities represent a worst-case scenario, with no recycling activities in place. However, the project would be required to provide adequate areas for collecting and loading recyclable materials in accordance with the County's Model Ordinance to reduce the volume of solid waste entering landfills. This recycling, implemented in concert with the Countywide efforts and programs, would substantially reduce the volume of solid waste generated by the project and entering landfills. Although The Shores and other related projects would generate approximately 6,122 tons per year, it can also be assumed that the project would at least meet the 1999 recycling levels of Los Angeles County (40 percent) and, in actuality, only generate approximately 3,673 tons per year. If the County succeeds in achieving the 50 percent reduction level mandated by CIWMA, cumulative projects will divert at least 3,061 tons of solid waste per year. Please see **Appendix 5.7** for calculation worksheets.

It is reasonable to assume the market forces that drive the waste disposal industry will place pressure on the industry and governmental agencies to continually identify new economically feasible means of waste disposal in the future to accommodate this growth. However, because an adequate supply of landfill space has not been approved for beyond 2017 and because existing hazardous waste management facilities in the County are inadequate, the cumulative increase in solid and hazardous waste generation would cause a significant impact unless additional landfill space or other disposal alternatives are approved.

5.7.6.2 Cumulative Mitigation Measures

There are no cumulative mitigation measures known to be available that would mitigate significant impacts to less than significant levels.

Table 5.7-4
Cumulative Solid Waste Generation (No Recycling)
Proposed Project and Related Projects

Land Use	Units	Quantity	Generation Factor[1] (lbs./day/unit)	Daily Generation (lbs./day)	Annual Generation (tons/year)
The Shores					
Residences (net)	du	544	6.41	2,193	400
Related Projects					
Multi-Family[2]	du	4,122	6.41	26,422	4,822
Hotel/Motel[3]	rooms	421	2	842	154
Commercial	sq. ft.	146,068	0.01	1,461	267
Restaurant[2]	sq. ft.	11,063	0.06	664	121
Office	sq. ft.	197,058	0.01	1,971	360
Subtotal:				31,360	5,724
Total:				**33,553**	**6,124**

Source: Impact Sciences, Inc., May 2005.
du = dwelling unit; sq. ft. = square feet.
Note: Numbers may not total exactly due to rounding.
[1] *Generation factor provided by the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts, unless otherwise noted.*
[2] *Includes senior care facilities.*
[3] *Generation factor from the California Integrated Waste Management Website, November 2003, which cites the Draft EIR for the North Hills Development which, in turn, cites the City of Los Angeles Bureau of Solid Waste, 1989.*

5.7.7 UNAVOIDABLE SIGNIFICANT IMPACTS

With implementation of the above mitigation measures, project and cumulative impacts to solid waste treatment and disposal are not significant.

5.8 Water Service

SUMMARY

Water is provided to Marina del Rey by the Los Angeles County Department of Public Works (LACDPW) Water Works District Number 29 (WWD No. 29), which is the local purveyor for the Metropolitan Water District (MWD). The LACDPW prepared a master plan to upgrade the Marina del Rey Water Distribution System based on existing demand and growth projections provided by the Los Angeles County Department of Regional Planning and land uses proposed in the Marina del Rey Land Use Plan.

The Shores project would consume approximately 95,150 gallons of water per day (gpd), or about 107.66 acre-feet per year (afy). This represents a net increase of approximately 57,057 gpd, or about 64.56 afy over existing water use on the project, assuming a similar irrigation requirement. No significant impacts to the existing water distribution system would occur with implementation of County-approved improvements. Entitlements for water have been secured and are adequate to serve existing uses and projected growth in Marina del Rey. In addition, mitigation is recommended that requires The Shores project to provide the County Department of Regional Planning with a letter from the Los Angeles County WWD No. 29 indicating their ability to serve the project prior to the issuance of grading, building, or construction permits. Given these water system improvements and recommended mitigation measures, impacts to the water supply system would be less than significant.

5.8.1 INTRODUCTION

This EIR section presents an overview of the existing water supply and distribution system for The Shores project. Should impacts to supply systems be identified, mitigation measures are recommended to reduce or avoid project impacts. This analysis is primarily based on information obtained from the project applicant and PSOMAS in May 2005. Additional sources of information include communication with LACDPW Waterworks and Sewer Maintenance Division, information from the County of Los Angeles Fire Department and information derived from the Marina del Rey Land Use Plan.

5.8.2 EXISTING CONDITIONS

5.8.2.1 Los Angeles County Water Works District Number 29, Malibu

Marina del Rey is supplied water from Los Angeles County WWD No. 29, which is a purveyor for the MWD of Southern California. WWD No. 29 is responsible for providing water to its customers while meeting all applicable federal and state water quality standards. The LACDPW operates and maintains

the Marina del Rey water system for the Department of Beaches and Harbors, via the Waterworks and Sewer Maintenance Division. The service area of WWD No. 29 includes Marina del Rey, the City of Malibu and unincorporated territory within Topanga Canyon.

Current entitlements provide the Marina del Rey small-craft harbor water system with a maximum water allocation of 5 cubic feet per second (cfs). The volume of water sold to WWD No. 29 in 2003 was 10,103.9 acre-feet, of which 1,876.7 acre-feet were distributed to uses within Marina del Rey.[1] The LACDPW indicates water is available and is of sufficient capacity to supply the proposed project (LACDPW, May 2005).

5.8.2.2 Metropolitan Water District of Southern California

WWD No. 29 purchases water from the West Basin Municipal Water District, which purchases water from the MWD. The MWD serves 27 member agencies including 14 cities, 12 municipal water districts and one county water authority. The MWD imports water from the Colorado River Aqueduct (CRA) and the State Water Project (SWP) in the Sacramento-San Joaquin Delta and distributes this water to its member agencies.

Based on projected growth, MWD expects that water demand in its service area will rise from a current demand of 3.6 million afy to 4.8 million afy by 2020. To accommodate this projected growth, MWD developed an Integrated Water Resources Plan (IRP) in 1996. The IRP is a 25-year comprehensive water resources plan for southern California and was last updated in 2003. The plan is a multifaceted approach towards the development and maintenance of reliable water supplies that are necessary to meet an increasing demand. The IRP proposes to combine water conservation, surface and groundwater storage, water transfers and exchanges, water recycling and water imports as a managed and integrated strategy to provide a stable and reliable source of water to its customers. The MWD's objective is to ensure reliability, affordability, quality, diversity and adaptability of the regional water supply. Implementation of plans and programs identified in the IRP will allow the MWD to provide water to all the firm's wholesale water demands of its member agencies through 2025.[2]

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1 Art Garcia, Senior Civil Engineer, Los Angeles County Department of Public Works, Waterworks and Sewer Maintenance Division, communication with Impact Sciences, August 26, 2004.

2 *Integrated Water Resources Plan, 2003 Update*, prepared by the Metropolitan Water District of Southern California, May 2004.

5.8.2.3 Marina del Rey Water Distribution System

The existing and proposed Marina del Rey Water Distribution System is shown on **Figure 5.8-1, Marina del Rey Water Distribution System**. Gravity storage for the Marina del Rey water system is provided at WWD No. 29's Sunset Mesa reservoir site. This site is located northeast of the intersection of Pacific Coast Highway and Topanga Canyon. A total of one million gallons are stored at this site and supply the domestic needs and a portion of the flows required for fire protection. The balance of water necessary for fire protection is supplied through emergency interconnections with the City of Los Angeles Department of Water and Power via connections at Marquesas Way and Via Dolce and Mindanao Way and Lincoln Boulevard.

Water for Marina del Rey is supplied through a metered connection to WWD No. 29's feeder main in Venice Boulevard. In the vicinity of the project site, water enters the Marina del Rey water system via a 14-inch transmission main in Washington Street near Palawan Way. Water mains occurring in perimeter roads connect to lines for each finger of the marina and to a pipeline that crosses under the Ballona Channel south of Basin A. All existing mains are asbestos-cement pipes except the channel crossing, which is somastic-coated, cement mortar-lined steel.

Water for the site, including both domestic uses and for fire response is provided from a 12-inch main located east of the project site in Via Marina, as well as a 10-inch main located south of the project site in Marquesas Way and a 10-inch main located west of the site in Dell Avenue.

5.8.2.4 Planned Upgrades to the Marina del Rey Water Distribution System

To service Phase I uses, LACDPW has prepared a master plan to upgrade the domestic water backbone distribution network in Marina del Rey. This upgrade was based on existing demand and growth projections provided by the Los Angeles County Department of Regional Planning and land uses proposed in the Marina del Rey Land Use Plan. These improvements are funded through a surcharge on revenue from the sale of water.

Planned improvements to the Marina del Rey water distribution system are phased and in progress. Phase I of this improvement plan was completed in 2002, with the construction of a new 24-inch line from WWD No. 29 metered connection in Venice Boulevard to Marina del Rey. This line replaced an existing 14-inch diameter main.

Phases II and III improvements are in the design phase. Phase II improvements consist of the construction of 10,000 lineal feet of 18-inch water line along Admiralty Way and a section of Via Marina. Construction of the proposed water pipeline in Admiralty Way has been delayed until 2007 due to budget constraints. A new 18-inch water main is planned to run along the remainder of Via Marina as part of Phase III improvements. Other proposed improvements include construction of a 16-inch water main along Admiralty Way and Fiji Way, construction of an 18-inch water main across the main channel of the small-craft harbor and construction of an additional 3.6 million gallons of storage at the existing Sunset Mesa reservoir site. Upon completion of Phase II and III water distribution network improvements, the delivery infrastructure would be sufficient to meet the demand required to implement the entire Marina del Rey redevelopment.[3] Implementation of The Shores project is not contingent upon these upgrades to the water distribution system (PSOMAS, 2005). [4] An applicant can arrange for a flow analysis of the lines that would serve that applicant's project. Should flow capacity be inadequate, the County has a system whereby a developer can finance the County's improvements in the area needed to support that developer's project, and other developers whose projects benefit from the improvements financed by the developer within a certain time period reimburse the developer a fair share portion.[5]

5.8.2.5 Existing Water Consumption

5.8.2.5.1 The Shores Project

Operation of the 202 existing apartments located on the project site requires a total of 38,093 gpd, or 43.10 afy, as shown in **Table 5.8-1** below.

Table 5.8-1
Existing Water Demand
The Shores Project Site

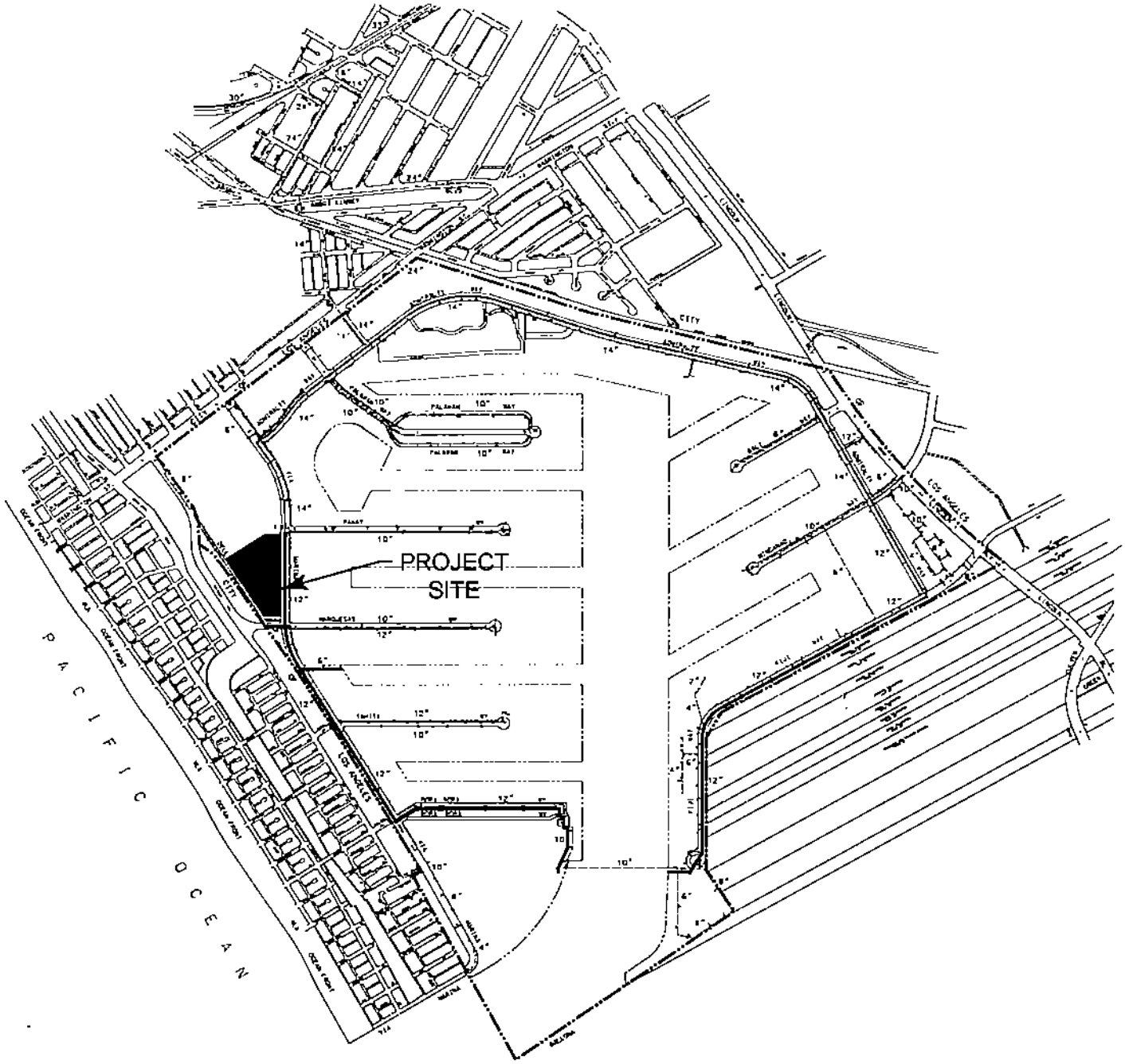
Land Use	Units	Demand Factor[1] (gal./day/unit)	Daily Demand[2] (gal./day)	Annual Demand (acre-feet/year)
Residential	202 du	188.58	38,093	43.10
Total:			38,093	43.10

Source: Impact Sciences, March 2005.
du = dwelling unit
[1] *The water consumption rate is from the Marina del Rey Apartment Community Draft EIR, Impact Sciences, May 2000.*
[2] *Assumes average daily domestic water flow is the same as average daily sewer flow.*

3 Greg Even, Senior Civil Engineer III, Los Angeles County Department of Public Works, Waterworks and Sewer Maintenance Division, communication with Impact Sciences, August 26, 2004.

4 However, the County has required that approximately 1,050 feet of 12-inch diameter water main in Dell Avenue replace the existing 10-inch water line.

5 Ibid.



SOURCE: Los Angeles County Department of Public Works – March 2004

FIGURE **5.8-1**

Marina del Rey Water Distribution System

779-02-09/05

5.8.2.6 Regulatory Policies for Water Quality and Conservation

5.8.2.6.1 Federal Level

The primary federal legislation concerning domestic water supply is the Safe Drinking Water Act (SDWA) of 1974. The SDWA provides the U.S. Environmental Protection Agency (U.S. EPA) with the authority to regulate water supplies. The SDWA required the U.S. EPA to set interim primary drinking water regulations that establish recommended maximum contamination levels (RMCLs) for each contaminant that may have an adverse effect on human health. Since promulgation of the National Primary Drinking Water Regulations (NPDWR), the U.S. EPA has developed additional drinking water quality standards for volatile organic chemicals, fluoride, surface water treatment, total coliform bacteria, lead, copper, synthetic organic contaminants and inorganic contaminants. All domestic water supplies are required to meet these standards.

5.8.2.6.2 State Level

In addition to the water quality standards identified above, Title 20 (Sections 1604 and 1606) and Title 24 (Sections 2-5307 and 2-5352) of the California Administrative Code (CAC) establish efficiency standards (i.e., maximum flow rates) for all new showerheads, lavatory faucets and sink faucets. These regulations also prohibit the sale of fixtures that do not comply with the current regulations; prohibit the installation of fixtures unless the manufacturer has certified compliance with the flow rate standards; and address pipe insulation requirements that can reduce water used before hot water reaches fixtures. Other applicable state water conservation laws include the Health and Safety Codes.

In 1995, the state legislature passed, and Governor Wilson signed into law, SB 901 (Costa). This bill requires that environmental impact reports for certain development projects address the availability of water for the project. Now codified as Part 2.10 of the California Water Code, SB 901 is applicable when a Notice of Preparation filed for projects that require the adoption of a specific plan and/or "an amendment to, or revision of, the land use element of a general plan, or a specific plan, that will result in a net increase in the stated population density or building intensity to provide for additional development." A Notice of Preparation for the proposed The Shores project was filed with the State of California Office of Planning and Research on July 20, 2005. While the project would result in a net increase in population density, no amendment to the County General Plan or Marina del Rey Specific Plan is required for this increase. Therefore, this project is not subject to the requirements of SB 901. However, the analysis used in this EIR is fundamentally based on the requirements of SB 901 as a means of analyzing the impact of this project on local and regional water supplies.

5.8.3 ENVIRONMENTAL IMPACTS

5.8.3.1 Project Improvements

Implementation of The Shores project would result in the development of 12 apartment buildings totaling 544 units. Development of The Shores project will require the removal of 202 existing apartment units. The net change associated with development of The Shores project is 342 new apartment units.

5.8.3.2 Thresholds of Significance

Based on Appendix G of the most recent update of the *California Environmental Quality Act (CEQA) Guidelines*, applicable thresholds of significance are listed below followed by analysis of the significance of any potential impacts. Mitigation measures are also identified which would reduce or avoid potential impacts.

Threshold: **Have insufficient water supplies available to serve the project from existing entitlements and resources, or would require expanded entitlements.**

Threshold: **Require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts.**

5.8.3.3 Impact Analysis

Construction Impacts: Demolition activities on The Shores project site are expected to occur over a two- to three-month period. Construction of the project would require an additional 25 months to complete. Water would be used during demolition and construction as a dust palliative and to moisten the fill dirt to achieve the required compaction during all grading and excavation activities. During construction, no residential water use would occur on the project site, and it is expected that low volumes of water would be consumed for construction uses. The amount of construction-related water that would be consumed would not have a significant impact on the water supply system.

Operation Impacts; Water System Improvements: As planned, water system upgrades are currently planned in Via Marina as part of Phase II and III water distribution network improvements proposed by the LACDPW. As part of the future Phase II and Phase III plans, the water main in Via Marina would be improved from the existing 12-inch main to a planned 18-inch main. As proposed, approximately 1,050 lineal feet of 10-inch water main occurring along Marquesas Way and Dell Avenue would be upgraded to a 12-inch main to satisfy the requirements of the County Fire Department of 3,500 gpm (PSOMAS, 2005).

The County has found that connection to existing lines in Via Marina and new lines in Dell Avenue are sufficient to provide water for domestic and fire fighting requirements (3,500 gpm for three hours).

No significant impacts would occur with implementation of The Shores project provided the recommended project improvements are made in coordination with the Marina water distribution system upgrades on the parts of the system that would serve the project. Completion of the future improvements to Marina del Rey Water Distribution System lines may enhance fire flows for the existing system and provide additional capacity to meet fire department requirements, if necessary.

Operation Impacts; Water Supply: As shown in **Table 5.8-2** below, The Shores project would require approximately 95,150 gpd, or about 107.66 afy. This represents a net increase of approximately 57,057 gpd, or about 64.56 afy, over existing site use.

Table 5.8-2
The Shores Project Water Demand

Land Use	Units	Demand Factor[1] (gal./day/unit)	Daily Demand (gal./day)	Annual Demand (acre-feet/year)
Proposed Residential	544 du	188.58	95,150	107.66
Less Existing Residential	-202 du	188.58	38,093	-43.10
Net Project Total:	**342 du**	**188.58**	**57,057**	**64.56**

Source: Impact Sciences, May 2005.
Note: Numbers may not total exactly due to rounding.
du = dwelling unit
[1] *The water consumption rate is from the* Marina del Rey Apartment Community Draft EIR, *Impact Sciences, May 2000.*

As discussed above, entitlements have been secured through WWD No. 29 and are adequate to serve existing uses and projected growth in Marina del Rey. In addition, a letter from WWD No. 29 indicating its ability to serve the project with water prior to the issuance of grading, building or construction permits is included as **Appendix 5.8**. Impacts to the water supply system would be less than significant.

5.8.4 MITIGATION MEASURES

5.8-1. Prior to the issuance of occupancy permits, The Shores project applicant shall improve, to the satisfaction of the LACDPW, water lines in Marquesas Way and Dell Avenue.

5.8-2. The Shores project shall prepare a landscape plan that meets all provisions of Title 26 of the Los Angeles County Code, Chapter 71, Water Efficient Landscaping.

5.8-3. The Shores project shall incorporate into the building plans water conservation measures as outlined in the following:

- State of California Health and Safety Code Section 17921.3 requiring low-flow toilets and urinals;
- Title 24, California Administrative Code which establishes efficiency standards for shower heads, lavatory faucets and sink faucets, as well as requirements for pipe insulation which can reduce water used before hot water reaches equipment or fixtures; and
- Government Code Section 7800, which requires that lavatories in public facilities be equipped with self-closing faucets that limit the flow of hot water.

5.8.5 CUMULATIVE IMPACTS

5.8.5.1 The Shores Project and Other Related Projects

The cumulative impacts on water service from The Shores project in conjunction with other related/approved projects identified in **Section 4.0, Environmental Setting,** were analyzed. Applicable significance thresholds are listed below in bold followed by an analysis of the cumulative impacts and their potential significance. Mitigation measures are also identified which would reduce or avoid potentially cumulative significant adverse impacts.

Threshold: Have insufficient water supplies available to serve the project from existing entitlements and resources, or would require expanded entitlements.

Threshold: Require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts.

5.8.5.1.1 Cumulative Analysis

As shown in **Table 5.8-3, Cumulative Water Demand – Proposed Project and Related Projects,** build-out of The Shores project and other related projects would consume an estimated 1,363,925 gpd, or 1,543.28 afy of water. Entitlements for water have been secured and are adequate to serve existing uses and projected growth in Marina del Rey. In addition, each future project would be required to provide to the Los Angeles County Department of Regional Planning a letter from WWD No. 29 stating that it is able to provide water service to the project phase under consideration. Grading permits shall not be issued until such time that WWD No. 29 indicates that the distribution system and water supply are adequate to serve the project.

Table 5.8-3
Cumulative Water Demand
Proposed Project and Related Projects

Land Use	Units	Demand Factor[1] (gal./day/unit)	Daily Demand (gal./day)	Annual Demand (acre-feet/year)
The Shores Project				
Residences (net)	544	188.58	95,150	107.66
Related Projects				
Multi-Family[2]	5,955	188.58	1,122,994	1,270.67
Hotel / Motel	421 rooms	222	93,462	105.75
Commercial	597,591 sq. ft.	0.05	29,880	33.81
Restaurant[3]	9,605 sq. ft.	1.05	10,085	11.41
Office	247,081 sq. ft.	0.05	12,354	13.98
Total:			1,363,925	1,543.28

Source: Impact Sciences, March 2005.
Note: Numbers may not total exactly due to rounding.
sq. ft. = square feet.
[1] *The water consumption rate is from the Marina del Rey Apartment Community Draft EIR, Impact Sciences, May 2000, unless other wise noted.*
[2] *Includes senior care facilities.*
[3] *The water consumption rate is based on a wastewater generation rate of 1 gallon per day per square foot. The wastewater generation rate is assumed to be 95 percent of the water consumption rate. The source of the wastewater generation factor is the Los Angeles County Sanitation Districts, Loadings for Each Class of Land Use (1998–99).*

5.8.5.1.2 Mitigation Measures

For all cumulative projects, prior to the issuance of grading permits, the applicant of each future project within Marina del Rey shall provide to the Los Angeles County Department of Regional Planning a letter from WWD No. 29 stating that the District is able to provide water service to the project under consideration. Alternatively, if necessary by Water Works District 29, the applicant of each future project, under consideration within Marina del Rey, may construct that phased improvement identified in the Water Works District No. 29 backbone of the Water Distribution Master Plan, which provides sufficient water supply and fire flows to accommodate the project under consideration. After mitigation, cumulative impacts would be less than significant. No additional mitigation is required.

5.8.6 UNAVOIDABLE SIGNIFICANT IMPACTS

With implementation of the above mitigation measures, project and cumulative impacts to water service are not significant.

5.9 Sewer Service

SUMMARY

Wastewater in Marina del Rey is collected and conveyed by a sewer system owned and operated by the Los Angeles County Department of Public Works (LACDPW), which is regulated in the Marina Sewer Maintenance District (MSMD). Treatment of domestic sewage and wastewater occurs at the City of Los Angeles Hyperion Treatment Plant (HTP) in El Segundo.

The Shores project would generate approximately 95,150 gallons of wastewater per day. This represents a net increase of approximately 57,057 gallons per day (gpd) when compared with existing uses. The existing County of Los Angeles 12-inch sewer main in Dell Avenue and existing City of Los Angeles sewer facilities downstream of the project site have adequate capacity to serve the proposed project. The HTP currently has adequate capacity to treat sewage generated by the project. The Shores project applicant must pay connection fees to the City of Los Angeles in order to retroactively fund recent and proposed infrastructure improvements. This connection fee program occurs through a developer fee paid to the County and a corresponding payment of fees from the County to the City of Los Angeles. The project applicant must also obtain a "will-serve" letter prior to issuance of building permits demonstrating the ability of the treatment plant and collection system to accommodate project-generated effluent. Based on the above, no significant impacts to wastewater treatment facilities would occur as a result of the proposed project.

The LACDPW requires that any developer constructing a new sewer line coordinate the construction and dedication of any new sewer facilities with LACDPW's Water Works and Sewer Maintenance Division, which would be responsible for future operation and maintenance. All local collector sewer lines within the project boundaries would be constructed to standards set forth by LACDPW and would be sized to accommodate sewage flows generated at project build-out. Impacts to the wastewater collection system would also be less than significant.

5.9.1 INTRODUCTION

This EIR section presents an overview of the existing sewer collection, treatment and disposal systems in the project area. Where impacts to sewer systems are identified, mitigation measures are recommended to reduce or avoid such impacts. This analysis is primarily based on information obtained from the *Sewer Capacity Report* prepared by PSOMAS, February 2005. Additional sources of information include written and oral communication with LACDPW staff, staff of the Waterworks and Sewer Maintenance Division and information derived from the Marina Del Rey Land Use Plan (LUP).

5.9.2 EXISTING CONDITIONS

Wastewater collection and treatment for the Marina del Rey area is provided by LACDPW and the City of Los Angeles HTP. The LACDPW's Water Works and Sewer Maintenance Division is charged with maintaining the sewer collection and conveyance system which is regulated in the Marina Sewer Maintenance District (MSMD). Wastewater collected within the MSMD system is ultimately directed to the City of Los Angeles HTP treatment facility under a contract between the City and the County of Los Angeles.

5.9.2.1 Regional Wastewater Treatment Facilities

Wastewater from the Marina del Rey area, including the existing apartments on The Shores project site, is treated at the HTP in El Segundo, located southwest of the Los Angeles International Airport. The drainage area served by the HTP is approximately 328,000 acres of developed land. The HTP treats wastewater from portions of the City of Los Angeles as well as from seven cities that it contracts with, including Santa Monica, Beverly Hills, Burbank, Culver City, El Segundo, Glendale and San Fernando. HTP also treats wastewater from portions of Los Angeles County and 29 contract agencies.

Completed in 1950, the HTP was originally designed with a treatment capacity of 320 million gallons per day (mgd). Since that time, the plant's capacity has increased to 480 mgd and now includes full secondary treatment of wastewater. The HTP is currently treating 350 mgd of effluent flow to secondary treatment standards, 130 mgd below its maximum operating capacity.[1]

The HTP service area also includes two inland reclamation plants: the Los Angeles/Glendale Water Reclamation Plant (LAGWRP) and the Tilman Water Reclamation Plant (TWRP). These plants partially treat upstream flows generated by urban uses in the San Fernando Valley and route the partially treated flows to the HTP. The LAGWRP was completed in 1976 and is capable of processing approximately 30 mgd of wastewater. The TWRP became operational in 1985 and was designed to process 40 mgd of wastewater. An expansion of TWRP was completed in October 1991, which increased its current capacity to 80 mgd. In total, the Hyperion Treatment System, inclusive of LAGWRP and TWRP, has the capacity to treat 590 mgd of domestic wastewater under normal operating conditions. Presently, the HTP system is treating 350 mgd, 240 mgd below its rated capacity. This excess capacity is due in part to water conservation measures now required as part of the City of Los Angeles Uniform Building Code (UBC).

The Regional Water Quality Control Board (RWQCB) regulates the treatment of wastewater at treatment plants and the discharge of the treated wastewater into receiving waters. Therefore, the HTP is

[1] Doug Bohlmann, Shift Superintendent II, Hyperion Treatment Plant, telephone conversation, August 27, 2004.

responsible for adhering to RWQCB regulations as they apply to wastewater generated by The Shores project.

Until recently, the Marina Sewer Maintenance District (MSWD) had contractual rights to 0.97 mgd of treatment capacity at HTP, which is the capacity required to serve existing development within Marina del Rey. To accommodate future growth, the MSMD has contracted for additional capacity and has obtained contractual rights to 3.0 mgd of treatment plant capacity at HTP. Therefore, 2.03 mgd of unused capacity is available to the MSMD.

5.9.2.2 Wastewater Collection System

In the vicinity of the project site, existing 12-inch and 15-inch VCP sewer mains occur in Dell Avenue and Via Marina respectively and an 18-inch main crosses the property parallel to Marquesas Way. These mains join at manhole 69 (**Figure 5.9-1**). As shown on **Figure 5.9-1**, from manhole 69, an existing 18-inch main connects the system to a City of Los Angeles owned and operated force main. On the project site, a 10-foot-wide sewer easement is present. In conformance with normal building requirements, no structures occur or are proposed within this existing easement.

This sewer system discharges to the City of Los Angeles's system through a metering station located at Via Dolce at Marquesas Way. Sewage is then pumped via the Venice Pumping Plant at Hurricane Street and Esplanade. The pump station has five pumps, three running and two parallel force main systems. Based on growth in the marina and other projects that occur in the marina area, this system of pumps is reaching capacity. The City of Los Angeles has plans to upgrade these pump stations. As a normal practice, the costs of these improvements are paid for by sewer connection fees paid by developers to the City of Los Angeles.

From the Venice Pumping Plant, sewage flows via the Coastal Interceptor Sewer (CIS) System, which transmits sewage to the HTP. Currently, there is a proposal for a new parallel force main system to provide relief for the existing CIS System.

5.9.2.3 Funding

The marina area holds contractual flow rights, purchased from the City, for use of pipe and pumping systems as well as treatment at HTP. Payment for these rights is based on the proportionate share of capital costs and annual costs for the system used, based on the relation of its contractual capacity to the design capacity of the system.

The LACDPW requires that new local sewer lines connect to the MSMD's existing sanitary sewer system. Moreover, LACDPW requires that any developer constructing a new local sewer line or sewer network not only coordinate its construction with the MSMD, but also dedicate the sewer line or network to the MSMD. Upon its dedication, the MSMD would be responsible for future operation and maintenance. Prior to any demolition/construction, the City of Los Angeles must ensure adequate capacity in the receiving trunk sewers and receiving water reclamation plant. If adequate capacity does not exist in the City of Los Angeles' system to accommodate the additional flows, the receiving trunk sewers and/or WRP may require expansion.

The mechanism used to fund improvements to the City of Los Angeles' system is the connection fee program. This connection fee program occurs through a developer fee paid to the City of Los Angeles. Prior to the connection of the local sewer network to the City of Los Angeles' system, all new users are required to pay a fair share contribution for City of Los Angeles' sewage system expansions. This "connection fee" is used by the City of Los Angeles to finance periodic expansion of treatment capacity and trunk lines. The connection fee varies in relation to the number of plumbing fixtures associated with a proposed project.

5.9.2.4 Existing Wastewater Generation

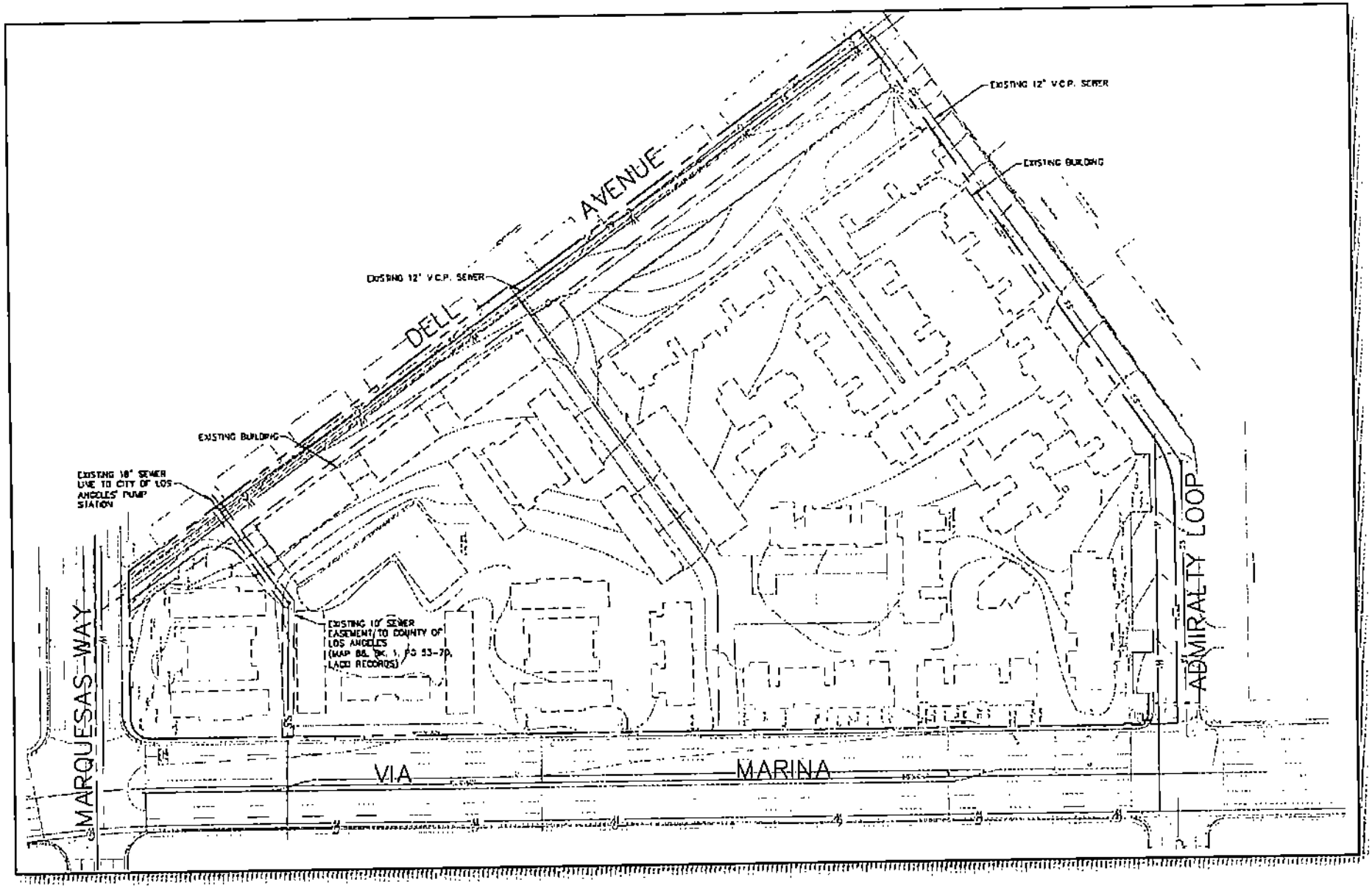
5.9.2.4.1 The Shores Project

As shown in Table 5.9-1, operation of the 202 existing apartments located on the project site generates a total of 38,093 gpd of wastewater.

Table 5.9-1
Existing Wastewater Generation

Land Use	Units	Generation Factor[1] (gal./day/unit)	Daily Generation (gal./day)
Residential	202 du	188.58	38,093
Total:			**38,093**

Source: Impact Sciences, Inc., March 2005.
du = dwelling unit.
[1] *The generation factor is from the Marina del Rey Apartment Community Draft EIR, Impact Sciences, Inc., May 2000, unless other wise noted.*



SOURCE: PSOMAS – February 2005

FIGURE **5.9-1**

Existing Wastewater Collection System

5.9.3 ENVIRONMENTAL IMPACTS

5.9.3.1 Project Improvements

Implementation of The Shores project would result in the development of 12 apartment buildings totaling 544 units. Development of the proposed project would require the removal of 202 existing residential units. A total of 1,114 parking spaces would be provided throughout The Shores project in structured parking garages below the apartment buildings. The net increase associated with residential development on The Shores project site is 342 apartment units.

5.9.3.2 Thresholds of Significance

Based on Appendix G of the most recent update of the *California Environmental Quality Act (CEQA) Guidelines,* the applicable thresholds of significance are listed below followed by analysis of the significance of any potential impacts. Mitigation measures are also identified which would reduce or avoid potential impacts.

Threshold: **Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.**

Threshold: **Result in the determination by the wastewater treatment provider, which serves or may serve the project, that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.**

5.9.3.3 Impact Analysis

5.9.3.3.1 Construction Impacts

Demolition activities on The Shores project site are expected to occur over a three-month period. Demolition and construction of the project would require a total of approximately 28 months to complete. Demolition of existing on-site uses would not disrupt sewer services to adjacent uses, as the lines will be disconnected prior to removal of the existing structures. Construction contractors would provide portable on-site sanitation facilities for use during demolition and construction that would be serviced at approved disposal facilities and/or treatment plants. The amount of construction-related wastewater that would be generated would not have a significant impact on wastewater disposal and treatment facilities due to the temporary nature of construction activity and the available capacity of the treatment facilities.

As defined above, on the project site, a 10-foot-wide sewer easement is present along with an associated main. In conformance with normal construction requirements, the location of the easement would be defined prior to grading and marked as appropriate to ensure avoidance of this main during construction.

5.9.3.3.2 Operation Impacts

Wastewater Collection System Improvements: Sewage generated from The Shores project will be directed to an existing County of Los Angeles 12-inch sewer main in Dell Avenue. Existing flows in this 12-inch sewer main are 361,291 gpd with an existing capacity of 1,318,486 gpd (27.4 percent of the rated capacity).

As proposed, The Shores project would generate a net increase in domestic sewage of 146,714 gpd. Project demand would increase flows in this main to 587,502 gpd (44.6 percent of the mains' rated capacity). This increase in demand would not exceed the capacity of the 12-inch main in Dell Avenue (PSOMAS, 2005).

The existing 12-inch sewer main in Dell Avenue combines with other County sewers at the existing Manhole No. 69. Downstream of Manhole No. 69, the existing sewer is City of Los Angeles-owned and operated. The City and County of Los Angeles have evaluated the increase in sewer flows due to The Shores project and found there to be sufficient capacity. Verification letters from the City and County of Los Angeles are incorporated as part of **Appendix 5.9**.

In summary, both the existing County of Los Angeles 12-inch sewer main in Dell Avenue and existing City of Los Angeles sewer facilities downstream of the project site have adequate capacity to serve the proposed project.

The LACDPW requires that any developer constructing a new sewer line must coordinate the construction and dedication of the sewer with the Department's Water Works and Sewer Maintenance Division for future operation and maintenance. All local collector sewer lines within the project boundaries would be constructed to the standards set forth by LACDPW and would be sized to accommodate sewage flows generated at project build-out. Impacts to the wastewater collection system would be less than significant.

Wastewater Treatment System: As shown in **Table 5.9-2**, The Shores project would generate approximately 95,150 gallons of wastewater per day. This represents a net increase of 57,057 gpd due to the increase of dwelling units in the proposed project.

Table 5.9-2
Proposed Project Wastewater Generation

Land Use	Number of Units	Average Daily Flow (gal./day)	Peak Daily Flow (PDF = 2.5 ADF)		
			GPD	GPM	CFS
Proposed Residential					
1-Bedroom; 750 s.f.	154	23,100	57,750	50.66	0.11
1-Bedroom; 900 s.f	65	9,750	24,375	21.38	0.05
1-Bedroom Corner; 900 s.f.	54	8,100	20,250	17.76	0.04
2-Bedroom; 1,050 s.f.	156	31,200	78,000	68.42	0.15
2-Bedroom; 1,250 s.f.	115	23,000	57,500	50.44	0.11
Net Project Total:	544	95,150	237,875	208.66	0.46

Source: Impact Sciences, Inc., March 2005.
[1] *The generation factor is from the Marina del Rey Apartment Community Draft EIR, Impact Sciences, Inc., May 2000, unless other wise noted.*

Sewage generated on the project site would be conveyed to the HTP for treatment, as described above. With the HTP currently operating 130 mgd below capacity, the addition of approximately 64,850 net gpd generated by The Shores project would not result in the plant exceeding capacity. Therefore, adequate capacity exists to treat sewage generated by the project, and the impact of the proposed project on the sewage treatment system is less than significant. As stated above in **5.9.2.1, Regional Wastewater Treatment Facilities**, the RWQCB is responsible for regulating the treatment of wastewater at treatment plants. Compliance with wastewater treatment requirements would not represent a significant impact.

As previously discussed, Marina del Rey has had contractual rights to 0.97 mgd of treatment capacity at the HTP, which covers treatment of effluent generated by existing uses within Marina del Rey. Also as previously discussed, an additional 2.03 mgd is currently in-place to accommodate future demand (inclusive of this project). Further, The Shores project applicant must pay connection fees to the City of Los Angeles in order to purchase the additional capacity necessary to treat project-generated wastewater and fund incremental expansion of treatment capacity. The project applicant must also obtain a "will-serve" letter prior to issuance of building permits demonstrating the ability of the treatment plant and collection system to accommodate project-generated effluent (reference **Appendix 5.9**). Based on the above, no significant impacts to wastewater treatment facilities will occur as a result of the proposed project.

5.9.4 MITIGATION MEASURES

If such improvements are deemed necessary, The Shores project shall design and construct all sewer lines to the specifications and standards defined by LACDPW. The project applicant shall pay the required sewer connection and capacity fees that are used to fund expansion of facilities. In addition, the following mitigation measures are recommended by the EIR:

5.9-1. Prior to issuance of building permits, The Shores project applicant shall demonstrate sufficient sewage capacity for the proposed project by providing a "will-serve" letter from LACDPW's Waterworks and Sewer Maintenance Division.

5.9-2. Prior to issuance of building permits, The Shores project applicant shall pay a one-time Sewer Facilities Charge to the City of Los Angeles, as required, to account for the increase in sewage generation.

5.9.5 CUMULATIVE IMPACTS

5.9.5.1 The Shores Project and Other Related Projects

The cumulative impacts on sewer service from The Shores project in conjunction with other related/approved projects identified in **Section 4.0, Environmental Setting,** were analyzed. The applicable thresholds are listed below in bold followed by an analysis of the cumulative impacts and their potential significance. Mitigation measures are also identified which would reduce or avoid potentially significant adverse impacts.

The cumulative impact on domestic wastewater service from The Shores project in conjunction with other related/approved projects identified in **Section 4.0, Environmental Setting,** is analyzed in this report section. Applicable thresholds are listed below in bold followed by an analysis of the cumulative impacts and their potential significance. Mitigation measures are also identified which would reduce or avoid potentially significant adverse impacts.

Threshold: **Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.**

Threshold: **Result in the determination by the wastewater treatment provider, which serves or may serve the project, that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.**

5.9.5.1.1 Cumulative Analysis

As shown in **Table 5.9-3**, build-out of The Shores project and other related projects would generate an estimated 1,480,904 gpd. Treatment capacity is available at the HTP under current contracts. In addition, each future project is required to provide adequate capacity to convey sewage to a safe point of discharge and pay fees to connect to the sewage system. In this manner, the existing sewage collection and conveyance system would be upgraded to accommodate sewage created by the development of future projects. As such, cumulative impacts to the sewage collection, treatment and disposal system would be less than significant.

5.9.5.1.2 Mitigation Measures

Each project is required to ensure that adequate capacity in the receiving trunk sewers and receiving wastewater treatment plant exists to accommodate the effluent generated by that use. Additionally, each project is required to pay a connection fee used to fund expansions needed to accommodate growth. Assuming each project constructs the improvements necessary to accommodate that use, and pays connection fees to cover the costs for operation of facilities, sewerage infrastructure would be upgraded as necessary to accommodate sewage created by the development of future projects. No additional mitigation is required.

Table 5.9-3
Cumulative Wastewater Generation
Proposed Project and Related Projects

Land Use	Units	Generation Factor[1] (gal./day/unit)	Daily Generation (gal./day)
The Proposed Shores Project	544 du		95,150
Residential	5,955 du	188.58	1,222,994
Hotel	421 rooms	125/room	52,624
Commercial*	607,196 sq. ft.	100/1000 sq. ft.	60,720
Office	247,081	200/1000 sq. ft.	49,416
			1,480,904

Source: Impact Sciences, Inc., May, 2005.
Note: Numbers may not total exactly due to rounding.
du = dwelling unit; sq. ft. = square feet
* *Includes Restaurant Land Uses*
[1] *The generation factor is from the Marina del Rey Apartment Community Draft EIR, Impact Sciences, May 2000, unless otherwise noted.*

5.9.6 UNAVOIDABLE SIGNIFICANT IMPACTS

With implementation of the above mitigation measures, project and cumulative impacts to wastewater treatment and disposal are not significant.

6.0 ALTERNATIVES

PURPOSE

This section of the EIR provides a comparative analysis of the merits of alternatives to the proposed project pursuant to Section 15126(d) of the California Environmental Quality Act (State CEQA) Guidelines, *as amended. According to the* State CEQA Guidelines, *the discussion of alternatives should focus on alternatives to a project that can avoid or substantially reduce the significant effects of the project. The* State CEQA Guidelines *indicate that the range of alternatives included in this discussion should be sufficient to allow decision makers a reasoned choice between alternatives and a proposed project. The alternative discussion should provide decision makers with an understanding of the environmental merits and disadvantages of various project alternatives.*

6.1 INTRODUCTION

As stated above, the principal purpose of alternatives is to define specific strategies that would reduce the magnitude of or eliminate potential project-related impacts. However, the *State CEQA Guidelines* place some restrictions on the range of alternatives an EIR must address. First, an EIR need only examine those alternatives which meet most basic objectives of the project. Second, the guidelines stipulate that alternatives addressed in an EIR should be feasible and should not be considered remote or speculative. When addressing feasibility, the guidelines state that "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, jurisdictional boundaries and whether the applicant can reasonably acquire, control or otherwise have access to the alternative site." Last, alternatives need not be presented in the same level of detail as the assessment of the proposed project.

Project objectives established for this project are defined in **Section 3.0, Project Description**, and include the following:

- Provide residential opportunities with modern features such as high-speed telecommunications, contemporary floor plans, modern kitchens and climate control; and
- Provide increased coastal residential opportunities with designs that emphasize coastal views, consistent with the residential build-out framework for Marina del Rey specified in the certified Local Coastal Program.

The project site is located in the County-unincorporated community of Marina del Rey, on Marina Parcels 100 and 101, which are located on the "landward"/westerly side of Via Marina, northwesterly of the intersection of Via Marina and Marquesas Way; site development is subject to the planning authority of

the Marina del Rey Local Coastal Program, which consists of the Coastal Land Use Plan (LUP), Local Implementation Plan (LIP) and Design Guidelines that are an Appendix to the LUP. The project developer leases the site from the County of Los Angeles; the property is presently developed with an apartment complex containing 202 dwelling units in an assortment of two-story apartment structures.

Existing uses in Marina del Rey were developed in the early to mid 1960s around the time the small-craft harbor was initially dedicated and are considered Phase I development as identified in the Marina del Rey LUP. Existing residential uses, in most locations, are over 30 years of age.

Based on CEQA-driven directives, alternatives to the project were tailored to reduce or change significant adverse impacts without undermining fundamental project objectives. **Section 5.0, Impact Analysis,** of the Draft EIR (Existing Conditions, Project Impacts and Mitigation Measures), indicates that project implementation would result in three unavoidable significant adverse impacts. These impacts include construction-related noise, construction air emissions and impacts to local landfills. The focus of the alternatives analysis considered in this EIR is to reduce or change the significant impacts associated with the proposed project.

6.2 ALTERNATIVES INITIALLY CONSIDERED

One alternative initially considered involved an overall reduction in project intensity. This alternative would have proposed a development of reduced scale and a corresponding reduction in use-related impacts (including noise and air quality impacts) as well as a reduction in the scale of structures that are proposed as part of The Shores project. As planned, The Shores project is consistent with policies defined in the Marina del Rey LUP, the Asset Management Plan pertaining to the recycling of Phase I Marina del Rey development, and applicable policies and development standards. Further, the project site is owned by the County of Los Angeles, which, through formal agreements, defines the intensity of development on site to the given lessee. As proposed, The Shores project is 13 percent below the maximum development density. Lower density is inconsistent with contract provisions that require a given development intensity. For these reasons, density reductions were eliminated and project alternatives, identified in this EIR, focused on alternatives that considered re-designs of the proposed project.

6.3 ALTERNATIVES SELECTED FOR EVALUATION

Consistent with the *State CEQA Guidelines*, four alternatives (inclusive of the No Project Alternative) were selected that would reduce or change the magnitude of the significant effects of the proposed project while meeting some of the basic project objectives. Significant adverse construction-related noise impacts

would occur principally with excavation operations associated with construction of the underground parking facilities and pile driving operations that are required to stabilize foundations in portions of the project where structures would be constructed on hydraulic fill. Excavation would require the use of heavy grading equipment on the site and truck trips that are required to dispose of the excavated material off the project site. Pile driving equipment would be required to install piles that are necessary to support building foundations on soils present on the project site. As defined in this Draft EIR, use of this equipment during the short-term construction phase would generate noise levels in excess of county standards and would primarily impact those residents with direct "lines-of-sight" for sound to the construction site. Therefore, construction noise impacts were considered adverse and significant.

Calculations indicate that during construction, air quality standards would be also be exceeded. Short-term project air quality impacts would occur primarily as a result of demolition, grading and construction activities and would occur principally as a by-product of excavation operations associated with construction of the underground parking facilities. Operational impacts associated with the project would not exceed state or federal standards. Therefore, short-term air quality impacts that would occur during construction were also considered adverse and significant.

Based on the information provided above, four project alternatives (inclusive of the No Project Alternative) were selected for analysis in this EIR. One alternative involves the provision for affordable housing on the project site. Provisions and precedent are present in the County of Los Angeles Affordable Housing Density Bonus Interim Guidelines that allow for a density bonus of 25 percent should affordable housing be included in the project. The LUP stipulates that 624 units are permitted on the project site. Given a density bonus of 25 percent, 780 units could be constructed on the project site (624 permitted units x 1.25 = 780 units). This number of units would require the project to include four levels of parking (one level below grade, and the remaining levels at and above grade). Above this parking structure, eight levels of housing would be necessary to account for the 780 residential units that are proposed. These project modifications would increase overall building height by approximately 150 feet (an increase in overall height from 95 to 120 feet). Although the number of units proposed would increase on-site development intensity, the project would provide for approximately 156 affordable units (25 percent of the base density).

A second alternative involves rehabilitation of the existing structures inclusive of one additional floor. Existing uses on the project site provide for 202 apartment units. Preliminary design schemes indicate that given the existing building area, the addition of one floor would yield approximately 303 total apartment units (a net increase of 101 units). Demolition of the structures and site grading would not occur as part of this project alternative. However, structural reinforcement of the foundations and

building framing would be required. As such, the exterior façades of the structures and the interior framing would need to be exposed. This would require the removal and disposal of all of the wood and stucco façades and all interior features associated with the apartment units, including the existing drywall. The construction period would be approximately 20 months.

A third alternative proposes the construction and operation of an alternative project consisting of an above-ground, six-deck parking structure in the southern portion of the project site and a 12-story above-ground residential structure situated in the northern portion of the project site. It is anticipated that the parking structure would provide for 1,114 parking spaces inclusive of guest spaces. The parking structure height would be approximately 62 feet above finished grade. The residential tower would provide for 544 apartment units with a combination of 273 one-bedroom and 271 two-bedroom units. As proposed, the residential tower height would be approximately 120 feet above finished grade. No below-grade parking is proposed as part of this alternative. The construction period would be approximately 28 months.

An analysis of a "No Project" Alternative is required by CEQA. The No Project represents a fourth alternative evaluated as part of this Draft EIR. This alternative would retain the existing uses on the site; therefore, no impact to the physical environment would occur.

6.4 ALTERNATIVES ANALYSIS

6.4.1 Alternative 1: No Project Alternative

Under the No Project Alternative, the project site would remain in its present condition and potential project-related impacts described throughout the impact analysis contained in **Section 5.0, Impact Analysis**, of the Draft EIR would not occur. However, selection of the No Project Alternative is not consistent with policies defined in the Marina del Rey LUP. The LUP is directed towards guiding and encouraging the recycling, intensification, or conversion of Phase I development consistent with the policies of the LUP, which prioritizes development of boating and visitor-serving facilities. The purpose behind encouraging the change and expansion of land uses within Marina del Rey are identified in the LUP as follows:[1]

- Implement objectives of the California Coastal Act;
- Encouraging controlled change over the next 30 years, rather than facing the prospect of major simultaneous change when the bulk of the leases expire after the year 2020; and
- Correcting existing problems and mandating the replacement of physically obsolete structures.

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1 County of Los Angeles Department of Regional Planning, *Marina del Rey Land Use Plan*, February 1996, p. 8-4.

In short, the LUP envisions the future development of Marina del Rey as a programmatic process. This process builds upon the success of existing uses in Marina del Rey via the creation an opportunity for selective reconstruction at higher intensities, the enhancement of visitor-serving uses, public access and coastal view opportunities.

Further, the No Project Alternative may preclude future development within Parcels 100 and 101. The Marina del Rey LUP divides Marina del Rey into a total of 15 development zones (DZ). The LUP defines a maximum development potential in each DZ and development potential is directly linked to the ultimate traffic capacity of the roadways within Marina del Rey. The LUP also defines a "first come first serve" response to new development proposals within each DZ. Should the No Project Alternative be selected, other projects have the potential to be proposed within each DZ that may preclude any potential for an economically feasible Phase II development on either Parcel 100 or 101.

6.4.2 Alternative 2: Provision for Affordable Housing

Although not a focus topic of this Draft EIR, as defined in **Section 4.0, Environmental Setting,** the project is consistent with population, housing and employment projections as defined by SCAG. However, the project makes no provision for affordable units on the project site. As defined in **Section 4.0,** the applicant will be conditioned by the County to make an in-lieu affordable housing fee payment should it be determined that affordable housing is determined to be infeasible on the project site.

Provisions and precedent are present in the County of Los Angeles Affordable Housing Density Bonus Interim Guidelines that allow for a density bonus of 25 percent should affordable housing be included in the project. The LUP stipulates that 624 units are permitted on the project site. Given a density bonus of 25 percent, 780 units could be constructed on the project site (624 permitted units x 1.25 = 780 units). This number of units would require the project to include four levels of parking (one level below grade, and the remaining levels at and above grade). Above this parking structure, eight levels of housing would be necessary to account for the 780 residential units that are proposed. These project modifications would increase overall building height by approximately 40 feet (an increase in overall height from 75 to approximately 115 feet). The number of units proposed would increase. However, the project would provide for approximately 156 affordable units (an increase of 25 percent over the base density).

As described in **Section 1.0**, the project, if constructed and operated consistent with the project description defined in **Section 3.0**, would result in three adverse significant impacts that are considered unavoidable. Unavoidable significant adverse impacts include:

- unavoidable significant impacts for construction emissions;
- unavoidable significant impacts for construction noise and vibration; and
- unavoidable significant impact on landfill space beyond 2017.

Environmental impacts associated with demolition of existing uses and site grading may be similar. However, due to the increased mass of the project and number of units it is expected that the proposed 25-month construction period would be increased to 48 to 50 months. This represents a 100 percent increase in duration of site construction. It is expected that construction techniques would be more intensive. Due to the increased duration of project construction, impacts associated with construction noise and air quality would be increased in both magnitude and duration. Construction-related impacts associated with site construction would further exacerbate construction-related noise and air quality impacts. PM_{10} (fine particulate matter) emissions would also be increased and would further exceed recommended thresholds during the construction phase.

Under this alternative, building height would be substantially increased. As a result, the project would be more visible and would not be in character with surrounding uses to the west, south and east. Use-related impacts associated with this alternative (e.g., traffic, water and sewage consumption, solid waste generation, school impacts, etc.) would also increase when compared with the proposed project. The net effect of this alternative would be to increase overall project intensity but to include a provision for 165 affordable housing units that are not currently proposed.

6.4.3 Alternative 3: Rehabilitation of Existing Structures

As proposed, this alternative involves rehabilitation of the existing structures inclusive of one additional floor. Existing uses on the project site provide for 202 apartment units. Preliminary design schemes indicate that given the existing building area, the addition of one floor would yield approximately 303 total apartment units (a net increase of 101 units). Demolition of the structures and site grading would not occur as part of this project alternative. However, structural reinforcement of the foundations and building framing would be required. As such, the exterior façades of the structures and the interior framing would need to be exposed. This would require the removal and disposal of all of the wood and stucco façades and all interior features associated with the apartment units, including the existing drywall. The construction period would be approximately 20 months.

As described in **Section 1.0**, the project, if constructed and operated consistent with the project description defined in **Section 3.0**, would result in three adverse significant impacts that are considered unavoidable. Unavoidable significant adverse impacts include:

- unavoidable significant impacts for construction emissions;
- unavoidable significant impacts for construction noise and vibration; and
- unavoidable significant impact on landfill space beyond 2017.

The intent of this alternative is to reduce unavoidable impacts associated with construction emissions, noise and vibration and this projects' impact on landfill space beyond 2017.

As defined above, environmental impacts associated with site grading for the below-ground garages would not occur. As such, significant adverse impacts associated with construction noise that would occur as a result of site excavation and construction required for the subterranean garages would be substantially reduced or eliminated. However, due to the requirement for structural reinforcement of the existing structures, construction associated with the third floor and re-construction of the building interiors and exterior façades, the proposed 25-month construction period would be reduced but would still require approximately 20 months to complete. Therefore, short-term impacts associated with noise and dust during the construction period would not be substantially altered.

Solid waste would be generated during construction and project operation. On a continuing basis, this alternative would reduce operational solid waste generation by approximately 42 percent. This alternative would also incrementally reduce solid waste generated during demolition and construction. However, this reduction would not be considered substantial. Exterior façade materials, interior drywall and interior appliances that would require demolition as part of this alternative are not recyclable and would be directed to area landfills. As part of this alternative, structural framing materials associated with the existing structures would be preserved on site resulting in an incremental reduction in impacts to local landfills. As part of the proposed project, framing materials would be demolished. However, it was anticipated that framing materials would be recycled and, therefore, framing materials would not result in a significant component of the demolition waste stream. Therefore, the majority of these materials would not be directed to local landfills. The export of earth material generated during excavation of the below-grade garages would not be required. However, earth material generated during site excavation is balanced on site and would not be directed to areas landfills.

Given the reduced scale of this alternative, this project would also result in an approximately 42 percent reduction in traffic generation, and a reduction of the use of potable water and domestic sewage

generated on the project site when compared with the proposed project. However, it is expected that given the intensification of building density of the project site and a like building footprint, it would not be possible to provide for parking in an amount that would be consistent with County ordinances. As such, it is expected that this alternative would result in a significant adverse impact to the parking environment.

Due to the reduced scale of the project, this project would also incrementally reduce the height and mass of the structures and would incrementally reduce impacts on the visual resources environment. Given a similar building footprint, this alternative is not expected to substantially alter impacts defined for the geotechnical and hydrologic environments.

Rehabilitation of existing structures was determined to be infeasible by the applicant. First, the project architect indicates that building foundations and the existing framing would not support a third story and substantial structural improvements would be required. Second, sufficient land area is not present to provide for the number of parking spaces required by County codes. Last, existing contract provisions call for the physical removal of existing uses in approximately 16 years.

6.4.4 Alternative 4: Above-Ground Parking

As proposed, this alternative would result in the construction and operation of an alternative project consisting of an above-ground, six-deck parking structure in the southern portion of the project site and a 12-story above-ground residential structure situated in the northern portion of the project site. It is anticipated that the parking structure would provide for 1,114 parking spaces inclusive of guest spaces. The parking structure height would be approximately 62 feet above finished grade. The residential tower would provide for 544 apartment units with a combination of 273 one-bedroom and 271 two-bedroom units. As proposed, the residential tower height would be approximately 120 feet above finished grade. No below-grade parking is proposed as part of this alternative. The construction period would be approximately 28 months.

As described in **Section 1.0**, the project, if constructed and operated consistent with the project description defined in **Section 3.0**, would result in three adverse significant impacts that are considered unavoidable. Unavoidable significant adverse impacts include:

- unavoidable significant impacts for construction emissions;
- unavoidable significant impacts for construction noise and vibration; and
- unavoidable significant impact on landfill space beyond 2017.

As defined above, environmental impacts associated with site grading for the below-ground garages would not occur. As such, significant adverse impacts associated with construction noise that would occur as a result of site excavation and construction required for the subterranean garages would be substantially reduced or eliminated. However, due to the requirement for construction of the parking structure and the residential tower, the proposed 25-month construction period would be increased by approximately three months. Therefore, significant and adverse impacts associated with noise and dust during the construction period would not be substantially altered.

Solid waste generated during demolition would be similar to the proposed action as demolition of all exiting structures would be required. The export of earth material generated during excavation of the below-grade garages would not be required. However, earth material generated during site excavation is balanced and would not be directed to areas landfills. On a continuing basis, this alternative would not reduce operational solid waste generation as the number of residential units proposed as part of this alternative would not be altered.

Given the similar scale of this alternative, this project would not result in a reduction in traffic generation, nor in the use of potable water and domestic sewage generated on the project site when compared with the proposed project. Further, given a similar building footprint, it is expected that impacts associated with the hydrology and water quality environments would be similar.

This alternative would substantially increase the height and mass of structures that would occur on the project site. Although not inconsistent with either the height requirements defined in the Marina del Rey LUP or other structures that occur or are proposed to the north and east, impacts when compared with the proposed project would be increased. The proposed parking structure would exceed proposed building heights by 7 feet, while the height of the residential towers would exceed proposed building heights by 45 feet. The net effect of this increase in structure height would be a substantial intensification of building intensity, and increase light and glare and shade and shadow effects that would likely impact adjacent residential uses.

This alternative was rejected by the project applicant due to greater construction costs as well as the intensity of development on the project site.

6.4.5 Environmentally Superior Alternative

Based on the information in this section, the No Project Alternative is environmentally superior. However, the No Project Alternative is not consistent with policies and goals of the Marina del Rey LUP. The No Project Alternative incorporates no adverse or beneficial effects.

As specified in the *State CEQA Guidelines* (Section 15126,(d),2), if the No Project Alternative is the environmentally superior alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Of the alternatives considered, Alternative 3, the Rehabilitation of Existing Structures is considered environmentally preferred. This alternative would result is a reduction in significant effects associated with noise, air quality and solid waste impacts. Further, this alternative would result in incremental reductions (a 42 percent reduction) in impacts associated with traffic generation, the use of potable water and domestic sewage generated on the project site when compared with the proposed project. However, rehabilitation of existing structures was determined to be infeasible by the applicant. First, the project architect indicates that building foundations and the existing framing would not support a third story and substantial structural improvements would be required. Second, sufficient land area is not present to provide for the number of parking spaces required by County codes. Last, existing contract provisions call for the physical removal of existing uses in approximately 16 years.

7.0 THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

PURPOSE

Pursuant to Section 15126(e) of the CEQA Guidelines, *projects are required to be evaluated with respect to their cumulative and long-term adverse environmental effects. This analysis focuses on impacts that narrow the range of beneficial environmental uses of the project site and/or impacts that pose long-term risks to public health and safety. Reasons for proceeding with the proposed project at this time, rather than reserving an option for other alternatives, are also discussed.*

7.1 INTRODUCTION

The primary effect of the proposed project is the removal of outdated apartments and surface parking and replacement with a more intensive, economically-productive, residential, land-use project. Development of the property as outlined in **Section 3.0, Project Description**, would increase the site's economic and social productivity by providing for additional housing and construction employment opportunities for residents of the area. The project will also generate substantial increased revenue directly and indirectly in the form of lease return, sales tax, property tax and other fees to the county of Los Angeles and state of California, while allowing for a reasonable return on the leaseholder's investment. The substantial investment required to upgrade the infrastructure and to develop the property as proposed would represent a significant long-term commitment of the site as a residential community.

7.2 CUMULATIVE LONG-TERM EFFECTS

Given the scope of the project, it is expected that the site would remain in a developed condition into the distant future. Any significant, long-term effects of this project, as identified in **Section 5.0** of this EIR, would occur over the lifetime of the project. Project and cumulative effects include additional air emissions, increased noise levels, and generation of solid waste, among others. These effects are primarily due to a general intensification of density in the area.

7.3 LIMITATIONS ON BENEFICIAL USES

The site is presently developed with an older apartment complex that was developed in the early 1960s. The aging improvements lack the modern amenities that many contemporary buildings possess. Loss of the existing developed uses would be offset by the benefits associated with the proposed project. Construction of the project would introduce a new contemporary community that incorporates modern conveniences such as state-of-the-art wiring for telecommunications, modern kitchens and climate control systems. Additionally, the project would be required to comply with County guidelines for water-saving plumbing fixtures, such as low-flow toilets, that would reduce per-capita water consumption on the site. Other beneficial effects attributable to site redevelopment include an increase in property value upon which tax revenues are based. Development of the project would also increase other revenues for the County and state.

7.4 LONG-TERM RISK TO PUBLIC HEALTH AND SAFETY

The project site is located in the seismically active region of southern California, and would be subject to the same ground shaking associated with seismic activity as other areas in the region over the course of project buildout. All structures on the project site must be constructed in compliance with the County of Los Angeles Building Code to reduce the risk of impacts associated with secondary seismic hazards associated with structural failure. No other significant health or safety risks are associated with site development.

7.5 WHY THE PROJECT IS PROPOSED AT THIS TIME RATHER THAN RESERVING AN OPTION FOR FUTURE USES

The California Department of Finance predicts that southern California will undergo substantial demographic growth well into this century. Based on the most recent projections, the department of Finance forecasts that the population of southern California will increase 62 percent over the 30-year period between the years 1990 and 2020. On a local level, the West Side Cities Subregion has undergone substantial population, housing and employment growth over the past 20 years. This growth is projected to continue into the next century according to regional growth forecasts prepared by the Southern California Association of Governments (SCAG). See **Section 4.0, Environmental Setting**, for these forecasts.

In addition, economic conditions are improving within southern California as evidenced by a variety of indicators, including increases in new residential and commercial building construction in the region and

growth in the entertainment industry. Based upon the projected demographic and economic growth throughout southern California, the project applicant is positioning the project to satisfy a predicted future demand for housing in a location that is within or adjacent to existing and planned infrastructure, urban services, transportation corridors and major employment centers. The project applicant is proposing the development of the project now, rather than reserving an option for future uses, to take advantage of the current and projected demand for housing and associated commercial and recreational services associated with future population increases in the region.

To maintain the popularity of the Marina del Rey area, the County has prepared a Marina Asset Management Strategy to promote development projects as called for in the Amendments to the certified Land Use Plan to draw people to Marina del Rey on a regional basis, and to encourage the redevelopment of uses constructed by leaseholders during Phase I. Based on this strategy, the County, in 2001, solicited a lease extension and redevelopment proposal for Parcels 100 and 101 in Marina del Rey. The solicitation contemplated a lease extension of an additional 39 years to create a financeable leasehold term in order to allow the leaseholder of Parcels 100 and 101 the ability to acquire the capital necessary to fund redevelopment activities.

8.0 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD RESULT FROM THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

PURPOSE

Uses of nonrenewable resources during the initial construction and continued operation of a proposed project may be irreversible if a large commitment of these resources makes their removal or non-use thereafter unlikely. According to Section 15126(f) of the CEQA Guidelines, *the irretrievable commitment of such resources are to be evaluated to assure that their current consumption by a proposed project is justified. In addition, this section must also identify any irreversible damage that can result from environmental accidents associated with the project.*

8.1 IRREVERSIBLE COMMITMENT OF NONRENEWABLE RESOURCES

Approval of the proposed discretionary actions would allow for the redevelopment of the existing residential project with a new apartment complex. The substantial investment required to upgrade the infrastructure and redevelop the property as proposed would represent a continuation of the long-term commitment of the land to a modern community.

Construction and operation/habitation of the proposed land use would contribute to the incremental depletion of resources, including renewable, as well as slowly renewable or nonrenewable resources. Resources, such as lumber and other forest products, as well as water, are generally considered renewable resources. Such resources would be replenished over the lifetime of the project. Given this, development of the project would not result in an irreversible commitment of renewable resources, although there would be an incremental increase in the demand for these resources over time.

Slowly renewable and nonrenewable resources, such as natural gas, petroleum products, asphalt, petrochemical construction materials, steel, copper and other metals, and sand and gravel are considered to be commodities that, ultimately, are available only in a finite supply. The actions or processes that created these products occur over a long period and cannot replace those supplies consumed in the development and habitation of the project site within its lifespan. To varying degrees, the aforementioned materials are all readily available and some materials, such as asphalt or sand and gravel are abundant. Other commodities, such as metals, natural gas and petroleum products, are also readily available, but are finite in supply given the length of time required by the natural process to create them.

The demand for all such resources is expected to increase regardless of whether or not the project builds out, as the Department of Finance indicates that the population of southern California will increase 62 percent over the 30-year period between 1990 and 2020. If not consumed by the project, these resources

would likely be committed to other projects in the region intended to meet this anticipated growth. Furthermore, the investment of resources in the project would be typical of the level of investment normally required for a community of this scale. Provided that all standard building codes, including energy conservation standards, are followed, no wasteful use of energy or construction resources is anticipated.

8.2 IRREVERSIBLE ENVIRONMENTAL CHANGE

Irreversible long-term environmental changes associated with the project would include a change in the visual character of the site as a result of the increased land use intensity. Additional irreversible environmental changes are associated with an increase in local and regional vehicular traffic, the resultant increase in air pollutants and noise emissions generated by this traffic, the increased consumption of potable water, and the generation of solid waste and wastewater among other impacts. As discussed above, restoration of the project site to pre-developed conditions after its development would not be feasible given the level of capital investment and degree of disturbance needed to develop the property in the first place. However, features have been incorporated into the project and mitigation measures are proposed in this EIR that would minimize or avoid the significant effects of the environmental changes associated with project implementation to the maximum degree feasible. Also, it is possible, if not likely, that new technologies will emerge in the future to reduce or eliminate motor vehicle air emissions and noise that a change in economic factors (e.g., a change in the price or availability of crude oil) will result in the expansion of mass transit in the region, thereby reducing vehicles miles traveled and associated air and noise emissions.

8.3 POTENTIAL ENVIRONMENTAL DAMAGE RESULTING FROM ACCIDENTS

The *CEQA Guidelines* also require a discussion of the potential for environmental damage caused by an accident associated with the project. The following discussion identifies the characteristics of the project site and proposed future uses that could be sources of potential accidents.

No unique hazards are found on the project site, and the project proposes no uniquely hazardous uses. The site is located within a seismically active region and would be exposed to ground shaking in the event of a seismic event. Conformance with the regulatory provisions of the Los Angeles County Building Code pertaining to construction standards would minimize, to the extent feasible, damage and injuries in the event of such an occurrence. Given the above, no significant risk to human health is expected to occur.

9.0 GROWTH-INDUCING IMPACTS

INTRODUCTION

Section 15126(d) of the CEQA Guidelines, *as amended, requires the discussion of the ways in which a project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Such a discussion should also include projects that would remove obstacles to population growth, and the characteristics of a project that may encourage and/or facilitate other activities that, either individually or cumulatively, could significantly affect the environment. CEQA emphasizes that growth in an area should not be considered beneficial, detrimental or of little significance. The purpose of this discussion is to evaluate the growth-inducing potential and impact of the project.*

9.1 GROWTH-INDUCING POTENTIAL

In general terms, a project may foster spatial, economic or population growth in a geographic area if it meets any one of the criteria that are identified below.

- The project removes an impediment to growth (e.g., the establishment of an essential public service or the provision of new access to an area).
- The project results in the urbanization of land in a remote location (Leap-Frog Development).
- Economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion, etc.).
- The project establishes a precedent setting action (e.g., a change in zoning or general plan amendment approval).

Should a project meet any one of these criteria, it may be considered growth-inducing. An evaluation of the proposed project in relation to these growth-inducing criteria is provided in this section.

9.1.1 REMOVAL OF AN IMPEDIMENT TO GROWTH

Growth in an area may result from the removal of physical impediments or restrictions to growth. In this context, physical growth impediments may include nonexistent or inadequate access to an area or the lack of essential public services (e.g., water service). The following discussion evaluates the effects of the proposed project with respect to this criterion.

The project site is located in Marina del Rey, an unincorporated area of the County of Los Angeles. A network of electricity, water, sewer, storm drain, communications, roadways and all other supporting infrastructure is already in place. Currently, there are approximately 202 residential units on the project site, and 544 new apartment units are proposed (a net increase of 342 units). The proposed uses would connect to the existing infrastructure with some already-planned off-site improvements necessary to meet project demand and future growth planned in the marina. Off-site improvements may include upsizing an existing sewer trunk that serves other uses within Marina del Rey. Additional off-site improvements may include the construction of new water lines to accommodate necessary fire flows. These improvements would serve the project but would also allow for more intensive development on other Marina del Rey parcels that could utilize these infrastructure components. These improvements and the associated increase in development intensity are consistent with already adopted and approved policies of the Marina del Rey Land Use Plan that promote recycling of Phase I Marina del Rey development with more intensive uses. In addition, no new service lines (e.g., storm drain, electricity, telephone, roadways, etc.) other than those required to serve the proposed uses are to be constructed. Therefore, the project would not induce growth through introduction or expansion of infrastructure.

9.1.2 URBANIZATION OF LAND IN REMOTE LOCATIONS (LEAP-FROG DEVELOPMENT)

Development can be considered growth-inducing when it is not contiguous to existing urban development and "leaps" over open-space areas. The project site is situated within an existing community that is contiguous to other developed uses located in City of Los Angeles and surrounding areas such as Culver City, Venice and Santa Monica. Further, the project entails redevelopment of previously developed land. As a result, the proposed project will not "leap frog" over any undeveloped areas or introduce development into an area not previously developed.

9.1.3 ECONOMIC GROWTH

Project development would increase the population, housing and employment opportunities within Marina del Rey at build-out. A temporary increase in construction-related job opportunities would also occur during site development. However, the short-term construction employment opportunities are likely to be filled by the existing labor force in the Los Angeles metropolitan area so no substantial influx of workers seeking to fill these temporary positions are anticipated.

With regard to operational impacts, the analysis contained in **Section 4.0, Environmental Setting,** indicates that the project's population, housing and employment characteristics are within Southern

California Association of Governments' growth projections for both the subregion as well as census tract. The project's population and employment generation would, therefore, not result in an increase in population and employment over expected levels, or that which has been officially planned for Marina del Rey. Based on the above, the project is considered "growth-accommodating" rather than "growth-inducing," under this criterion.

9.1.4 PRECEDENT-SETTING ACTION

The proposed project would require a Coastal Development Permit, Parking Permit and a variance (for additional project signage). These discretionary actions are common requirements for development within Marina del Rey, which is subject to a number of regulatory and planning policies for both the County of Los Angeles and the California Coastal Commission.

The decision to allow development of land on or near the proposed project site is at the discretion of the County of Los Angeles Regional Planning Department and the County Board of Supervisors. If the proposed project were to be approved, its approval would not necessarily mean that other development approvals in the area would follow. For example, development within Marina del Rey is subject to the Marina del Rey Specific Plan. The Specific Plan contains development policies that link development within Marina del Rey to the traffic capacity of the local roadway system. As such, the Specific Plan can be considered an impediment to growth that would not be removed as a result of project approval. Based on the above, the project may not be considered as growth-inducing under this criterion.

9.1.5 CONCLUSION

The above analysis indicates that the proposed project is not considered growth-inducing.

9.1.6 IMPACTS CREATED BY GROWTH

Attempting to determine the environmental impacts created by growth is speculative in that the size, type and location of specific, future projects that may be induced by this project are unknown at the present time. Furthermore, it is presumptuous to state conclusively that implementation of the project alone would induce growth in surrounding areas, as there are many variables that must be considered when examining the mechanics of urban growth (e.g., market forces, demographic trends, planning regulations, etc.). As indicated above, impacts associated with any specific future development project that could be influenced by development of this project would be examined in depth during the environmental review conducted for that project as part of its review and approval process.

Impacts of growth associated with other known development projects in the region can be found in the cumulative analyses for each topic that were conducted in **Section 5.0, Impact Analysis**. Impacts identified in the cumulative analyses include, but are not limited to, increased vehicle traffic and vehicle exhaust emissions, increased noise levels and growth in the demand for County services and utilities.

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THE SHORES PROJECT

DRAFT
ENVIRONMENTAL IMPACT REPORT

Volume II – Appendices

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PARKING PERMIT NO. RPKP 200500004
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TABLE OF CONTENTS

VOLUME I of II

Section			Page
1.0	EXECUTIVE SUMMARY		1.0-1
2.0	INTRODUCTION		2.0-1
3.0	PROJECT DESCRIPTION		3.0-1
4.0	ENVIRONMENTAL SETTING		4.0-1
5.0	IMPACT ANALYSIS		5.0-1
	5.1	Geotechnical and Soil Resources	5.1-1
	5.2	Noise	5.2-1
	5.3	Hydrology and Water Quality	5.3-1
	5.4	Air Quality	5.4-1
	5.5	Visual Quality	5.5-1
	5.6	Traffic/Access	5.6-1
	5.7	Solid Waste Disposal	5.7-1
	5.8	Water Service	5.8-1
	5.9	Sewer Service	5.9-1
6.0	ALTERNATIVES		6.0-1
7.0	THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY		7.0-1
8.0	SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD RESULT FROM THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED		8.0-1
9.0	GROWTH-INDUCING IMPACTS		9.0-1
10.0	REFERENCES		10.0-1
11.0	PREPARERS OF THE EIR		11.0-1

TABLE OF CONTENTS (continued)

VOLUME II of II

APPENDICES

Appendix 2.0(A) – Initial Study/Notice of Preparation

Appendix 2.0(B) – Written Responses to the Notice of Preparation

Appendix 4.0(A) – Minutes of DCB Hearing

Appendix 5.1 – Geotechnical Data/Reports

Appendix 5.1(A) – URS, Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina del Rey, California (May 8, 2001)

Appendix 5.1(B) – URS, Soil Gas Survey Letter Report, Proposed Apartment Complex Redevelopment, Del Rey Shores, Marina del Rey, California (May 12, 2005)

Appendix 5.1(C) – URS, recent update of the Geotechnical Investigation (June 2, 2005)

Appendix 5.2 – Noise Data

Appendix 5.3 – Hydrology and Water Quality Report
PSOMAS, Site Hydrology Study for Del Rey Shores (April 2005)

Appendix 5.4 – Air Quality Data

Appendix 5.4(A) – Calculations

Appendix 5.4(B) – Analysis of Construction Emissions

Appendix 5.4(C) – Wind Study
RWDI, Wind Study Del Rey Shores Apartments (March 30, 2005)

Appendix 5.6 – Traffic Report
Crain & Associates, Traffic Analysis for a Proposed 544-Unit Residential Development on Parcels 100 and 101 In Marina Del Rey (June 2005)

Appendix 5.7 – Solid Waste Data

Appendix 5.8 – Water Service Availability Letter

Appendix 5.9 – Sewer Capacity Verification Letter

LIST OF FIGURES

Figure		Page
2.0-1	Regional Location	2.0-3
2.0-2	The Shores Apartments Project Site	2.0-4
2.0-3	The Shores Proposed Site Plan	2.0-7
3.0-1	Regional and Local Site Location	3.0-3
3.0-2	Relationships of Project Parcels to the Marina del Rey Land Use Plan	3.0-4
3.0-3	Existing Site Conditions	3.0-5
3.0-4	The Shores Illustrative Site Plan	3.0-6
3.0-5	The Shores Perspective from Via Marina and Marquesas Way	3.0-7
3.0-6	The Shores One-Bedroom Apartment Floor Plans	3.0-12
3.0-7	The Shores Two-Bedroom Apartment Floor Plans	3.0-13
3.0-8	The Shores Perspective from Courtyard	3.0-14
3.0-9	The Shores Building Elevations	3.0-15
3.0-10	The Shores Building Cross-Sections	3.0-16
3.0-11	The Shores Vehicular Access	3.0-17
4.0-1	Marina del Rey Parcels 100 and 101	4.0-3
4.0-2	Surrounding Land Uses/Development Zones	4.0-4
4.0-3	Related Projects Location Map	4.0-11
5.2-1	Noise Attenuation Barriers	5.2-3
5.2-2	Typical Levels of Ground-Bourne Vibration	5.2-6
5.2-3	Land Use Compatibility Guidelines for Noise	5.2-13
5.2-4	Noise Sensitive Uses Along Studied Roadway Segments	5.2-14
5.2-5	Haul Route	5.2-21
5.4-1	South Coast Air Basin	5.4-3
5.5-1	Representative Site Vistas	5.5-5
5.5-2	Viewshed Photo Key Map	5.5-6
5.5-3	Pre- and Post-Development View of Site; Viewing Northbound on Via Marina South of Marquesas Way	5.5-9
5.5-4	Pre- and Post-Development View of Site; Viewing Southbound on Via Marina North of Panay Way	5.5-10
5.5-5	Site Renderings	5.5-11
5.5-6	Shade Shadow Effects	5.5-18
5.6-1	Study Intersection Locations	5.6-5
5.6-2	Existing (2005) Traffic Volumes – AM Peak Hour	5.6-10
5.6-3	Existing (2005) Traffic Volumes – PM Peak Hour	5.6-11
5.6-4	Related Projects Locations	5.6-16
5.6-5	Trip Distribution Percentages	5.6-21
5.6-6	Traffic Volumes – Net Shores Project Traffic – AM Peak Hour	5.6-22
5.6-7	Traffic Volumes – Net Shores Project Traffic – PM Peak Hour	5.6-23
5.6-8	Future (2009) Traffic Volumes without Project (Ambient Growth) – AM Peak Hour	5.6-26
5.6-9	Future (2009) Traffic Volumes without Project (Ambient Growth) – PM Peak Hour	5.6-27
5.6-10	Future (2009) Traffic Volumes with Project – AM Peak Hour	5.6-28
5.6-11	Future (2009) Traffic Volumes with Project – PM Peak Hour	5.6-29
5.6-12	Related Project Traffic Volumes – AM Peak Hour	5.6-38
5.6-13	Related Project Traffic Volumes – PM Peak Hour	5.6-39
5.6-14	Future (2009) Traffic Volumes – with Project and Related Projects – AM Peak Hour	5.6-40
5.6-15	Future (2009) Traffic Volumes – with Project and Related Projects – PM Peak Hour	5.6-41
5.7-1	Locations of Major Los Angeles County Landfill Sites	5.7-11
5.8-1	Marina del Rey Water Distribution System	5.8-5
5.9-1	Existing Wastewater Collection System	5.9-5

LIST OF TABLES

Table		Page
1.0-1	Summary Table of Project Impacts and Mitigation Measures	1.0-6
3.0-1	Description of Proposed Residential Units by Type	3.0-10
4.0-1	Related Projects Descriptions	4.0-10
4.0-2	SCAG Demographic Projections – Census Tract 7029.10	4.0-13
4.0-3	The Shores Population and Housing Unit Statistical Summary	4.0-13
5.1-1	Seismic Design Parameters	5.1-4
5.2-1	Outside to Inside Noise Attenuation	5.2-4
5.2-2	County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources	5.2-9
5.2-3	County of Los Angeles Construction Equipment Noise Restrictions	5.2-10
5.2-4	Existing Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project	5.2-15
5.2-5	Predicted Future Off-Site Roadway Noise Levels at Noise-Sensitive Locations – The Shores Project	5.2-18
5.2-6	Noise Levels of Typical Construction Equipment	5.2-20
5.2-7	Predicted Cumulative Roadway Noise Levels at Noise-Sensitive Locations	5.2-25
5.4-1	National Ambient Air Quality Standards and Status – South Coast Air Basin (Los Angeles County)	5.4-5
5.4-2	California Ambient Air Quality Standards and Status – South Coast Air Basin (Los Angeles County)	5.4-6
5.4-3	Ambient Air Quality Standards	5.4-11
5.4-4	Ambient Pollutant Concentrations Registered in SRA 2	5.4-13
5.4-5	Existing Carbon Monoxide Concentrations at Project Study Area Intersections	5.4-15
5.4-6	Existing Project Site Air Emissions	5.4-16
5.4-7	Localized Significance Criteria for SRA 2	5.4-18
5.4-8	Estimated Unmitigated Demolition, Excavation/Grading and Construction Emissions	5.4-21
5.4-9	Localized Significance Thresholds Analysis During Construction	5.4-22
5.4-10	Estimated Operational Emissions without Mitigation	5.4-23
5.4-11	Carbon Monoxide Concentrations Cumulative with Project Traffic (2009)	5.4-26
5.4-12	Comparison of Growth of ADT to Population Growth	5.4-31
5.6-1	Project Trip Generation Rates	5.6-4
5.6-2	Level of Service Operating Characteristics	5.6-6
5.6-3	Critical Movement Volume Ranges for Determining Levels of Service	5.6-6
5.6-4	Level of Service as a Function of CMA Values	5.6-7
5.6-5	Directional Trip Distribution	5.6-12
5.6-6	Critical Movement Analysis (2005) Summary	5.6-13
5.6-7	Total Allowable Phase II Marina del Rey Development	5.6-14
5.6-8	Phase II Development Potential Allocated to Development Zone 12	5.6-14
5.6-9	Related Projects Descriptions and Trip Generation	5.6-17
5.6-10	Project Trip Generation	5.6-20
5.6-11	Summary of Critical Movement Analysis Future (2009) Traffic Conditions – Without and With Project – AM Peak Hour	5.6-25
5.6-12	Summary of Critical Movement Analysis Future (2009) Traffic Conditions – Without and With Project – PM Peak Hour	5.6-25
5.6-13	Parking Tabulation for the Proposed Project	5.6-31
5.6-14	Development Zone 12 PM Peak-Hour Trips	5.6-33
5.6-15	Summary of Critical Movement Analysis – Future (2009) Traffic Conditions – With Project Plus Mitigation	5.6-36
5.6-16	Summary of Critical Movement Analysis – Future (2009) Traffic Conditions – With Cumulative Development – AM Peak Hour	5.6-37
5.6-17	Summary of Critical Movement Analysis – Future (2009) Traffic Conditions – With Cumulative Development – PM Peak Hour	5.6-42
5.6-18	Summary of Critical Movement Analysis – Future (2009) With Cumulative Development Traffic Conditions	5.6-46

LIST OF TABLES (continued)

Table		Page
5.7-1	The Shores Project Site – Existing Solid Waste Generation (No Recycling)	5.7-8
5.7-2	Existing Landfill Capacity and Regional Needs Analysis for Los Angeles County	5.7-12
5.7-3	The Shores Proposed Project Solid Waste Generation (No Recycling)	5.7-16
5.7-4	Cumulative Solid Waste Generation (No Recycling) – Proposed Project and Related Projects	5.7-19
5.8-1	Existing Water Demand – The Shores Project Site	5.8-4
5.8-2	The Shores Project Water Demand	5.8-8
5.8-3	Cumulative Water Demand – Proposed Project and Related Projects	5.8-10
5.9-1	Existing Wastewater Generation	5.9-4
5.9-2	Proposed Project Wastewater Generation	5.9-8
5.9-3	Cumulative Wastewater Generation – Proposed Project and Related Projects	5.9-10

APPENDIX 2.0(A)

Initial Study/Notice of Preparation

NOTICE OF PREPARATION

THE SHORES PROJECT

COUNTY PROJECT NO. R2005-00234-(4)
COASTAL DEVELOPMENT PERMIT NO. RCDP 200500002
PARKING PERMIT NO. RPKP200500004
VARIANCE NO. RVAR200500004

LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING
320 WEST TEMPLE STREET
LOS ANGELES, CALIFORNIA 90012

JULY 2005

NOTICE OF PREPARATION

THE SHORES PROJECT

COUNTY PROJECT NO. R2005-00234-(4)
COASTAL DEVELOPMENT PERMIT NO. RCDP 200500002
PARKING PERMIT NO. RPKP200500004
VARIANCE NO. RVAR200500004

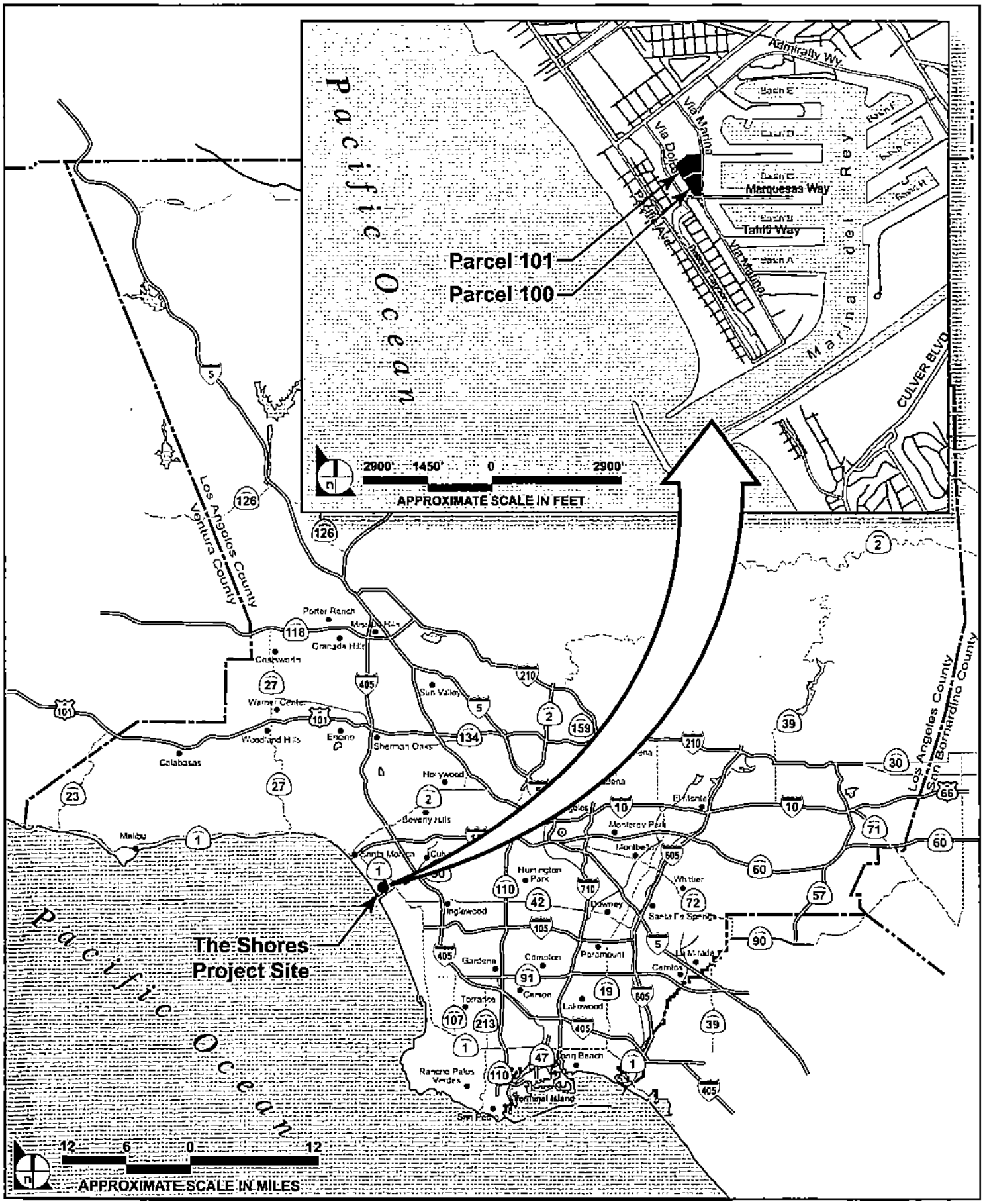
The County of Los Angeles will be the Lead Agency and will prepare an Environmental Impact Report for the project identified below. In compliance with Section 15082 of the *California Environmental Quality Act (CEQA) Guidelines*, the County of Los Angeles is sending this Notice of Preparation (NOP) to each responsible and federal agency and interested parties involved in approving the project and to trustee agencies responsible for natural resources affected by the project. Within 30 days after receiving the NOP, each agency shall provide the County of Los Angeles with specific details about the scope and content of the environmental information related to that agency's area of statutory responsibility.

The purpose of this NOP is to solicit the views of your agency as to the scope and content of the environmental information germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The review period for the NOP will be from July 20 to August 18, 2005. Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but not later than August 25, 2005. Please direct all written comments to Mr. Rick Kuo, County of Los Angeles Department of Regional Planning, 320 West Temple Street, Room 1348, Los Angeles, California 90012, Telephone (213) 974-6461, Fax (213) 626-0434. In your written response, please include the name of a contact person in your agency.

1.0 Project Location

The Del Rey Shores project is situated on Parcels 100 and 101 in the unincorporated community of Marina del Rey in the County of Los Angeles (**Figure 1, Site Location**). Parcel 100 is located at the northwest corner of the intersection of Via Marina and Marquesas Way, while Parcel 101 is located adjacent to, and directly north of, Parcel 100. Both parcels front Via Marina, a small portion of Via Dolce and Dell Avenue (Dell Avenue is a private alley). The project site is located within the Venice USGS 7.5-minute quadrangle (**Figure 2, Venice USGS 7.5-Minute Quadrangle**).

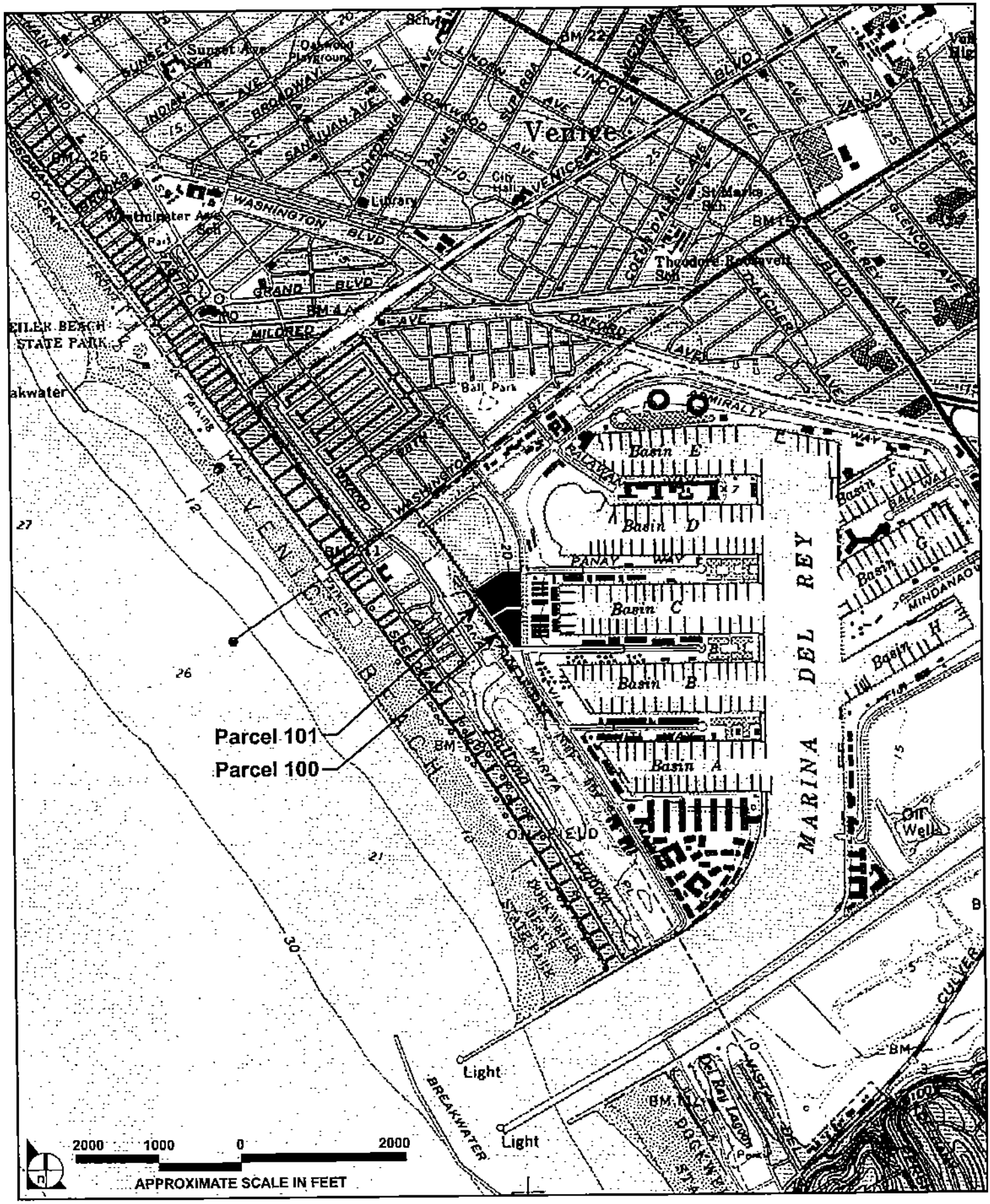


SOURCE: Impact Sciences, Inc. –April 2005

FIGURE 1

Site Location

779-01-06/05



SOURCE: USGS Venice Quadrangle – 1981

FIGURE 2

Venice USGS 7.5-Minute Quadrangle

779-01-06/05

2.0 Site Characteristics

The 8.31-acre site is roughly triangular in shape and is bounded by residential land uses. High-density residential uses are situated to the north (north of Dell Avenue, a private alley) and to the east (east of Via Marina). Land uses south and west are generally characterized by medium-density residential areas (south of Via Dolce). Storage units also occur west of the Dell Avenue alley. Other land uses proximal to the project site include multi-story apartment buildings, multi-story condominiums, some neighborhood-serving commercial and the marina.

The project site currently consists of 34 two-story apartment buildings containing a total of 202 apartment units. The existing apartments were originally constructed in the early 1960s as part of the initial (Phase I) development in Marina del Rey. All existing on-site structures and other improvements would be demolished and replaced with 544 apartment units in a series of 12 five-story apartment buildings with appurtenant facilities.

2.1 Surface Hydrology

No major drainage courses occur on the project site or on adjacent parcels and no blue-line streams occur on site. Drainage is by sheet flow to surrounding roadways, where water is collected in an existing surface and underground storm drain system. As a result of the limited topographical relief on the site, there is no potential for mudflows or landslides and the potential for water erosion is small. The project has been designed with wind and water erosion control features as required by Section 22.46.1180 of the Los Angeles County Zoning Code. During construction, de-watering may be required. In this case, groundwater would be directed to a network of settling basins, filtered and then diverted to the existing storm drain system.

2.2 Landforms and Geologic Features

T mpacted raulic fill that was placed during construction of Marina del Rey. The project is low-lying and generally flat with an elevation of approximately 10 feet above sea level. The site has no unique topographic features and is flat with a 1–2 percent slope occurring from west to east.

No active faults occur on site, although the project site is in a seismically active region. The site is not subject mudslides, but preliminary geology reports indicate that there is potential for soil liquefaction

from strong seismic shaking due to sandy soil composition and the high water table elevation on the site, and there may be potential for tsunami or seiche.

2.3 Soils

The upper 10 to 15 feet of soil on the site and immediate surroundings consists of a mixture of artificial and hydraulic fill deposits dredged from the Ballona wetlands during construction of the small-craft harbor. These fill deposits consist of silty and relatively clean sands. Native soils encountered below these fills are the natural beach and alluvial deposits consisting of interbedded silty sands, clayey sands, sandy and clayey silts, silty and sandy clays, and relatively clean sands. Natural deposits beneath the site are of Holocene to Pleistocene age.

2.4 Biota

The project site is presently developed and within a highly urbanized area. No significant biological resources occur on site. The project is not located within an existing or planned County of Los Angeles defined Significant Ecological Area (SEA) and is consistent with all local and regional conservation plans.

2.4.1 Site Vegetation

The site presently contains a 202-unit apartment complex and is landscaped with primarily non-native species typical of a coastal residential development. The project site does not contain any wetlands, major riparian vegetation or special-status habitat, and it does not contain oak or other unique native plants. No special-status plant species are known to occur on the project site.

2.4.2 Common Wildlife

The project site may provide habitat for wildlife species typical of developed urban areas near the coast. Given the developed nature of the project site and its surroundings, terrestrial wildlife resources are not expected to be abundant or diverse.

2.4.3 Special-Status Biological Resources

No natural habitat occurs on site. A review of records and on-site field investigations indicate no special-status species of plant or animal significantly utilize the structures or habitat present on the

project site. A nesting colony of the state and federal Endangered California least tern occurs approximately 0.3 mile southwest of the project site on the coastal strand. Between the project site and this nesting colony, land uses are developed with a combination of high- and moderate-density residential land uses.

2.4.4 Wildlife Movement Corridors

The project site is not part of any defined wildlife movement corridor recognized by a local or regional planning agency or document.

3.0 Project Description

3.1 Requested Approvals

As proposed, The Shores project is subject to the Marina del Rey Specific Plan, which is a component of the certified Marina del Rey Local Coastal Program (LCP). The LCP consists of the Marina del Rey Land Use Plan (LUP), Local Implementation Plan (LIP) and Design Guidelines that are an appendix to the LUP.

Project density as currently proposed is approximately 65 dwelling units per acre, while the density allowed for these parcels per the LCP is up to 75 dwelling units per acre. The maximum height of the proposed apartment buildings is 75 feet (exclusive of appurtenant screened rooftop mechanical equipment and selected artistic architectural features), while the maximum allowable building height per the LCP for the project site is 225 feet.

No amendments to the certified LCP are required for the proposed development. Land use entitlement requests include site plan review by the Marina del Rey Design Control Board, a Coastal Development Permit, a Parking Permit (to authorize installation and maintenance of compact parking for a small portion of required parking), a Variance (to modify residential sign standards in order to provide sufficient project signage) from the County of Los Angeles Department of Regional Planning and subsequent grading and building permits from the County of Los Angeles Department of Public Works.

3.2 Residential Development

The proposed The Shores project consists of (1) the demolition and removal of all existing site improvements which include 202 apartment dwelling units in 34 two-story structures, related surface parking and landscaping and hardscape facilities and (2) the construction of 544 apartment units in a series of 12 five-story structures. Each building would consist of a five-story concrete structure over two levels of subterranean and above-grade parking. The proposed project also includes substantial landscaping and hardscape facilities such as sidewalks, paved paths and outdoor recreational amenities for the residents of the apartments (**Figure 3, Landscape and Hardscape Site Plan**).

3.3 Access/Parking

Vehicular access to the parking garage would be provided from driveways in six locations: one along Via Marina, two along Admiralty Loop and three along Dell Avenue. The driveway on Via Marina would provide ingress and egress right-turn-only lanes; all other driveways would provide full left- and right-turn access.

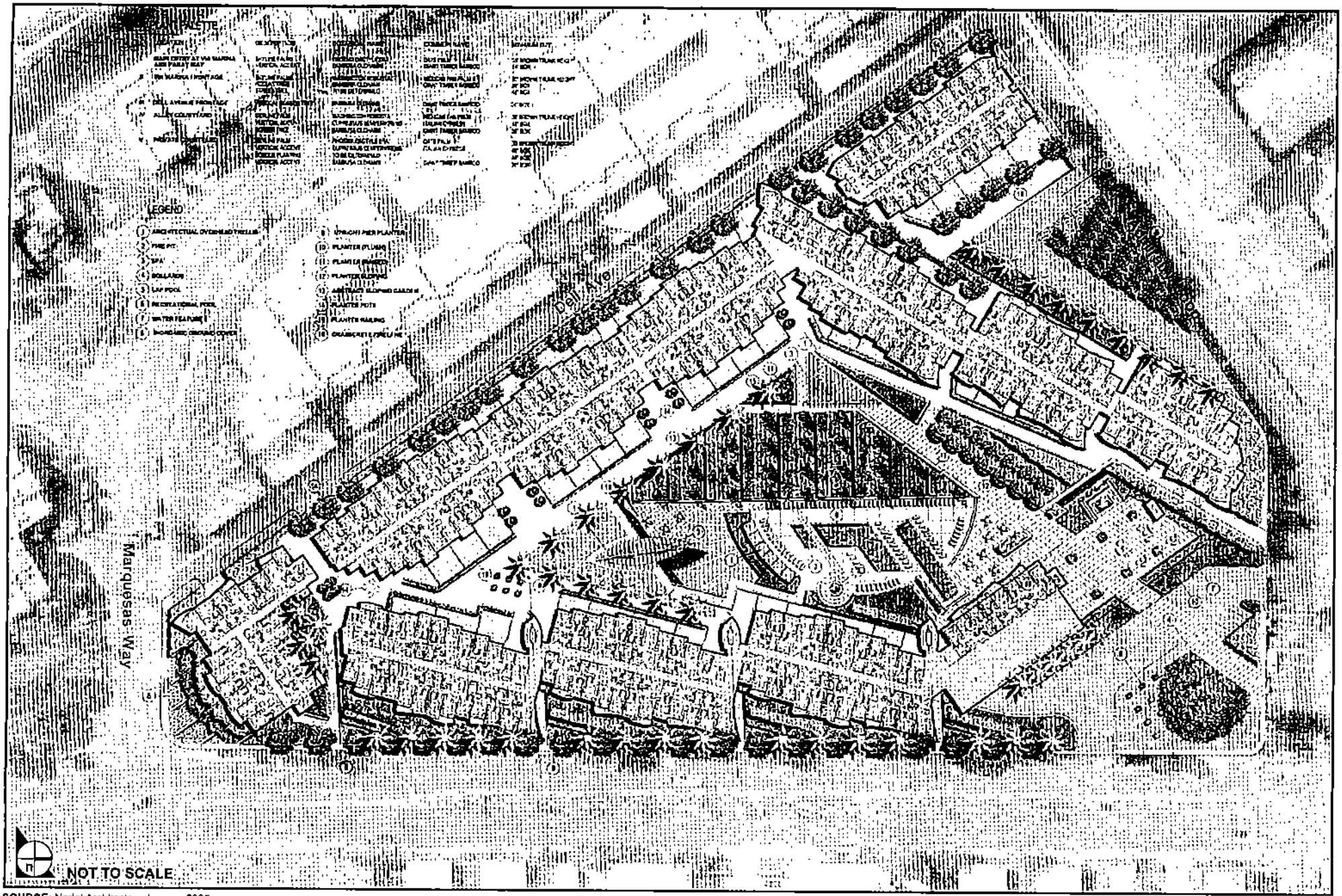
Parking would occur in garages built beneath five levels of apartments. The proposed project will provide a total of 1,114 parking spaces on site. This number exceeds code parking requirements. County of Los Angeles Zoning Code requires 1,088 parking spaces (952 for residents of the project and 136 spaces for their guests).

3.4 Grading

Grading on site would consist of cut and fill of approximately 40,000 cubic yards of materials to be balanced on site. Site grading will not include alternation of topography or slopes of more than 25 percent. If import soil is required, it will be tested for expansion potential prior to placement on the project site.

4.0 Environmental Impact Report

In conformance with Section 15063 of the implementing *CEQA Guidelines* (California Code of Regulations Title 14, Chapter 3), the County of Los Angeles prepared an Initial Study (**Attachment A**) and determined that the project had the potential to result in significant adverse impacts, and consistent with Section 15063(b)(1)(A), required preparation of an EIR. The following analysis will be included in this EIR.



SOURCE: Nadel Architects – January 2005

FIGURE 3

Landscape and Hardscape Site Plan

779-01-06/05

4.1 Environmental Setting

The *CEQA Guidelines* require a description of the environment, as it exists, from both a local and regional perspective. In addition to describing the physical characteristics of the existing environment, an analysis of the project's consistency with all applicable local and regional plans will be provided.

4.2 Impact Analyses

Scopes of work for each required topic defined as part of the County-prepared Initial Study are provided below. These scopes of work may be modified based on information received as part of this NOP process or as deemed appropriate by the Lead Agency. The following areas were identified in the Initial Study as having potential impacts that required additional analysis:

Potential Hazards
- Geotechnical and Soil Resources
- Flood and Tsunami Inundation
- Noise

Impacts to Resources
- Hydrology and Water Quality
- Air Quality
- Aesthetics

Impacts on Services
- Traffic and Access
- Sewage
- Environmental Safety

Impacts on Utilities
- Water Service
- Solid Waste

4.2.1 Work Scopes

4.2.1.1 Geotechnical and Soil Resources

The following scope of work is proposed to define and evaluate this project's potential adverse effect on the geology / soils environments.

1. Incorporate the available geotechnical, geologic and soils information developed from the literature. This discussion shall include a description of existing earth materials, geologic units and seismic hazards.

2. Based on information provided by the applicant, describe and analyze proposed grading and manufactured slopes and general areas of cut and fill will be discussed.

3. Based on the conclusions of the geotechnical investigation, potential impacts will be analyzed as follows:

   a. Document the locations of the nearest active faults and determine whether there would be any hazards related to fault rupture.

   b. Determine whether people or structures would be exposed to significant effects from ground shaking, ground failure or landslides.

   c. Discuss the potential for erosion-related impacts from grading and with regard to the drainage on site.

   d. Discuss the potential for the project to be located on an unstable geologic unit or soil with the associated hazards.

   e. Discuss soils constraints (expansive soils, corrosive soils) related to structural development.

   f. Discuss hazards associated with methane gas as it occurs in subsurface soils on and proximal to the project site.

4. Incorporate recommendations and mitigation measures from the geotechnical investigation and document their effectiveness at reducing impacts.

4.2.1.2 Flood and Tsunami Inundation

1. Incorporate the available hydrological information developed from the literature. This shall include a description of existing subsurface water levels and the potential for flood hazards.

2. Evaluate the potential for flooding and tsunami inundation.

3. Based on the conclusions of the hydrological and geotechnical investigation, potential tsunami inundation impacts will be analyzed as follows:

   a. Document the locations of the significant active faults and determine possible tsunami hazards related to fault rupture.

   b. Determine whether people or structures would be exposed to significant effects from seawater velocities and inundation.

4. Incorporate recommendations and mitigation measures from the hydrological investigation and document their effectiveness at reducing impacts.

4.2.1.3 Noise

The project site is located approximately three miles west of Los Angeles International Airport (LAX). Noise from jet traffic is audible. The site is situated in a dense urban area and existing noise sources are

generally from vehicles. The following scope of work is proposed to define and evaluate this project's potential adverse effect on the noise environment.

1. A description of existing noise sources and the noise environment in the vicinity of the project site.
2. A summary of noise measurements on the project site and along roadways most affected by increases in project traffic.
3. Identification of noise-sensitive land uses or activities in the vicinity of the project site and along roadways providing access to and from the site.
4. A discussion of relevant noise policies, regulations and standards, including those in the County General Plan and Noise Ordinance (for informational purposes).
5. A discussion of construction noise impacts, based upon proposed construction activities and scheduling information provided by the applicant. The Draft EIR shall evaluate noise impacts from construction based on the duration, nature, phasing and level of various construction activities.
6. A description of typical noise generated by the project during operation. Noise generated by project-generated motor vehicle traffic on adjacent sensitive land uses would also be evaluated.
7. Noise modeling shall be conducted to assess increases in noise levels at adjacent noise sensitive locations.
8. Provide mitigation measures identified as necessary to avoid or reduce significant noise impacts with an evaluation of their effectiveness based on published technical documents.
9. Provide cumulative impact analysis and mitigation measures.

4.2.1.4 Hydrology and Water Quality

The project site is located in an area with a high water table and is near the waters of the marina. De-watering of the site may be necessary during construction and pollutant run off is possible both during project construction and operation. The following scope of work is proposed to define and evaluate this project's potential adverse effect on the hydrology and water quality environments.

1. Analyze water quality management issues and review plans. The County shall require development of a Storm Water Pollution Prevention Plan (SWPPP) to guide water quality protection during the construction and post-construction phases, in compliance with the regulatory requirements of the construction and municipal storm water permit components of the National Pollution Discharge Elimination System (NPDES). New regulations being adopted by the Regional Board require treatment of 80 to 90 percent of mean annual rainfall. Compliance with these regulations is typically explained in a Storm Water Management Plan (SWMP), including how the proposed treatment measures will be monitored and maintained.
2. Characterize pollutants of concern under existing conditions and following development and assemble information regarding the local and regional regulations related to storm water quality management. The Draft EIR shall review the site design plans for consistency with regulatory criteria and suitability of water quality treatment measures proposed to avoid impacts to local drainage channels and off-site habitat. Where applicable, the Draft EIR shall identify

additional opportunities and constraints that bracket selection of best management practices (BMPs) and recommend further measures that are appropriate for the project.

3. Assess impacts to groundwater recharge from the proposed project. Recharge to groundwater is typically reduced when development creates impervious surfaces over areas that were formerly permeable. Under this task the EIR will assess the magnitude and importance of existing recharge, evaluate how recharge will likely change as construction occurs and identify impacts and mitigation measures suitable for maintaining hydrologic support to retained drainage channels or local wells, if applicable. If appropriate, the Draft EIR shall also suggest BMPs to maintain recharge.

4. Describe any other direct, indirect and cumulative impacts on water resources resulting from the proposed project and appropriate mitigation measures.

4.2.1.5 Air Quality

The project is situated in the South Coast Air Basin, a severe non-attainment area. Air quality standards, policies and monitoring are the responsibility of the South Coast Air Quality Management District (SCAQMD). Wind issues are equally important in the Marina due to the prevalence of recreational sail boating. The following scope of work is proposed to define and evaluate potential adverse effect on the air quality and wind environment during the project's construction and operation.

1. Describe baseline air quality information, including area topography and meteorology and their influence over air quality, relevant state and federal ambient air quality standards, monitoring data—for the past five years—from the monitoring station(s) proximal to the project site, air quality trends and existing and reasonably foreseeable sensitive receptors near the development site or near roadways/intersections that could be affected by project traffic. Also, identify federal, state and local regulatory agencies responsible for air quality policies, regulations and standards that pertain to the project. Identify major existing sources of air pollutants in the project vicinity, including sources of toxic air contaminants or odorous emissions on the basis of inventory data compiled by the SCAQMD.

2. Describe the significance criteria/thresholds for evaluating air quality impacts from the SCAQMD *CEQA Air Quality Handbook.*

3. Based on available information from the project applicant, calculate potential emissions from demolition and construction activities related to the project. Include emissions from grading, excavation and building construction. Consider construction haul trips and exhaust emissions from construction equipment. Compare estimated construction emissions with SCAQMD thresholds.

4. Calculate operational mobile and area source emissions for reactive organic gases, nitrogen oxides, particulates and carbon monoxide using the most current URBEMIS model. Calculations associated with vehicle traffic will be based on the trip generation modeling documented in the traffic report. Compare the estimated emissions to the SCAQMD thresholds.

5. Discuss the potential for the combined emissions from the project and cumulative development to adversely affect air quality or impede attainment of air quality goals. Also, discuss whether the project would conflict with the most recent version of the *Air Quality Management Plan* and other

applicable air quality plans. Apply SCAQMD significance criteria to determine the potential for cumulative air quality impacts.

6. Identify mitigation measures as necessary to reduce or avoid any potential project-specific or cumulative impacts to air quality and quantify their effectiveness based on methodologies available from SCAQMD and other sources.

7. Evaluate the potential for the structures to effect wind patterns in the marina that could adversely impact fresh breezes or sailing opportunities in the Marina area.

4.2.1.6 Aesthetics

The existing character of the project site will be changed with development of the proposed project. The proposed project is denser and taller than existing land uses. View corridors are not applicable to the project, as the subject parcels do not adjoin the water. The following scope of work is proposed to define and evaluate this project's potential adverse effect on the aesthetic environment.

1. Describe the existing visual character of the project site, focusing on site features such as topography, vegetation, existing light sources and the site's relationship to nearby uses. Work will be based on site reconnaissance.

2. Provide text, documenting views from adjacent roadways and discuss project's consistency with existing and planned development in the area.

3. Summarize applicable policies or regulations related to visual quality, including policies from the County of Los Angeles General Plan and the Marina del Rey Specific Plan and the Design Standards.

4. Through view simulations, evaluate the visual impacts of the proposed project with respect to defined significance criteria, focusing on changes to existing visual character, effects on views from area roadways.

5. Evaluate potential light, glare and shade/shadow impacts of the proposed project on existing visual character of the site or area.

6. Identify, as necessary, additional mitigation measures for avoidance or reduction of the identified visual impacts.

4.2.1.7 Traffic and Access

A preliminary report defining existing traffic conditions on and near the project has been prepared. The intersections surrounding the site within Marina del Rey operate at good Levels of Service (LOS A to C). Some intersections outside of Marina del Rey that are likely to experience increased traffic exhibit traffic congestion problems and operate at fair to poor Levels of Service (LOS D to F). Site access will conform to all County of Los Angeles Fire Department standards for roadway widths, turning radii and road length and surface materials. Additionally, the project will be required to pay all applicable

traffic impact mitigation fees. The following analysis would be incorporated into the proposed EIR to adequately address potential project and cumulative impacts to the traffic environment.

1. Study area, methods and level of service standards;
2. Description of regional and local transportation network;
3. Existing traffic volumes and levels of service;
4. Programmed roadway improvements;
5. Relevant transportation and circulation features of the proposed project;
6. Trip generation, distribution and assignment;
7. Project-specific impacts (increased congestion, hazards, emergency access, parking and conflicts with alternative transportation policies); and
8. Describe project-specific mitigation measures and cumulative impacts and mitigation measures.

4.2.1.8 Sewage

Domestic sewage flows from the project site are currently treated at the City of Los Angeles' (City) Hyperion Treatment Plant through a contractual agreement between the County and City. This plant has surplus capacity to serve new projects. However, a full analysis of sewer line capacity from the project site to sewer trunk lines is necessary to adequately evaluate system capacity. The following analysis would be incorporated into the proposed EIR to adequately address potential project and cumulative impacts on the county sewage treatment systems.

1. Obtain information on existing sewer capacity, assess the potential impacts of the proposed project, define specific standards and provide input on appropriate mitigation measures.
2. Provide information on existing conditions for the treatment and disposal of domestic sewage via the existing sewage treatment system.
3. Provide information on the sewage treatment system's capacity for additional wastewater treatment and on any pending and proposed improvements to the system.
4. Based on readily available wastewater generation rates, calculate the project's wastewater generation. Compare with the defined capacities of the sewage treatment plant(s) and sewage system.
5. Provide mitigation measures proposed as part of the project or recommendations of the County of Los Angeles Department of Public Works. Describe cumulative impacts and mitigation measures.

4.2.1.9 Environmental Safety

Historically, the project site was subject to oil and natural gas extraction activities. Oil and natural gas wells on site and in the project areas were removed per applicable state and federal standards prior to Phase I development in the early 1960s. No extraction activities currently occur on the project site. Natural gas extraction does occur in the site vicinity (to the south). To assess the potential effects of soil gas on future site residents the following methodology is proposed.

Soil gas surveys on the project site shall be assessed and reported in the Draft EIR in accordance with both the Advisory document titled Active Soil Gas Investigations, January 28, 2003, jointly issued by the Department of Toxic Substances Control (DTSC) and the California Regional Water Quality Control Board – Los Angeles Region (LARWQCB) (DTSC/LARWQCB Advisory), and the LARWQCB Interim Guidance for Active Soil Gas Investigations (February 25, 1997).

4.2.1.10 Water Service

Domestic water flows are provided by Los Angeles County Waterworks District 29. The water district has sufficient capacity to provide water to the proposed project. However, the Department of Public Works is currently planning and performing upgrades to the water supply system to increase capacity. A full analysis of current and planned water supply line capacity from water mains to the project site is necessary to adequately evaluate system capacity. The following analysis would be incorporated into the proposed EIR to adequately address potential project and cumulative impacts on the county water supply systems.

1. Provide information regarding on-site water system improvements and the existing capacity of the Marina del Rey water system as well as any planned improvements to the water supply system.
2. Based on readily available water consumption rates, calculate the project's estimated water consumption. Compare with the defined capacities of water system.
3. Provide mitigation measures proposed as part of the project or recommendations of the County of Los Angeles Department of Public Works. Describe cumulative impacts and mitigation measures.

4.2.1.11 Solid Waste

Solid waste collection and transfer in unincorporated Los Angeles County is handled by private contractors. These contractors haul waste to a variety of sorting, recycling and transfer stations and to local and regional landfills. The following analysis would be incorporated into the proposed EIR to adequately address potential project and cumulative impacts on solid waste services.

1. Provide information regarding on-site solid waste collection and transfer. Identify likely landfills that accept solid waste from Marina del Rey, discuss capacity of these landfills and current diversion rates of recyclables in Los Angeles County.

2. Based on readily available solid waste generation rates, calculate the project's estimated solid waste generation. Compare with the defined capacities of identified landfills.

3. Document hazardous materials or the generation of hazardous wastes associated with the project. Document policies and measures that would apply to the safe use and disposal of such materials.

4. Provide mitigation measures proposed as part of the project. Describe cumulative impacts and mitigation measures.

5. Demolition and construction waste would be hauled via an approved haul route, to an appropriate approved, environmentally acceptable landfill location. The impact of this additional solid waste on local landfills shall be evaluated in the Draft EIR.

4.3 Alternatives

In conformance with the *State CEQA Guidelines*, a range of reasonable alternatives that would reduce significant impacts and would foster informed decision making and public participation will be included in the Draft EIR.

4.4 Growth-Inducing Impacts

In conformance with the *State CEQA Guidelines*, growth-inducing impacts (i.e., ways the project could foster economic growth or population growth) either direct or indirect would be described and analyzed.

ATTACHMENT A
INITIAL STUDY

STAFF USE ONLY

PROJECT NUMBER: *R2005-00234*

CASES: *RCDP T200500002*
RENV T200500040
RVAR T200500004
RPKP T200500004

****** INITIAL STUDY ******

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING

GENERAL INFORMATION

I.A. Map Date: *November 15, 2004* Staff Member: *Kevin Johnson*

Thomas Guide: *671 J-7* USGS Quad: *Venice*

Location: *4201 Via Marina (Parcels 100 & 101), Marina del Rey*

Description of Project: *An application for a Coastal Development Permit to authorize demolition of the existing 202-unit one- and two-bedroom apartment complex and subsequent construction of a 544-unit apartment complex in twelve 75-foot high buildings (five stories of apartments over two levels of parking) with architectural features extending approximately 25 feet above the roofline). A total of 1,114 parking spaces will be provided within parking structures on-site (954 – residents, 136 – guest parking). The project also includes a Parking Permit request to authorize installation of residential compact parking as well as a Variance to authorize modification of signage standards to allow more signage than allowed by the Zoning Code.*

Gross Area: *8.31 Acres*

Environmental Setting: *The project is located within the developed Marina del Rey small craft harbor and is currently developed with 202 residential apartments in over 30 separate buildings. Surrounding uses consist of medium to high density single and multi-family residential uses in all directions as well as commercial uses, boat slips and Marina Beach to the east. The property does not have frontage on the water.*

Zoning: *SP (Specific Plan)*

General Plan: *High Density Residential*

Community/Area Wide Plan: *Residential V*

Major projects in area:

Project Number	Description & Status
98-134	*Net increase of 614 dwelling units, retail, boat slips - under construction*
98-172	*99 dwelling units, yacht club, offices; boat slips - under construction*
02-277	*Commercial redevelopment of site - under construction*
03-030	*Addition of appx. 18,000 square feet of retail to existing shopping center - approved by RPC*
03-029	*Net increase of 115 dwelling units – approved by RPC*
00-39	*120 dwelling units, remodel existing apartments, remove boat slips & office*

NOTE: For EIRs, above projects are not sufficient for cumulative analysis.

REVIEWING AGENCIES

Responsible Agencies

- ☐ None
- ☒ Regional Water Quality Control Board
  - ☒ Los Angeles Region
  - ☐ Lahontan Region
- ☒ Coastal Commission
- ☒ Army Corps of Engineers
- ☒ *CA Dept. of Conservation, Div. of Oil, Gas & Geothermal Resources*
- ☒ *City of Los Angeles Dept. of Public Works*

Trustee Agencies

- ☐ None
- ☒ State Fish and Game
- ☐ State Parks
- ☒ *US Fish & Wildlife Service*

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of the Santa Monica Mtns.
- ☒ *City of Los Angeles*
- ☒ *City of Santa Monica*
- ☒ *City of Culver City*
- ☒ *CA State Lands Commission*
- ☒ *CA Dept of Toxic Substances Control*
- ☒ *LAUSD*
- ☐ _____

Regional Significance

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

County Reviewing Agencies

- ☐ Subdivision Committee
- ☒ DPW: *Land Development, Watershed Management, Geotech. & Materials Engineering, Traffic & Lighting, Waterworks & Sewer Maint., Envir. Programs*
- ☒ Health Services: *Env. Hygiene*
- ☒ *Dept. of Beaches and Harbors*
- ☒ *Fire Department*
- ☒ *Parks and Recreation*
- ☒ *Sanitation Districts*
- ☒ *Sheriff Department*

IMPACT ANALYSIS MATRIX

CATEGORY	FACTOR	Pg	Less than Significant Impact/No Impact	Less than Significant Impact with Project Mitigation	Potentially Significant Impact	Potential Concern
			ANALYSIS SUMMARY (See individual pages for details)			
HAZARDS	1. Geotechnical	5	☐	☐	☒	*Liquefaction, grading*
	2. Flood	6	☐	☐	☒	*Tsunami Inundation area*
	3. Fire	7	☒	☐	☐	
	4. Noise	8	☐	☐	☒	*Temporary construction noise, adjacent to residential uses*
RESOURCES	1. Water Quality	9	☐	☐	☒	*Known water quality problems, proximity to beach*
	2. Air Quality	10	☐	☐	☒	*Regionally significant, may exceed AQMD thresholds, non-attainment area*
	3. Biota	11	☒	☐	☐	
	4. Cultural Resources	12	☒	☐	☐	
	5. Mineral Resources	13	☒	☐	☐	
	6. Agriculture Resources	14	☒	☐	☐	
	7. Visual Qualities	15	☐	☐	☒	*Shadow or glare*
SERVICES	1. Traffic/Access	16	☐	☐	☒	*Known capacity problems, cumulative impacts*
	2. Sewage Disposal	17	☐	☐	☒	*Potential capacity problems*
	3. Education	18	☐	☒	☐	*School & library fees will be required*
	4. Fire/Sheriff	19	☒	☐	☐	
	5. Utilities	20	☐	☐	☒	*Water, solid waste*
OTHER	1. General	21	☒	☐	☐	
	2. Environmental Safety	22	☐	☐	☒	*Methane gas, historic oil fields, wind*
	3. Land Use	23	☒	☐	☐	
	4. Pop./Hous./Emp./Rec.	24	☒	☐	☐	*Adequate recreation facilities*
	Mandatory Findings	25	☐	☐	☒	*Traffic, Environmental Safety*

DEVELOPMENT MONITORING SYSTEM (DMS)

As required by the Los Angeles County General Plan, DMS shall be employed in the Initial Study phase of the environmental review procedure as prescribed by state law.

1. Development Policy Map Designation: *Conservation/Maintenance*

2. ☐ Yes ☒ No Is the project located in the Antelope Valley, East San Gabriel Valley, Malibu/Santa Monica Mountains or Santa Clarita Valley planning area?

3. ☐ Yes ☒ No Is the project at urban density and located within, or proposes a plan amendment to, an urban expansion designation?

If both of the above questions are answered "yes", the project is subject to a County DMS analysis.

☐ Check if DMS printout generated (attached)

Date of printout: _____

☐ Check if DMS overview worksheet completed (attached)

*EIRs and/or staff reports shall utilize the most current DMS information available.

Environmental Finding:

FINAL DETERMINATION: On the basis of this Initial Study, the Department of Regional Planning finds that this project qualifies for the following environmental document:

☐ NEGATIVE DECLARATION, inasmuch as the proposed project will not have a significant effect on the environment.

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and, as a result, will not have a significant effect on the physical environment.

☐ MITIGATED NEGATIVE DECLARATION, inasmuch as the changes required for the project will reduce impacts to insignificant levels (see attached discussion and/or conditions).

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was originally determined that the proposed project may exceed established threshold criteria. The applicant has agreed to modification of the project so that it can now be determined that the project will not have a significant effect on the physical environment. The modification to mitigate this impact(s) is identified on the Project Changes/Conditions Form included as part of this Initial Study.

☒ ENVIRONMENTAL IMPACT REPORT*, inasmuch as there is substantial evidence that the project may have a significant impact due to factors listed above as "significant."

☐ At least one factor has been adequately analyzed in an earlier document pursuant to legal standards, and has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets (see attached Form DRP/IA 101). The EIR is required to analyze only the factors not previously addressed.

Reviewed by: _____ Date: 3/28/05

Approved by: _____ Date: 28 MARCH 2005

☒ This proposed project is exempt from Fish and Game CEQA filling fees. There is no substantial evidence that the proposed project will have potential for an adverse effect on wildlife or the habitat upon which the wildlife depends. (Fish & Game Code 753.5).

☐ Determination appealed--see attached sheet.

*NOTE: Findings for Environmental Impact Reports will be prepared as a separate document following the public hearing on the project.

HAZARDS - 1. Geotechnical

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone?
				Liquefaction Zone per Seismic Hazard Zone Map
b.	☐	☒	☐	Is the project site located in an area containing a major landslide(s)?
c.	☐	☒	☐	Is the project site located in an area having high slope instability?
d.	☒	☐	☐	Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction?
				Liquefaction
e.	☐	☒	☐	Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard?
f.	☐	☐	☒	Will the project entail substantial grading and/or alteration of topography including slopes of more than 25%?
				40,000 cubic yards of grading to be balanced on-site
g.	☐	☒	☐	Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
h.	☐	☒	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 C Sections 308B, 309, 310 and 311 and Chapters 29 and 70.

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Approval of Geotechnical Report by DPW

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **geotechnical** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 2. Flood

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is a major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site?
b.	☒	☐	☐	Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone? *Tsunami inundation zone per Los Angeles County Safety Element Plate 6*
c.	☐	☒	☐	Is the project site located in or subject to high mudflow conditions?
d.	☐	☒	☐	Could the project contribute or be subject to high erosion and debris deposition from run off?
e.	☐	☒	☐	Would the project substantially alter the existing drainage pattern of the site or area?
f.	☐	☐	☐	Other factors (e.g., dam failure)?

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 C Section 308A ☐ Ordinance No. 12,114 (Floodways)
☒ Approval of Drainage Concept by DPW

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **flood (hydrological)** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 3. Fire

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in a Very High Fire Hazard Severity Zone (Fire Zone 4)?
b.	☐	☒	☐	Is the project site in a high fire hazard area and served by inadequate access due to lengths, widths, surface materials, turnarounds or grade?
c.	☐	☒	☐	Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?
d.	☐	☒	☐	Is the project site located in an area having inadequate water and pressure to meet fire flow standards?
e.	☐	☒	☐	Is the project site located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)?
f.	☐	☒	☐	Does the proposed use constitute a potentially dangerous fire hazard?
g.	☐	☒	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Water Ordinance No. 7834 ☐ Fire Ordinance No. 2947 ☐ Fire Regulation No. 8

☐ Fuel Modification/Landscape Plan

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☐ Compatible Use

To be discussed in conjunction with the "Environmental Safety" factor

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **fire hazard** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

HAZARDS - 4. Noise

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located near a high noise source (airports, railroads, freeways, industry)?
b.	☐	☐	☒	Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity?
c.	☐	☒	☐	Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project?
d.	☐	☐	☒	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project?
e.	☐	☒	☐	Other factors?

Residential uses immediately adjacent to the project site

Underground parking proposed

Temporary construction noise

STANDARD CODE REQUIREMENTS

☐ Noise Ordinance No. 11,778 ☐ Building Ordinance No. 2225--Chapter 35

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by **noise**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 1. Water Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located in an area having known water quality problems and proposing the use of individual water wells?

Known water quality problems in Marina del Rey harbor

b.	☐	☒	☐	Will the proposed project require the use of a private sewage disposal system?
	☐	☒	☐	If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations *or* is the project proposing on-site systems located in close proximity to a drainage course?
c.	☐	☐	☒	Could the project's associated construction activities significantly impact the quality of groundwater and/or storm water runoff to the storm water conveyance system and/or receiving water bodies?

NPDES permit required

d.	☐	☐	☒	Could the project's post-development activities potentially degrade the quality of storm water runoff and/or could post-development non-storm water discharges contribute potential pollutants to the storm water conveyance system and/or receiving bodies?

NPDES permit required

e.	☐	☐	☒	Other factors? *Proximity to Marina Beach*

STANDARD CODE REQUIREMENTS

☐ Industrial Waste Permit ☐ Health Code Ordinance No. 7583, Chapter 5

☐ Plumbing Code Ordinance No. 2269 ☒ NPDES Permit Compliance (DPW)

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **water quality** problems?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 2. Air Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Will the proposed project exceed the State's criteria for regional significance (generally (a) 500 dwelling units for residential uses or (b) 40 gross acres, 650,000 square feet of floor area or 1,000 employees for nonresidential uses)? *544 dwelling units are proposed*
b.	☐	☒	☐	Is the proposal considered a sensitive use (schools, hospitals, parks) and located near a freeway or heavy industrial use?
c.	☐	☐	☒	Will the project increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure, or exceed AQMD thresholds of potential significance per Screening Tables of the CEQA Air Quality Handbook? *May exceed AQMD thresholds*
d.	☐	☐	☒	Will the project generate or is the site in close proximity to sources which create obnoxious odors, dust, and/or hazardous emissions? *Temporary construction/demolition*
e.	☐	☒	☐	Would the project conflict with or obstruct implementation of the applicable air quality plan?
f.	☐	☒	☐	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?
g.	☒	☐	☐	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? *Non-attainment area*
h.	☐	☒	☐	Other factors:

STANDARD CODE REQUIREMENTS

☐ Health and Safety Code Section 40506

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☒ Air Quality Report

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **air quality**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 3. Biota

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located within a Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural?
b.	☐	☒	☐	Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas?
c.	☐	☒	☐	Is a major drainage course, as identified on USGS quad sheets by a blue, dashed line, located on the project site?
d.	☐	☒	☐	Does the project site contain a major riparian or other sensitive habitat (e.g., coastal sage scrub, oak woodland, sycamore riparian woodland, wetland, etc.)?
e.	☐	☒	☐	Does the project site contain oak or other unique native trees (specify kinds of trees)?
f.	☐	☒	☐	Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)?
g.	☐	☐	☐	Other factors (e.g., wildlife corridor, adjacent open space linkage)?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Oak Tree Permit ☐ ERB/SEATAC Review

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **biotic resources**?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 4. Archaeological / Historical / Paleontological

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock outcroppings, or oak trees) which indicate potential archaeological sensitivity?
b.	☐	☒	☐	Does the project site contain rock formations indicating potential paleontological resources?
c.	☐	☒	☐	Does the project site contain known historic structures or sites?
d.	☐	☒	☐	Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5?
e.	☐	☒	☐	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
f.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Phase I Archaeology Report

The Marina del Rey LCP indicates that cultural resources are unlikely to be encountered in developed areas (pages 7-2 & 7-3. Standard "stop work" condition will apply.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **archaeological, historical**, or **paleontological** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 5.Mineral Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
b.	☐	☒	☐	Would the project result in the loss of availability of a locally important mineral resource discovery site delineated on a local general plan, specific plan or other land use plan?
c.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **mineral** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 6. Agriculture Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
b.	☐	☒	☐	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?
c.	☐	☒	☐	Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?
d.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **agriculture** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 7. Visual Qualities

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?
b.	☐	☒	☐	Is the project substantially visible from or will it obstruct views from a regional riding or hiking trail?
c.	☐	☒	☐	Is the project site located in an undeveloped or undisturbed area, which contains unique aesthetic features?
d.	☐	☐	☒	Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?
e.	☐	☐	☒	Is the project likely to create substantial sun shadow, light or glare problems?
f.	☐	☐	☐	Other factors (e.g., grading or land form alteration):

Approved building height to the east is 65'. Maximum existing building height to north is approximately 200', adjacent uses to the west and south are single family in character. Existing structures on the subject site are two stories in height.

75'-high structures and 100'-foot architectural features may create sun shadow or glare problems beyond that which currently exist

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Visual Report ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **scenic** qualities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 1. Traffic/Access

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Does the project contain 25 dwelling units, or more and is it located in an area with known congestion problems (roadway or intersections)?
				Known congestion problems, more than 25 units
b.	☐	☒	☐	Will the project result in any hazardous traffic conditions?
c.	☐	☒	☐	Will the project result in parking problems with a subsequent impact on traffic conditions?
d.	☐	☒	☐	Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?
e.	☐	☐	☒	Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded?
f.	☐	☒	☐	Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?
g.	☒	☐	☐	Other factors?
				LOS at intersections serving project are poor; completion of mitigation for nearby projects

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☒ Traffic Report ☒ Consultation with Traffic & Lighting Division

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **traffic/access** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 2. Sewage Disposal

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	If served by a community sewage system, could the project create capacity problems at the treatment plant?

City of Los Angeles Hyperion Treatment Plant serves site

b.	☐	☐	☒	Could the project create capacity problems in the sewer lines serving the project site?

Marina sewer maintenance district (county)

c.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Sanitary Sewers and Industrial Waste Ordinance No. 6130

☐ Plumbing Code Ordinance No. 2269

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

A sewer study is required

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **sewage disposal** facilities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 3. Education

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project create capacity problems at the district level?

Site is within LA Unified School District

b.	☐	☐	☒	Could the project create capacity problems at individual schools which will serve the project site?

The project site is within the attendance boundary of three public schools: Coeur d'Alene Avenue Elementary, Marina del Rey Middle School, and the Venice Senior High School

c.	☐	☐	☒	Could the project create student transportation problems?

d.	☐	☐	☒	Could the project create substantial library impacts due to increased population and demand?

e.	☐	☒	☐	Other factors?

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Site Dedication ☒ Government Code Section 65995 ☒ Library Facilities Mitigation Fee

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **educational** facilities/services?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 4. Fire/Sheriff Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project create staffing or response time problems at the fire station or sheriff's substation serving the project site?

Fire station located on Admiralty Way, Parcel 129

b.	☐	☒	☐	Are there any special fire or law enforcement problems associated with the project or the general area?

Sheriff station located on Fiji Way, Parcel 62

c.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Fire Mitigation Fees

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **fire/sheriff** services?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

SERVICES - 5. Utilities/Other Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells?
				Waterworks district 29 will serve project
b.	☐	☒	☐	Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs?
c.	☐	☒	☐	Could the project create problems with providing utility services, such as electricity, gas, or propane?
d.	☐	☐	☒	Are there any other known service problem areas (e.g., solid waste)?
				Solid waste generated by demolition/construction & 342 new residential units
e.	☐	☒	☐	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)?
f.	☐	☒	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Plumbing Code Ordinance No. 2269 ☐ Water Code Ordinance No. 7834

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **utilities/services**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 1. General

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Will the project result in an inefficient use of energy resources?
b.	☐	☒	☐	Will the project result in a major change in the patterns, scale, or character of the general area or community?
c.	☐	☒	☐	Will the project result in a significant reduction in the amount of agricultural land?
d.	☐	☐	☐	Other factors?

Area is generally high-density residential in nature and project is below permitted density

STANDARD CODE REQUIREMENTS

☐ State Administrative Code, Title 24, Part 5, T-20 (Energy Conservation)

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to any of the above factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

OTHER FACTORS - 2. Environmental Safety

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Are any hazardous materials used, transported, produced, handled, or stored on-site?
b.	☐	☒	☐	Are any pressurized tanks to be used or any hazardous wastes stored on-site?
c.	☒	☐	☐	Are any residential units, schools, or hospitals located within 500 feet and potentially adversely affected? *Methane gas hazard*
d.	☐	☒	☐	Have there been previous uses that indicate residual soil toxicity of the site or is the site located within two miles downstream of a known groundwater contamination source within the same watershed?
e.	☐	☒	☐	Would the project create a significant hazard to the public or the environment involving the accidental release of hazardous materials into the environment?
f.	☐	☒	☐	Would the project emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
g.	☐	☒	☐	Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment?
h.	☐	☒	☐	Would the project result in a safety hazard for people in a project area located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip?
i.	☐	☒	☐	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
j.	☐	☐	☒	Other factors? *Methane gas in Marina del Rey area, historic oil fields, wind*

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Toxic Clean up Plan

CONCLUSION

Considering the above information, could the project have a significant impact relative to **public safety**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 3. Land Use

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Can the project be found to be inconsistent with the plan designation(s) of the subject property?
b.	☐	☒	☐	Can the project be found to be inconsistent with the zoning designation of the subject property?
c.				Can the project be found to be inconsistent with the following applicable land use criteria:
	☐	☒	☐	Hillside Management Criteria?
	☐	☒	☐	SEA Conformance Criteria?
	☐	☒	☐	Other?
d.	☐	☒	☐	Would the project physically divide an established community?
e.	☐	☒	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

Burden of Proof for Parking Permit and Variance to be discussed in the DEIR

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **land use** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

OTHER FACTORS - 4. Population/Housing/Employment/Recreation

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project cumulatively exceed official regional or local population projections?
b.	☐	☒	☐	Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)?
c.	☐	☒	☐	Could the project displace existing housing, especially affordable housing?
d.	☐	☒	☐	Could the project result in a substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?
e.	☐	☐	☒	Could the project require new or expanded recreational facilities for future residents?
f.	☐	☒	☐	Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?
g.	☐	☒	☐	Other factors?

Project will increase residential units, which requires additional recreational facilities in the Marina area

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

Coastal Improvement Fund fees will be required to fund park development

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **population, housing, employment,** or **recreational** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

MANDATORY FINDINGS OF SIGNIFICANCE

Based on this Initial Study, the following findings are made:

	Yes	No	Maybe	
a.	☐	☒	☐	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?
b.	☐	☐	☒	Does the project have possible environmental effects which are individually limited but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
c.	☐	☐	☒	Will the environmental effects of the project cause substantial adverse effects on human beings, either directly or indirectly?

Traffic, Air quality impacts

Water Quality, Traffic, Environmental Safety

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the environment?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

APPENDIX 2.0(B)

Written Responses to the Notice of Preparation

County of Los Angeles Public Library
7400 East Imperial Hwy. P.O. Box 7011, Downey, CA 90241-7011
(562) 940-8401 TELEFAX (562) 803-3032

MARGARET DONNELLAN TODD
COUNTY LIBRARIAN

Library

RECEIVED
SEP 6 2005

August 29, 2005

TO: Rick Kuo
Los Angeles County Department of Regional Planning

FROM: David Flint
Assistant Director, Finance and Planning

SUBJECT: **NOTICE OF PREPARATION**
THE SHORES APARTMENT PROJECT
R2005-00234

This is in response to your invitation to submit comments on the Notice of Preparation for the Shores Apartment Project.

The demand for library services is typically determined based on the size of the resident population. Increase in population results in the need for additional facility space, library materials and services. The cumulative effect of new housing and infill development, such as the Shores Apartment Project, will have significant impact on the ability of the Public Library to serve existing and future population in the service area. Payment of the County Library's developer fee would reduce the impact of this project to a less than significant level.

This project is located in the County Library's Developer Fee Planning Area 6. The current County Library Developer Fee for Planning Area 6 is $710 per dwelling unit. This would result in a total fee obligation of $386,240 (544 x $710) at the current rate. The County Library Developer Fee is subject to an annual CPI adjustment, and the actual amount of the fee will be that in effect at the time the building permits for the project are issued. Therefore, the total fee obligation for this project may be higher.

If you have any questions regarding this matter, please contact Malaisha Hughes of my staff at (562) 940-8455.

DF:mh
U:\STAFFSERVICES\DEVELOPER FEE\EIR\Shores Apartment Project.doc

c: Robert Seal, Assistant, Public Library
Malaisha Hughes, Public Library

COUNTY OF LOS ANGELES

DEPARTMENT OF PARKS AND RECREATION

"Creating Community Through People, Parks and Programs"

Russ Guiney, Direct

August 25, 2005

TO: Rick Kuo
Department of Regional Planning
Impact Analysis Section

FROM: Bryan Moscardini
Park Project Coordinator

SUBJECT: **NOTICE OF PREPARATION (NOP) FOR AN ENVIRONMENTAL IMPACT REPORT FOR THE SHORES APARTMENT PROJECT NO. R200-00234**

The Department of Parks and Recreation has reviewed the NOP for the proposed project. Development of the project as described in the notice will not impact facilities currently under the jurisdiction of this Department.

If you have any questions, please contact me at (213) 351-5133

BM(c:response-R2005-00234)

c: Parks and Recreation (James Barber, Joan Rupert, Patrick Reynolds Bryan Moscardini)

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, OFFICE OF REGIONAL PLANNING
100 MAIN STREET, IGR/CEQA BRANCH
LOS ANGELES, CA 90012-3606
PHONE (213) 897-3747
FAX (213) 897-1337
TTY (213) 897-4937

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AUG 22 2005

Flex your power!
Be energy efficient!

August 15, 2005

IGR/CEQA cs/050738 - NOP
County of Los Angeles
The Shores Project, Project No. R2005-00234- (4)
Demolition of 202 apartment units to be replaced with 544 apartment units
Via Marina and Marquesas Way
Vic. LA-1-30.92; SCH #

Mr. ~~Kirk~~ Rick Kuo
County of Los Angeles
Department of Regional Planning
320 West Temple Street
Los Angeles, California 90012

Dear Mr. Kuo:

Thank you for including the California Department of Transportation in the environmental review process for the above-mentioned project. Based on the information received, we have the following comments:

A traffic study will be needed to evaluate the project's overall impact on the State transportation system including State Route 1 (Lincoln Blvd.) and SR-90 (Marina Freeway) and all affected freeway on/off ramps and major intersections. The traffic study should include, but not be limited to:

1) Assumptions used to develop trip generation/distribution percentages and assignments.

2) An analysis of ADT, AM and PM peak hour volumes for both the existing and future (year 2025) conditions. This should also include level-of-service calculations using the HCM 2000 methodology. The analysis should include the following:

- existing traffic volumes
- project and cumulative traffic volumes
- future traffic volumes projections for year 2025
- existing level-of-service (LOS) calculations
- project and cumulative level-of-service (LOS) calculations

3) Any mitigation measures proposed to alleviate traffic impact should include, but not be limited to the following:

- financing
- scheduling considerations
- implementation responsibilities
- monitoring plan

4) The Equitable Share responsibility for traffic mitigation measures will need to be calculated as determined by the percentage increase in projected peak period trips resulting in operational impacts to the following State transportation facilities, Lincoln Blvd. and the Marina Freeway. The County should refer to Appendix "B" Methodology for Calculating Equitable Mitigation Measures found in our Caltrans Guide for the Preparation of Traffic Impact Studies. The Guide can be found on the Internet at:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

The County should coordinate project related regional traffic mitigation measures along with the Lincoln Boulevard Corridor Task Force plans and activities.

We recommend that construction related truck trips on State highways be limited to off-peak commute periods. Transport of over-size or over-weight vehicles on State highways will need a Caltrans Transportation Permit. The contractor should agree to avoid excessive or poorly timed truck platooning (caravans of trucks) to minimize transportation related operational conflicts, minimize air quality impacts, and maximize safety concerns.

We would appreciate advance copies of the Draft EIR and Traffic Study to facilitate our internal Caltrans review. Advance copies should be sent to the undersigned:

Cheryl J. Powell, IGR/CEQA Program Manager
Caltrans District 7 Office of Regional Planning
100 South Main Street
Los Angeles, CA 90012

If you have any questions regarding our comments, please refer to our IGR/CEQA Record number cs/050738 and you may contact me at (213) 897-3747.

Sincerely,

for

Cheryl J. Powell
IGR/CEQA Program Manager

cc: Scott Morgan, State Clearinghouse

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

DONALD L. WOLFE, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
www.ladpw.org

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE REFER TO FILE: LD-0

August 18, 2005

TO: Daryl Koutnik
Department of Regional Planning

Attention Rick Kuo

FROM: Rossana D'Antonio RD
Land Development Division

RESPONSE TO NOTICE OF PREPARATION
FOR A DRAFT ENVIRONMENTAL IMPACT REPORT
THE SHORES APARTMENT PROJECT
PROJECT NO. R2005-00234
MARINA DEL REY

We reviewed the Notice of Preparation for this project and concur that an Environmental Impact Report is the appropriate document. We offer the following comments for your consideration in completing the Draft Environmental Impact Report (DEIR).

Geotechnical Hazards

We concur that a geotechnical report is required and should be submitted to Public Works for review and approval.

Flood Hazards/Water Quality

We concur that to adequately assess/address the flood hazards and water quality concerns a drainage concept and a Standard Urban Stormwater Mitigation Plan are required and should be submitted for review and approval by Public Works. When approved, the drainage concept and the Standard Urban Stormwater Mitigation Plan should be included in the DEIR.

Traffic/Transportation

We are reviewing the traffic impact study we received under a separate cover. We will forward our recommendation separately after we complete our review. Please note that

our guideline requires the need of the developer to confer with Caltrans and or affected cities during the preparation of the traffic study.

Sewer

We have recently completed our review of the sewer area study. The approved sewer area study should be included in the DEIR.

Water

A Water Supply Assessment Document should be prepared and submitted to Public Works during the public review stage of the DEIR to address the adequacy of the regional water supply to ensure availability of water for this development. Additionally, a Will Serve Letter is required from the water purveyor that meets minimum domestic flow requirements as well as fire flow/fire hydrant requirements.

Solid Waste

Solid waste generated in Los Angeles County currently exceeds the available permitted daily landfill capacity. The construction of the proposed project will increase the generation of solid waste and negatively impact the solid waste management infrastructure in the County. Therefore, the proposed DEIR should identify what measures will be implemented to mitigate the impact. Mitigation measures may include waste reduction, recycling programs and development of infrastructure in the project to facilitate recycling.

The proposed project is required to recycle or reuse 50 percent of the construction and demolition debris generated per the County's Construction and Demolition Debris Recycling and Reuse Ordinance. A Recycling and Reuse plan must be prepared and submitted to our Environmental Programs Division for review and approval.

Based on the findings of the Initial Study, the project site contains abandoned oil and gas operations. Buildings or structures adjacent to or within 200 feet (60.96 m) of active, abandoned, or idle oil or gas well(s) must be provided with methane gas protection systems. Our Environmental Programs Division must be contacted for issuance of necessary permits.
Should any operation within the subject project include the construction, installation, modification, or removal of storage tanks, industrial waste treatment or disposal facilities, and/or storm water treatment facilities, our Environmental Programs Division must be contacted for required approvals and operating permits.

If you have any questions regarding the above comments, please contact Juan Sarda at (626) 458-7151.

JMS:ca
P:\ldpub\CEQA\Juan\R2005-00234 - The Shores Apartment Project.doc

bc: Environmental Programs (De La O)
Geotechnical and Material Engineering (Alam)
Traffic and Lighting (Alfonso)
Waterworks and Sewer Maintenance (Cortez)
Land Development (Burger, Chong)

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

5816 Corporate Avenue, Suite 200, Cypress, CA 90630-4731

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

RECEIVED
AUG 10 2005

August 9, 2005

Mr. Rick Kuo
Los Angeles County Department of Regional Planning
320 West Temple Street, Room 1348
Los Angeles, California 90012

Subject: Notice of Preparation for The Shores Apartment Project, Project No. R2005-00234

Dear Mr. Kuo:

The Department of Conservation's (Department) Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced project. The Division supervises the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California.

The proposed project is located within the administrative boundaries of the Playa Del Rey oil field. There are two plugged and abandoned wells on or within proximity to the project boundaries. These wells are identified on Division maps 120 and in records as County of Los Angeles "Ohio R.G.C." 1 and 2. The Division recommends that all wells within or in close proximity to project boundaries be accurately plotted on future project maps.

Building over or in the proximity of plugged and abandoned wells should be avoided if at all possible. If this is not possible, it may be necessary to plug or re-plug wells to current Division specifications. Also, the State Oil and Gas Supervisor is authorized to order the reabandonment of previously plugged and abandoned wells when construction over or in the proximity of wells could result in a hazard (Section 3208.1 of the Public Resources Code). If reabandonment is necessary, the cost of operations is the responsibility of the owner of the property upon which the structure will be located. Finally, if construction over an abandoned well is unavoidable an adequate gas venting system should be placed over the well.

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

To ensure proper review of building projects, the Division has published an informational packet entitled, "Construction Project Site Review and Well Abandonment Procedure" that outlines the information a project developer must submit to the Division for review. Developers should contact the Division's Cypress district office for a copy of the site-review packet. The local planning department should verify that final building plans have undergone Division review prior to the start of construction.

Thank you for the opportunity to comment on the Notice of Preparation. If you have questions on our comments, or require technical assistance or information, please call me at the Cypress district office: 5816 Corporate Avenue, Suite 200, Cypress, CA 90630-4731; phone (714) 816-6847.

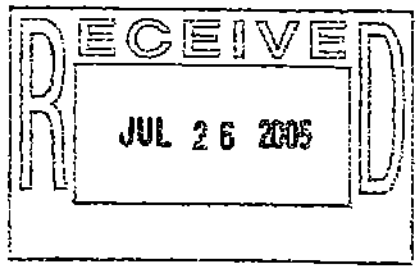
Sincerely,

Paul Frost

Paul Frost
Associate Oil & Gas Engineer

Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012-2952
213.922.2000 Tel
metro.net

Metro



July 22, 2005

Rick Kuo
Los Angeles County Department of Regional Planning
320 West Temple Street - Room 1348
Los Angeles, CA 90012

Dear Mr. Kuo:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the Shores Apartment Project, Project No. R2005-00234. This letter conveys recommendations from the Los Angeles County Metropolitan Transportation Authority (Metro) concerning issues that are germane to our agency's statutory responsibilities in relation to the proposed project.

A Traffic Impact Analysis (TIA), with both highway and freeway, and transit components, is required under the State of California Congestion Management Program (CMP) statute. The CMP TIA Guidelines are published in the "2004 Congestion Management Program for Los Angeles County", Appendix B. The geographic area examined in the TIA must include the following, at a minimum:

1. All CMP arterial monitoring intersections, including monitored freeway on/off-ramp intersections, where the proposed project will add 50 or more trips during either the a.m. or p.m. weekday peak hour (of adjacent street traffic); and
2. Mainline freeway-monitoring locations where the project will add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hour.

Among the required steps for the analysis of development-related impacts to transit are:

1. Evidence that in addition to Metro, all affected municipal transit operators received the NOP for the Draft EIR;
2. A summary of the existing transit services in the area;
3. Estimated project trip generation and mode assignment for both morning and evening peak periods;
4. Documentation on the assumptions/analyses used to determine the number of percentage of trips assigned to transit;

5. Information on facilities and/or programs that will be incorporated into the development plan that will encourage public transit usage and transportation demand management (TDM) policies and programs; and
6. An analysis of the expected project impacts on current and future transit services along with proposed project mitigation.

Metro looks forward to reviewing the Draft EIR. If you have any questions regarding this response, contact me at 213-922-6908 or by email at chapmans@metro.net. Please send the Draft EIR to the following address:

Metro CEQA Review Coordination
One Gateway Plaza MS 99-23-2
Los Angeles, CA 90012-2952
Attn: Susan Chapman

Sincerely,

Susan F. Chapman
Program Manager, Long Range Planning

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

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AUG 1 2005

July 22, 2005

Mr. Rick Kuo
Los Angeles County Dept. of Regional Planning
320 West Temple Street, Room 1348
Los Angeles, CA 90012

Dear Mr. Kuo:

Notice of Preparation of a Draft Environmental Impact Report for
The Shores Apartment Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. In addition, please send with the Draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files.

Air Quality Analysis
The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2002 Model. This model is available on the SCAQMD Website at: www.aqmd.gov/ceqa/models.html.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

Consistent with the SCAQMD's environmental justice enhancement I-4, in October 2003, the SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts and localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality

analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

It is recommended that lead agencies for projects generating or attracting vehicular trips, especially heavy-duty diesel-fueled vehicles, perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA webpages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Charles Blankson, Ph.D., Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

LAC050720-08LI
Control Number

County of Los Angeles
Sheriff's Department Headquarters
4700 Ramona Boulevard
Monterey Park, California 91754-2169

RECEIVED
OCT 18 2005

October 3, 2005

Rick Kuo, Regional Planning Assistant II
Impact Analysis Section
County of Los Angeles
Department of Regional Planning
320 West Temple Street, Room 1348
Los Angeles, California 90012

Dear Mr. Kuo:

REVIEW OF ENVIRONMENTAL DOCUMENT
NOTICE OF PREPARATION THE SHORES PROJECT
COUNTY PROJECT NO. R2005-00234

This is in response to your letter dated July 14, 2005, requesting our Department's review of the above identified project. Our Department has completed its review of the project description and plans and have several concerns. Attached is the letter from Mary D. Campbell, Captain of the Marina Del Rey Sheriff's Station addressing these concerns.

We would like to emphasize that comments outlined in Captain Campbell's letter are based on limited information provided by your proposed project. As the development in the Marina area continues to grow, the need to increase our staffing to deal with the demand will be contingent on the rate of growth and complexity of the future developments.

Therefore, we encourage you to follow Captain Campbell's crime prevention design guidelines and consult with California Highway Patrol regarding traffic enforcement.

Finally, we want to reserve further comments on your proposed project once more detail design are available.

Should you have any questions regarding this matter, please contact Mr. Mike Kameya, of my staff at (626) 300-3013.

Sincerely,

LEROY D. BACA, SHERIFF

Gary T.K. Tse, Director
Facilities Planning Bureau

GTKT:MK:mk/jh

cc: Mary D. Campbell, Captain, Marina Del Rey Sheriff's Station
Gregory Nelson, Lieutenant, Marina Del Rey Sheriff's Station
Victor Rampulla
Adrianne Ferree
Mike Kameya
Chrono
File
(EIR-NOP-PrepTheShoresProj)

County of Los Angeles
Sheriff's Department Headquarters
4700 Ramona Boulevard
Monterey Park, California 91754-2169

LEROY D. BACA, SHERIFF

August 12, 2005

Mr. Gary T.K. Tse, Director
Facilities Planning Bureau
Los Angeles County Sheriff's Department
1000 S. Fremont Avenue
Building A-9 East, 5th Floor, North
Alhambra, California 91803

Re: Information Request for Notice of Preparation for The Shores Apartment Project, County Project No. R2005-00234

Dear Director Tse:

The following is a response to a Notice of Preparation distributed by Mr. Rick Kuo of Department of Regional Planning, Impact Analysis Section. This response is based, in part, upon limited information provided to the Sheriff's Department by the Department of Regional Planning, regarding the proposed project.[1]

- Service Area for Marina del Rey Station

The Marina del Rey Sheriff's Station provides primary law enforcement services for the unincorporated areas of Marina del Rey, Ladera Heights, Windsor Hills and View Park. The station also provides marine law enforcement services in the Marina del Rey harbor, and the Los Angeles County Maritime Region in general. Marina del Rey Station's land-side jurisdiction does not include incorporated areas.

- Staffing, Allocation of Personnel, Populations Served, Ratio of Officers to Population

Marina del Rey Station presently has 72 sworn and 14 civilian employees assigned. Of the 72 sworn employees, 19 are supervisors/managers, 5 are detectives, 7 are in special operations, and approximately 12 are boat operators. Field deployment consists of four

[1] It should be noted that the Department of Regional Planning's Initial Study, on page 19, stated that the project would not create staffing or response time problems at the "sheriff's substation" serving the project. This is not correct. See Increase in Crime Rate / Additional Staffing, below.

deputies on day shift and six each on PM and EM shift. Two of these deputies on each shift are assigned to the unincorporated area of Marina del Rey. Additionally, a field sergeant and a two deputy boat crew are deployed on every shift.

The 2000 census noted approximately 26,000 permanent residents in the communities patrolled by the station (Marina del Rey with 8,176, Ladera Heights with 6,568 and View Park-Windsor Hills with 10,958). Marina del Rey also has a large working and tourist population (with the largest human-made recreational harbor in the world, the highest concentration of restaurants in the nation and about 1,000 hotel rooms running 70-100% occupancy depending on the season).

The officer to population ratio varies greatly as a result of the daily and seasonal influx of people into Marina del Rey, and the "Department's desired ratio of 1 to 1000" is non sequitur under these circumstances.

- Current Emergent and Routine Response Times to the Project Site

During the period of January 1, 2005, through August 01, 2005, Marina del Rey Station units responded to 1,172 calls for service in the reporting district encompassing the project area, and 41 of these calls were specifically to the project address. The calls for service were broken down into three categories: 27 calls were for emergent services with an average response time of 5.3 minutes, 140 calls were priority calls with an average response time of 6.3 minutes, and 954 were routine calls with an average response time of 17.1 minutes.

- Types and Number of Calls for Service Currently Received for the Project Site and Project Area

The following numbers are specific to the project area of 4201 Via Marina, Panay Way and Via Marina during the period January 1, 2005, through August 01, 2005. 49% of calls received were for suspicious persons or vehicles, 21% of calls received were for disturbances (i.e., family disputes, loud music, loud vehicles, party calls, drunk persons, etc.). 13% of calls received were for theft related incidents (i.e., bike thefts, vehicle thefts, grand theft property, burglaries, etc.). 11% of calls received were for traffic related incidents (i.e., parking violations, racing, speeding, traffic accidents, etc.). 6% of calls received were for vandalism.

- Increase in Crime Rate/Additional Staffing

The proposed project replaces an existing 202 unit apartment complex with 544 apartment units. Considering the net increase in residential units, the impact on traffic and population density in the marina will be significant. The census of 2000 placed the permanent resident population in Marina del Rey at 8,176: the proposed project would increase that population by 8-10% or more. Based on the increase in population, it is presumptive that the crime

rate and demand for services would rise by similar amounts, putting an increased burden on station resources.

The Department can anticipate increased response times and an increase in the calls for service based upon heavier traffic and a denser population in the area. An increase in calls for service proportional to the increase in population is a reasonable projection. The Station presently assigns only two one-deputy patrol cars in the Marina del Rey area per shift. The anticipated increase in calls for service may not, in and of itself, require the permanent assignment of additional patrol cars to Marina del Rey; however, this project taken as an aggregate with the other redevelopment projects ongoing and planned in the marina would put a significant strain on the station's resources and will eventually necessitate additional deputy staffing.[2]

- Traffic, Access and Parking

The proposed project, when completed, will increase traffic significantly around the project site, since the number of vehicles presently emanating from the site will nearly triple. While thoroughfares next to the project area are relatively free-flowing except for rush-hours, the adjacent arteries (Lincoln Boulevard, Washington Boulevard, etc.) are grid-locked through much of the day. Ongoing construction on Lincoln Boulevard and the 90 Freeway exacerbate local traffic conditions.

The purview for traffic planning lies with the Department of Public Works (in conjunction with the Department of Beaches and Harbors). The Department of Regional Planning should contact Mr. Barry Kurtz of the Department of Public Works Traffic and Lighting Division, 900 S. Freemont Street, Alhambra 91803 (626-300-4724) for that department's input into the Notice of Preparation (NOP). Furthermore, the California Highway Patrol provides contractual traffic enforcement services to the unincorporated areas of the County, including Marina del Rey. Their input in the NOP may be of value. (CHP West L.A. Division services the area: 6300 Bristol Parkway, Culver City 90230, 310-642-3939.) Major thoroughfares leading into Marina del Rey, Lincoln Boulevard and Washington Boulevard, are areas within LAPD Pacific Division's jurisdiction, and will also be negatively impacted by increased traffic. (LAPD Pacific Division, 12312 Culver Blvd., Los Angeles 90066, 310-391-7515.)

Although it appears a considerable number of parking spaces are included in the plan, the parking situation will also be exacerbated if these spaces are insufficient in number or impractical in location.

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[2]The Station, as a matter of officer safety and service mandates, cannot shuffle east-end cars to patrol the marina. These cars have their own communities to police, and must already respond to backup requests from the marina cars, and handle marina priority and emergent calls when the marina cars are unavailable (due to other calls, bookings, hospital runs, etc.), and vice versa. Fielding an additional one-deputy car daily on each shift (a 56-hour car) in the marina will require an additional 5 deputies assigned to the Station.

- Configuration/Design/Layout of Building Structures

During construction and after the completion of the project there should be ample access for emergency vehicles and access for Sheriff's vehicles conducting routine patrol. Several of the existing apartment complexes in the Marina del Rey Station area have made it extremely difficult for patrol vehicles to gain access into the parking lots or other areas (e.g., no gate access). Without adequate access, response times are extended and the ability of deputies to provide proactive policing and efficient crime suppression is diminished.

The schematics and project description do not provide enough detailed information for the Department to make specific recommendations in design that might enhance crime prevention. The Department offers for the project designers' review "Attachment A," generic design considerations for "apartment/condominium complexes."

- Project Generated Noise

During construction, the builder and contractor should be held responsible for any violations of the County of Los Angeles ordinances pertaining to construction noise (refer to Title 12, Chapters 12.08 & 12.12 Los Angeles County Code).

- Department's Ability to Serve the Project

Looking only at this individual project, Marina del Rey Station would be able to serve it; however, the Department of Beaches and Harbors has provided the station with proposed increases in total apartment units and hotel rooms for the Marina del Rey redevelopment, which will be ongoing for the next five to ten years. Including the Shores Apartment Project, 1,674 additional apartments are proposed, and 788 additional hotel rooms. At some point, as future redevelopment projects approach these totals and the population in the marina correspondingly grows, an increase in deputy staffing to deal with increased demands for service (and attendant response time degradation) will be necessary.

Marina del Rey Station's physical facility is small and operating at capacity as far as staffing accommodations. If additional personnel are assigned to the station additional space will have to be found. The Department of Beaches and Harbors has offered to provide some additional space for Sheriff's Department personnel, and if this comes about it may not be a critical issue as far as the project is concerned.

If you have any additional questions, please contact Operations Lieutenant, Gregory Nelson, at 310-577-5053.

Sincerely,

LEROY D. BACA, SHERIFF

Mary Campbell

Mary D. Campbell, Captain
Commander,
Marina del Rey Station

I. APARTMENT/CONDOMINIUM COMPLEX

This guideline covers a variety of types of apartments from the small building with only a few units to the large complex encompassing several apartment buildings. This includes the multi-storied apartments as well as the sprawling garden variety.

WHAT TO LOOK FOR

The following list considers six major components of an apartment complex in which design considerations can play an important part in crime prevention. For each component, a list of questions is presented:

A. Street Patterns and Lot Plans

1. Have large complexes of apartments eliminated all but essential thoroughfares through the apartment areas without reducing fire suppression capabilities?
2. In the large apartment complexes, are the apartment buildings set back sufficiently from the perimeter streets to deter the casual passerby from entering the complex area?
3. Do street patterns and lot plans maximize social deterrents to crime by enhancing neighborhood observation and recognition?
4. Are the apartments situated on the lots to facilitate patrol observation and allow patrol access to all sides of the apartments?
5. Are the apartments arranged on the site with adequate access streets to enable the police to respond quickly in an emergency?
6. Are streets well lighted?

B. Parking

1. Is an off-street garage parking area available for tenants and some spaces for visitors to reduce on-street parking to a minimum?
2. Is the tenant off-street parking area in a secure place, with an access control device which limits entrance and exit from the area to authorized tenants only?
3. Is this well lighted?
4. Are technological devices needed in the parking area, such as CCTV and sound devices to provide adequate security?
5. Is the parking area situated in a manner that it does not provide access to any of the apartments other than for authorized persons?

C. Structural

1. Are all the entrances clearly visible to patrols or neighbors.
2. Are the number of entrances at a minimum and, where possible, require passage through some central point such as the lobby where a clerk could be on duty?
3. Can entrances to the building from the parking structure be tightly secured?
4. Is there adequate lighting at the entrances?
5. Are unobservable windows kept to a minimum, especially on the first floor?
6. Are the stairwells open and able to be observed at all times from public areas?
7. Could the elevator use a shaft that would be observable from a public area - such as a glass shaft on the outside of the building?
8. Is the elevator equipped with a security alarm button that would sound a silent alarm and automatically send the elevator to the first floor?
9. for the smaller apartment building, do the apartments open onto a central court and face one another without unduly increasing the noise factor?
10. Are the number of units per building relatively limited to facilitate a sense of community and mutual observations?
11. Are storage areas outside of tenants' apartments required? If so, are they located in a secure area, i.e. somewhere remote and not visible from an adjacent street?
12. Does each apartment have their own storage area with access limited to their use only? Are storage ares secure?
13. Is there need for a service entrance? Is it located to provide selective access and not to create an entrance way for criminals into the complex?

D. Walkways

1. Are the walkways situated to generate enough traffic to provide a deterrent by virtue of the number of people using or observing the walkway at all times?
2. Are they routed past areas where the public is likely to congregate?
3. Are they wide enough to permit clear observation?
4. Are they sufficiently straight to provide adequate observation?
5. If they will be utilized at night, are they adequately lighted?
6. Have the walkways been landscaped in a manner as to provide minimum concealment for would-be attackers?
7. Are there access roads nearby so that emergency vehicles can get relatively close to any point on the walkways?
8. Are there any unnecessary indentations which would provide hiding places for would-be assailants?

E. **Landscaping**

1. Is the landscaping of the type and situated in locations so as to maximize observation while providing the desired degree of aesthetics?
2. Is the lighting used in the landscaping both for security and aesthetics?
3. Are walls planned only where they would create a desirable buffer? Then are they sufficiently high to deter circumvention? Are they situated in a manner so as not to provide concealment for a would-be attacker? Would it be feasible to use a chain link fence instead?

F. **Miscellaneous**

1. In those apartments which are clustered, has the developer provided recreational or other community facilities that would encourage neighbors becoming acquainted with one another? Are these areas located in places where they will receive a maximum amount of observation from the tenants?
2. If the apartments are located adjacent to a commercial zone, a school, etc., is there some buffer between them such as a large expanse of park land or high wall?
3. Has the developer included provisions for intrusion alarm systems?

APPENDIX 4.0(A)

Minutes of DCB Hearing

MINUTES
OF
MARINA DEL REY
DESIGN CONTROL BOARD

January 20, 2005

Department of Beaches and Harbors
Burton Chace County Park
Community Building – 13650 Mindanao Way
Marina del Rey, CA 90292

Members Present:	Susan Cloke, First District, Chair David Abelar, Second District Katherine Spitz, Third District Peter Phinney, Fourth District
Member Absent:	Tony Wong, Fifth District
Department Staff Present:	Stan Wisniewski, Director Joseph Chesler, Chief, Planning Division Julie Carpenter, Planner Roger Moliere, Deputy Director Dusty Crane, Chief, Community and Marketing Services Division LaTrina Hancock-Perry, Secretary
County Staff Present:	Kevin Johnson, Regional Planning Tom Faughnan, County Counsel
Guests Present:	Donald Klein, Coalition to Save the Marina John Lutz, Selbert Perkins Design Pat Younis, Westchester LAX /MdR Chamber of Commerce Craig Schuman, Heal the Bay Hans Etter, MdR resident Randal Burg, Randall Burg Yachts Mathew Simon, Manager, Marina Waterside Patti Brook, Pacific Ocean Management Aaron Clark, Armbruster & Goldsmith LLP David Levine, Del Rey Shores Mike Walden, Nadel Architects David Larkins, LRM Ltd. Charles Elliot, LRM Ltd. Beverly Moore, Executive Director, Convention & Visitors Bureau

1. **Call to Order & Absences**

Ms. Cloke called the meeting to order at 2:15 p.m. Mr. Abelar led the Pledge of Allegiance. Mr. Abelar (Phinney) moved to excuse Commissioner Tony Wong from today's meeting. Ms. Cloke advised that Ms. Spitz would arrive late.

2. **Approval of Minutes of November 20, 2004**

Mr. Phinney (Abelar) moved to approve the minutes of November 20, 2004 as amended. Motion passed unanimously.

3. **Confirmation of Past Actions**

A. DCB #04-018 – Marina del Rey Curb Treatment

Ms. Cloke advised that this item would be held until the end of the meeting to allow for the late arrival of Ms. Spitz.

6. **Staff Reports**

C. Ongoing Activities Report – Given by Stan Wisniewski, Director

- Board Actions on Items Relating to Marina del Rey

  Nothing to report

- Small Craft Harbor Commission (SCHC) Minutes

  Mr. Wisniewski advised the Board that they had only been provided a copy of the SCHC Minutes for November 10, 2004 since the December 2004 meeting was cancelled and the minutes for the January 12, 2005, meeting were not available at the time of the DCB mailout.

- Parcel 9U Update (verbal report)

  Mr. Wisniewski reported that the prospective lessee has contracted for the consultant recommended environmental work to further study the potential for wetlands on the site. All of the fieldwork has been completed and a draft report will be finalized in the near future. When Staff receives a copy of the report, copies will be forwarded to the DCB.

  Public Comments

  - Dr. Craig Schuman, Heal the Bay, advised that after heavy rains he went out to Parcel 9U on January 8, 2005, and took pictures. He believes the site is a wetland. Mr. Schuman suggested that the site be used to promote stewardship in the community, restoration enhancement options be examined and the site be incorporated into the master plan for Marina del Rey. Mr. Schuman also submitted photos, which showed various birds and vegetation on the site. Mr. Wisniewski suggested giving copies of the photos to the lessee who would then submit them to the consultant studying Parcel 9U.

- Hans Etter, resident, stated that Parcel 9U is a wetland area and the last open space area in the Marina and that development is unconscionable.

□ Marina del Rey and Beach Special Events

- Mr. Stan Wisniewski announced the Special Events that have occurred or will occur in the Marina for the next few months.

- Mr. Abelar asked if the events are posted throughout the Marina.

- Mr. Wisniewski advised that the events are published in the Argonaut and are reported at the SCHC and DCB Meetings. Mr. Wisniewski indicated that Dusty Crane and Beverly Moore may have additional information.

- Ms. Carpenter advised the Board that offsite signage is not allowed in the Marina.

Public Comment

- Hans Etter was concerned about the Boat Show being held in the winter and that due to the prevalence of "million dollar yachts" it did not appeal to the community.

- Beverly Moore, CVB, advised the Board of the promotion for concerts and other events in the Marina. She advised that there are a series of bulletin boards throughout the community that are regularly updated. In addition, the CVB prints out a monthly calendar of events, which is heavily distributed in the community and to the hotels. The information is also posted on the Beaches and Harbors website.

- Ms. Cloke asked if the attendance of the events is tracked by the CVB.

- Ms. Moore advised that the events are not tracked but that the CVB website received 3.7 million hits last year.

- Ms. Cloke asked if flyers are given to the markets/grocery stores in the community for the public.

- Ms. Moore advised that it had been attempted in the past, but with the exception of a few smaller retailers, most are not receptive.

- Mr. Abelar asked about the intent of the Boat Show.

- Ms. Crane advised that the intent of the Boat Show was to display Marina del Rey as a boating community and give boaters the opportunity to purchase/order boats that could be delivered by summertime. Ms. Crane also noted that the attendance of the MdR concert series is tracked and a report can be given to the Board.

2:40 p.m. Commissioner Spitz arrived

- Mr. Abelar asked about the size of the boats exhibited at the Boat Show.
- Ms. Crane advised that the boats ranged from small to large.
- Mr. Wisniewski also advised the Board that the MdR Boat Show has a long history, having been held annually for the last 25-30 years. The Boat Show is also a way for the retailers in MdR to even out the business cycle and helps to display the boats that are available in Maria del Rey.
- Randall Burg, Randall Burg Yachts, advised he was a participant in this year's Boat Show and thought it was very successful. He suggested that the rainy weather prior to the show may have led to fewer boats being displayed. He also suggested that there had been too many west coast boat shows in a 30-day block, which meant that vendors had to choose among the locations.

5. New Business

A. Parcel 50 – Marina Waterside – DCB #05-001
Continuation of "Open During Construction" banners through construction (to September 2005).

- Mathew Simon, Marina Waterside Manager, advised the Board that he would like an extension for the temporary banners through the construction period ending in September 2005.

Public Comment

- Mr. Phinney asked the applicant if there were any provisions to repair/replace the banners if needed.
- Alex Liftis, advised yes, the banners will be repaired or replaced if needed.

Mr. Phinney (Spitz) moved to approve the temporary extension of the banners for three months with the option to renew based on photo documentation and a report from Staff. Motion passed unanimously.

B. Parcel 44 – Randall Burg Yachts Brokerage at Pier 44 – DCB #05-002
Consideration of building identification signage.

- Ms. Cloke asked the applicant what he anticipated doing with the two bulletin board panels by the door.
- Mr. Randall Burg, Randall Burg Yachts, advised that he hadn't thought about what to do with those areas.

- Mr. Abelar asked if there are any other signs on the building and the type of signage on the property.

- Mr. Burg advised there is no other signage on the building and the proposed signage is similar to the other signage of adjacent businesses.

- Ms. Cloke advised the applicant that the proposal was a bit confusing and asked if they had color samples of the proposed signage.

- Mr. Burg advised the Board of the correct size of the signage being proposed.

- Ms. Carpenter noted that she understood the sign was already constructed due to it being used at another location and that Mr. Burg could possibly bring in the sign. Mr. Burg agreed.

Ms. Cloke (Spitz) moved to table the item until the applicant returns with the sign that is being proposed. Motion passed unanimously.

3:05 p.m. a recess was taken to give the next applicant time to set up their renderings.

3:20 p.m. meeting reconvened.

C. Parcels 100 and 101 – Del Rey Shores – DCB #05-003
Consideration of redevelopment, including the demolition of the existing 202 apartment units and construction of 544 new apartment units.

- Ms. Cloke asked Staff what approvals are being considered for today's meeting.

- Ms. Carpenter advised that the applicant is requesting a conceptual approval from the Board regarding the overall design. Post entitlement, the applicant will have to return to the Board with design details, i.e., landscaping, actual materials to be used, and further refinement of the architecture. The applicant is not asking for building approval beyond what is normally given at the DCB meetings.

- Mr. Wisniewski added that the benefits of the project are that it is consistent with the Local Coastal Program (LCP), it's a landside project and does not have any waterfront issues and that the lessee has maintained the proposed parcels impeccably.

- David Levine, Chief of Staff for Jerry Epstein, introduced the development team for the project. Mr. Levine explained the project in more detail advising that the project would have 13% fewer units than the maximum allowed by the LCP, there would be almost 2 acres of open space and there are no promenade or view corridor requirements.

- Mr. Mike Waldon, Nadel Architects, explained in detail the architectural features of the project, which allows for major landscape improvements. The garage structures will not be seen from the street because they will be partially located below grade and screened with landscaping. Mr. Waldon also explained the views of the project, parking, the major courtyard amenities and the sewer easement.

- Mr. Charles Elliot, landscape architect, explained in detail the proposed landscape and plant palette. He also explained that vertical column planters with lacey bamboo and palm trees would be used to help provide filtered light. The project also contains fire pits, waterfalls, and soft community areas that would include bar-b-que pits, pools and spas.

- Mr. Waldon reminded the Board that the parking is stacked directly below the five levels of residential apartments but not underneath the landscaped courtyard, allowing for increased site permeability.

- Ms. Spitz asked if the project contained operable windows and wanted to know how the stormwater issues are being handled.

- Mr. Waldon advised that the project does contain operable windows.

- Ms. Cloke asked the applicant about parking garage access and for an explanation of the sun/shade issues.

- Mr. Waldon explained that for residents, the garages could be accessed through the alleyway of the project. There will be two major entry points with a bamboo screen planted along the length of the garage. As for the sun/shade issues, the project will provide a balcony system (four to six feet in depth) that partially projects out.

- Ms. Cloke asked the applicant to discuss the materials that will be used for the project.

- Mr. Waldon explained that the exterior plaster would have an integral color. The main exterior will have integral exterior plaster with an overcoat of paint. Nextwood material will be used for the exterior of lower level patios and will also be used as partial enclosures for the major stairwells, which are located in the courtyard. Nextwood will be used along with kalwal© (translucent insulated fiberglass panel system). Powder coated metals will be used for accent pieces for the balconies.

- Ms. Cloke advised that in the future, the Board would like to know the sustainability of the proposed materials.

Public Comments

- Ms. Cloke reminded Mr. Etter that many of the questions he asked should be properly addressed to the office of the Board of Supervisors or the SCHC who have more jurisdiction and that the applicant should be willing to answer as many of these questions as possible.

- David DeLange, Coalition to Save the Marina, was concerned about the project conceptually, the design and the project itself. He wants alternatives considered, particularly renovation of the current structures or use of the parcels for recreational and visitor purposes. Other concerns included the increased residential density and traffic impact. Mr. DeLange suggested that the applicant wait until the LCP periodic review has been finished to see if it will have an effect on their current proposal.

Board Comments

- Ms. Spitz was concerned about the following:
  - Clashing geometry of the project, especially in the courtyard area;
  - How much of the space is actually being used by the residents;
  - Use of plaster and stucco, cautioning that painting stucco some of the proposed colors was not advised;
  - Wind tunnel test should be prepared;
  - Screening of parking areas; and
  - Garage entry and exits seem insufficient for the number of units.

- Mr. Phinney disclosed a prior meeting with the applicant to review the project prior to its presentation before the Board:
  - Create amenities for the residents that because of their placement can be made available to the general public, i.e., street furniture and a fitness trail;
  - Corner of the building at Marquesas Way and Via Marina needs more work, maybe a landscape and architectural issue;
  - The methods of lighting need to distinguish the project and the building, but not obscure views of the night sky, use uplighting if possible, and light the sails on top of the buildings;
  - Consider moving the sail elements to the public façade rather than keeping them on the private façade;
  - Had concerns about wind; and
  - In terms of the courtyard scale some of the elements are too large, i.e., the fire pits. The courtyard should be broken down into smaller elements.

- Ms. Cloke appreciated the sense of fun and play and also the sophistication of the project but had some major concerns:
  - Landscape plan for the project has been created within the scale of a presentation board as opposed to showing a livable space that residents will utilize. The next drawing on landscape must show "people" in it and the specifics of where people can relax and play;
  - Would like to see "soft grass" on the hill of the project;

- The earth mound should incorporate a sophisticated element using the language of water (water element);
- Reconsider using palm trees (ubiquitous symbol) because they don't provide shade and can be very expensive;
- Use a plant palette native to California and use canopy trees, include shade trees and look at plant sustainability;
- Create stormwater retention ponds;
- Landscaping should be playful, fun and should also be sophisticated;
- When the applicant returns they should have real architectural drawings and material boards. Everything should be tested and researched;
- Would like to see a list of amenities that can be offered to others in the Marina;
- The sails are elegant;
- The wood material is wrong for the patio walls, they should be a lighter color; and
- Access to the parking garage area.

- Ms. Cloke commended the applicant for the level of detail that was given to the Board for this project. She also advised that some of the public comments that were made at today's meeting should be directed to the Regional Planning Department.

- Mr. Phinney advised the applicant not to create a "vernal wetland" and suggested contrast in terms of gardens as opposed to wilderness. He also encouraged the applicant to use street furniture and a fitness trail in the Admiralty Way loop area, which may help disguise the parking elevation.

Ms. Cloke (Spitz) moved to conceptually approve DCB #05-003 for the purpose of allowing the project to begin the approval process. Post-entitlement, the applicant must return to the Board and address the following issues:

1. Design a landscape that echoes both the playfulness and sophistication of the architecture;
2. Use water thematically;
3. Create a plant palette of native plants and continue to include architectural shape and elements;
4. Examine all of the street edges, create parkway and canopy trees;
5. Examine the possibility of a fitness trail and/or any other public amenities as appropriate;
6. Review and research all materials and alternatives, looking at sustaining the crispness of the color palette;
7. Look at the materials in terms of solar gain and wind loads;
8. Examine issues of sustainability of building materials and landscape;
9. Maximize opportunities for stormwater capture and groundwater infiltration;
10. Look at the design of the garages for circulation and for access and egress to make sure it works for the size of the project and the number of tenants;
11. Lighting plan that is subtle and sufficient for safety and that does not interfere with the night sky;

12. Consider tenants and neighbors; and
13. Wonderful opportunity to create a park, ensure that there are comfortable places within and without.

The applicant will return with materials, colors, fenestration, landscape, signage and all the issues that are typically addressed by the Board. Motion passed unanimously.

5. **New Business (cont'd)**

D. Election of Officers
Election of Vice Chair

Mr. David Abelar nominated Ms. Katherine Spitz for Vice Chair and Ms. Spitz accepted the nomination.

Mr. Abelar (Phinney) moved to nominate Ms. Katherine Spitz for Vice Chair of the Design Control Board. Motion passed unanimously.

3. **Confirmation of Past Actions**

A. DCB# 04-018-Marina del Rey Curb Treatment
Approval of the record of the DCB's November 2004 action for the curb treatment design, with a condition that this item return with a Marina map showing proposed locations and, where possible, inclusion of the street's name.

Mr. Phinney (Spitz) moved to approve DCB #04-018 as submitted. Motion passed unanimously.

4. **Old Business**

A. Marina del Rey Curb Treatment & Signage Program – DCB #04-018-A
Consideration of revised curb treatment program as well as mole road signs and wayfinding improvement in the Marina

- Ms. Carpenter explained in detail the proposed curb treatment and wayfinding directional signage.
- Ms. Dusty Crane, Chief, Community and Marketing Services Division, advised the Board that after speaking to some of the lessees in the Marina, they would like to keep the word "way", i.e., Marquesas Way, in all of the street signs that contain "way" instead of condensing the signage.
- Mr. John Lutz, Selbert Perkins Design, explained in detail the materials that would be used and how the signs would be created.

- Because of time constraints, the Board advised the applicants that only the curb treatment would be considered at today's meeting.

- Ms. Cloke asked the applicant for a map that shows which streets would have complete addresses, street name and address, and which streets would only have the street address. She also asked which of the three application options would be most cost effective.

- Mr. Lutz showed the Board the map of street names and street addresses. He also explained the three options of application for the proposed curb treatment.

- Ms. Spitz asked which of the three options is the most durable.

- Mr. Lutz advised that the heat applied curb treatment option is the most durable and more expensive than the other curb treatment options.

- Ms. Cloke suggested a field trip to view the curb treatment.

Public Comments

- Hans Etter commented that the proposed symbols for the wayfinding signs do not relate to the Marina and that there should be an ethnic connection to the Polynesian street names. He also suggested tsunami warning signs.

- David DeLange was concerned that the absence of the word "way" in the street signs could be confusing to the public.

- Pat Younis, Westchester/LAX MdR Chamber of Commerce, was thrilled with the proposed curb treatment and signage program.

- Beverly Moore, Executive Director, Convention & Visitors Bureau, supports the proposed curb treatment and signage program, complimenting the design of the icons and their coordination with the color palette of existing banners and wind disc program. She disagreed with using the word "way" in all of the signage, noting that it's unnecessary.

Ms. Spitz (Cloke) moved to approve conceptually DCB #04-018-A using the teal color palette (sheet A-1) presented by the applicant for the purposes of researching cost and the method of application. The map showing the locations of street names and addresses was also approved. All other signage must be placed on the next agenda (February 2005). Staff must also set up a field visit for the Board to view the curb treatment for modifications of the treatment. Motion passed unanimously.

5. **New Business (cont'd)**

B. Parcel 44 – Randall Burg Yacht Brokerage at Pier 44 – DCB #05-002
Consideration of building identification signage.

The applicant returned with the proposed signage that would be used at the location.

Public Comment
None

Mr. Phinney (Spitz) moved to approve DCB #05-002 as submitted. The applicant must provide staff with a color photo of the sign for the file. Motion passed unanimously.

6. **Staff Reports (cont'd)**

A. Marina del Rey LCP Periodic Review (verbal report)

- Mr. Roger Moliere, Deputy Director, advised the Board that the Marina del Rey Local Coastal Program (LCP) is now undergoing the Periodic Review by the California Coastal Commission (CCC). The review is legally mandated and is supposed to take place every five years, but due to budgetary and staff constraints, the CCC is only now able to perform this review. The periodic review is to take into account the actions and permits issued since the comprehensive update of the Coastal Plan in 1996, to determine whether the permits and other actions have advanced the cause and goals of the LCP under the Coastal Act. The CCC is now in the phase of scoping and information gathering, to determine which areas should be concentrated on. On Wednesday, January 19, 2005, there was a night workshop to solicit the views of the public on their issues of concern. The CCC expects to finish the scoping by March 2005; written comments need to be sent to the CCC by January 25, 2005. When the scoping is finished, a preliminary report and recommendation to the Coastal Commission is anticipated to be placed on the CCC agenda in late May or early June 2005.

- Ms. Cloke asked how many people attended the meeting.

- Mr. Moliere advised about 50 people, 30 members of the public and 20 others from the various agencies and Staff.

- Ms. Cloke asked what was the main concern of the public.

- Mr. Moliere advised that he has not received the report from the meeting, but he recalls that the public was most concerned with water quality, public access, traffic and recreational boating.

- Mr. Wisniewski advised that at the March 16-18, 2005, CCC hearing in Orange County, the public would have an opportunity to address the scoping element of the recommendations. In June, a preliminary report will be on the CCC agenda for public discussion. The January 19, 2005, meeting started at 6:30 p.m. and ended at 9:00 p.m.

- Mr. Phinney was at the meeting and advised that the public was concerned that Marina development is not always appropriate.

- Mr. Wisniewski added that the public was also concerned that rents were too expensive in the Marina.

Public Comment

- Hans Etter also attended the LCP night meeting. He advised that the public concerns dealt with the excluding middle and low income residents and boaters from the Marina, that the development does not fit the needs of the Marina and that more access for commercial operators, and more access for boaters to local restaurants is needed. He was also concerned about the small businesses in the Marina disappearing and the increase in traffic and population.

- Ms. Cloke advised Mr. Etter to send his written comments to the California Coastal Commission.

7. **Comments from the Public**
None

8. **Adjournment**
Meeting adjourned at 5:52 p.m.

Respectfully Submitted,

La Trina Hancock-Perry
Design Control Board Secretary

APPENDIX 5.1
Geotechnical Data/Reports

APPENDIX 5.1(A)

URS, Geotechnical Investigation; Proposed Apartment Complex, The Shores, Marina Del Rey, California (May 8, 2001)

FINAL REPORT

GEOTECHNICAL INVESTIGATION
PROPOSED APARTMENT COMPLEX
DEL REY SHORES
MARINA DEL REY, CALIFORNIA

Prepared for
Cox, Castle, and Nicholson
2049 Century Park East, 28th Floor
Los Angeles, California 90067-3284

May 8, 2001

URS

URS Corporation
2020 East First Street, Suite 400
Santa Ana, California 92705

57-00012019.01

URS

May 8, 2001
Project No. 57-00012019.01

Mr. Charles J. Moore, Esq.
Cox, Castle, and Nicholson
2049 Century Park East, 28th Floor
Los Angeles, CA 90067-3284

SUBJECT: GEOTECHNICAL INVESTIGATION
PROPOSED APARTMENT COMPLEX
DEL REY SHORES
Marina del Rey, California

Dear Mr. Moore:

In general accordance with our proposal dated June 26, 2000, and as authorized by the subsequent Agreement for Professional Services on October 10, 2000, URS Corporation (URS) has completed our geotechnical investigation for the proposed apartment complex at Del Rey Shores in Marina del Rey, California. Enclosed find 3 copies for your use/distribution.

As discussed in the attached report, the subsurface conditions consist of fill extending to 13 to 26 feet below existing grade. This fill overlies native clay and sand layers. Groundwater is located about 13 to 23 feet below grade. The site is not suitable for the use of spread footings to support the proposed multi-story structures; settlement of the clays under the applied loads would exceed tolerable limits, and the potential for significant post-liquefaction settlement is present. However, at a depth of 42 to 47 feet below existing grade, adequate bearing material in the form of dense sands was encountered. Accordingly, we recommend the use of driven piles extending into the dense sands be used for support of the proposed buildings.

We appreciate the opportunity to be of service to you. Please call if you have any questions or require additional information.

Very truly yours,

URS Corporation

REGISTERED PROFESSIONAL ENGINEER
LARRY R. RAPP
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Exp. 3/31/04
GEOTECHNICAL
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cc: Mr. Dale Yonkin – Nadel Architects, Inc. (2 copies + 1 reproducible)

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TABLE OF CONTENTS

Section 1 Introduction 1-1

1.1 Introduction 1-1
1.2 Previous Investigation 1-1
1.3 Scope of Work 1-1
1.4 Organization of This Report 1-2

Section 2 Project Description 2-1

Section 3 Field Investigation and Laboratory Testing 3-1

3.1 Field Investigation 3-1
3.1.1 Previous 1988 Investigation 3-1
3.1.2 Current 2000 Investigation 3-1
3.2 Laboratory Testing 3-2

Section 4 Site Conditions 4-1

4.1 Regional Geologic Setting 4-1
4.2 Faults and Seismicity 4-1
4.3 Site Use History 4-2
4.4 Site Surface Conditions 4-2
4.5 Subsurface Soil Conditions 4-3
4.6 Groundwater 4-4

Section 5 Discussion and Recommendations 5-1

5.1 General 5-1
5.2 Earthquake Ground Motions 5-1
5.2.1 Uniform Building Code Seismic Design Parameters 5-1
5.2.2 Liquefaction Potential 5-2
5.2.3 Lateral Spreading 5-3
5.2.4 Seismically Induced Settlement 5-4
5.3 Foundation Recommendations 5-4
5.3.1 Foundation Type 5-4
5.3.2 Driven Pile Foundation System 5-5
5.3.3 Shallow Foundations – Minor Structures 5-8
5.3.4 Swimming Pools 5-8
5.4 Slab-On-Grade 5-8
5.5 Groundwater 5-9
5.5.1 Groundwater Design Levels 5-9
5.5.2 Groundwater Control During Construction 5-10
5.5.3 Permanent Groundwater Control 5-11
5.6 Lateral Earth Pressures and Resistance to Lateral Loads 5-11
5.6.1 Applied Lateral Pressures 5-11
5.6.2 Lateral Resistance of Foundations 5-12

TABLE OF CONTENTS

5.7 Temporary Excavations and Shoring 5-13
5.8 Soil Sulfate Content and Corrosion Potential 5-14
5.9 Pavement Design 5-14
5.10 Site Preparation and Grading 5-15
5.10.1 General Grading Requirements 5-15
5.10.2 Demolition 5-15
5.10.3 Site Preparation and Removals 5-15
5.10.4 Fill Materials 5-16
5.10.5 Fill Placement and Compaction 5-17
5.11 Alternative Foundation System (Stone Columns) 5-17

Section 6 General Conditions 6-1

6.1 Post-Investigation Services 6-1
6.2 Uncertainties and Limitations 6-1

Section 7 References 7-1

List of Appendices

A. Field Investigation
B. Laboratory Testing
C. Potential Seismic Sources
D. Suggested Items for Inclusion in Specifications for Engineered Fill

List of Tables

1 List of Significant Faults
2 Review of Aerial Photographs, Site Use History
3 Summary Review of Existing Geotechnical Documents
4 Capacities of Laterally Loaded Single Piles for ½-inch Maximum Deflection

List of Figures

1 Site Location Map
2 Site Plan
3 Regional Fault and Epicenter Map
4 Historic Site Use
5 Cross Section A-A'
6-14 "Clean Sand" Corrected Blow Counts versus Depth, Borings B-1 through B-9
15 Pile Axial Capacity, Static Loads
16 Pile Axial Capacity, Seismic Loads

1.1 INTRODUCTION

This report presents the results of the geotechnical investigation performed by URS Corporation (URS) at the proposed Del Rey Shores apartment building redevelopment site at 4201 Via Marina in Marina del Rey, California. This investigation was performed in general accordance with our proposal dated June 26, 2000, as verbally authorized on July 12, 2000, and formally authorized by Mr. Charles Moore of Cox, Castle, and Nicholson, LLP on October 10, 2000.

The overall site location is shown on Figure 1. The site has historically been divided into two parcels, referred to as the southern parcel and the northern parcel, or "Parcel A" and "Parcel B," respectively, approximately as delineated on Figure 2. Parcel A is approximately 3.2 acres in size, while Parcel B is approximately 4.8 acres. As shown on Figure 2, Parcels A and B, collectively referred to herein as "the site," is bordered by Via Marina on the east, Marquesas Way to the south, Dell Avenue to the west, and Admiralty Loop to the north.

1.2 PREVIOUS INVESTIGATION

URS (formerly Woodward-Clyde Consultants) previously conducted a geotechnical investigation at the site within Parcel A (Woodward-Clyde, 1988). The purpose of that investigation was to provide preliminary site background information to obtain a conditional use permit for a new hotel. The resulting report contained a review of the historical land use of Parcel A based on an evaluation of aerial photographs, review of the regional geology, and field and laboratory investigations. The report did not include investigation for, nor development of, geotechnical design parameters. In addition, the 1988 investigation did not cover Parcel B.

This report, which covers both Parcels A and B, includes the pertinent information from the 1988 report. This report therefore supersedes the 1988 report in its entirety for the geotechnical purposes of the current project.

1.3 SCOPE OF WORK

The scope of services was developed to supplement and update the information for Parcel A and provide data regarding Parcel B. The scope of work consisted of the following activities:

- Reviewing the Woodward Clyde 1988 preliminary geotechnical investigation of Parcel A;
- Reviewing historical aerial photographs and regional geology;

- Conducting a geotechnical field investigation;
- Performing laboratory testing on selected soil samples obtained from the field investigation;
- Conducting engineering and geological analyses and developing conclusions and recommendations regarding:
  - Site surface, subsurface and groundwater conditions
  - Geologic setting, including pertinent fault descriptions
  - Foundation design (including type, bearing capacity, and settlement)
  - UBC (1997) seismic design parameters
  - Liquefaction potential
  - Slab-on-grade
  - Lateral earth pressures and resistance to lateral loads
  - Site preparation and earthwork
  - Sulfate attack on concrete and corrosion potential
  - Evaluation of possible soil improvement alternatives for future study.

1.4 ORGANIZATION OF THIS REPORT

This report describes the proposed facilities, the services URS completed, the subsurface conditions at the site, and our geotechnical findings. Following this introduction section, this report is divided into the following sections:

2.0 Project Description
3.0 Field Investigation and Laboratory Testing
4.0 Site Conditions
5.0 Discussion and Recommendations

General conditions applicable to the investigation and this report are presented in Section 6. References cited in the report or used during this study are listed in Section 7. Geotechnical data acquired during the field and laboratory investigations are included in the Appendices.

Our understanding of the proposed project is based primarily on discussions with Mr. Dale Yonkin of Nadel Architects, Inc. (Nadel).

It is our understanding that most or all of the existing apartment complex will be torn down (perhaps in phases) and redeveloped into a higher density apartment complex. The footprint of the proposed complex is not yet known, but it is expected to cover most of parcels A and B. The proposed apartment complex would consist of four to five stories of wood-framed apartments above at least one, and more likely two, levels of a reinforced concrete parking garage. One level of the garage would be subterranean, resulting in an excavation of about 10 feet deep below existing grade. Structural column loads are estimated to be on the order of 500 kips or less.

3.1 FIELD INVESTIGATION

3.1.1 Previous 1988 Investigation

The field investigation in 1988 was conducted on April 25 and consisted of advancing three exploratory borings to depths ranging from 24.5 to 46 feet below grade. The borings were advanced with a truck-mounted drill rig using rotary wash techniques. The locations of these three previous borings, designated WCC B-1 through WCC B-3 herein, were selected based on limited access to the interior of the site. These locations are indicated on Figure 2. The boring logs are provided in Appendix A.

Subsurface soil samples were obtained from the exploratory borings at intervals of about 5 feet starting at approximately 3 feet below the existing ground surface. The samples were collected using modified California (MC) and Standard Penetration Test (SPT) drive samplers.

Because of the concern about contamination resulting from historical uses of the site for oil field operations, an Organic Vapor Analyzer (OVA) was used to monitor the work area and to monitor the headspace from MC samples. The OVA readings are included on the boring logs.

After finishing the drilling, the boreholes were backfilled with a dry mixture of sand and bentonite to within 1 foot from the ground surface, and the top foot of each borehole was backfilled with asphalt cold patch. Drilling fluid and soil cuttings were properly stored and sealed in 55-gallon drums. The owner was advised of the need for proper management of the drilling fluid and cuttings.

3.1.2 Current 2000 Investigation

URS conducted the current investigation between July 17 and 20, 2000. This investigation consisted of 6 rotary wash borings (URS B-4 through URS B-9) at the locations shown on Figure 2. Site access was limited to paved areas reachable by the drill rig. The depths of the six borings ranged from 36½ to 81½ feet below existing grade.

Soil samples were taken at approximate 3- to 5-foot intervals using Shelby tubes, an MC sampler, or an SPT sampler. Four near-surface bulk samples were also taken. Measurements of the headspace of the soil samples were taken with an OVA. The levels measured that were above the background readings were recorded on the boring logs.

A URS engineer visually classified soil encountered during drilling in general accordance with the Unified Soil Classification System. Upon completion of drilling, logging, and sampling, the drilling fluids were drummed and sealed, and the boreholes were backfilled with a cement-bentonite grout and covered with asphalt cold patch or a steel hole cover. The soil cuttings and drilling mud from the drilling operations were placed in 55-gallon drums. The material in the drums was tested as indicated in the Section 3.2 and found to be non-hazardous. The drums were then removed from the site by Rios Industries. Further descriptions of the field exploration and the boring logs are presented in Appendix A.

3.2 LABORATORY TESTING

Soil samples collected from the test borings were classified visually, and selected soil samples were tested in the laboratory to verify soil classifications and to estimate soil engineering properties. In 1988, the laboratory testing program consisted of moisture content, dry density, wash analysis, plastic and liquid limits, and consolidation. Chemical analysis of the soil samples was not a part of the scope of that investigation, so none was performed.

The above laboratory tests were supplemented with additional testing of samples obtained from the current investigation. These tests included moisture content, dry density, liquid and plastic limits, fines content, particle size distribution, unconfined compression, confined compression (consolidation), R-value, sulfate content, and organic content. The drummed material was tested for metals and total petroleum hydrocarbons (gasoline and diesel).

Further descriptions of the laboratory testing and the test results are presented in Appendix B. For ease of reference, some of the laboratory results are also presented on the boring logs in Appendix A.

4.1 REGIONAL GEOLOGIC SETTING

Within California there are several large regions that are similar in their topography and geologic structure. These regions have been described as Physiographic Provinces. The Del Rey Shores site is located in the Los Angeles Basin, an area that constitutes the juncture between the Peninsular Range Physiographic Province to the south and the Transverse Range Physiographic Province to the north.

These two physiographic provinces have contrasting tectonic characteristics that overlap within the Los Angeles basin, resulting in a complex tectonic environment that is marked by active faulting and historic seismicity. The Peninsular Range Physiographic Province is characterized by northwest trending topography and geologic structure. Active faults within the province are typically steeply dipping and northwest trending, with a predominantly right-lateral strike-slip sense of movement. In contrast, the Transverse Range Physiographic Province is characterized by east-west trending topography and geologic structure. The predominance of these east-west trending structures is evidence of the north-south compressional forces that have affected the region in the recent geologic past. The resulting geologic structures consist of anticlinal and synclinal folds and active faults with both left-lateral strike-slip and reverse senses of movement.

4.2 FAULTS AND SEISMICITY

Southern California is known for its many active faults and historic seismicity. The location of the site with respect to these known active and sufficiently active faults and locations of earthquake epicenters with magnitudes of 3.5 or greater are shown on Figure 3. As shown on Figure 3, no known active surface fault traces have been recognized to cross the site, and the site is not located within an Alquist-Priolo Earthquake Fault Zone as defined by the California Department of Conservation Division of Mines and Geology (CDMG, 1997). However, with the numerous known active faults in the region, the site will likely be subjected to future seismic shaking from earthquakes on local to distant sources.

As shown on Figure 3, the closest significant active faults to the site are the Palos Verdes fault, the Newport-Inglewood fault zone (NIFZ), and the Santa Monica and Hollywood faults. The geoseismic characteristics for these nearby faults are summarized on Table 1 and are described in more detail in Appendix C. In addition, the San Andreas fault was included in the near-source characterization, although it is located about 45 miles northeast of the site. Structural models indicate that the Compton-Los Alamitos blind thrust could be located approximately 6 to 8 km below the site. However recent studies suggest that this fault may be inactive, and therefore it

was not considered in the near-source evaluation. Details discussing the Compton-Los Alamitos blind thrust fault are included in Appendix C.

4.3 SITE USE HISTORY

Our knowledge of the site use history is based on review of historic aerial photographs and a review in 1988 of oil well records at the California Department of Conservation, Division of Oil and Gas in Long Beach, California.

In the late 1920's, the site consisted primarily of lagoon and tidal marshes, at and slightly above high tide levels. Lagoon channels crossed portions of the site; in particular, one channel looped through the northeast corner of the site, and a smaller eddy or channel protruded into the south end of the site. Between 1928 and 1936 the site was explored and developed for oil production. Site development included a tank farm, sump, miscellaneous structures, and associated piping. An approximate layout of the oil production configuration, as well as the location of the lagoon channels, is shown on the Historic Site Use map, Figure 4.

By 1940, oil operations appear to have been on the decrease. By January 1956, all tanks and structures appear to have been removed from the site, except for sump areas. The elevation at the site ranged from approximately zero to 10 feet above mean sea level (Castle, 1960 and Fairchild Aerial Photos 1928 to 1956). By November of 1956, Marina Del Rey marina had been constructed, and the site began to change from being a topographic low area to a topographically high area. At this time, Via Marina and Via Dolce were constructed, but no structures were on site.

Currently, the site lies north of Ballona Creek, between the Ballona Lagoon to the west and Marina Del Rey Harbor to the east. The site is used as a medium density apartment complex with surrounding covered parking areas. Additional details regarding site use history can be found in Table 2.

4.4 SITE SURFACE CONDITIONS

The present surface elevation at the site varies from about 17 to 26 feet above mean sea level. The site is presently occupied by a residential complex consisting of two-story apartments, parking lots with roof covers, swimming pools, and recreational facilities. The driveways and alleyways within the property are paved with asphalt concrete and have concrete surface drains. Landscaping, consisting of plants, grass, and trees, cover the remaining empty space.

4.5 SUBSURFACE SOIL CONDITIONS

To aid in the visualization of the soil stratigraphy beneath the site, a cross section was made at the location indicated on Figure 2. The cross section is provided on Figure 5. Our interpretation of the previous site topography prior to development of the site is shown by the dotted line on the cross section. The cross-hatched area indicates fill, the green areas are fine-grained materials (clays, clayey silts) and the white areas are granular materials (sands, gravels and sandy silts). Some of the white areas are shaded gray to indicate liquefaction potential, as discussed in Section 5.2.2.

As shown on Figure 5, beneath the surface of the site lies fill to a depth of 13 to 26 feet below existing grade. This fill was encountered in all borings. The deeper depths of fill generally coincide with the location of the aforementioned lagoon channels at the site, except at location URS B-5, as discussed below. The uppermost 7 feet of fill (extending to 5 feet below the bottom of footings) is fill documented by Frankian (1972a).

The fill consists primarily of loose to medium dense sand, silty sand, and clayey sand, with occasional gravel and seashells. In the middle of the site, as encountered in WCC B-1, WCC B-3, URS B-5, URS B-6, and URS B-8, a 5 to 7 foot thick layer of fine-grained material was encountered at the bottom of the fill, above the native soil. This fine-grained material consisted primarily of very soft to soft, wet clay and sandy clay, and contained occasional foreign items such as wood chips, glass, copper wire, tile pieces, and roots. The fine-grained material encountered in WCC B-1 and WCC B-3 was visually classified in 1988 as a "sandy silt (ML-OL)." Because no confirming plastic/liquid limit tests were performed on this material in 1988, we feel it likely that this material is actually the same layer identified as fine-grained but clayey in the current investigation. Blow counts within the fill ranged from 2 to 29, with the higher blow counts being encountered in the near surface sands. The dry unit weights within the fill ranged from 84 to 103 pounds per cubic foot (pcf).

In boring URS B-5, fill was encountered down to a depth of about 7 feet deeper than the previously existing grade. However, the location of URS B-5 approximately coincides with the location of a structure and piping on the west side of the site, as shown on Figure 4, where perhaps trenching or other man-made excavations could have been performed. At this location, the fill consisted of very dense, well-graded gravel with silt and sand, and pieces of glass, rubber, wire, and wood.

Below the fill lies silts and clay of lagoonal and fluvial origin (Poland, 1959), and organic-rich tidal muds with interbedded floodplain deposits that are primarily composed of fine- to medium-

grained sand (Castle, 1960). The soft to very stiff clay layers are generally normally consolidated, which means that the clay has consolidated, or "settled," from the pressure of the overlying soil or structures close to it, but that the clay has not had greater-than-current pressures imposed on it since its deposition. The significance of this is that the potential for settlement due to any additional imposed loads is high. Blow counts in the sandy layers ranged from 3 to 64, but generally fell within the loose to medium dense range. These tidal deposit materials generally extended to a depth of about 43 to 47 feet below existing grade in the borings, with the lowest elevation being approximately elevation -27 feet.

These tidal deposits overlay silt, sand and gravel of fluvial origin that were deposited within the an ancestral stream-cut channel that is known as the Ballona Gap (Poland, 1959). These materials consisted primarily of dense to very dense sand, sand with silt and gravel, and silty sand. Blow counts in this material ranged from 35 to over 100.

In general, most headspace readings taken at the site with the OVA were not above typical background levels of about 2 to 8 parts per million (ppm). However, within the tidal deposits, close to the interface with the overlying fill, oily material or material with a petroleum or sulfur odor was typically encountered (WCC B-1 at 17 feet, WCC B-3 at 16 feet, URS B-5 at 18 feet, URS B-7 at 25 feet URS B-8 at 23 feet, and URS B-9 at 16 feet). This is described in somewhat more detail in Appendix A. Readings with the OVA on the headspace in this zone were generally small (6 to 38 ppm) except in URS B-9, where a reading of 90 ppm was recorded.

4.6 GROUNDWATER

During the 1988 field investigation, the static water level was reportedly not observed. An attempt was made to measure the depth to the groundwater table by bailing the drilling fluid out of borings WCC B-1 and WCC B-3 after completion. However, these two boreholes caved in at a depth of about 18 feet below existing grade in boring WCC B-1 and about 12 feet in boring WCC B-3. Because of the cohesionless nature of the upper subsurface soil, soils below the water table tended to cave in after the drilling fluid was withdrawn. It was believed that the static groundwater table at the site is below the depths where the soil caved in those borings.

The depth to groundwater was measured in all 6 borings of the current 2000 investigation. The depth to groundwater ranged from 13 to 23 feet below existing grade, corresponding to elevations between +1.5 and +11.5 feet.

Groundwater was also encountered at the nearby "Parcels 12 and 15" site along Marquesas Way. This site is much closer to the Quay walls of the harbor, with lower ground surface elevations.

The groundwater levels encountered there, ranging from 6 to 15 feet below that grade, correspond to elevations 0 to +4 feet (Law/Lawgibb, 2000).

Because of the proximity of the site to the waterfront, it is reasonable to assume that the water table beneath the site is influenced by tidal variations. Data on the overall depth to groundwater and its fluctuations can be obtained by installing groundwater monitoring wells. Because of the apparent variability in the groundwater elevations measured and in the absence of well data, the depth to groundwater can only be estimated. For the purposes of this report, we have assumed a groundwater level of 13 feet below the existing ground surface, which is consistent with the shallowest water level actually measured. The corresponding elevation of the water table is about +9 to +13 feet.

5.1 GENERAL

It is our opinion that the site is suitable for the proposed development, provided consideration is given to on-site geotechnical conditions as discussed in this section. In particular, due to the presence of weak layers of fine-grained soils, shallow groundwater table, and the potential for liquefaction in some layers of the cohesionless soils, driven piles are the preferred foundation system for the proposed development, from a geotechnical viewpoint.

5.2 EARTHQUAKE GROUND MOTIONS

5.2.1 Uniform Building Code Seismic Design Parameters

Earthquake ground motions were estimated in accordance with the procedures outlined in the Uniform Building Code (International Conference of Building Officials, 1997). The Soil Profile Type is typically based on average soil properties for the top 100 feet. Were this method to be used, the subsurface materials indicate a Soil Profile Type S_D would be appropriate. The next lower profile, Type S_E is for softer soils than those present at the site. However, if the presence of potentially liquefiable soils in the upper 50 feet is appropriate to be taken into account, much of the site would fall into the lowest S_F category, requiring "special analysis."

In reviewing the applicability of these soil profile types to the proposed construction, the following was observed:

(1) The presence of a soft (i.e. liquefiable) layer tends to dampen the peak ground motions (which is why an S_E category results in lower design ground accelerations [C_a values] than the S_D category);

(2) As discussed in Section 5.3 of this report, the proposed structures should be founded on driven piles extending into the denser material beneath the liquefiable zone. This denser material is also representative of S_D material, and would thereby represent the peak ground motion that would be induced into the structure via the foundations. As the peak ground acceleration (represented by C_a) is higher for S_D material, this value is conservative and appropriate for pile design.

(3) The act of driving the piles would tend to densify the surrounding granular soils by a measurable but unknown degree, bringing the looser material closer to or within the S_D category.

Based on the above information, we recommend that Soil Profile Type S_D be used for design.

According to published maps of known active fault near-source zones (International Conference of Building Officials, 1998), the closest seismic sources to the site are the following:

Fault Name	Fault Type	Slip Rate (mm/yr)	Maximum Magnitude	Approximate Closest Distance to the Site (km)
Palos Verdes	B	3	7.1	6½
Newport-Inglewood	B	1±0.5	6.9	10

The following are the resulting Seismic Design Parameters recommended for the currently proposed construction:

Soil Profile Type:	S_D
Seismic Zone:	4
Seismic Source Type (Table 16-U):	B
Closest Distance to known Seismic Source:	6.5 km
Zone Factor (Table 16-I):	0.4
Near Source Factor N_a (Table 16-S):	1.0
Near Source Factor N_v (Table 16-T):	1.14
Seismic Coefficient C_a (Table 16-Q):	0.44 N_a = 0.44
Seismic Coefficient C_v (Table 16-R):	0.64 Nv = 0.73

Please note that the above parameters assume the structures are founded on driven piles extending to the denser sand layers at the site, as recommended in this report. Otherwise, the soil profile type should be considered S_F, and a dynamic site response analysis should be performed. Such a condition would be more applicable, say, in identifying the appropriate ground motion parameters of the current site conditions (surface structures founded on spread footings).

5.2.2 Liquefaction Potential

Liquefaction can be defined as significant and relatively sudden reduction in stiffness and shear strength of saturated sandy or gravelly soils caused by a seismically induced increase in pore water pressures. Liquefaction generally occurs during seismic shaking in loose, fine to medium, sandy to silty saturated soils with a shallow groundwater table. When liquefaction occurs, the site can experience damage induced by permanent ground movements, such as from differential settlement, tilting, or bearing capacity loss.

To evaluate this potential, the standard blow counts recorded on the boring logs were corrected as appropriate for overburden, sampler type, rod length, hole diameter, and hammer type. These corrections and the liquefaction evaluations followed the methods described by Tokimatsu and Seed (1987), and Youd and Idriss (2001).

The actual groundwater levels recorded on the boring logs was applied to the blow counts during the correction process discussed above. The design groundwater level that was assumed for calculating liquefaction potential was taken to be a depth of 13 feet below existing grade. This depth is at or above the groundwater levels actually measured, and therefore accommodates the potential for higher groundwater levels than those encountered during drilling.

Based on the parameters indicated in Section 5.2.1, the design earthquake has a peak ground acceleration (C_a value) of 0.44g, with a maximum magnitude of 7.1. The results of our liquefaction analysis for this design earthquake have been summarized on Figures 6 through 14 for borings WCC B-1 through URS B-9, respectively. On these figures, the solid line indicates a factor of safety (FOS) of 1. The corrected blow counts for all potentially liquefiable layers are shown by the circles; blow counts within non-liquefiable layers (such as clays) are not shown. Circles located on or to the left of the line indicate potentially liquefiable layers that have factors of safety less than one.

The results of this analysis indicate that in every boring at least one layer of potentially liquefiable material was encountered that had an FOS less than one. For ease of reference, the results have been condensed onto the cross section, Figure 5, with the zones having an FOS against liquefaction less than or equal to 1 are shown in gray. As can be seen on Figure 5, these zones were located entirely in the native tidal deposits; none of the fill material nor the deeper fluvial deposits contained layers that had an FOS of 1 or less. As can be seen on Figure 5, the shaded layers are generally continuous and located close to the proposed bottom of the proposed structures. Therefore, we conclude that the potential for liquefaction at the site, and the potential for liquefaction to have a significant affect on the proposed development, are high.

5.2.3 Lateral Spreading

Lateral spreading refers to a phenomenon where the ground surface moves laterally as a result of a subsurface layer liquefying and moving laterally. For this to occur, there must typically be a slope or unsupported face to permit this type of movement, though the slopes involved can be very flat (a few degrees can be sufficient). In this case, the potential for spreading comes from the nearby Marina. For example, should the bulkheads (Quay walls) in the Marina being

maintained by the County of Los Angeles fail, there may be the potential for lateral movement towards these bulkheads.

We have evaluated this potential for lateral spreading should the bulkhead walls fail. The closest distance from these bulkheads to the site is approximately 400 feet on the west side of the site, and about 540 feet from the east side of the site. Following the procedures of Youd *et al.* (in press), we calculate a lateral displacement up to about 2½ feet for these conditions. However, there are several items to take into consideration when evaluating this displacement: 1) this does not take into account any improvement made to the subsurface as a result of all the pile driving activities in the surrounding developments; and 2) this potential exists for the existing apartment complex as well; the proposed development is not a factor in increasing this risk. Exterior surface improvements, such as sidewalks or pavements, which would be most susceptible, but the driving of the piles for the proposed development will tend to densify the subsurface soils and reduce the potential for lateral spreading beneath the building significantly.

It should be noted, however, that we have not studied the seismic stability of the Marina bulkheads. Assuming that these bulkheads would be stable during a seismic event, the possibility of lateral movement or spreading developing at the Del Rey Shores site is negligible.

5.2.4 Seismically Induced Settlement

We have evaluated the potential for seismically induced settlement using the procedure outlined by Tokimatsu and Seed (1987). Such settlement below the proposed foundation level would be primarily post-liquefaction settlement of the liquefiable zones. Based on the results of our analyses, the post-liquefaction settlement at the various boring locations would range between 1 and 5 inches, with possible differential settlements of up to 3 inches over a horizontal distance of 50 feet. The greater settlement estimates occur in those zones with the thickest and least dense sandy layers. The potential for such settlement should be anticipated in design.

5.3 FOUNDATION RECOMMENDATIONS

5.3.1 Foundation type

Two criteria which should be satisfied by an adequate foundation are: (1) the stresses imposed on the soils by the foundation should not exceed the strength of the soils, and (2) the settlement or heave of the foundation should be within limits tolerable to the structure.

We have evaluated the possibility of using shallow foundations or a mat for the proposed development. As indicated in Section 4.5, the subsurface clay is normally consolidated, indicating the potential for significant settlement at pressures beyond those currently existing. In addition, the thickness of the clay zones is variable across the site. The sandy layers below foundation level would also contribute to the total static settlement. We estimate the settlement due to static loads to range between 1 and 6 inches, with differential settlements of up to 5 inches over a horizontal distance of 50 feet. The greater settlement values occur in those zones with the thickest *clay* layers, and the high differential settlement is due to the changes in stratigraphy between thick clay layers and thick sand layers. These values are typically unacceptable for a building foundation.

As mentioned in Section 5.2.4, the amount of seismically induced settlement within the *sand* zones is 1 to 5 inches. These values, which would also occur differentially across the site, are also typically unacceptable for a building foundation.

Based on the above analysis, the use of shallow foundations is not considered viable for the overall proposed construction. It is our opinion that drilling cast-in-place piers at the site is also not a viable option for this site, due to the difficulty in drilling piers below the general groundwater table in loose sandy soils with high caving potential. The type of foundation system most suitable for the proposed construction, from a geotechnical viewpoint, is a driven pile foundation system.

We have reviewed a number of earlier geotechnical reports prepared for sites at or surrounding the subject site. A summary of our review can be found in Table 3. We note that driven pile systems have been recommended and/or used for nearby structures with similarly high loads.

Minor site walls may be designed with a shallow foundation system, as the loads would be light and generally not affect the deeper clays. In addition, footings near existing grade (rather than 10 to 13 feet below grade) also have a greater buffer zone of non-liquefiable material between the bottom of footing and the liquefiable zone. Nevertheless, it should be understood that some distress may occur to these walls above those zones that experience post-liquefaction settlement. For this reason, the use of such footings should be limited to minor, non-critical walls.

5.3.2 Driven Pile Foundation System

We recommend that the piles consist of full-displacement piles (no predrilling). The advantage of this type of pile is that it tends to increase the density of the surrounding sandy soils, thereby

reducing the liquefaction potential and the post-seismic settlement of the soils surrounding the piles.

We have analyzed driven precast prestressed concrete piles. Because of the presence of liquefiable soils, we recommend that the piles be driven at least 10 feet into the medium dense to dense sand layer below the site, encountered starting at about elevation –25 to –27 feet, as shown on the cross section, Figure 5. Assuming a top of pile approximately 12 feet below existing grade, the total anticipated minimum pile lengths would range from 42 to 48 feet. The piles will gain support from a combination of both skin friction and end bearing.

Based on our experience and on discussions with Nadel, 12-, 14-, and 18-inch square precast prestressed concrete piles may be a suitable option for use at this site.

The allowable shaft resistance curves (FOS of 2) for static loads are presented on Figure 15. We recommend that center-to-center spacing of the piles be not less than three times the pile dimension. For this condition, a pile group efficiency of about 0.75 should be assumed. The pile group efficiency value increases linearly to 1.0 at about 8 times the pile dimension.

Piles embedded at least 10 feet into the sand bearing layer may be designed for a dead-plus-live allowable axial compression bearing capacity of 60 ksf (FOS of 4) in addition to the friction values presented on Figures 15 and 16.

Allowable end-bearing capacities may be increased by 1/3 for transient loads, such as wind gusts and seismic loads.

Friction capacities shown on Figure 15 may be increased by 1/3 for wind loads. However, for seismic loads, the potential for soil liquefaction must be considered. Using the design earthquake, we have reduced the shear strength in those zones having an FOS against liquefaction of less than 1 to the corresponding residual shear strength (Kramer, 1996). As seismic conditions typically involve different factors of safety than are used for static loads, the friction capacity curves shown on Figure 16 are for an FOS of 1 (one). If it is desired to use an FOS greater than 1.0, which represents bare stability with no allowance for uncertainty, the capacity for the higher FOS can be calculated by dividing the capacities shown on Figure 16 by the desired FOS. It should be noted that the values on Figure 16 do NOT represent an increase in the axial capacity over the values in Figure 15, because the factors of safety inherent in the figures are different and the loading/soil conditions are different. In fact, the values on Figure 16 represent a loss during an earthquake of approximately 30% of downward capacity.

In addition, post-liquefaction settlement would induce downdrag on the piles, which should be accommodated in design. We estimate a maximum downdrag on the order of 20, 23, and 30 kips for the 12-inch, 14-inch, and 18-inch piles, respectively. As this downdrag occurs after the earthquake, these downdrag loads should be added to the calculated applied axial loads considered when evaluating the total axial capacity shown on Figure 15 (and not to the total load during an earthquake, which would utilize Figure 16). Downdrag forces could be added to the uplift capacity for each pile when analyzing for tension.

The uplift capacity for wind loads is estimated to be about 2/3 of the downward friction capacity presented on Figure 15 (FOS of 2), plus the weight of the pile. The uplift capacity for seismic loads is estimate to be about 1/2 of the downward friction capacity presented on Figure 16 (FOS of 1), plus the weight of the pile.

We estimate the total settlement of the driven pile foundation embedded into the sandy bearing layer as recommended above to be less than ½ inch. We estimate the differential settlement between similarly loaded foundations to be on the order of ½ the total settlement.

Without a proposed site plan, it is difficult to develop an appropriate indicator pile program. Because of the variability of the site and the presence of buried lagoon channels, we recommend about 12 indicator piles be driven across the site to evaluate the driving effectiveness of the hammer, to establish pile driving criteria, and to confirm pile lengths and design assumptions. Where feasible, the indicator piles should be located near the borings and should be cast to a length corresponding to a driven depth of at least 60 feet below finish floor elevation (to allow for deeper driving below anticipated final tip elevation). Sections of pile that remain above grade can be cut off to finish elevation. Indicator piles driven to sufficient embedment and meeting the needed capacity may be utilized for final building support.

The selection of a suitable hammer depends on the overall soil-pile-hammer cushion system, and both the Structural Engineer and Geotechnical Engineer should be consulted to avoid over-stressing the piles during driving. The driving resistance, indicated by the number of blows per inch required to achieve the design capacity, depends upon the pile-hammer-cushion combination and the load distribution along the pile. Blow count criteria for the production pile driving should be established based on the boring information, a review of indicator pile driving records, and dynamic pile analysis.

5.3.3 Shallow Foundations – Minor Structures

Shallow foundations, such as spread or continuous footings, adjacent to, but structurally separate from, the proposed apartment complex may be established in the upper fill. We recommend these footings be designed using an allowable bearing capacity of 1000 psf. Spread footings for the proposed minor structures should extend to a minimum depth of 18 inches below the lowest adjacent grade, and should have a minimum width of 12 inches.

We estimate the total static settlement of the proposed minor structures established at grade on spread or continuous footings to be on the order of ½ inch. Seismically induced liquefaction settlement and lateral spreading of the soils that are around and underlying the foundations of these minor structures may be on the order of several inches, as discussed in section 5.2, and may need repair or replacement should the significant earthquake shaking occur.

5.3.4 Swimming Pools

The existing soils within the depths of excavations of a proposed swimming pool are primarily sandy and should not be expected to stand vertically for construction of a shotcreted or gunited pool. Some caving or sloughing should be anticipated. To provide a working base during construction and to provide uniform support for any pools, we recommend that the existing soils beneath the proposed pool be excavated about 2 feet below the proposed pool bottom and replaced with Caltrans Class 2 permeable material, or similar well-graded sandy gravel.

5.4 SLAB-ON-GRADE

If a slab-on-grade were to be used at the site, high areal loads would be imposed on the subsurface soils from parking on the basement floor slab. This in turn would result in settling of the soils beneath the slab. In other areas, post-liquefaction settlement of the ground surface is also likely to result in settlement beneath the lowest basement floor slab, as compared to the pile-supported main structure. Because of these conditions, a slab-on-grade floor is not recommended. However, structural slabs that transmit loads to the supporting piles can be used for the proposed structures. The slab thickness and reinforcement should be designed by the structural engineer for the anticipated floor loads and other structural considerations.

In addition, because of this potential for gaps between the floor slab and subgrade, and because differential settlements between the pile-supported structure and any adjacent minor structures and utilities (which are not on driven piles) can be expected, we recommend that flexible connections that would allow for differential movement be used wherever utilities enter the

buildings. Proposed minor structures (planters, swimming pools, etc.) should be structurally separate from the proposed buildings, or else structurally supported by the main structure.

We recommend that the floor slab be underlain by at least 3 feet of compacted, coarse gravel. This gravel will provide several functions: it will help provide a stable working base for construction; it will facilitate dewatering; it will provide sub-slab drainage; and it will provide a firm uniform surface for the overlying slab. We recommend that the bottom floor slab also be fitted with pressure reliefs. These reliefs will not only aid in providing an outlet for an unanticipated rapid water level rise, but may also act as a relief valve during liquefaction which would otherwise create sand blows and possibly destroy the slab due to the underlying pressure.

The gravel mat would lie above soil conditions that vary from soft clay to sands of various densities. To help prevent the migration of fines into the gravel mat, we recommend that a filter fabric, such as Mirafi 140NL (apparent opening size of No. 60 sieve) or equivalent, be placed upon the subgrade prior to gravel placement. A porous stabilization fabric, such as Mirafi 500X or equivalent, could also be used instead.

As an alternative to placement of a geotextile, a 6-inch layer of Caltrans Class 2 permeable material may be used to act as a filter between the finer-grained soil and the coarse gravel. This 6-inch layer can be considered part of the 3-foot thick gravel mat. However, this assumes that the surface is stable enough to permit the placement and spreading of such material.

The surface upon which the Caltrans Class 2 permeable material or geotextile is placed should be relatively even and undisturbed. Areas significantly disturbed by the excavation process may require additional removal and subgrade preparation prior to placement of the permeable material or geotextile.

If moisture-sensitive floor coverings are planned, we recommend that the slabs be underlain by an impermeable membrane covered top and bottom by at least 2 inches of clean washed sand. To prevent the sand from settling into the coarse gravel, the upper 6 inches of the gravel could be replaced with Caltrans Class 2 permeable material, or else a filter fabric could be used.

5.5 GROUNDWATER

5.5.1 Groundwater Design Levels

For the purposes of our design, we have assumed a groundwater level at about 13 feet below existing grade throughout the site. This design level is equal to the highest level measured at any

time during our investigation, and higher than that encountered in most of our borings. This design depth corresponds to elevations between about +7 to +12 feet.

The proximity of the Marina and the pervious nature of the subsurface soils indicate that groundwater levels may fluctuate readily with the tide. Nearby sites have assumed. a groundwater elevation of about +5 feet (LAW/LAWGibb, 2000) for design purposes, which is lower than the highest level encountered at the Del Rey Shores site. Based on this and the proximity of the site to the Marina to the east and west, a significant rise in the groundwater table at the Del Rey Shores site above the 13-foot depth (elevation +7 to +12 feet) does not seem likely under non-extreme conditions (widespread flooding, for example). However, surface water, such as from irrigation or rainfall, that permeates the surface may result in a localized buildup of water above less permeable zones, such as the clay layers.

5.5.2 Groundwater Control During Construction

Although the bottom floor slab is planned to be 10 feet deep below existing grade, the depth of excavation to construct the structure could be about 13 feet. This puts the bottom of excavation at about the design groundwater level. Therefore, the bottom of the excavation may be locally unstable due to the potential for "pumping" of the subgrade sands in response to pore pressure increases from the construction equipment. In the event that the water level is higher than we encountered during the investigation, the bottom of the excavation could be expected to be wet and experience instabilities that are more widespread.

We recommend that the water level be maintained at least 2 to 3 feet below the bottom of excavations to avoid subgrade instability and possibly a "quick" condition. Therefore, depending on the water level encountered during construction, some dewatering may be necessary, possibly requiring point wells. However, if the groundwater stays at the level recorded in most of the borings, which is closer to elevations 0 to 5 feet, then widespread dewatering would not be necessary, and the contractor may be able to handle localized groundwater through the use of sumps.

Dewatering for construction raises two issues. The first issue is the comprehensive cost of the dewatering system and its operation. The second is the impact that the system may have in inducing settlement of the neighboring structures. The number of pumps to achieve the necessary flow rate and the impact on the water table should be evaluated in more detail on the basis of pumping tests.

It may be difficult to compact the gravel to be placed under the floor slab, due to wet subgrade conditions. It may be cost-effective to place a layer of geotextile, such as Mirafi 500X or equivalent, on the subgrade before placing any gravel.

5.5.3 Permanent Groundwater Control

The grounds will be irrigated and subjected to rainfall, and buried water pipes may leak. As such, we recommend that the building design incorporate a design to prevent water buildup adjacent to subsurface walls. In addition, beneath the bottom floor slab drainage should be provided to address the potential need for pore pressure relief from subsurface liquefied material.

We recommend that subterranean walls be designed with a gravel backdrain system. The gravel should consist of Caltrans Class 2 permeable material, at least 12 inches thick, extending up to within 18 inches of overlying subgrade. This upper 18 inches should consist of relatively impervious compacted fill material to help seal off surface water infiltration. The gravel should be drained near the base of the wall by a minimum 4-inch diameter, minimum Schedule 40 PVC, perforated pipe. The pipe should have some positive slope, and drain into an appropriate discharge location, such as a sump pit.

As an alternative to Class 2 permeable material, a drainage panel, such as Miradrain 6000, may be used instead. The drainage panels should be intact and continuous, with no disruptions in water flow.

We recommend a waterproofing layer be applied between the gravel or drainage panel and the wall to aid in preventing water infiltration through the wall.

As indicated in Section 5.4, a three-foot layer of coarse gravel should be placed and compacted beneath the basement floor slabs. This gravel layer should be equipped with 6-inch diameter perforated pipes connected to a sump. The approximate minimum center-to-center spacing of the pipes should be no more than about 50 feet or so. We also recommend the placement of pressure relief valves in the floor of the lowest basement level, as discussed in Section 5.4.

5.6 LATERAL EARTH PRESSURES AND RESISTANCE TO LATERAL LOADS

5.6.1 Applied Lateral Pressures

All walls constructed below grade, such as basement walls, elevator pits, and retaining walls, will be subject to lateral earth pressures from subsurface materials or backfill. For cantilever walls that are

free to rotate at the top, we recommend that a lateral pressure equal to that imposed by an equivalent fluid weighing 37 pcf be used for design. For walls restrained at the top, we recommend that an equivalent fluid weighing 55 pcf be used for design. In addition, walls should be designed to resist a uniform lateral pressure distributed over the height of the wall equal to 0.35 times the surcharge loads imposed by floor slabs, traffic, or other loads adjacent to the wall.

These pressures assume that all such walls incorporate a drainage system designed to prevent hydrostatic pressure on the wall, such as that recommended in Section 5.5.3. Although the basement walls are not expected to encounter groundwater during construction, there remains the possibility of a ground water level rise at some future time, or infiltration of irrigation, which may accumulate against the wall. In addition, other potential water sources, such as broken water pipes, also provide potential for water to accumulate behind the wall.

The above pressures assume that the backfill is relatively level for a minimum distance of 10 feet away from the wall. Other special cases, if any, will need to be evaluated on a case-by-case basis by the Geotechnical Engineer.

5.6.2 Lateral Resistance of Foundations

To provide resistance to lateral loads transmitted to shallow foundations (for minor site walls), subsurface walls, shear keys, and pile caps, located above the water table and constructed neat against the existing in situ material, we recommend the use of a passive pressure equal to that imposed by an equivalent fluid weighing 200 pcf. This equivalent fluid value may be increased to 350 pcf at those locations, if any, where compacted engineered fill is present adjacent to the construction element of interest for a lateral distance of 3 times the depth below grade of the passive resistance zone, or 10 feet, whichever is less.

If passive resistance is being calculated for structural elements below the water table, the design allowable passive equivalent fluid weights indicated above should be reduced by 50% (i.e., to 100 pcf and 175 pcf for in situ material and engineered fill, respectively) for the portion that is below the design water table. The upper 12 inches of material in areas not protected by floor slabs or pavements should not be included for design for passive resistance to lateral loads (i.e., the ground surface should be assumed to be 12 inches lower than planned). An allowable coefficient of sliding friction of 0.3 between cast-on-grade concrete and the underlying soil may be combined with the passive resistance to resist lateral loads.

Resistance to lateral loads applied at the pile head can also be developed through bending of the pile, utilizing the pile stiffness, the lateral resistance provided by the soil, the amount of deflection (as typically measured at the top of the pile), and the condition of fixity at the top of the pile. This resistance can be combined with passive resistance against the pile caps to calculate the total lateral load resistance. Based on an assumed concrete compressive strength f_c' of 5000 psi, lateral capacities for 12-, 14-, and 18-inch square precast concrete piles were calculated using the p-y (lateral load-deflection) method and a finite difference solution (PILED/G by Geosoft, 1987).

These capacities have been calculated for both free- and fixed-head conditions as summarized in Table 4. A fixed-head condition denotes that the pile cap is free to translate, but is fixed against rotation. A free-head condition denotes that the pile cap is free to rotate and translate. The structural engineer should decide which condition is most applicable to his particular design.

The data presented in Table 4 are for maximum pile head deflections of ½ inch. The values within the table are given as a function of lateral load but are only applicable for loads up to the maximum design loads indicated. The results are non-linear and the values provided should not be extrapolated for higher loads. The results shown in Table 4 are applicable for single piles, or for single unconnected piles with a center-to-center spacing of 3 pile diameters or greater.

5.7 TEMPORARY EXCAVATIONS AND SHORING

Because of the relatively shallow depth of excavation anticipated for the construction, we consider it likely that an open cut excavation would be considered for the bulk of the construction. We performed a slope stability analysis on the near surface material using a variety of slope angles until a factor of safety of 1.25, typical for temporary conditions, was calculated. For a factor of safety of 1.25, temporary cuts in the near surface material should be made no steeper than 1.7:1.

In those areas where driven piles would be used to provide cantilever shoring, the active cantilever pressures discussed in Section 5.6.1 may be used for design. Resistance to lateral loads would be provided from that portion of the pile embedded beneath the bottom of the excavation. For this condition, we recommend using a passive resistance based on an equivalent fluid with a unit weight of 250 pcf against the projected width of the soldier pile for design.

Other shoring configurations, such as braced excavations, would need to be evaluated on a case-by-case basis.

5.8 SOIL SULFATE CONTENT AND CORROSION POTENTIAL

A sulfate content test was performed on a soil sample collected within the silty sand fill material within the proposed building area. The test results, presented in Appendix B, showed a soluble sulfate concentration of 621 parts per million (ppm), or 0.06%. Based on this result and the recommendations of the American Concrete Institute (1982) and the Cement Industry Technical Committee of California (no date), either a Type I or Type II cement is sufficient to resist sulfate attack. The concrete mix should have a maximum water/cement ratio of 0.55 and a minimum cement content of 470 pounds per cubic yard.

The resistivity test and chloride concentration results, as presented in Appendix B, indicate the this material has a high potential for corrosion of metallic pipes. We recommend that a Corrosion Engineer be consulted to evaluate these conditions if use of buried metallic structures (pipes, tanks, etc.) is planned.

5.9 PAVEMENT DESIGN

Pavement design analyses were performed using the Caltrans design method. In this method, soil and base material strengths are evaluated with respect to an R-value (Test Method No. Calif 301-F) and traffic loading is represented by a traffic index (TI). The traffic indices are based on the anticipated number of vehicle "trips" and the type of vehicle. To our knowledge, no traffic study has been performed for traffic inside the property. We have therefore assumed TI's of 4 and 5.5 for the parking areas and the driveway areas, respectively. A subgrade R-value of 25 was selected for design. The following pavement sections are recommended:

Pavement Section	TI=4	TI=5.5
Asphalt Concrete (inches)	3	3
Aggregate Base (inches)	4	8

The pavement materials should conform to Sections 26 and 39 of the Standard Specifications of the California Department of Transportation (Caltrans, 1999) for aggregate base and asphalt concrete, respectively. The aggregate base material should have an R-value of at least 78.

If acceptable to the Owner, crushed miscellaneous base (CMB) may be used instead of aggregate base. The CMB should have a minimum R-value of 78 and should otherwise conform to Section 200-2.4 of the Greenbook, 1997 edition (Greenbook Committee, 1997). The CMB sieve size

used should be that which closest resembles that specified for the AB. It should be realized, however, that while material costs for CMB may be less than for AB, this material does not always compact as readily as AB, resulting in more time being spent on earthwork and field observation and testing activities.

5.10 SITE PREPARATION AND GRADING

5.10.1 General Grading Requirements

Earthwork should be performed in accordance with the applicable portions of the Uniform Building Code (International Conference of Building Officials, 1997), as well as the recommendations of this report, and should be performed under the observation and testing of the Geotechnical Engineer. Suggested items for inclusion in the earthwork specifications are included in Appendix D. All references to relative compaction refer to the ratio, expressed in percent, of the in-place dry density of the compacted fill to the maximum dry density obtained by the latest version of ASTM D1557.

5.10.2 Demolition

We recommend that demolition operations of below-grade items in the vicinity of new structures and foundations be periodically observed and documented by the Geotechnical Engineer. Documentation should include the limits and extent of demolition and cavities created by such operations. Soils loosened or disturbed by demolition should be removed. No facilities should be constructed in areas where removals and/or fill placement are not documented.

5.10.3 Site Preparation and Removals

Prior to earthwork, the areas to be cut, to receive fill, or to receive stockpile materials should be cleared and stripped of all debris, deleterious materials, organics and vegetation, and remnants resulting from site demolition. Cleared and grubbed material as well as all rubble waste that may be encountered or created should be disposed of offsite. Areas of loose or otherwise unsuitable material beneath footings or other structures should be removed down to firm native material.

The exposed excavated surface should be observed by the Geotechnical Engineer to confirm that satisfactory subgrade soils have been encountered. If loose, soft, or undocumented fill is encountered at the bottom of the excavation, additional removals may be required. The decision for additional overexcavation should be made by the Geotechnical Engineer in the field once the

bottom of the excavation is exposed. The bottom of excavations should then be scarified to a depth of 6 inches, moisture conditioned to near the optimum moisture content, and compacted.

Because of the presence of odoriferous and oily material encountered between a depth of 14 and 26 feet below grade, the possibility of encountering such material during construction can not be discounted. Depending on the quality of the material excavated, some cleanup and disposal issues may need to be addressed by the Owner and Contractor during construction. The use of full-displacement driven piles would minimize the exposure to such material, which appears to be more concentrated below the planned excavation elevation. As a precaution, it may be prudent to perform a soil gas survey at the excavation bottom, before placement of rock. Such a survey typically consists of inserting a probe into the ground on a grid pattern (such as 100-foot spacing, for example), and measuring soil gas quantities from a depth of zero to 4 feet. Such surveys have been done elsewhere where a potential for gasses to buildup beneath a structure was perceived.

5.10.4 Fill Materials

We recommend that material placed as fill beneath buildings or structures consist of Select Fill materials. The criteria for Select Fill is material smaller than 3 inches, having at least 80 percent passing the 3/8-inch sieve, and at least 15 percent passing the number 200 sieve. Select Fill materials should be free of organics, debris, or other deleterious materials, and have an expansion index (EIT) of 30 or less.

Fill not meeting the criteria for Select Fill may be used as General Fill in open areas, planters, etc. The criteria for general fill is no material greater than 6 inches, at least 70 percent passing the 3/8 inch sieve, and at least 5 percent passing the Number 200 sieve.

The subsurface materials within the zone of excavation consist primarily of silty sand granular materials and sandy clay fine-grained materials. It is our opinion that the silty sand materials generally meet the above recommendations for Select Fill, and are therefore suitable for use as Select Fill. However, the sandy clay layers are marginal, and may exceed the expansion index limit. In addition, the water content of the sandy clay layers is high, and would require drying out and blending with the granular materials to bring the soil water content to near the "optimum" water content and be more suitable for compaction.

It should also be noted that debris, such as pieces of glass, rubber, wire, wood, and tile, was occasionally encountered during our field investigation. Higher concentrations of these materials

are possible; such material and debris is not suitable for use as either General or Select Fill. In addition, if odoriferous or oily material is encountered, such material should be segregated and not used for fill until additional consultation (such as from our in-house environmental engineers) can be provided.

The Geotechnical Engineer should check that excavated materials conform to the project specifications after stripping and partial excavation, but prior to compaction. Any material exposed at the site or from excavations that are judged to be unsuitable by the Geotechnical Engineer should be removed. The materials to be excavated during construction consist of soil that ranges in density from loose to dense. These materials should be excavatable with standard excavation and earth moving equipment.

5.10.5 Fill Placement and Compaction

The maximum dry density of the fill materials should be determined in accordance with the latest version of ASTM D1557. The field density of fill should be determined in accordance with the Sand Cone Method (ASTM D1556) of the Nuclear Method (ASTM D2922 and D3017).

The uppermost one foot of pavement subgrade, pavement base materials, scarified material in structural areas, and engineered fill located beneath footings, floor slabs, other structural elements, or pools, should be compacted to at least 95 percent relative compaction. All other fill and scarified subgrade should be compacted to at least 90 percent relative compaction.

Fill material should be placed in lifts generally no greater than 8 inches thick, loose measurement. The water content of the fill material should be at or above optimum water content. Materials greater than ¾ inch should be placed so that they are completely surrounded by compacted finer soils. Appropriate compaction equipment should be used adjacent to walls so as not to overstress the wall.

5.11 ALTERNATIVE FOUNDATION SYSTEM (STONE COLUMNS)

As an alternative to driven piles, the Owner may wish to consider the use of stone columns. Stone columns are installed using a vibro-replacement technique. In this method, a shaft of soil is replaced with stone through the means of a vibroflot. This device has water jets and vibrates as required to extend the tip of the machine to the design depth. Stone is then placed down the shaft, and the vibroflot is slowly raised to compact the material as it is placed. The resulting

column of stone provide stiff support through weaker clay materials, while vibrating the looser sands and causing them to densify, thereby improving the soil around the stone column as well.

This system has several advantages. Shallow foundations can be used, assuming their locations are coordinated with the location of the stone columns. In this way, the stiffer stone takes most of the load rather than the weaker adjacent clay. The stone also provides a way to reduce pore pressure buildup, speeding clay consolidation and providing an exit for water pressure buildup within the sandy soils. The process of installing stone columns tends to densify the surrounding sands for several feet, thereby reducing the risk of liquefaction. Also, although the construction is not quiet, it does produce somewhat less noise and much less ground vibration then driving piles.

There are disadvantages to this system. Typically, driven piles are cheaper than stone columns, unless there are other compensating considerations, such as a ready, cheap availability of stone for the stone columns. In addition, since the stone columns tend to aid in consolidation of the adjacent clay, the potential for settlement of the clay can not be discounted. Therefore, structurally supported slabs would still be required with the stone column system. Also, at the Del Rey Shores site, the subsurface stratigraphy is not constant; the spacing and construction of the stone columns is often different for clay areas and granular areas, and thus additional conservatism would be required to accommodate the worse condition (this, too, increases the cost). Unlike a pile foundation, there is no immediate assurance that a desired bearing capacity has been achieved. Typically, total settlements of stone columns are on the order of one inch which, although higher than for driven piles, is still within standard construction limits. Lastly, as this involves replacing material with stone, the material within which the petroleum odor and elevated OVA readings were encountered would be brought to the surface and may require additional handling.

6.1 POST-INVESTIGATION SERVICES

Post-investigation geotechnical services are an important and necessary continuation of this investigation, and it is critical that the Geotechnical Engineer be retained to perform such services.

Foundation and grading plans as well as specifications related to construction of the project should be reviewed by the Geotechnical Engineer to verify that the intent of the recommendations presented in this report has been properly interpreted and incorporated into the contract documents.

Geotechnical observation and testing should be performed by the Geotechnical Engineer during excavating, shoring, foundation construction, and related earthwork operations. The purpose of the geotechnical observation and testing is to correlate findings of this investigation with actual subsurface conditions exposed during construction and provide supplemental recommendations, if necessary. The geotechnical observation and testing will also confirm that foundation and shoring elements are founded in the recommended soils, and that suitable fill and backfill soils are placed upon competent materials and properly compacted to meet the project specifications.

6.2 UNCERTAINTIES AND LIMITATIONS

URS has observed only a very small portion of the subsurface conditions at the project site. In view of the general geology of the project area, the site history, and the presence of fill placed by others, the possibility of different subsurface conditions cannot be discounted. Conclusions and recommendations presented in this report are based upon URS's understanding of the project and the assumption that the subsurface conditions do not deviate appreciably from those disclosed by the field exploration. In the event that the concept and elevations of the proposed structures are changed, the recommendations presented in this report may not be applicable. It is the responsibility of the Owner to bring any such changes of the proposed structures to the attention of URS. In this way, supplemental recommendations, if required, can be made without delay to the project.

Professional judgments presented in this report are based on an evaluation of the technical information gathered and URS's general experience in the field of geotechnical engineering. URS does not guarantee the performance of the project in any respect. For instance, we have no way of knowing the successful bidder's capabilities, experiences, his choices of crew and equipment, his choice of bidding and operating strategies, or limitations which my be imposed

on him by the Owner or the designer. Therefore, we can only guarantee that URS's engineering work and judgments rendered meet the standard of care of our profession at this time.

This report has been prepared for the Owner solely for their use in designing and assessing the feasibility of constructing the proposed apartment complex. This report has not been prepared for use by other parties of for other uses, and may no contain sufficient information of purposes of other parties.

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TABLES

TABLE 1
LIST OF SIGNIFICANT FAULTS

Fault Name	Fault Type [1]	Approximate Distance to Site (km)[2]	Approximate Fault Length (km) [3]	Estimated Slip Rate (mm/yr.)[4]	Estimated Maximum Credible Earthquake[5]
Palos Verdes	O/RL	6.5	96	3	7.1
Newport-Inglewood Fault Zone (onshore)	RL	10	64	1	6.9
Santa Monica	O/LL, R	7.4	28	1	6.6
Hollywood	O/LL, R	13	17	1	6.4
San Andreas Fault System (1857 rupture)	RL	73	345	35	7.8

(1) RL = Right Lateral Strike-Slip Fault; O/RL = Oblique Right-Lateral Fault; O/LL = Oblique Left-Lateral Fault; R = Reverse Fault

(2) Distance estimated from "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada..." (International Conference of Building Officials, 1998).

(3) Fault lengths taken from Petersen *et al.* (1996).

(4) Slip-Rates from Fault Table from Project 97 Ground Motion Project (Petersen *et al*, 1996). Plus and minus factor not included in table.

(5) Maximum credible earthquake values reported as maximum moment magnitude from Petersen *et al.* (1996), and calculated from relationships derived by Wells and Coppersmith (1994).

TABLE 2
REVIEW OF AERIAL PHOTOGRAPHS
SITE USE HISTORY

Date	Flight	Reviewed in 1988?	Frames	Comments
January, 1928	C-164	Yes	13, 14	The site (Parcels A and B) is located within natural lagoon and tidal marsh environments, at and slightly above high tide levels. Tidal channels of Ballona Lagoon meander around and through the site. The tidal channel crosses Parcel A along its southern boundary and continues to the east before turning back to the northwest and crossing the northeast corner of Parcel A. The tidal channel continues its northwest trend into Parcel B, then loops back to the east and exits the site at the northeast corner of Parcel B. Subsidiary narrow tidal channels trend eastward from the approximate center of Parcel A and merge with the main channel east of Parcel A's boundaries. A linear east-west trending feature is visible immediately north of the north boundary of Parcel B, and appears to be the shallow northern margin of the tidal channel as it trends east into Los Angeles Lake.
1928	C-300	No	J-288, 289, 290	No observed changes from above description.
January 22, 1936	C-3874	No	11,12, and 13	Between 1928 and 1936 the site was explored and developed for oil production. A previous record search of well records from the California Department of Conservation, Division of Oil and Gas in Long Beach, California indicates that oil wells were developed on the site during 1930. The oil well designated as the County of Los Angles–Ohio Recreation Gun Club ("Ohio R.G.C.") No. 1 is located within the northwest portion of Parcel B and oil well Ohio R.G.C. No. 2 is located approximately 550 feet to the southeast in the west-central portion of Parcel A. A tank farm consisting of 12 tanks (2 rows with six tanks in each row) with an approximate diameter of 25 feet and 3 smaller tanks with an approximate diameter of 10 to 15 feet is located in the center of the site and straddles the boundary between Parcel A and Parcel B. Parcel A contains four additional tanks and several structures located within the southwest corner, a sump immediately south of the tank farm, and two additional sumps further south and north of Ohio R.G.C. No. 2 well. A structure and associated piping are located along the western boundary at the intersection between Parcel A and Parcel B. In Parcel B a structure is located adjacent to Ohio R.G.C. No. 1 well in the northwest corner of the parcel. Topographic lows are apparent along the

TABLE 2 (cont.)
REVIEW OF AERIAL PHOTOGRAPHS
SITE USE HISTORY

January 22, 1936 (cont.)	C-3874	No	11, 12, and 13	(continued) north and east portions of Parcel B, and in the southeast corner of Parcel A. A berm surrounds the tank farm and merges with another berm that runs along the east boundary of the entire site, separating the infrastructure from the main tidal channel. This berm trends essentially north-south along a pre-existing topographic break, with higher topography to the west and lower topography to the east. A construction/staging yard is set up east of the tidal channel in the northeast corner of Parcel B. Four oil wells exist west of the site and east of Grant Canal, and a tank farm with 5 tanks is located west of the site in the area of future Via Dolce. Also noted, is that the oil well development is concentrated west of the site and south of the east-west lineament (described in 1-1928 description) along the north portion of the site. After review of Castle (1960), it appears that the well development is concentrated along a north–northwest trending ridgeline or along its trend.
May 1936	C-3967	Yes	1 and 2	No stereo coverage. Site appears graded. Similar structures on site as described for January 22, 1936 above, and matches previous 1988 site description, except that Ohio R.G.C. No. 2 well was already drilled in 1936 photographs. The soil southeast of the main sump appears to be darkly discolored in a narrow band from the sump southeast towards the main tidal channel on the eastern boundary of Parcel A. The dark discolored surface stops or is truncated at the berm that separates the developed portion of the site from the tidal channel. Within the low area along the east boundary and southeast corner of Parcel A white brine (salt) deposits are visible. Apparently this area fluctuates from being submerged at higher tides to emergent during low tides. A cone-shaped depression is more pronounced within the topographic low area than previously observed in the north-central portion of Parcel B.
December 13, 1937	C-4915	No	11 and 12	Stereo coverage does not cover entire site, low area in southeast corner of Parcel A is inundated with tidal water. The cone-shaped depression in north portion of Parcel B is not as apparent, possibly tidal water within low area here also.
April 1, 1938	C-5084	No	16, 17, 18, and 26, 27, 28	High altitude photograph, hard to distinguish details of site. Ohio R.G.C. No. 1 in northwest portion of Parcel B has been abandoned.

TABLE 2 (cont.)
REVIEW OF AERIAL PHOTOGRAPHS
SITE USE HISTORY

May 1940	C-6330	Yes	29, 30, 31, and 35, 36, 37	1988 (WCC) site description in error. 1988 description states oil operations are in full operation, but actually, operations are on the decrease. No wells in operation-both abandoned, southern two (2) tanks of west row have been removed from tank farm. Construction yard that was located southeast of site,-east of tidal channel, is now gone. "V"-shaped surface drains drain east into main tidal channel across eastern portion of Parcel A (as stated in 1988 description). These drains are in same location as subsidiary tidal channels recognized in 1928 photographs, but are straight and appear to have been partially completed. Photographs confirm that both wells have been abandoned by this date.
August 1, 1946	C-10622	No	1:13, 14, 15, and 28, 29, 30.	Primarily viewed photograph frames 14 and 15. Four (4) tanks have been removed from the north end of east row; only six (6) tanks now remaining in tank farm. Structures removed from northwest area of Parcel B. Vegetation apparent in low area within north portion of Parcel B. New buildings located in old construction yard east of site.
1946-1947	C-10890	Yes	31 and 32	Area in northwest corner of Parcel B where structures and well were located appears to have been excavated or scraped.
1947	C-11023	No	3:73, 74, 75 & 3:56, 57, 58	No observed changes from 1946/1947 C-10890 photographs.
October 21, 1949	C-14180	Yes	3:21, 22, 23, and 67, 68, 69	Only three (3) tanks remaining in tank farm. Buildings in Parcel A all gone except for one in southwest corner. Sand appears to be covering west side of site. A new structure has been constructed in construction yard in northeast portion of Parcel B, east of tidal channel.
July 1953	C-19375	Yes	3:31, 32, and 4-34, 35	Only two (2) tanks remain in tank farm. Sumps appear to be partially covered.
January 27, 1956	C-22403	Yes	18 and 19	All tanks and structures removed from site, except for tank farm pad and sumps. Sump areas are partially vegetated.
November 24, 1956	C-24385	No		Marina del Rey constructed, the site has been covered with fill and graded over. Site changed from being a topographic low area to a topographically high area. There is still a break in topography along east-central portion of Parcel B, being lower to east. Via Marina and Via Dolce constructed. No structures on site, Marina in early phases of use, additional construction to take place.

TABLE 3
SUMMARY REVIEW OF EXISTING GEOTECHNICAL DOCUMENTS

Location	Focus of Report	Findings
Parcel B, subject site (Frankian, 1971)	1) Review of Grading Plan 2) 3-story apts. over concrete subterranean garages 3) One high-rise	1) Removal and recompaction of at least 7 feet (min 5 feet below footings) 2) High-rise structure to be supported on drilled piers
Parcel B, subject site (Frankian, 1972a)	1) Summary of Construction Observations (Compaction Tests)	1) Fill acceptable for Shallow Foundations 2) Minimum relative compaction of 90%
Parcel B, subject site (Frankian, 1972b)	1) Proposed Tower 2) Verifying pile capacities by drilling two additional borings	1) Driven Piles
Via Marina and Tahiti Way (LeRoy Crandall, 1982)	1) Proposed Marina Plaza Hotel	1) No faults known to exist at site 2) Possibility of liquefaction 3) Soils not suitable for spread footings (settlement and liquefaction) 4) Driven friction piles recommended
13940± and 13960± Panay Way (Earth Systems Consultants, 1996)	1) Proposed Panay Apartment and Senior Development Complex	1) Upper 10-12 feet of soil is poorly compacted fill. 2) Groundwater at 12 feet 3) No known active fault on site 4) Seismically induced settlement may occur 5) Driven piles through upper soils
East end of Marquesas Way, Southeast corner of Panay Way and Via Marina (LAW/LAWGibb, 2000)	1) Proposed seven-story apartment buildings	1) Fill soils upper 7 feet. 2) Groundwater at elevation 0 to +5 feet (depth 6 to 15 feet) 3) Existing fill not suitable for shallow foundations 4) Upper soils are liquefiable 5) Driven concrete piles down to dense sand/gravel at elev. –21 to –28 feet
Marquesas Way and Via Marina (Bagahi Engineering, 2000)	1) Neptune Marina Apartment Complex	1) Fill extends to 10 to 15 feet 2) Groundwater elev. from +3.5 to –1.3 feet 3) High likelihood of liquefaction, and resulting displacements
Marina Del Rey Apartment Community (Unknown, 2000)	1) Draft EIR 2) Based mostly on LAW/LAWGibb's report (2000) above.	1) No known active faults mapped at site. 2) Site subject to soil liquefaction and seismically induced settlement 3) Pile foundations are anticipated 4) Provide at least 2 to 3 feet of gravel beneath floor slabs 5) Lowest basement floor slab to be structurally supported

TABLE 4
CAPACITIES OF LATERALLY LOADED SINGLE PILES[1] FOR 1/2-INCH MAXIMUM DEFLECTION

Horizontal Load Applied at Pile Head							
Single Square Pile Dimension		**12 inches**		**14 inches**		**18 inches**	
Pile Head Condition		**Free**	**Fixed**	**Free**	**Fixed**	**Free**	**Fixed**
Pile Head Deflection, Δ_{ind} [2]	in/kip	0.089	0.050	0.078	0.043	0.065	0.034
Bending Moment at Pile Head	kip-ft/kip	0	-4.9	0	-5.5	0	-6.8
Depth to Moment Inflection	feet	N/A [3]	8	N/A	9	N/A	10
Maximum Bending Moment in Pile Shaft	kip-ft/kip	3.3	1.4	3.7	1.6	4.6	2.4
Distance from Pile Head to Maximum Bending Moment in Pile Shaft	feet	8	15	9	16	12	20
Depth to Zero Moment	feet	21	27	24	29	29	31
Pile Head Rotation	rad/kip	8.5E-3	0	6.8E-4	0	4.6E-4	0
Maximum Design Load[4]	kips	6	11	6.5	12	8	16

Moment Applied at Pile Head				
Single Square Pile Dimension		**12 inches**	**14 inches**	**18 inches**
Pile Head Condition		**Free**	**Free**	**Free**
Pile Head Deflection, Δ_{ind} [2]	in/kip-ft	9.2E-3	7.4E-3	5.0E-3
Positive Bending Moment at Pile Head	kip-ft/kip-ft	1	1	1
Depth to Moment Inflection	feet	18	19	21
Maximum Negative Bending Moment in Pile Shaft[3]	kip-ft/kip-ft	-7.7E-2	-7.6E-2	-5.6E-2
Distance from Pile Head to Maximum Negative Bending Moment in Pile Shaft	feet	21	23	26
Depth to Zero Moment	feet	30	32	36
Pile Head Rotation	rad/kip-ft	1.6E-4	1.2E-4	6.4E-5
Maximum Design Moment	kip-ft	55	70	100

Notes:

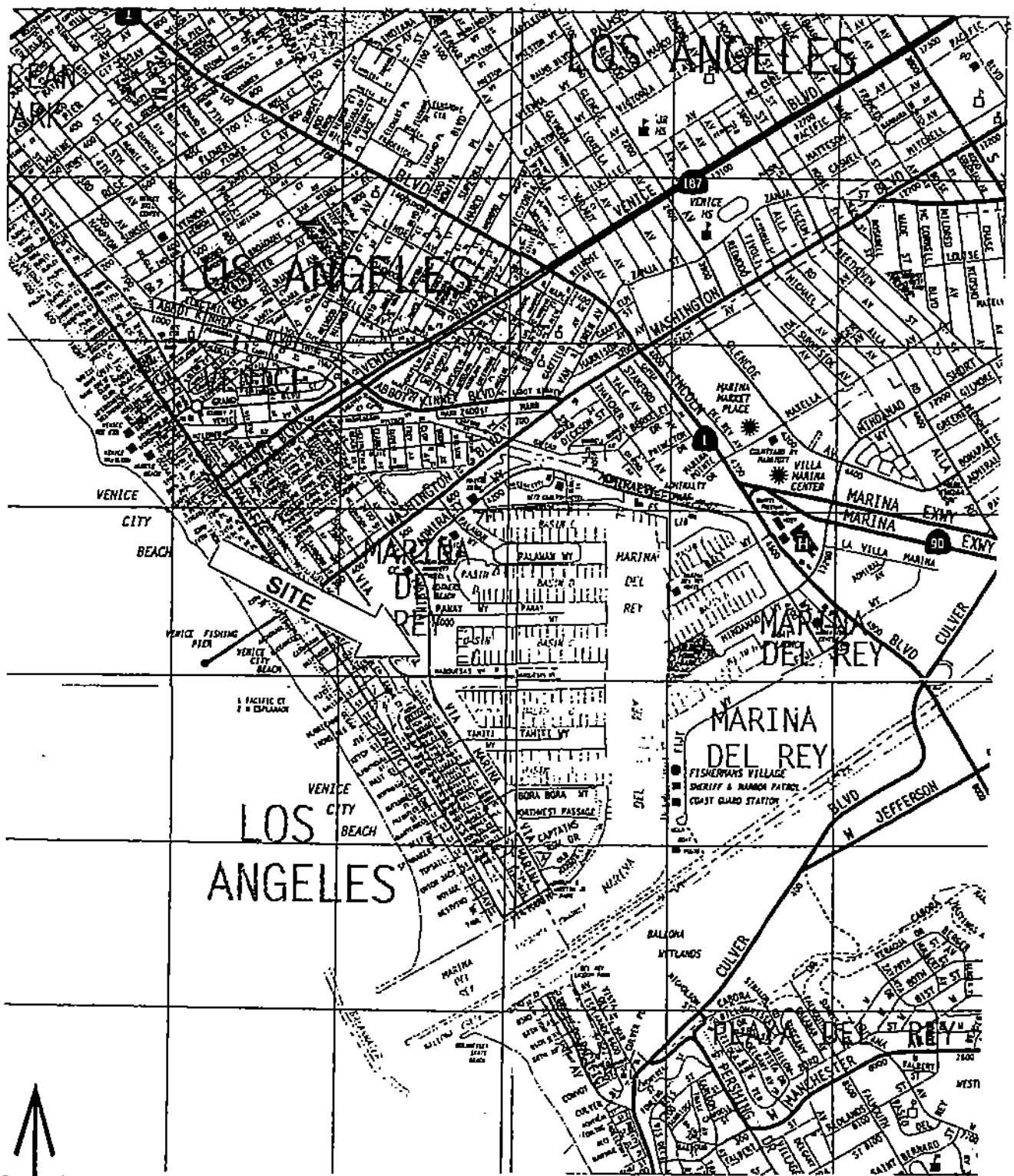
(1) Results are applicable to a single pile, or single unconnected piles spaced no closer than 3 diameters, center-to-center. The analysis assumes that piles are fully embedded in native material, that the top of pile is 12 feet below the existing ground surface (i.e., 2 feet below finish slab grade), and that the adjacent grade is horizontal. The analysis also assumes a minimum concrete strength (f'_c) of 5,000 psi, and a maximum deflection of ½ inch at the head of the pile.

(2) Deflections of pile groups with center-to-center spacing of approximately 3 diameters, assuming equal loading of all piles, can be calculated by the following equations: For loading parallel to the piles, $\Delta_{group} = (1+0.3[n-1])\Delta_{ind}$; for loading perpendicular to the piles, $\Delta_{group} = (1+0.15[n-1])\ \Delta_{ind}$; where, n = number of piles in pile group and Δ_{ind} = deflection calculated for a single pile.

(3) N/A indicates not applicable because the bending moment does not change sign over the pile length.

(4) Indicates the maximum design load up to which the values indicated in the table are valid. Deflections and resulting moments due to applied horizontal loads and applied moments are additive; when combined, the maximum allowable loads/moments for a total of ½ inch deflection may be less.

FIGURES



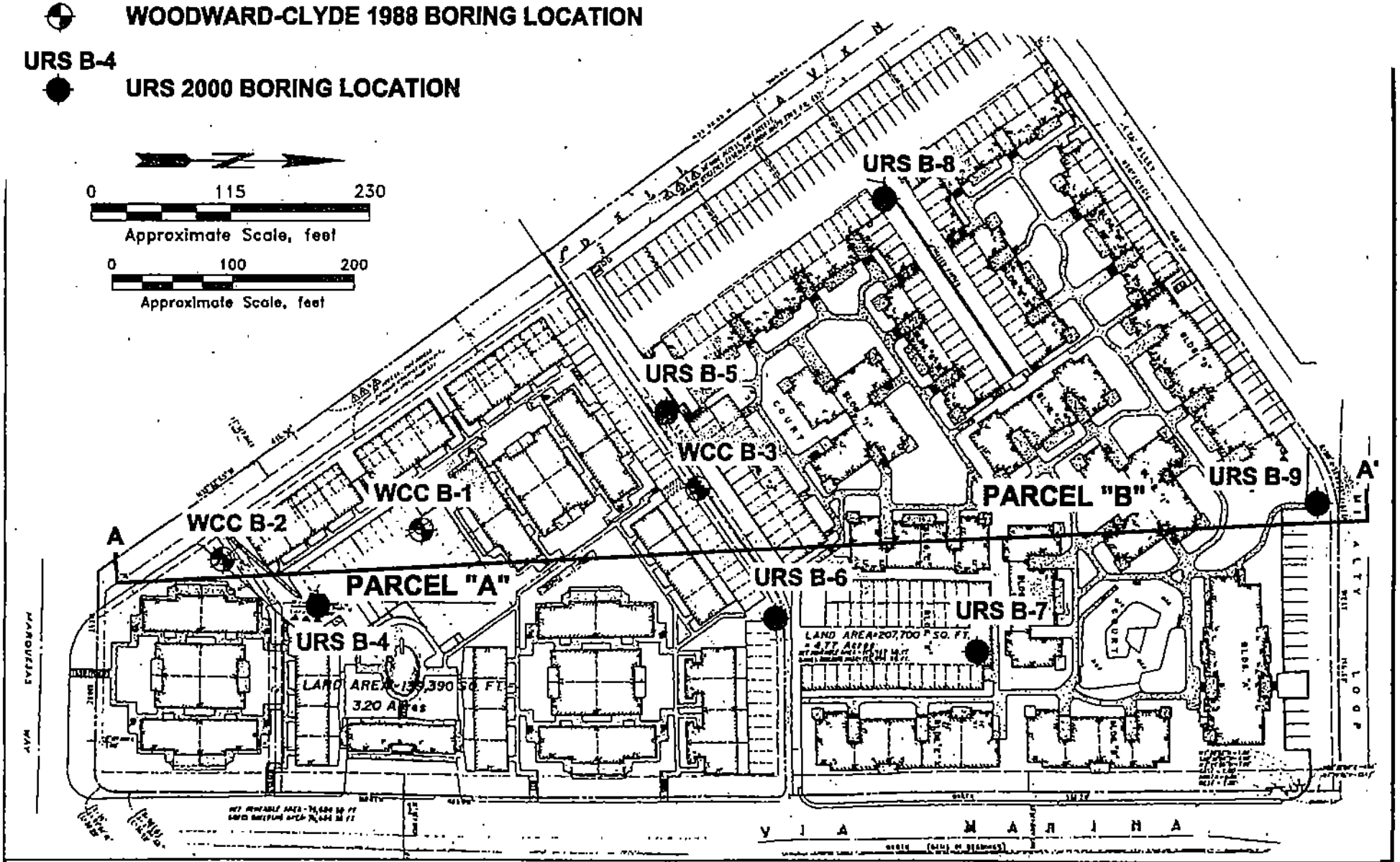
Site Location Map

Project No.	Date: June 2000	Project: Del Rey Shores	Fig. 1

URS Corporation

WCC B-2
WOODWARD-CLYDE 1988 BORING LOCATION

URS B-4
URS 2000 BORING LOCATION

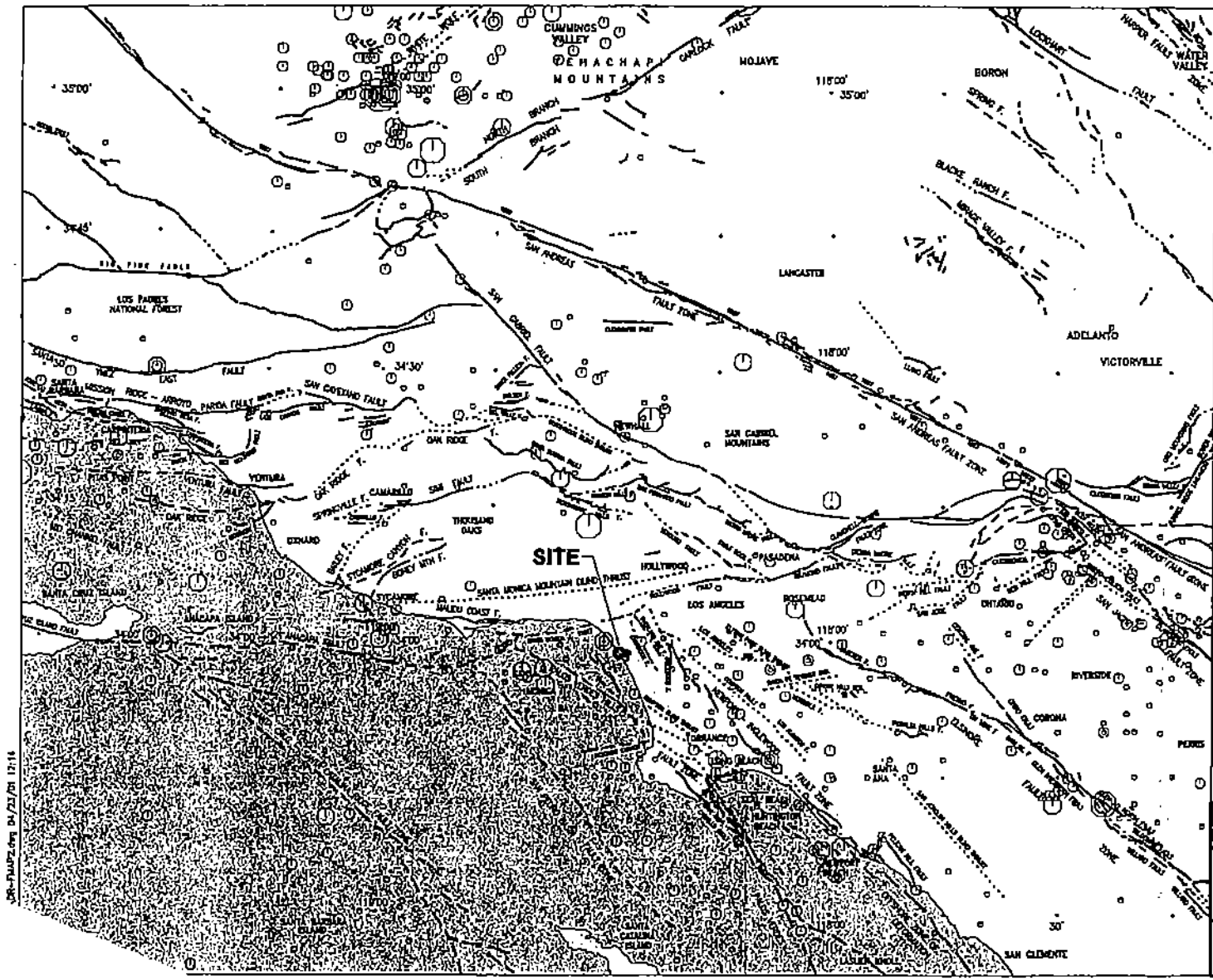


SITE PLAN

Project No.: 5700012019.01	Date: June 2000	Project: Del Rey Shores	Fig.: 2

03/15/01

URS



0 20 40

APPROXIMATE SCALE, kilometers

LEGEND

REPORTED EARTHQUAKE MAGNITUDES.

- 3.5 TO 3.9
- 4.0 TO 4.9
- 5.0 TO 5.9
- 6.0 TO 6.9
- 7.0 AND GREATER

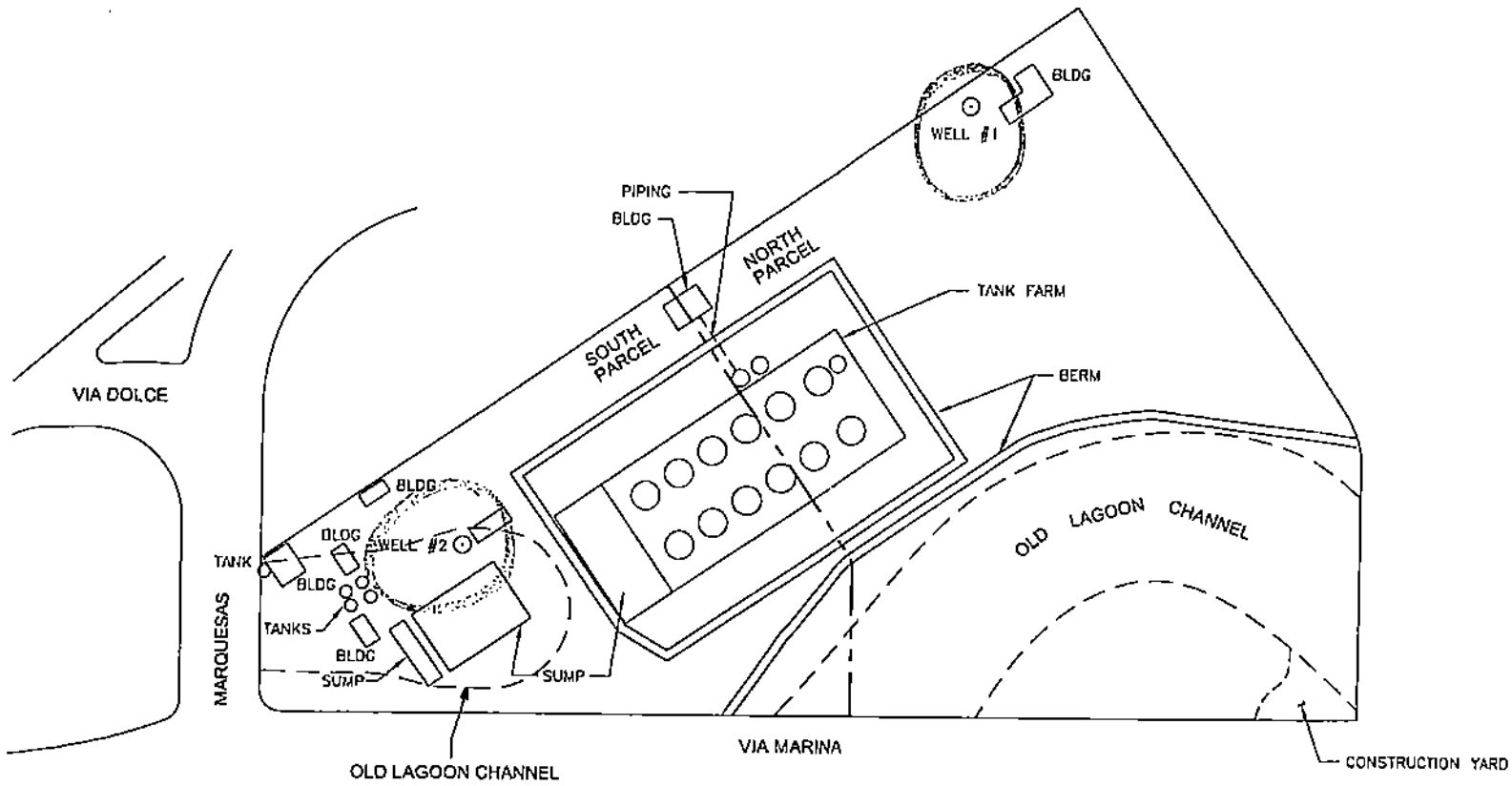
SOUTH OF LATITUDE 35°N, EPICENTER AND MAGNITUDE DATA ARE FROM THE CALTECH EARTHQUAKE CATALOG FOR THE PERIOD FROM 1800 TO JUNE 1994. ONLY EARTHQUAKES OF MAGNITUDE 3.5 AND LARGER ARE SHOWN. AFTERSHOCKS ARE NOT INCLUDED.
NORTH OF LATITUDE 35°N, DATA ARE FROM THE CNSS EARTHQUAKE CATALOG (UC BERKELEY) FOR THE PERIOD FROM 1932 TO DECEMBER, 1998. ONLY EARTHQUAKES OF MAGNITUDE 4.0 AND LARGER ARE SHOWN. SIGNIFICANT AFTERSHOCKS OF THE 1952 KERN COUNTY EARTHQUAKE ARE INCLUDED.

APPROXIMATE LOCATION OF HOLOCENE AND PLEISTOCENE FAULTS, DOTTED WHERE CONCEALED, QUERIED WHERE CONJECTURAL. FAULT LOCATIONS BASED ON: ZIONY AND JONES, 1989; CDMG GEOLOGIC MAP SERIES OF CALIFORNIA, 1977–1986 (1:250,000 SCALE); CDMG GEOLOGIC MAP SERIES, CALIFORNIA CONTINENTAL MARGIN, 1987 (1:250,000 SCALE); HAUKSSON, 1990; SHAW AND SHEARER, 1999; WRIGHT, 1991; AND DOLAN ET AL., 1995; GRANT ET AL. 1999.

URS

REGIONAL FAULT AND EPICENTER MAP

Proj. No.: 57-00012019.01	Date: APR. 2001
Project: DEL REY SHORES	Figure: 3



NOTE: ALL LOCATIONS FOR HISTORIC OIL FIELD OPERATIONS ARE APPROXIMATE AND ARE ESTIMATED FROM INTERPRETING AERIAL PHOTOGRAPHS. THE LOCATION OF THE OLD LAGOON CHANNEL(S) IS BASED ON HISTORIC TOPOGRAPHY (CASTLE, 1960) AND INTERPRETATION OF AERIAL PHOTOGRAPHS.

0 50' 100' 200' 400'

SCALE: 1"=100'

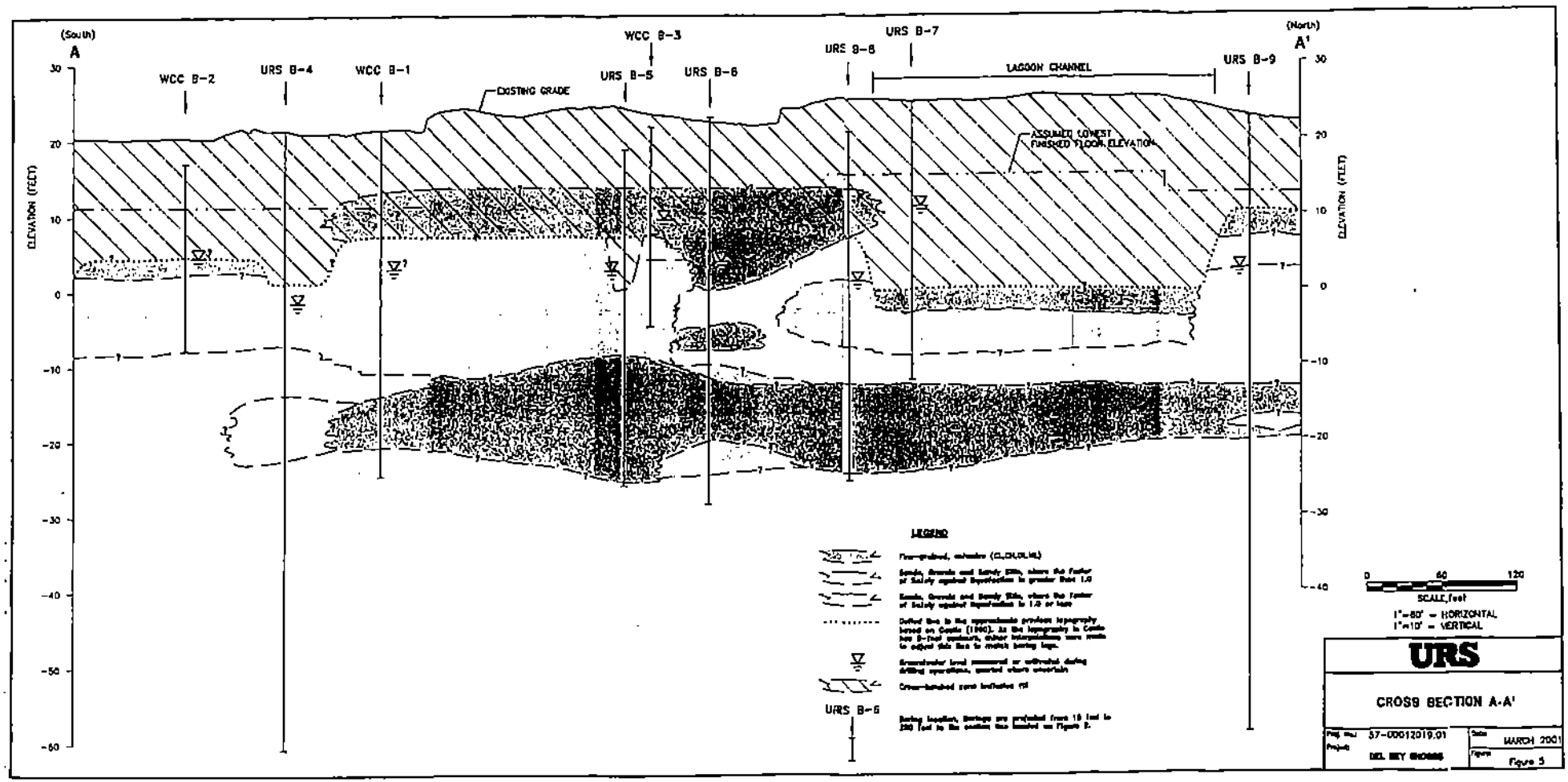
URS Corporation

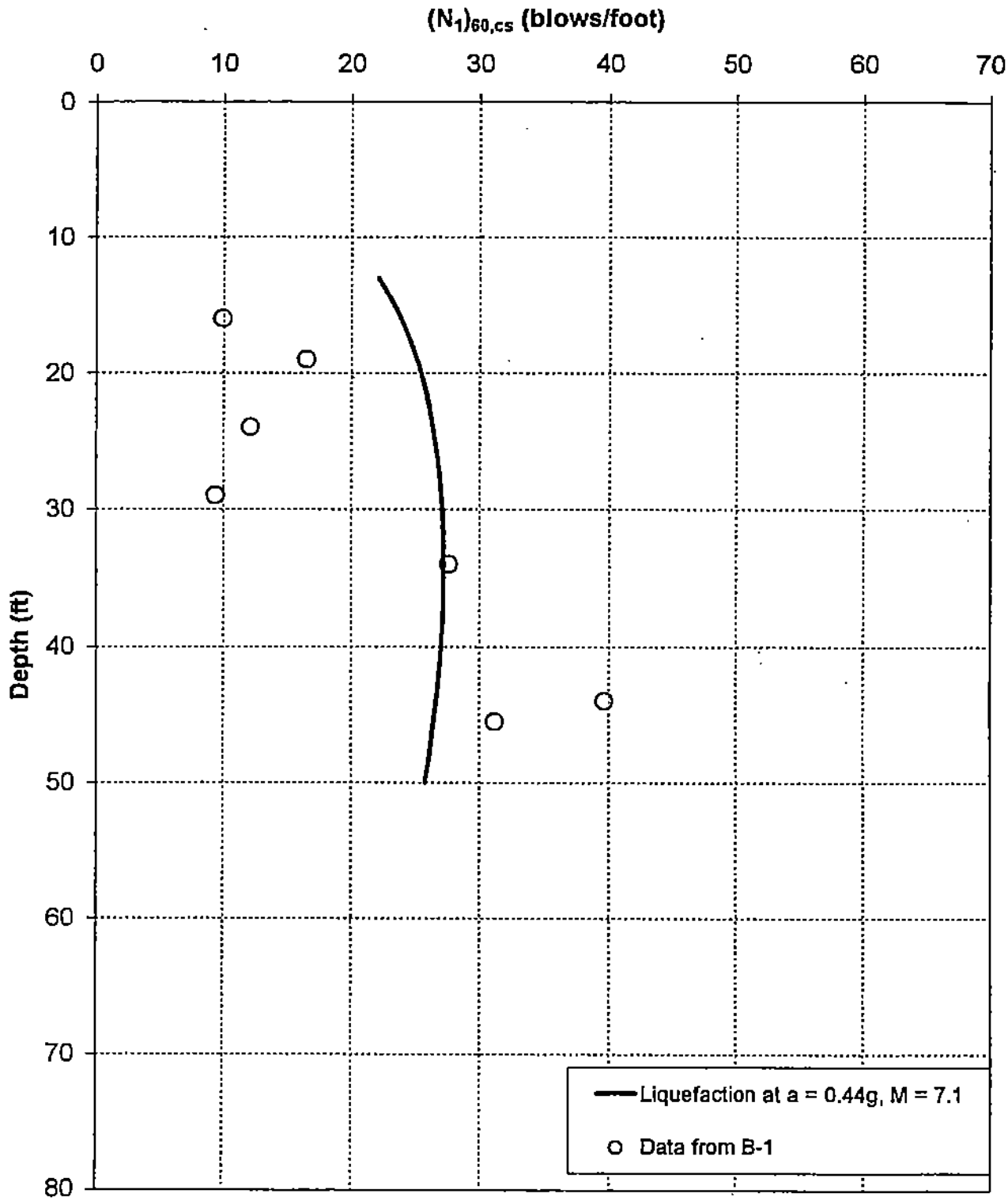
HISTORIC SITE USE

Proj No.: 57000120019.01
Project: DEL REY SHORES

Date: MARCH 2001
Figure: 4

I:\57001201901\FIGURE 3.DWG

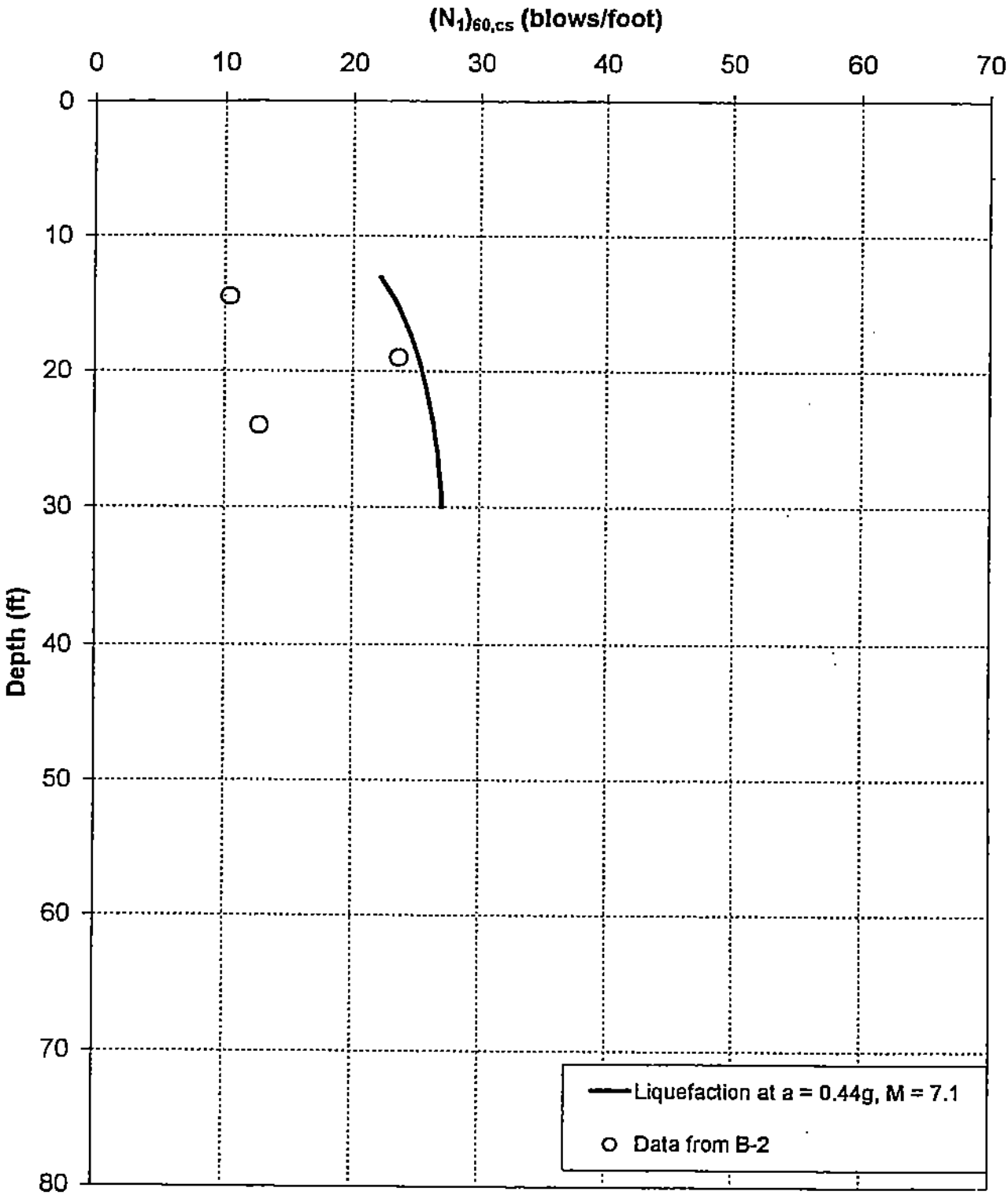

(South)
A
(North)
A'
WCC B-2
URS B-4
WCC B-1
WCC B-3
URS B-5
URS B-6
URS B-8
URS B-7
LAGOON CHANNEL
URS B-9
EXISTING GRADE
ASSUMED LOWEST FINISHED FLOOR ELEVATION
ELEVATION (FEET)
30
20
10
0
-10
-20
-30
-40
-50
-60
LEGEND
URS B-6
0
60
120
SCALE, Feet
1"=60' = HORIZONTAL
1"=10' = VERTICAL
URS
CROSS SECTION A-A'
57-00012019.01
MARCH 2001
DEL REY DOWNS
Figure 5



"Clean Sand" Corrected Blow Counts versus Depth, WCC B-1

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 6

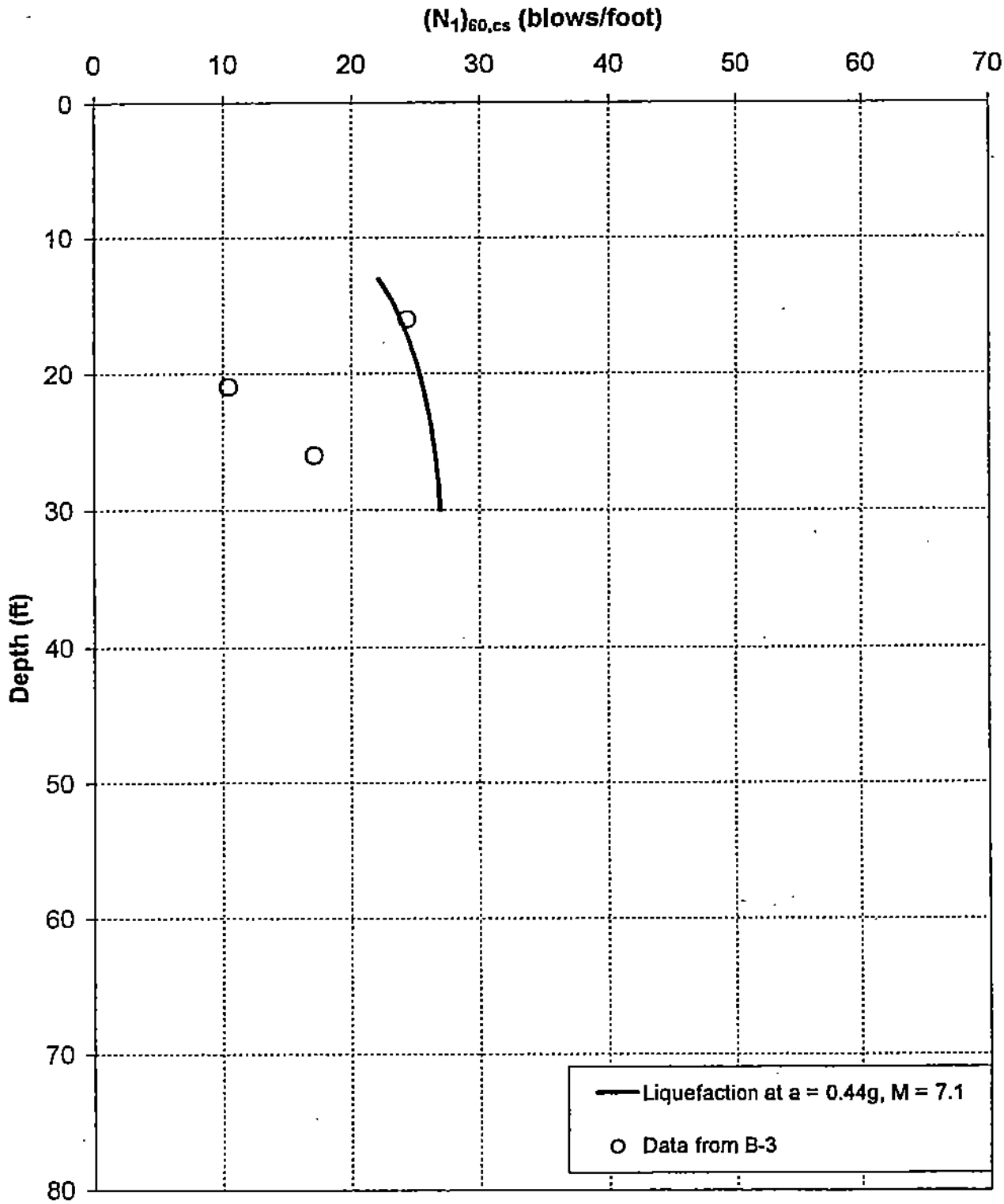
URS



"Clean Sand" Corrected Blow Counts versus Depth, WCC B-2

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 7

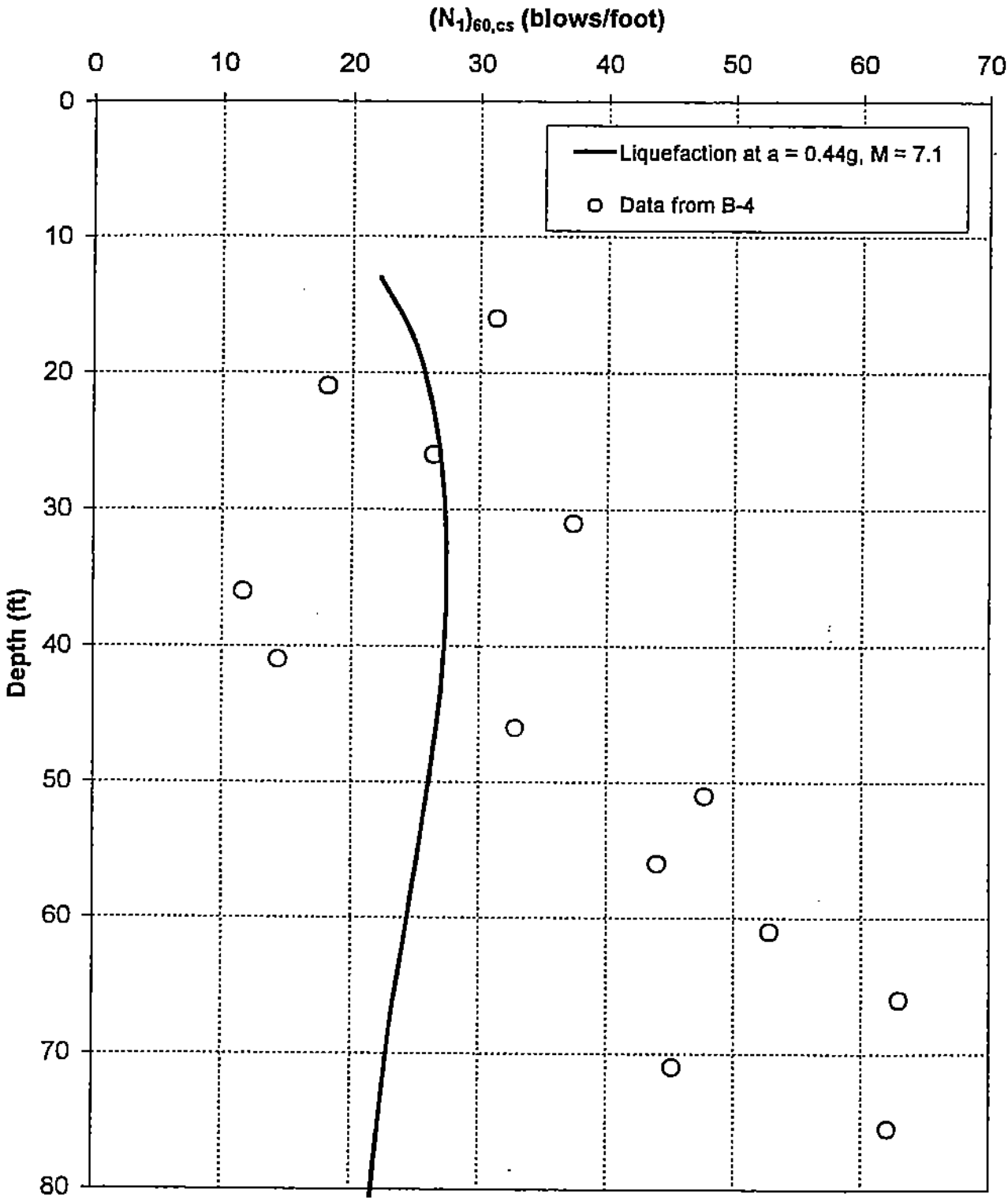
URS



"Clean Sand" Corrected Blow Counts versus Depth, WCC B-3

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 8

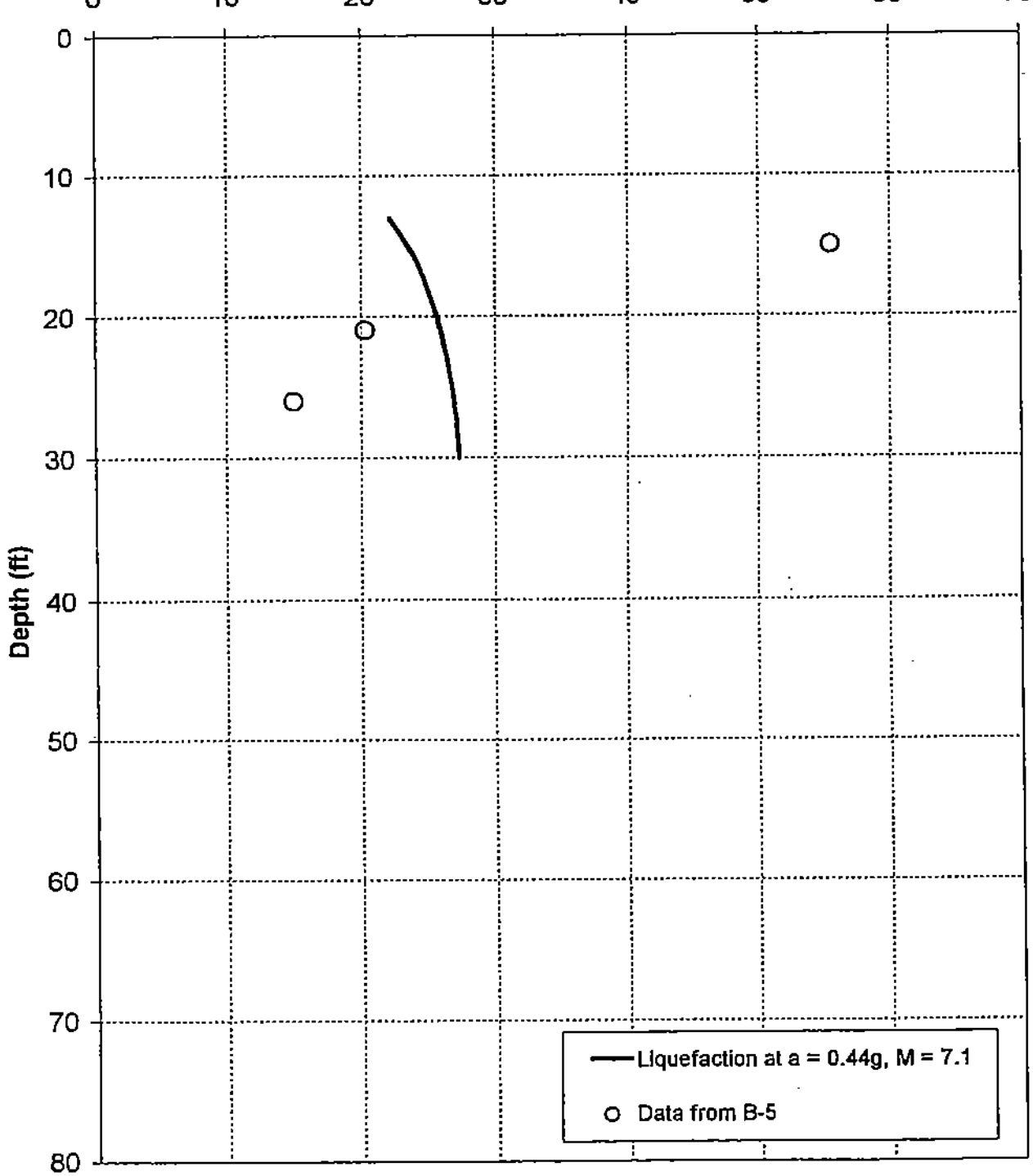
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-4

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 9

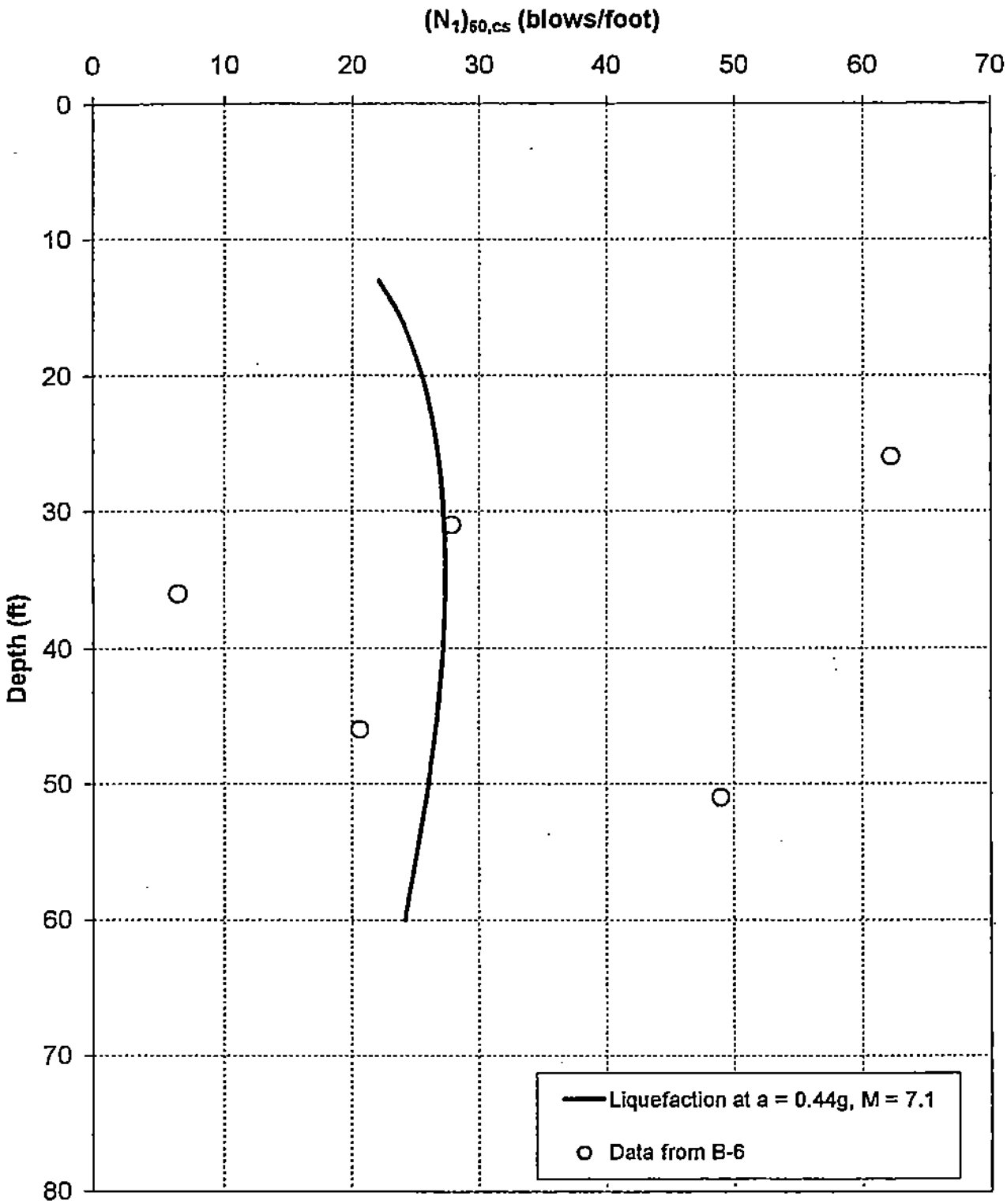
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-5

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 10

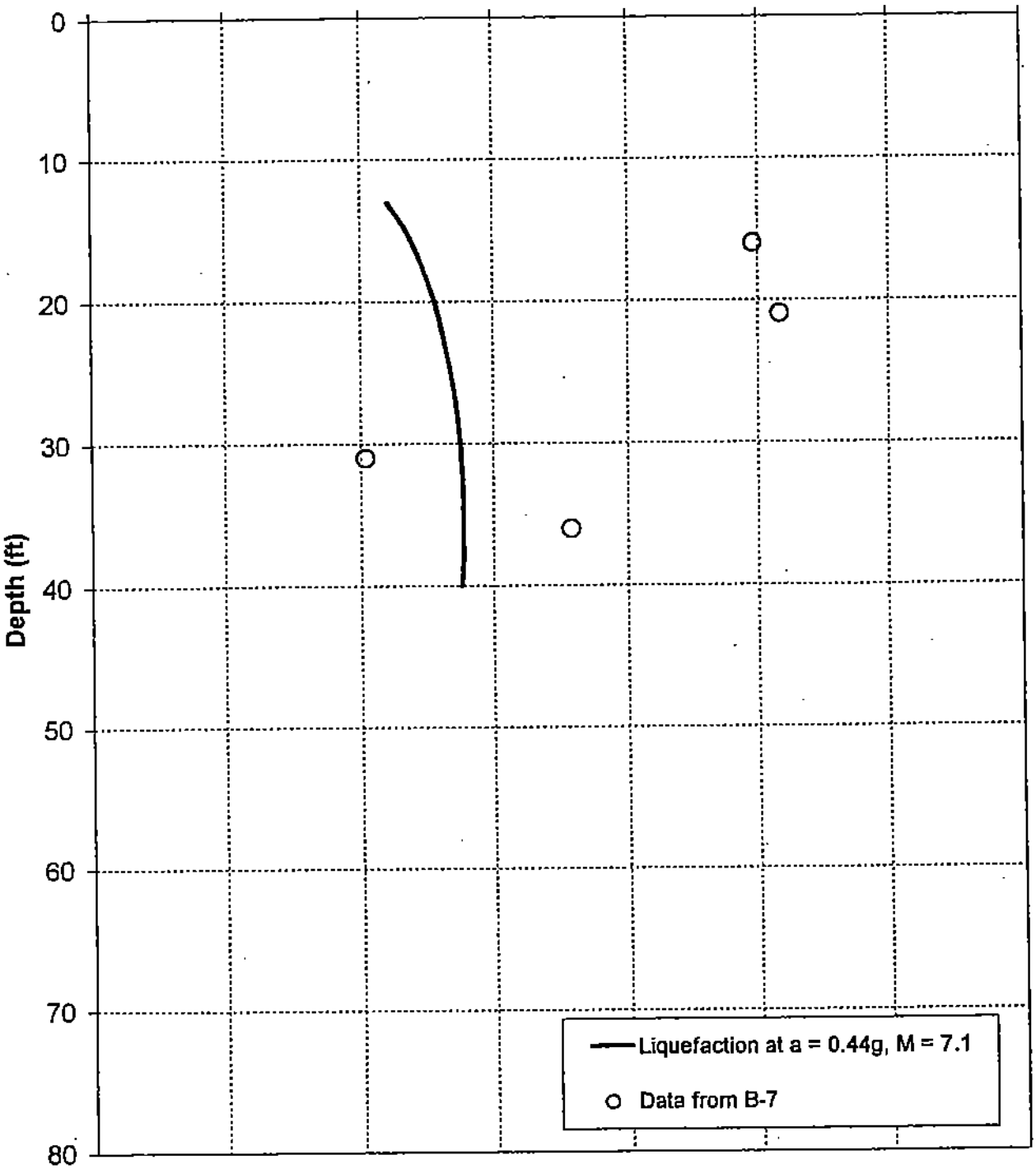
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-6

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 11

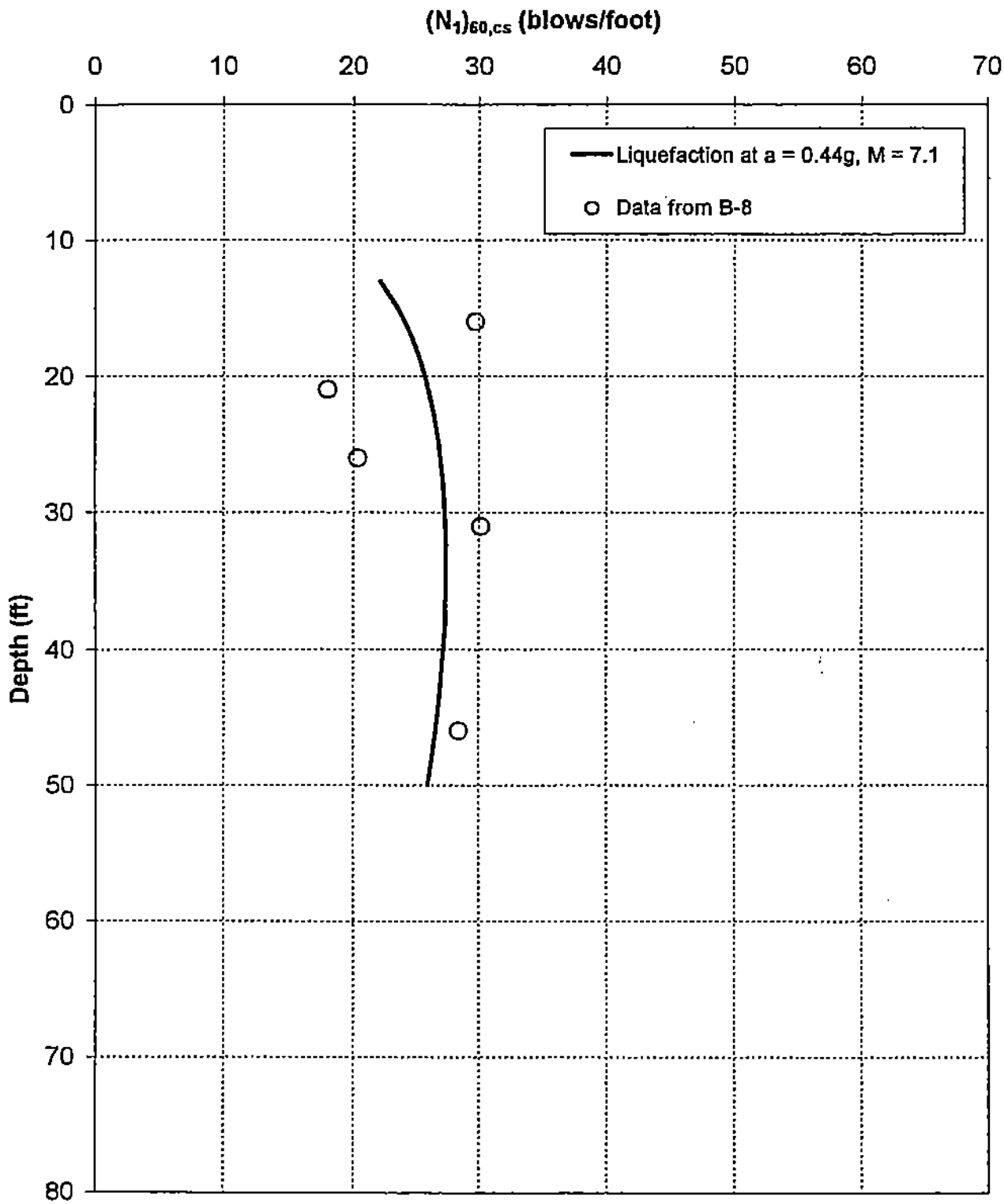
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-7

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 12

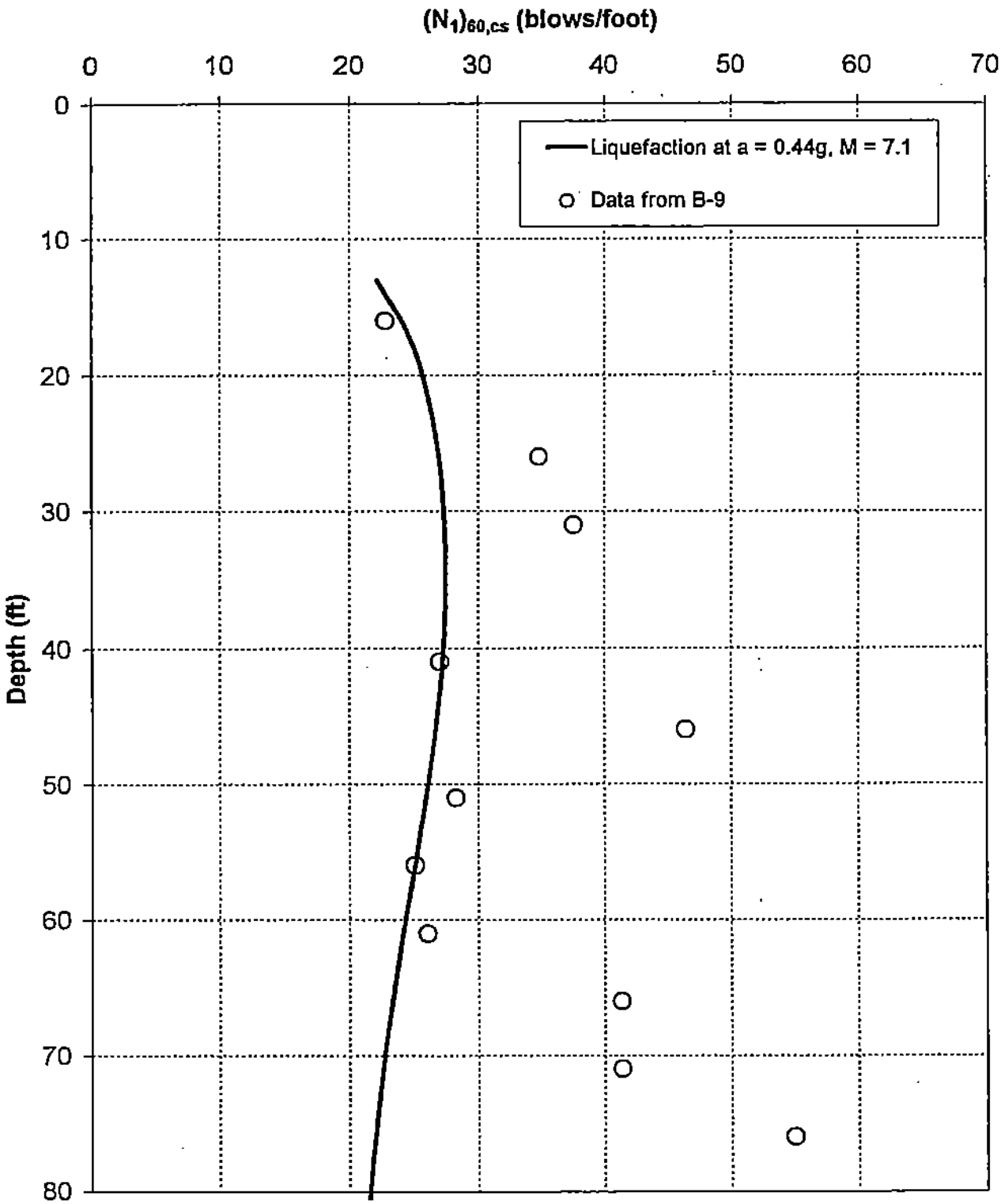
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-8

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 13

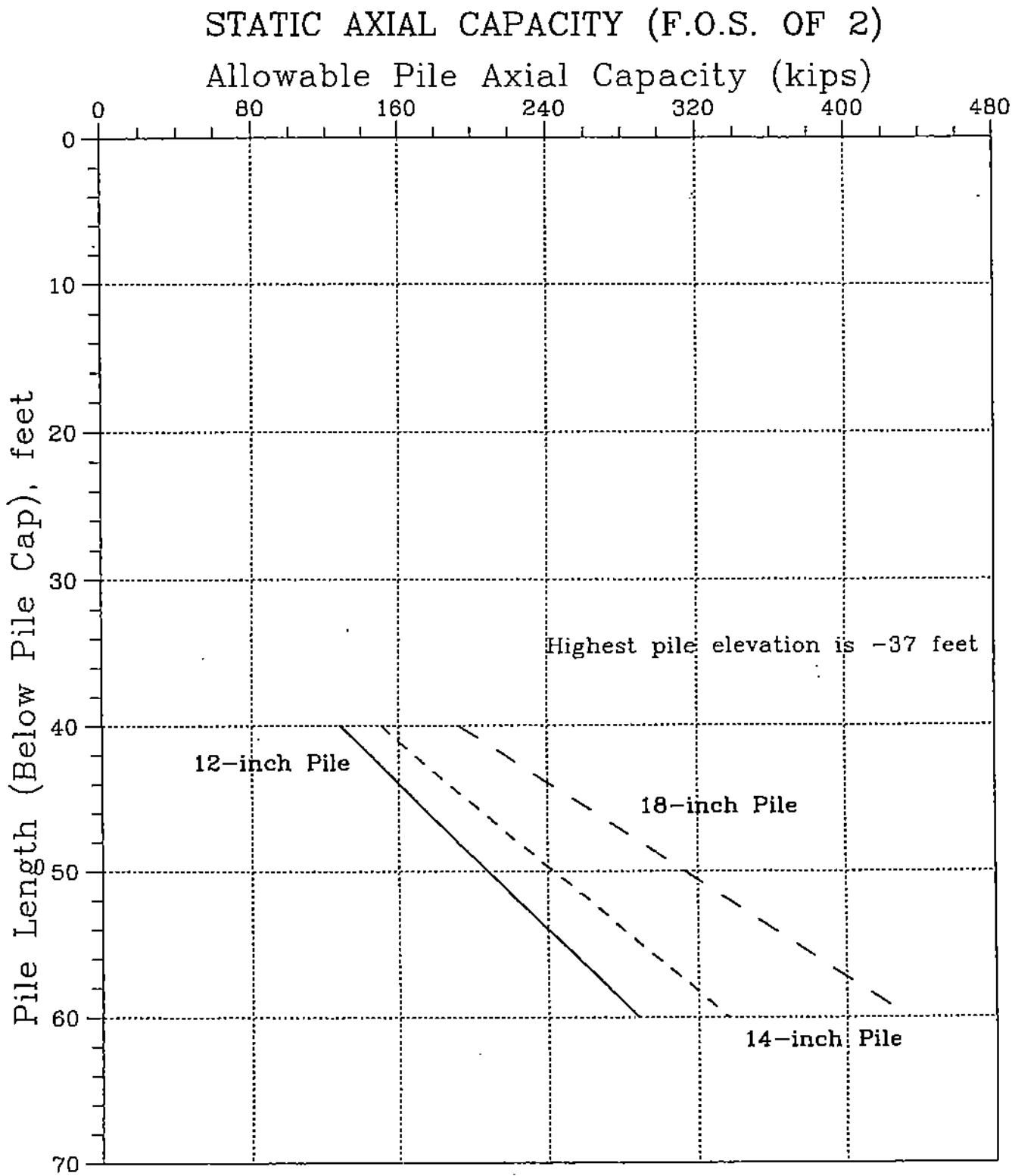
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-9

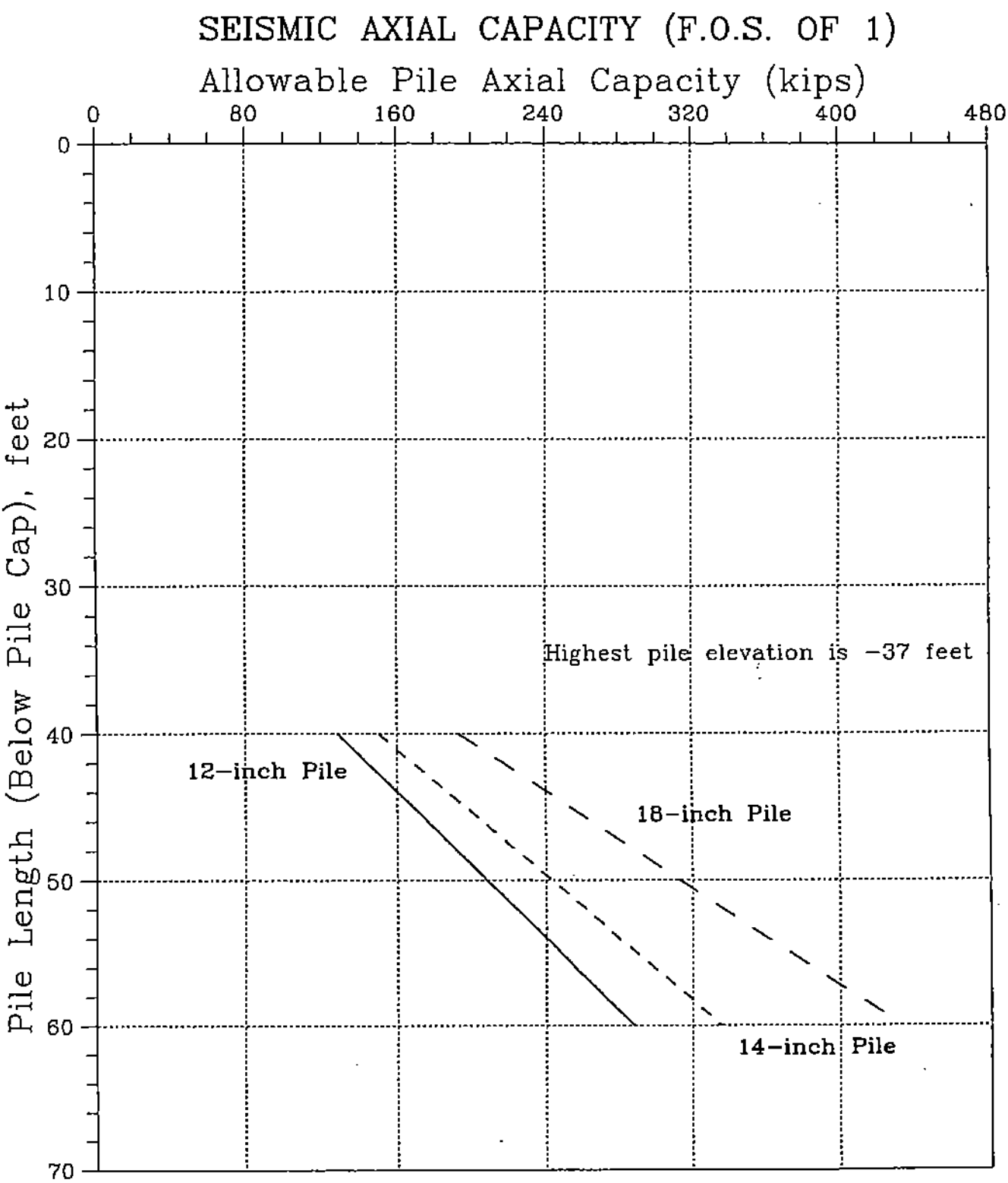
Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 14

URS



Notes: 1) Capacities indicated assume a top of pile at about 12 feet below existing grade
2) Capacities shown are for single piles

Pile Axial Capacity, Static Loads Figure 15



Notes: 1) Capacities indicated assume a top of pile at about 12 feet below existing grade
2) Capacities shown are for single piles

Pile Axial Capacity, Seismic Loads Figure 16

Appendix A
Field Investigation

Field Exploration

The field investigation in 1988 was conducted on April 25 and consisted of advancing three exploratory borings, designated WCC B-1 through WCC B-3, to depths of 46, 24.5, and 26.5 feet below the existing ground surface, respectively. The exploratory borings were advanced with a truck-mounted Mobile B-61 drill rig using conventional rotary wash techniques with a nominal 3-7/8 inch diameter drill bit. Drilling was performed by A&R Drilling, Inc., of Carson, California, now located in Gardena, California.

To prevent cave-in of the cohesionless soil or soil below water, a drilling fluid product, EZ-MUD™ a heavy liquid slurry, was used in the borings as the borehole was drilled. This drilling fluid is an anionic polymer emulsion and, according to the manufacturer's brochure, is non-toxic.

For the current 2000 investigation, 6 rotary wash borings, designated URS B-4 through URS B-9, were advanced on July 17, 18, and 20, 2000 using a Mayhew 1000 drill rig equipped with a 5-inch diameter tricone bit. These borings were advanced by A&W Drill Rentals (now replaced by C&L Drilling) of La Habra, California. A similar drilling fluid product was also employed to advance the borings to depth. The depths of the borings ranged from 36½ to 81½ feet below existing grade. The borings were backfilled with a cement-bentonite grout and covered with asphalt cold patch or a steel hole cover (URS B-9).

URS personnel observed drilling operations, prepared boring logs, and obtained samples for laboratory observation and testing. Final boring logs were prepared based on the field logs, results of laboratory observations, and testing of selected soil samples. The key to the boring logs together with the final boring logs are presented in Figures A-1 through A-12. The existing ground elevations were not surveyed, but were estimated using as-built data obtained in July 2000 from Del Rey Shores. The approximate boring locations are shown on the Site Plan, Figure 2.

Sampling Methods

Subsurface soil samples were obtained from the exploratory borings at intervals of about 5 feet. Driven soil samples were obtained using either a Standard Penetration Test sampler (SPT, also known as a split spoon sampler), or a modified California (MC) sampler. The MC sampler has a nominal outside diameter of 2.5 inches. The cutting shoe and the barrel of the MC sampler have nominal inside diameters of 1.94 and 2 inches, respectively. The sampler barrel was lined with

brass tubes to retain soil samples. Plastic end caps were used to seal the samples to help preserve the natural water content.

The cutting shoe and the barrel of the SPT sampler have nominal inside diameters of 1.375 and 1.5 inches, respectively. Barrel liners were not used. The nominal outside diameter of the SPT sampler is 2 inches. Upon completion of observations and recording on the field boring log, the disturbed samples from the SPT sampling tube were placed in plastic bags and sealed to help preserve the natural moisture content.

The driven samples were obtained by driving the samplers a total length of 18 inches into the soil using a 140-pound doughnut hammer falling 30 inches, using a rope-and-cathead system. The number of blows required to drive the sampler was recorded for every 6 inches of penetration of the 18-inch drive. The blows/foot reported on the boring logs represent the number of blows required to drive the sampler the final 12 inches of the nominal 18-inch drive. When the final penetration increment was less than 6 inches, the increment length was recorded to the nearest inch. The first 6-inch increment of penetration is generally considered to be a "seating interval," in the more highly disturbed soils at the base of the borehole, and the corresponding blow count is not taken into consideration unless the sampler is not driven a full 12 inches beyond the seating interval. The total number of blows for the last 12-inch penetration, commonly referred to as the "N"-value, is used to reflect the penetration resistance.

The degree of relative density for granular soils and the level of consistency for cohesive soils are generally described on the boring logs according to the following conventional correlation:

Granular Soils		Cohesive Soils	
SPT Blow Counts	Description	SPT Blow Counts	Description
< 4	Very Loose	< 2	Very Soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
> 50	Very Dense	15 - 30	Very Stiff
		> 30	Hard

The relative density and consistency descriptions may deviate from the correlation for a number of reasons, including reliance on other test results or the engineer's judgment based on manual manipulation of the sample, and simplification of the logs to increase readability. It is widely accepted that the above-listed blow count correlation is overly simplistic, and the blow count should be adjusted for other factors, including the effective vertical pressure at the sampling depth and other details of the sampling system (such as hammers, rods, samplers, and techniques

used). The relative density and consistency descriptions are based on unadjusted blow counts recorded in the field and reported on the logs.

In addition to the above, relatively undisturbed soil samples were obtained by pushing a 24- to 36-inch long, thin-walled steel Shelby tube into the soil with a single, continuous motion using the hydraulic system of the drill rig. The Shelby tube has an outside diameter of 3 inches and an inside diameter of 2.87 inches. The top of the sample within the Shelby tube was sealed with an O-ring seal. Each end of the Shelby tube was then covered by taped plastic caps.

Bulk samples of near surface materials were also collected.

The site history review indicates that portions of the property were used for oil field operations (crude oil production and storage). Therefore, health and safety protocols were prepared and followed during the field investigations. During drilling operations, the URS personnel, who were also the acting Site Health and Safety Officers, were at the drilling rig and monitored the work area with an Organic Vapor Analyzer (OVA). Portions of the samples were placed into a plastic bag (the 1988 investigation only used MC samples for this, the 2000 investigation used both MC and SPT samples). The plastic bags were then sealed. After approximately 10 to 15 minutes were allowed for equilibration, the probe of an OVA was inserted into the bag, and the vapor concentration in the headspace was read. The vapor concentration of the breathing zone around the drilling rig was also monitored. The background level readings, as well as headspace readings above background levels, are recorded on the boring logs.

Petroleum hydrocarbon odor was encountered during 1988 field drilling operations at WCC B-1 and WCC B-3. In WCC B-1, dark olive gray, sandy silt with gravel, lenses of peat, clay, and a significant odor was found from 17 to 22 feet below the ground surface. In boring WCC B-3, a layer of gravelly sand to sandy gravel with clay, and trace of petroleum hydrocarbon with a significant petroleum hydrocarbon odor extended from about 14 to 25 feet below the existing ground surface.

Similar odors at similar depths were also encountered during the 2000 investigation. A strong petroleum odor was encountered emanating from the boring URS B-5 between 18 and 19 feet. In this boring, the headspace readings on samples between a depth of 14 and 23 feet ranged from 8 to 10 ppm above background. This material was a black well-graded gravel fill, apparently coinciding with various piping and possibly trenching during the oil operations. In URS B-6, black sandy clay was encountered at 16 feet that had a headspace reading above background of 38 ppm, with a slight sulfur (rotten egg) odor noticed at about 26 feet. In URS B-7, a sulfur odor was noticed at a depth of about 25 feet, with headspace readings of 6 ppm from samples at 21

and 26 feet. In URS B-8, a sulfur odor was noticed at a drill depth of around 23 feet, but no readings above background were measured (there was no recovery of the sample at 21 feet). The strongest odors were encountered in URS B-9 in black sandy clay and clayey sand, starting at about 14 feet in depth and extending to about 20 feet below grade. The headspace in the sample at 16 feet in this boring reached 90 ppm. No odors or headspace readings above background levels were encountered in URS B-4 or WCC B-2.

DATE OF BORING _____ WATER DEPTH _____ DATE MEASURED _____
TYPE OF DRILL RIG _____ HOLE DIAMETER _____
WEIGHT OF HAMMER _____ FALLING _____ SAMPLES _____

DEPTH, FT.	SAMPLES	BLOWS/foot	DESCRIPTION	UNC. COMP. STRENGTH, ksf	MOISTURE CONTENT, %	DRY DENSITY pcf	OTHER TESTS
			SURFACE ELEVATION				
			Medium dense, moist, brown, SILTY SAND (SM) ← Soil Description per the Unified Soil Classification				
5							
	1	17	Modified California Sample				
10	(NR)		(NR) = No Sample Recovered				
	2	20	Standard Penetration Test Sample				

Number of blows required to advance sampler one foot.

Sample Number

OTHER TESTS

CONC – Consolidation Test
PI – Plasticity Index, Liquid Limit and Plastic Limit (the Plasticity Index is given in parenthesis)
WA – Sieve Analysis (the percentage of grains by weight passing the No. 200 Sieve is given in parenthesis)
OT – Organic Content Test in percentage
OVA – Organic Vapor Analyzer head space reading in ppm

NOTES ON FIELD INVESTIGATION

1. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: DEL REY SHORES Project No. 8840197B	KEY TO BORING LOGS	Fig. A–1

DATE OF BORING 4-25-88 WATER DEPTH Below 18' DATE MEASURED 4-25-88
TYPE OF DRILL RIG Mobile B-61, Rotary Wash HOLE DIAMETER 3-7/8 inches
WEIGHT OF HAMMER 140 lbs. FALLING 30 inches SAMPLES Mod. Cal., SPT

DEPTH, FT.	SAMPLES	BLOWS/foot	DESCRIPTION	UNC. COMP. STRENGTH, ksf	MOISTURE CONTENT, %	DRY DENSITY pcf	OTHER TESTS
			SURFACE ELEVATION Approx. 21 feet				
			2" Asphalt concrete pavement.				
			CLAYEY SAND (SC), gravel and debris. (FILL)				
			Medium dense, moist, dark brown fine SAND (SP) with some shell [Fill]				
	1	21					WA(18) OVA(0)
5	2	20					WA(26)
			Very loose, moist, dark olive gray SANDY SILT (ML-OL) with shell fragments. [Fill]				
10	3	2			43		WA(66)
			Rock and gravel encountered.				
			Loose, moist to wet, dark olive gray CLAYEY fine SAND (SC) with peat and gravel.				
15	4	6			26		PI(16) OT(1.9) WA(40)
			Gravel and oil odor encountered.				
	5	10					WA(38)
			shell fragments				OT(2.0)
20							OVA(12)
			Becomes medium dense, SILTY SAND (SM) and no odor encountered.				
	6	27					WA(20) OVA(0)
25							
			Lens of light brown SANDY CLAY (CL) with shell fragments.				
	7	11	Medium dense, wet, dark olive gray medium SAND (SP).				WA (5) OVA(0)
30							

Project: DEL REY SHORES
Project No. 8840197B

LOG OF BORING B-1

Fig. A-2

WOODWARD-CLYDE CONSULTANTS

DATE OF BORING 4-25-88 WATER DEPTH Below 18' DATE MEASURED 4-25-88
TYPE OF DRILL RIG Mobile B-61, Rotary Wash HOLE DIAMETER 3-7/8 inches
WEIGHT OF HAMMER 140 lbs. FALLING 30 inches SAMPLES Mod. Cal., SPT

DEPTH, FT.	SAMPLES	BLOWS/foot	DESCRIPTION	UNC. COMP. STRENGTH, ksf	MOISTURE CONTENT, %	DRY DENSITY pcf	OTHER TESTS
			SURFACE ELEVATION Approx. 21 feet				
			Medium dense, wet, dark olive gray, medium SAND (SP).				
			Becomes dense.				
	8	34					WA (3)
35			Very stiff to medium dense, wet, dark olive gray SANDY CLAY to CLAYEY SAND (CL-SC) with shell fragments.				
	9	17		1.9	25	101	CONC PI(13) OT(1.0)
40			Dense, wet, dark brown SILTY SAND (SM).				
	10	49					
	(NR)		Becomes medium dense.				
45	11	30					WA(40)
			Bottom of Boring at 46 feet.				
50							
55							
60							

Project: DEL REY SHORES
Project No. 8840197B

Cont. LOG OF BORING B-1

Fig. A-3

WOODWARD-CLYDE CONSULTANTS

DATE OF BORING 4-25-88 WATER DEPTH Not Measured DATE MEASURED --
TYPE OF DRILL RIG Mobile B-61, Rotary Wash HOLE DIAMETER 3-7/8 inches
WEIGHT OF HAMMER 140 lbs. FALLING 30 inches SAMPLES Mod. Cal., SPT

DEPTH, FT.	SAMPLES	BLOWS/foot	DESCRIPTION	UNC. COMP. STRENGTH, ksf	MOISTURE CONTENT, %	DRY DENSITY pcf	OTHER TESTS
			SURFACE ELEVATION Approx. 16.5 feet				
			2" Asphalt concrete pavement.				
			Loose, moist, dark brown SILTY SAND (SM) with shell fragments and mica. [Fill]				
	1	8					
5	2	5					
			Heavy shell fragments encountered.				
	3	6			19		WA(30)
10							
			Very soft, moist, dark olive gray organic CLAYEY SILT (OL-OH) with peat.				
	4	8			43		OT(1.9) WA(29)
15			Medium dense, moist, dark olive gray SILTY fine SAND (SM) with shell fragments.				
	5	21					WA(11)
20			Becomes loose.				
	6	9			38		WA(19)
25			Bottom of Boring at 24.5 feet.				
30							

Project: DEL REY SHORES
Project No. 8840197B

LOG OF BORING B-2

Fig. A-4

WOODWARD-CLYDE CONSULTANTS

DATE OF BORING 4-25-88 WATER DEPTH Below 12' DATE MEASURED 4-25-88
TYPE OF DRILL RIG Mobile B-61, Rotary Wash HOLE DIAMETER 3-7/8 inches
WEIGHT OF HAMMER 140 lbs. FALLING 30 inches SAMPLES Mod. Cal., SPT

DEPTH, FT.	SAMPLES	BLOWS/foot	DESCRIPTION	UNC. COMP. STRENGTH, ksf	MOISTURE CONTENT, %	DRY DENSITY pcf	OTHER TESTS
			SURFACE ELEVATION Approx. 21.5 feet				
			2" Asphalt concrete pavement.				
			Very loose, moist, dark brown SILTY SAND (SM) with shell fragments. [Fill]				
	1	8					
5	2	4			28		WA(31)
			Very loose, moist, dark olive gray SANDY SILT (ML-OL) with shell fragments. [Fill]				
10	3	5			42	82	WA(93)
			Medium dense, moist to wet, black GRAVELLY SAND to SANDY GRAVEL (SP-GP) w/ CLAY (CL), shell fragments, oil odor and trace oil.				
15	4	28			10		
20	5	13			12		
25	6	17	Medium dense, wet, dark gray SILTY SAND (SM) with shell fragments.		28		WA(19)
			Bottom of Boring at 26.5 feet.				
30							

Project: DEL REY SHORES
Project No. 8840197B

LOG OF BORING B-3

Fig. A-5

WOODWARD-CLYDE CONSULTANTS

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Key to Log of Boring

Sheet 1 of 1

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	Sampling Resistance	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number.

5 **Sampling Resistance:** Number of blows required to advance driven sampler 12 inches beyond first 6-inch interval, or distance noted, using a 140-lb hammer with a 30-inch drop.

6 **Headspace OVA:** Organic vapor analyzer field sample headspace reading in parts per million.

7 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

8 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density/consistency.

9 **Water Content:** Water content of soil sample measured in laboratory, expressed as percentage of dry weight of specimen.

10 **Dry Unit Weight:** Dry density of soil sample measured in laboratory, in pounds per cubic foot.

11 **Remarks and Other Tests:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other field and laboratory test results, using the following abbreviations:

CHEM	Chemical tests for corrosivity
COMP	Compaction test by modified effort
CONS	One-dimensional consolidation test
LL	Liquid limit (from Atterberg limits test), %
PI	Plasticity Index [LL - PL], %; NP=nonplastic
QC	Organic content test, %
R-Value	Resistance value
SA	Sieve analysis, %<#200 sieve
UC	Unconfined compressive strength test, Qu in ksf
WA	Three-point wash sieve, %<#200 sieve

TYPICAL MATERIAL GRAPHIC SYMBOLS

- SAND (SP)
- SAND with silt (SP-SM)
- Silty SAND (SM)
- Clayey SAND (SC)
- Lean CLAY (CL)
- Fat CLAY (CH)
- Silty CLAY (CL/CL-ML)
- SILT (ML)
- GRAVEL (GP)
- GRAVEL with silt (GP-GM)
- CLAYEY to SILTY SAND (SC/SM)
- Seashells

TYPICAL SAMPLER GRAPHIC SYMBOLS

- 2-inch-OD unlined split spoon (SPT)
- 2.5-inch-OD Modified California with brass liners
- Shelby Tube (thin-walled, fixed head)
- Bulk sample
- Grab sample
- 3-inch-OD California sampler

OTHER GRAPHIC SYMBOLS

- First water encountered at time of drilling and sampling (ATD)
- Water level measured at specified time after completion of drilling and sampling
- Minor change in material properties within a stratum
- Inferred or gradational contact between strata

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Report GEO_1082_SOLON_KEY; File: DRSHORES.GPJ; 3/13/2001 keyhsa

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Figure A-6

Project: Del Rey Shores Project Location: Marina del Rey, California Project Number: 57-00012019.01	**Log of Boring B-4** Sheet 1 of 3

Date(s) Drilled	7/17/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	81.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	21 feet
Groundwater Level(s)	23 feet bgs after drilling on 7/17	Sampling Method(s)	Modified California, SPT, bulk	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, asphalt patch	Location	Parcel A, south side		

Elevation, feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0		SK-1		0		2 inches of asphalt concrete			OVA background reading=1.7 ppm. Testing on SK-1: R-Value
20			1	26	0		Medium dense, damp, brown, SILTY SAND (SM) with gravel and seashells [Fill]			
							Decreasing gravel and seashells			
			2	15	0		Few to no gravel and seashells	13	97	
	5		3	10	0					
15										
	10		4	12	0					
10							Medium dense, wet, dark gray, CLAYEY SAND (SC) with gravel and seashells [Fill]			
	15		5	24	0					
5								18	107	SA: 35%<#200
										Rig chattering.
							Gravel layer			
	20		6	12	9		Medium dense, wet, gray, CLAYEY SAND (SC)			WA: 29%<#200
0										
	25		7	24	0					No odor.
-5										WA: 18%<#200
							Very dense, wet, dark gray, poorly graded SAND with silt (SP-SM)			
	30									

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Figure A-7

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-4

Sheet 2 of 3

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	30						Very dense, wet, dark gray, poorly graded SAND with silt (SP-SM) (continued)			
-10			8	54	0			24	103	WA: 7%<#200
	35		9	14	0		Becomes medium dense			WA: 7%<#200
-15							Medium dense, wet, dark gray, CLAYEY to SILTY SAND (SC/SM)			Rig chattering; shells and/or gravel.
	40		10	11	0					WA: 28%<#200
-20							Becomes dense			
	45		11	31	0					WA: 37%<#200
-25							Very dense, wet, brown, poorly graded SAND (SP), trace silt			
	50		12	66	0					
-30										
	55		13	63	0		Becomes coarser-grained, with gravel, increasing silt content			Rig chattering.
-35										
	60		14	78	0					
-40										
	65						Very dense, wet, gray, SILTY SAND (SM), fine-grained			

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Figure A-7

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-4

Sheet 3 of 3

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
-45	65		15	72/9"	0		Very dense, wet, gray, SILTY SAND (SM), fine-grained (continued)			
							Very dense, wet, greenish brown with red streaks, poorly graded SAND with silt (SP-SM), fine-grained			
-50	70		16	71	0					
-55	75		17	50/6"	0					
-60	80		18	70/9"	0					
							Bottom of boring at 81.5 feet			
-65	85									
-70	90									
-75	95									
	100									

Report: GEO_1082_SOLON; File: DRSHORES.GPJ; 3/13/2001 9-04

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Figure A-7

Project: Del Rey Shores Project Location: Marina del Rey, California Project Number: 57-00012019.01	**Log of Boring B-5** Sheet 1 of 2

Date(s) Drilled	7/17/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	44.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	18.5 feet
Groundwater Level(s)	16.5 feet bgs after drilling on 7/17	Sampling Method(s)	Modified California, SPT, bulk	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, asphalt patch	Location	Between Parcels A and B		

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / foot	SAMPLES: Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0		SK-1		0		2 inches of asphalt concrete			OVA background reading=5-8 ppm.
			1	27	0		Medium dense, wet, brown, SILTY SAND (SM) with gravel and seashells [Fill]			
								8		Testing on SK-1: COMP SA: 15%<#200
-15			2	5	0		Becomes loose, with no seashells			
	5		3	3	–					No sample recovery.
							Soft, wet, dark gray, SANDY CLAY (CL) [Fill]			
-10										
	10		4A	8	0		Layer of SILTY CLAY to CLAYEY SILT (CL/ML)			
			4B				Becomes medium stiff to stiff			
										Fibrous organic material in cuttings.
-5										
	15		5	58	10		Very dense, wet, black, well-graded GRAVEL with silt and sand (GW-GM); contains pieces of glass, rubber, wire, and wood [Fill]	19	105	SA: 7%<#200
0							Strong petroleum odor			Strong petroleum odor emanating from hole at 16.5 ft.
	20		6	12	8		Medium dense, wet, dark gray, SILTY SAND (SM), fine-grained			WA: 19%<#200
-5							Becomes loose, with seashells			
	25		7	10	0					WA: 24%<#200
							Soft, wet, dark gray, SILTY CLAY (CL), trace sand.			
-10										With odor.
	30									

Report GEO_1092_SOLON; File: DRSHORES.GPJ; 3/13/2001 B-05

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Figure A-8

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-5

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	30		8	4	4		Soft, wet, dark gray, SILTY CLAY (CL), trace sand (continued)			
-15										
	35		9	12	0		Becomes stiff	26	99	LL=39, PI=20 UC=2.5 ksf
-20										
	40		10	26	–		Layer of medium dense sand (based on cuttings and drilling observations)			No sample recovery.
							Becomes very stiff, wet, dark brown, with increasing sand content			
-25			11	18	0					LL=26, PI=12
	45						Bottom of boring at 44.5 feet			
-30										
	50									
-35										
	55									
-40										
	60									
-45										
	65									

Report: GEO_1082_SOLON; File: DRSHORES.GPJ; 3/13/2001 B-05

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Figure A-8

Project: Del Rey Shores Project Location: Marina del Rey, California Project Number: 57-00012019.01	**Log of Boring B-6** Sheet 1 of 2

Date(s) Drilled	7/18/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	51.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	23 feet
Groundwater Level(s)	19 feet bgs after drilling on 7/18	Sampling Method(s)	Modified California, SPT, Shelby tube	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, asphalt patch	Location	Between Parcels A and B		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0						2 inches of asphalt concrete			OVA background reading=6 ppm.
			1	21	0		Medium dense, damp, brown, SILTY SAND (SM) with gravel and seashells [Fill]			
							Becomes loose, fine-grained, with no gravel and seashells	8	103	
20			2	10	0					
	5		3	5	0		Becomes moist			
15										
	10		4	2	–		Very soft, wet, black, SANDY CLAY (CL) with wood chips, roots, tile pieces, and seashells [Fill]			No sample recovery.
10			5	Push	–		With organic odor	28	100	OC=4.1% LL=43, PI=23 UC=1.0 ksf
								24	94	CONS
	15						Very stiff, wet, black, SANDY CLAY (CL) with seashells			
			6	24	38			23	102	
5										
							Becomes stiff, with trace gravel			Rig chattering.
	20		7	9	4					
0							Very dense, wet, dark gray, poorly graded SAND with silt (SP-SM)			
	25		8	64	4					WA: 10%<#200 Slight sulfur odor.
-5							Very stiff, wet, gray, SILTY CLAY (CL)			
	30									

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Figure A-9

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-6

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	30		9A	25	0		Very stiff, wet, gray, SILTY CLAY (CL) (continued)			Sulfur odor.
			9B				Medium dense, wet, dark gray, SILTY SAND (SM)			
-10							Becomes loose, with seashells			
	35		10A	3	0					WA: 21% <#200
			10B				Soft, wet, dark gray, SILTY CLAY (CL) with seashell fragments			
-15							Becomes sandy, with mica, trace gravel			No odor.
	40		11	15	0			23	103	CONS LL=33, PI=16 WA: 78% <#200
-20							Medium dense, wet, greenish gray, SILTY SAND (SM)			
	45		12	28	0			26	99	
-25							Very dense, wet, gray, poorly graded SAND with silt and gravel (SP-SM), coarse-grained			
	50		13	66	0					
							Bottom of boring at 51.5 feet			
-30										
	55									
-35										
	60									
-40										
	65									

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Figure A-9

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-7

Sheet 1 of 2

Date(s) Drilled	7/20/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	36.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	24.5 feet
Groundwater Level(s)	13 feet bgs after drilling on 7/20	Sampling Method(s)	Modified California, SPT, bulk	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, asphalt patch	Location	Parcel B, east side		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0		SK-1				2 inches of asphalt concrete.			OVA background reading=7 ppm. Testing on SK-1: R-Value
			1	21	0		Medium dense, damp, brown, SILTY SAND (SM), trace seashell fragments [Fill]	8	100	
			2	18	0					
20	5		3	6	0		Becomes loose			
							Becomes very loose, moist, gray			
15	10		4	3	0					Disturbed sample.
10							Dense, wet, gray, SILTY SAND (SM) with seashells [Fill]			
	15		5	35	0					WA: 21%<#200
5							No seashells			
	20		6	40	6					WA: 21%<#200
0							Very soft, wet, gray CLAY (CH)			Sulfur odor.
	25		7	Push	8			57	66	CONS LL=70, PI=42 WA: 99%<#200
-5							Medium dense, wet, gray, CLAYEY to SILTY SAND (SC/SM)			
	30									

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Figure A-10

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-7

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	30		8	17	16		Medium dense, wet, gray, CLAYEY to SILTY SAND (SC/SM) (continued)			Sulfur odor.
							Some seashells	38	83	WA: 31%<#200
-10	35		9	34	16		Becomes dense			WA: 15%<#200
							Bottom of boring at 36.5 feet			
-15	40									
-20	45									
-25	50									
-30	55									
-35	60									
-40	65									

Report: GEO_10B2_SOLON; File: ORSHORES.GPJ; 3/13/2001 B-07

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Figure A-10

Project: Del Rey Shores	**Log of Boring B-8**
Project Location: Marina del Rey, California	Sheet 1 of 2
Project Number: 57-00012019.01	

Date(s) Drilled	7/18/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	46.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	21 feet
Groundwater Level(s)	20 feet bgs after drilling on 7/18	Sampling Method(s)	Modified California, SPT, Shelby tube, bulk	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, asphalt patch	Location	Parcel B, west side		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
20	0	SK-1					4 inches of asphalt concrete			OVA background reading=5 ppm. Seashells and coarse sand in cuttings.
			1	29	0		Medium dense, damp, brown, SILTY SAND (SM), fine-grained [Fill]			Testing on SK-1: COMP SA: 19%<#200
			2	21	0					
15	5		3	4	0		Becomes moist	9	99	
							Very soft, wet, dark gray CLAY (CL) with sand and gravel; contains wood chips, glass, and copper wire [Fill]			
10	10		4	2	0					
			5	Push	–			14		LL=30, PI=16
5	15		6	19	0		Medium dense, damp, dark brown, CLAYEY SAND (SC) with roots			WA: 38%<#200
0	20		7	15	–		Medium dense, wet, dark gray, SILTY SAND (SM)			No sample recovery.
										Sulfur odor.
-5	25		8	15	0					WA: 27%<#200
	30									

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Figure A-11

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-8

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
-10	30		9	38	10		Medium dense, wet, dark gray, SILTY SAND (SM) (continued)	27	97	Strong sulfur odor. WA: 14%<#200
							Medium stiff, wet, dark gray CLAY (CL) with sand and seashells			
-15	35		10	6	0					LL=33, PI=16
							Very stiff, wet, dark brown, SANDY SILTY CLAY (CL)			
-20	40		11	22	0			22	106	LL=32, PI=15 UC=2.4 ksf No odor.
-25	45		12	32	0		Dense, wet, dark gray, SANDY SILT (ML)			
							Bottom of boring at 46.5 feet			
-30	50									
-35	55									
-40	60									
	65									

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Figure A-11

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-9

Sheet 1 of 3

Date(s) Drilled	7/20/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	81.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	23 feet
Groundwater Level(s)	20 feet bgs after drilling on 7/20	Sampling Method(s)	Modified California, SPT	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, steel plate hole cover	Location	Parcel B, north side		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0						2 inches of asphalt concrete			
			1	12	0		Medium dense, damp, brown, SILTY SAND (SM), fine-grained [Fill]			
20			2A	4	0		Becomes loose			
			2B							
	5		3	3	0		Becomes very loose, dark gray	28	84	CHEM
15							Medium dense, damp, dark gray, CLAYEY to SILTY SAND (SC/SM) with gravel, seashells, wood, and glass pieces [Fill]			
	10		4	20	6					
10							Very stiff, wet, black, SANDY CLAY (CL)			Strong petroleum odor emanating from hole.
	15		5A	17	90					
			5B				Medium dense, wet, black, CLAYEY SAND (SC) with gravel			
5										
	20						Dense, wet, dark gray, poorly graded SAND with silt (SP-SM)			
0										
	25		6	37	15					WA: 6%<#200
-5							Increasing silt content			Decrease in intensity of odor.
	30									

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Figure A-12

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-9

Sheet 2 of 3

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	30		7	40	4		Dense, wet, dark gray, poorly graded SAND with silt (SP-SM) (continued)			Strong sulfur odor. WA: 11%<#200
-10							Soft, wet, dark gray, CLAYEY SILT (ML) with sand, seashells			Slight sulfur odor.
	35		8A 8B	3	2		Soft, wet, dark gray, SANDY SILTY CLAY (CL)			LL=46, PI=25
-15										
	40		9	30	0		Dense, wet, dark gray, SILTY SAND (SM)	20	108	WA: 30%<#200
							Very stiff, wet, brown, SANDY CLAY (CL)			No odor.
-20							Very dense, wet, gray with light gray streaks, well-graded SAND with silt and gravel (SW-SM)			Gravel at about 43 ft.
	45		10	58	0					WA: 10%<#200
-25										Driller reports smoother drilling from 47 to 49 ft.
	50		11	38	0		Becomes dense			SA: 6%<#200
-30							No gravel			
	55		12	35	0					WA: 6%<#200
-35										
	60		13	37	0					WA: 8%<#200
-40							Very dense, wet, gray with orange streaks, poorly graded SAND with silt (SP-SM)			
	65									

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Figure A-12

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-9

Sheet 3 of 3

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	65									
-45			14	62	0		Very dense, wet, gray with orange streaks, poorly graded SAND with silt (SP-SM) (continued)			
	70		15	64	0					
-50							Very dense, wet, gray, poorly graded SAND (SP)			
	75		16	88	0					
-55										
	80		17	107	0					
-60							Bottom of boring at 81.5 feet			
	85									
-65										
	90									
-70										
	95									
-75										
	100									

Report: GEO_1082_SOLON; File: DRSHORES.GPJ; 3/13/2001 B-09

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Figure A-12

Appendix B
Laboratory Testing

The laboratory testing program was conducted on selected samples obtained from the borings during the field investigation. Unless noted otherwise, the testing was conducted at the URS laboratory in Santa Ana, California, in general accordance with the latest applicable procedures of the American Society for Testing and Materials (ASTM), where applicable. The laboratory tests from the 1988 and 2000 investigations have been combined in this appendix. The following laboratory tests were performed:

Liquid and Plastic Limit Tests (ASTM D4318)

Liquid and plastic limit tests were performed on selected samples to evaluate the properties of the onsite cohesive soils. The results of the plasticity tests are shown graphically and numerically on Figures B-1 and B-2, and are included on the boring logs at the corresponding sample depth for ease of reference.

Water Content and Dry Unit Weight Tests (ASTM D2216)

Dry unit weight and water content tests were performed on selected soil samples. The test results are presented on the boring logs in Appendix A for ease in correlation with the soil profile.

Particle Size Distribution Tests (ASTM D422)

Grain size distribution tests were performed to evaluate the general gradation of the soil and to verify the visual classification of the samples. The resulting grain-size distribution curves are presented on Figures B-3 through B-8.

Wash Sieve Analyses (ASTM D1140)

Wash sieve analyses were performed on selected soil samples to determine the percentage of materials finer than a No. 200 sieve. In addition to aiding in soil classification, this provided essential information for appropriate corrections to blow counts to determine liquefaction potential. For convenient correlation with the soil profile, the percentage of fines content from the wash sieve analyses is presented on the boring logs in Appendix A at the corresponding sample depths. In addition, the results appear graphically as an abbreviated particle-size distribution curve (starting at the number 40 sieve) presented on Figures B-3 through B-8.

Organic Matter Content

The percentage by weight of organic matter was obtained for one sample from boring URS B-6. The test had a result of 4.1%. The results is presented on the boring log in Appendix A for ease in correlation with the soil profile.

Unconfined Compression Tests (ASTM D2166)

The strength characteristics of the clay layers encountered were estimated by 3 unconfined compression tests. The results of these tests have been plotted and are presented herein on Figures B-9 through B-11. The resulting compressive strength ranged between, about 1 to 2.5 ksf.

Consolidation/Oedometer Tests (ASTM D2435)

To obtain information regarding settlement/consolidation of the subsurface material beneath the proposed structures, four consolidation tests were performed on intact samples of material obtained during the field investigation. Water was added at the beginning of the test to best model in situ conditions. The results of the confined compression tests are shown on Figures B-12 through B-15.

Compaction Tests (ASTM D1557)

Two compaction tests were performed to help evaluate the compaction characteristics of the material being excavated during construction. The results of the compaction tests are presented on Figures B-16 and B-17.

Corrosion Test

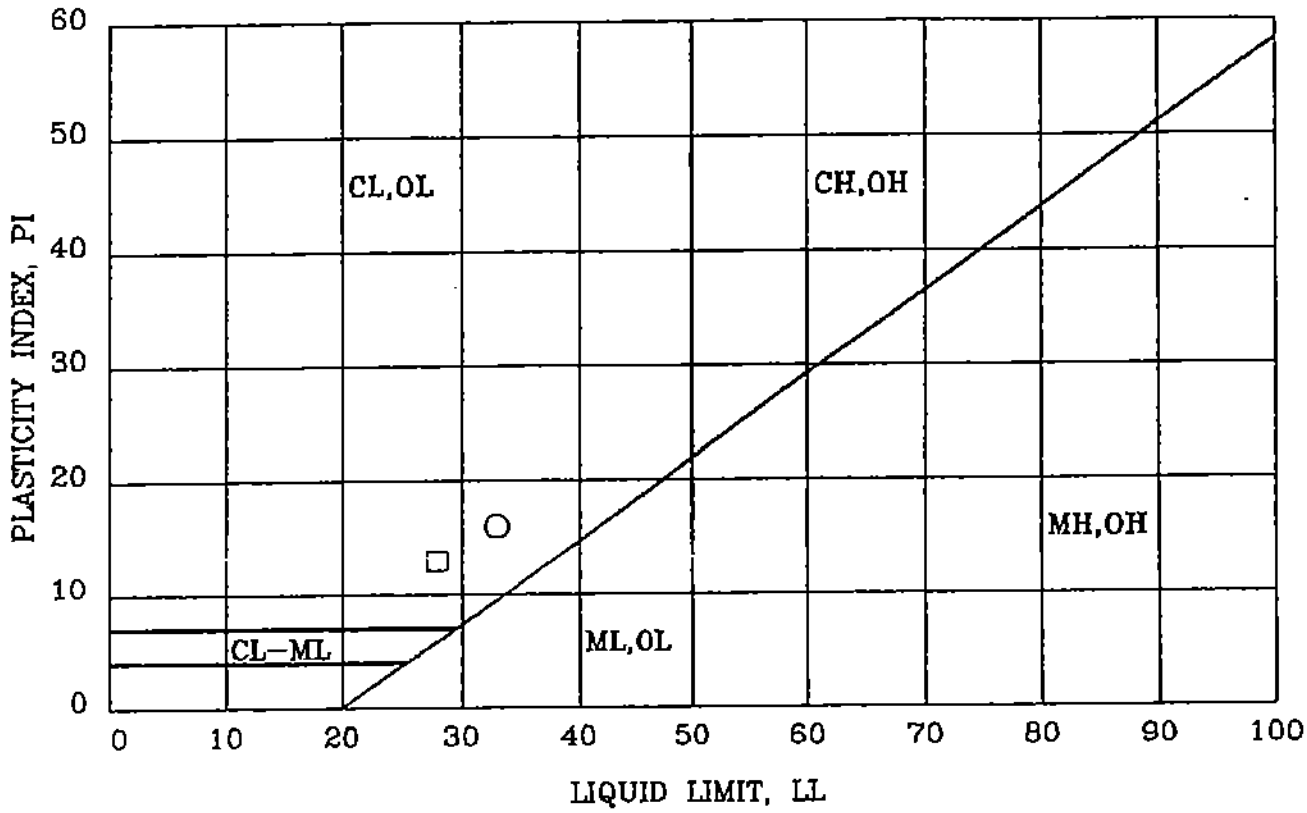
A corrosion test was performed on one near-surface soil sample to test for corrosion potential and the potential for sulfate attack on concrete. The test consisted of resistivity, pH, sulfate content, and chloride content, and was performed by AP Engineering and Testing, Inc. of Pomona, California. The results of the tests are shown on Figure B-18.

R-Value Test (California Test Method 301-F)

Two R-value tests were performed on near-surface bulk samples to provide input for pavement design. The tests were performed at Signet Testing Laboratories, Inc. The results of the R-value tests indicated R-values of 54 and 69, which seem high based on the material types tested.

Chemical Tests

We took composite samples of the drilling spoils that were collected and contained in nine 55-gallon steel drums. Using appropriate preservation techniques, the samples were taken to Calscience Environmental Laboratories for testing of metals and total petroleum hydrocarbons (gasoline and diesel) in accordance with EPA 6010B/7471A, EPA 8015M, and EPA 5030B. Based upon these test results, the drummed material was acceptable for disposal. The nine drums were picked up by Rios Industries in Santa Fe Springs, California, and delivered to the McKittrick Waste Treatment Site. A copy of the chemical test results, complete with Chain-of-Custody, is attached at the end of this Appendix.



SYMBOL	BORING	DEPTH (ft)	MC (%)	LL (%)	PL (%)	PI (%)	LI (-)	DESCRIPTION
○	B-1	15	25.7	33	17	16	.54	SILTY CLAY (CL)
□	B-1	39	18.3	28	15	13	.26	SANDY CLAY (CL)

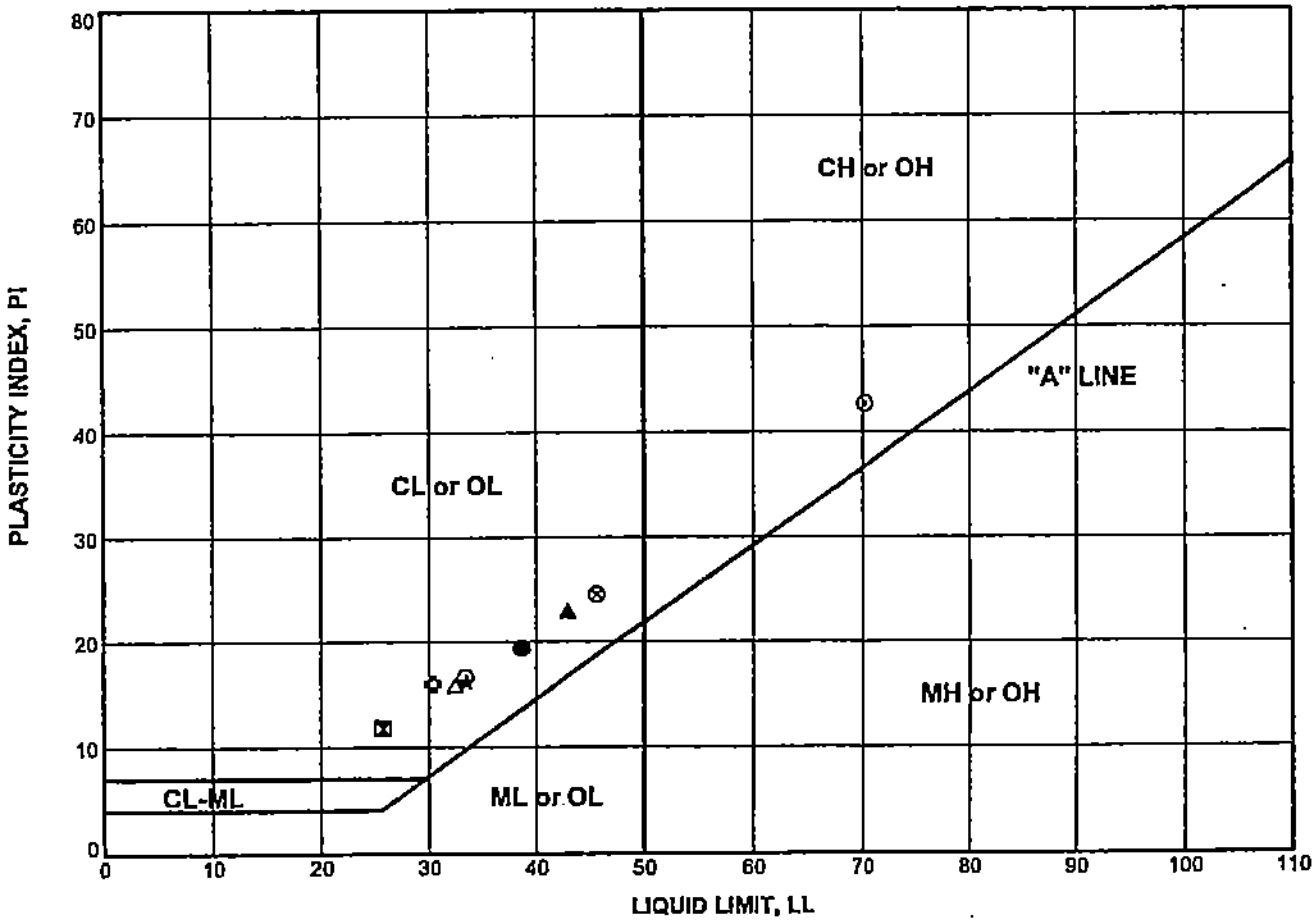
Remark :

DEL REY SHORES
Proj. No. 8840197B

PLASTICITY CHART

Fig. B-1

WOODWARD-CLYDE CONSULTANTS



Boring Number	Sample Number	Depth (feet)	Test Symbol	Water Content (%)	LL	PL	PI	Classification
B-5	9	35.5	●	26	39	19	20	Silty Clay (CL)
B-5	11	43-44.5	⊠		26	14	12	Silty Clay (CL)
B-6	5	13.0	▲	26	43	20	23	Sandy Clay (CL) [Fill]
B-6	11	40.0	★	23	33	17	16	Silty Clay with Sand (CL)
B-7	7	25.0	⊙	57	70	28	42	Clay (CH)
B-8	5	11.5-13.5	✿	14	30	14	16	Clay (CL) [Fill]
B-8	10	35-36.5	○		33	17	16	Clay (CL)
B-8	11	41.0	△	22	32	17	15	Sandy Silty Clay (CL)
B-9	8B	36.0	⊗		46	21	25	Sandy Silty Clay (CL)

Report:ATTERBERG_PLOT_12 PTS; File: DRSHORES.GPJ; 3/13/2001 B-09

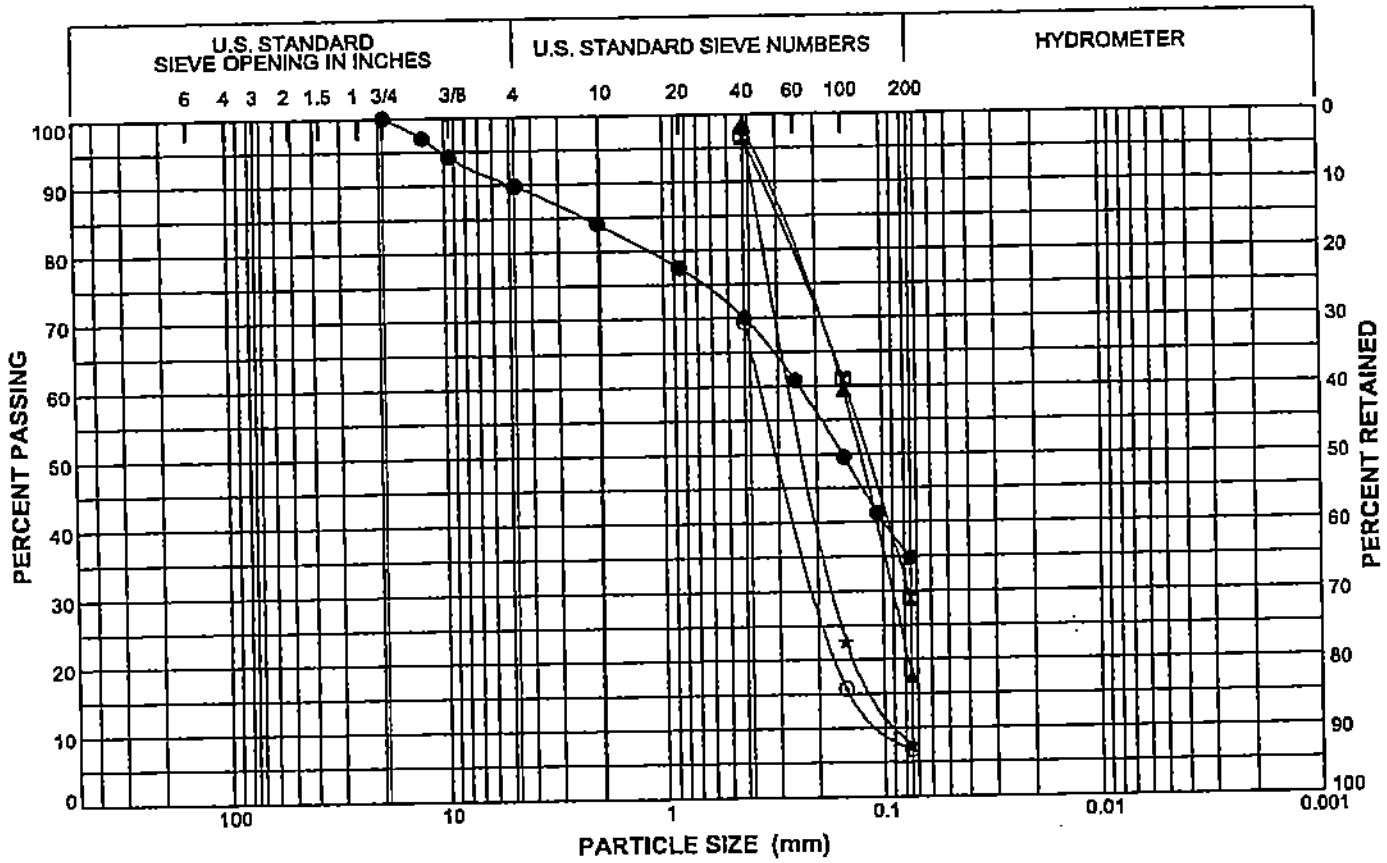
Del Rey Shores
Marina del Rey, California
57-00012019.01

PLASTICITY CHART

URS

Figure B-2

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Classification
B-4	5	16.0	●			Clayey Sand (SC) [FILL]
B-4	6	20-21.5	⊠			Clayey Sand (SC)
B-4	7	25-26.5	▲			Clayey Sand (SC)
B-4	8	31.0	★			Poorly graded Sand with Silt (SP-SM)
B-4	9	35-36.5	⊙			Poorly graded Sand with Silt (SP-SM)

Report SIEVE_5_CURVES_SNA; File: DRSHORES.GPJ; 3/13/2001 B-04

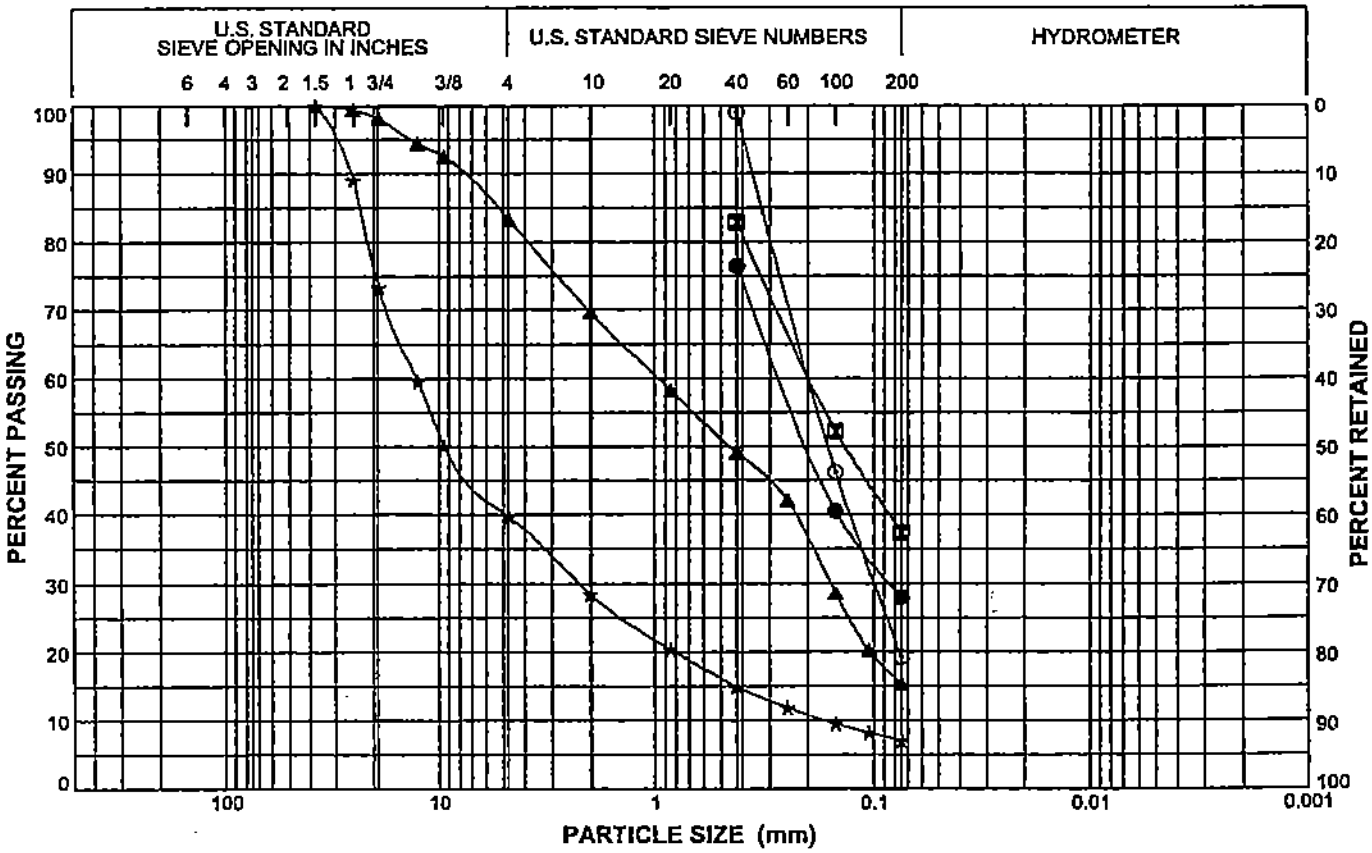
Del Rey Shores
Marina del Rey, California
57-00012019.01

PARTICLE SIZE DISTRIBUTION CURVES

Figure B-3

URS

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Classification
B-4	10	40-41.5	●			Clayey to Silty Sand (SC/SM)
B-4	11	45-46.5	⊠			Clayey to Silty Sand (SC/SM)
B-5	SK-1	0-5	▲			Silty Sand with Gravel (SM) [Fill]
B-5	5	14.5	★			Well-graded Gravel with Silt, Sand, and Seashells (GW-GM) [Fill]
B-5	6	20-21.5	⊙			Silty Sand (SM)

Report: SIEVE_5_CURVES_SNA; File: DRSHORES.GPJ; 3/13/2001 B-05

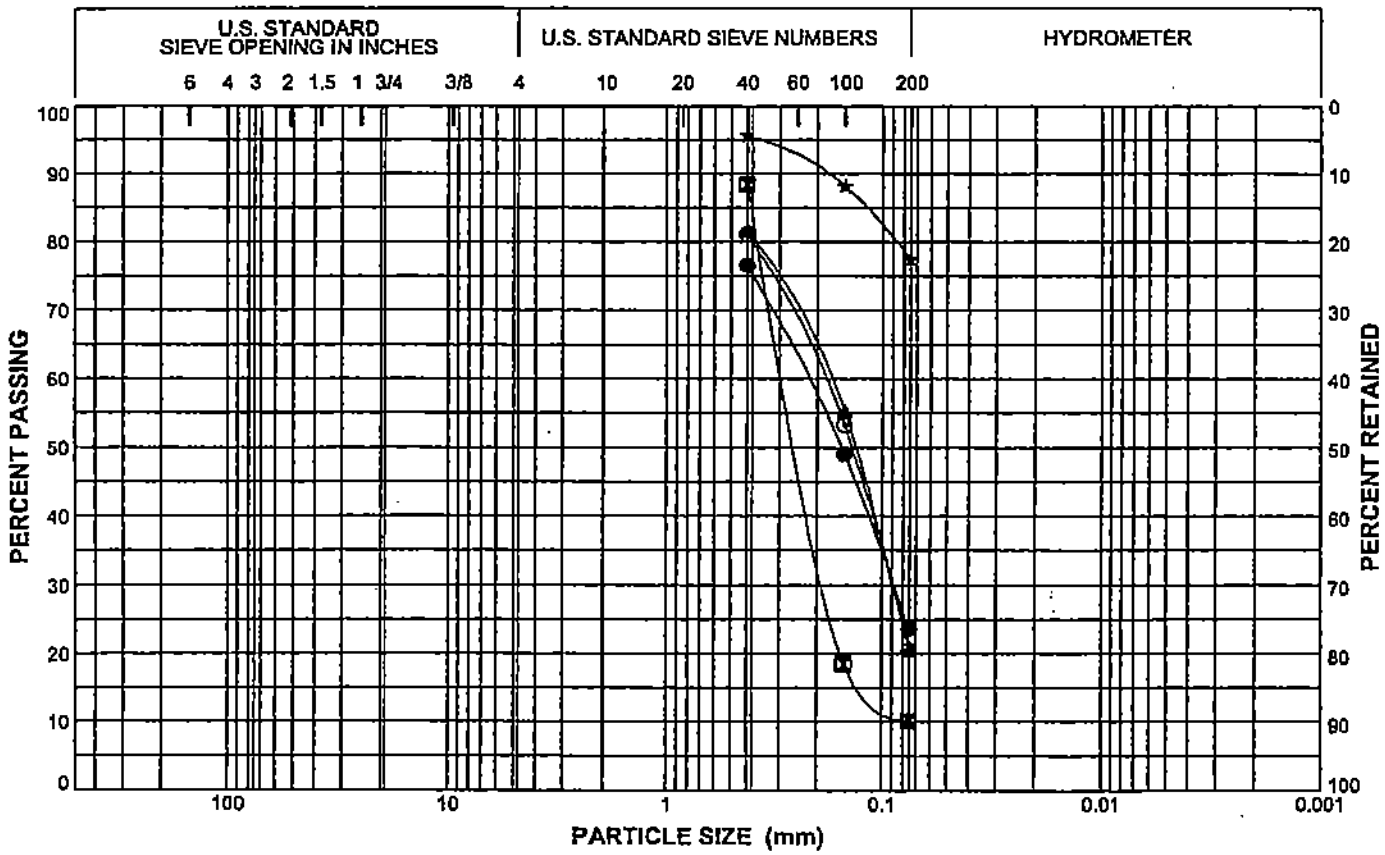
Del Rey Shores
Marina del Rey, California
57-00012019.01

PARTICLE SIZE DISTRIBUTION CURVES

Figure B-4

URS

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Classification
B-5	7	25-26.5	●			Silty Sand (SM)
B-6	8	25-26.5	⊠			Poorly graded Sand with Silt (SP-SM)
B-6	10A	35.0	▲			Silty Sand (SM)
B-6	11	40.0	★	33	16	Silty Clay with Sand (CL)
B-7	5	15-16.5	⊙			Silty Sand (SM) [Fill]

Report SIEVE_5_CURVES_SNA; File: DRSHORES.GPJ; 3/13/2001 B-07

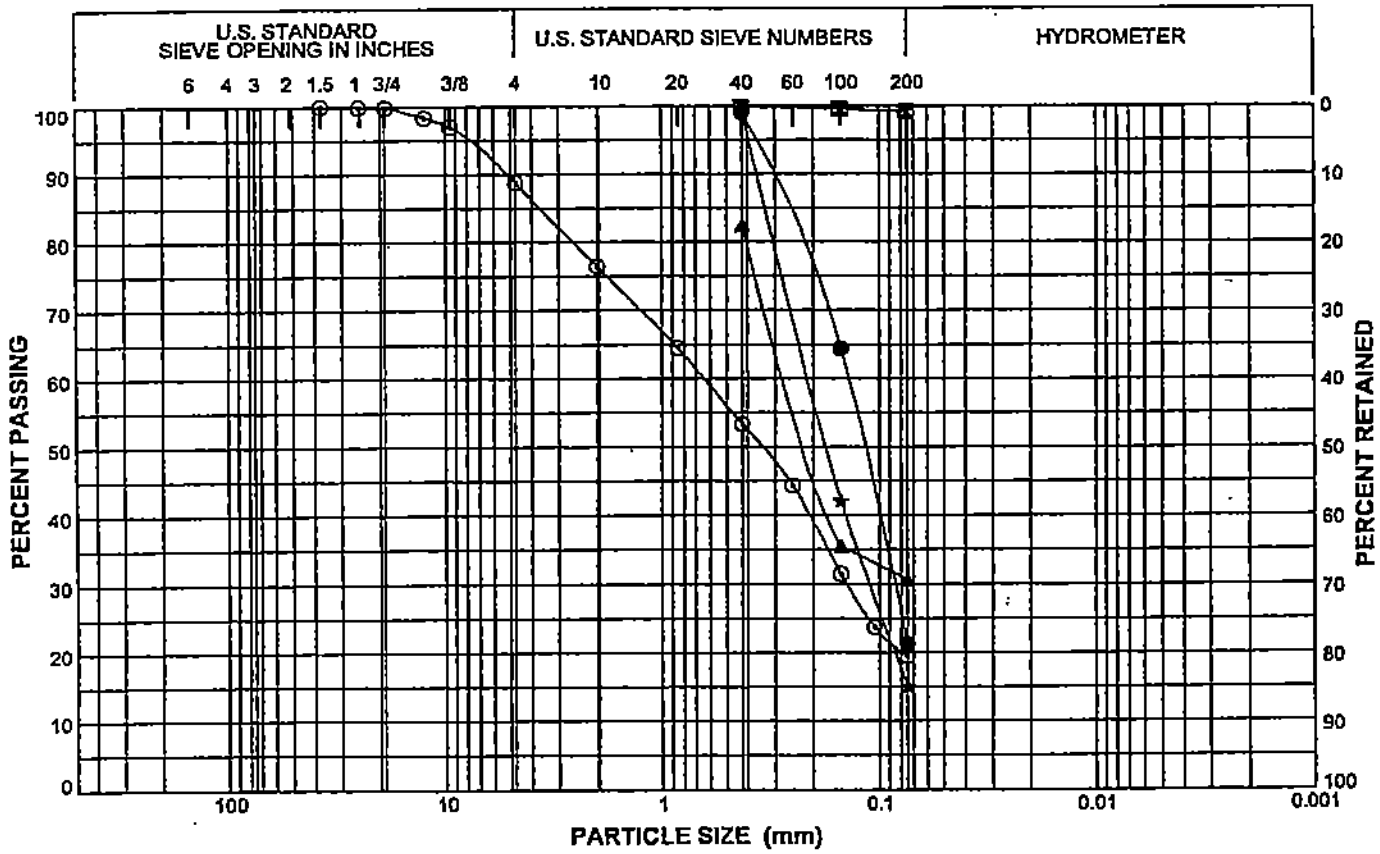
Del Rey Shores
Marina del Rey, California
57-00012019.01

PARTICLE SIZE DISTRIBUTION CURVES

Figure B-5

URS

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Classification
B-7	6	20-21.5	●			Silty Sand (SM) [Fill]
B-7	7	25.0	⊠	70	42	Clay (CH)
B-7	8	31.0	▲			Clayey to Silty Sand (SC/SM)
B-7	9	35-36.5	★			Clayey to Silty Sand (SC/SM)
B-8	SK-1	0-5	⊙			Silty Sand (SM) [Fill]

Report: SIEVE_5_CURVES_SNA; File: ORSHORES.GPJ; 3/13/2001 8:08

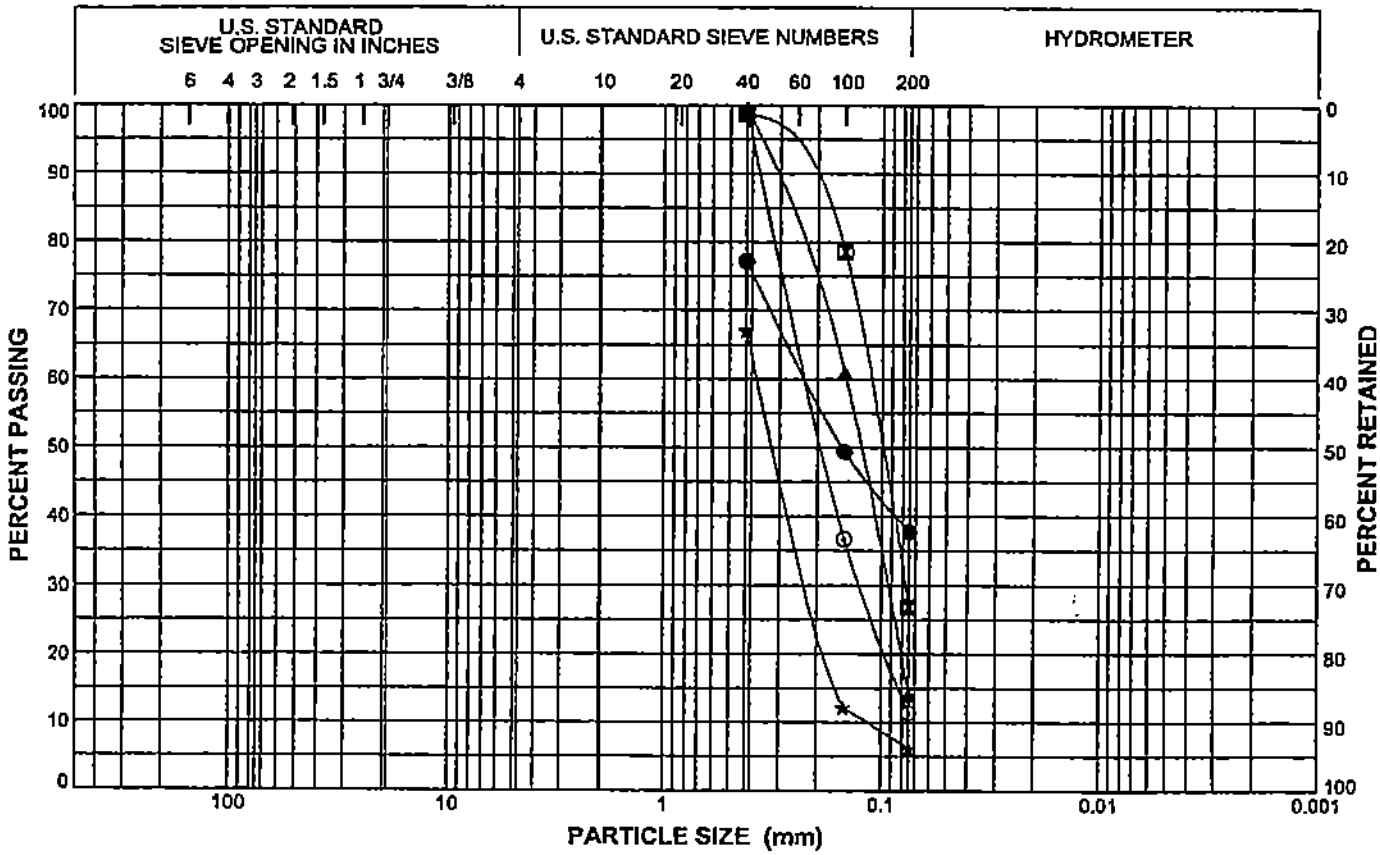
Del Rey Shores
Marina del Rey, California
57-00012019.01

PARTICLE SIZE DISTRIBUTION CURVES

Figure B-6

URS

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Classification
B-8	6	15-16.5	●			Clayey Sand (SC)
B-8	8	25-26.5	⊠			Silty Sand (SM)
B-8	9	31.0	▲			Silty Sand (SM)
B-9	6	25-26.5	★			Poorly graded Sand with Silt (SP-SM)
B-9	7	30-31.5	⊙			Poorly graded Sand with Silt (SP-SM)

Del Rey Shores
Marina del Rey, California
57-00012019.01

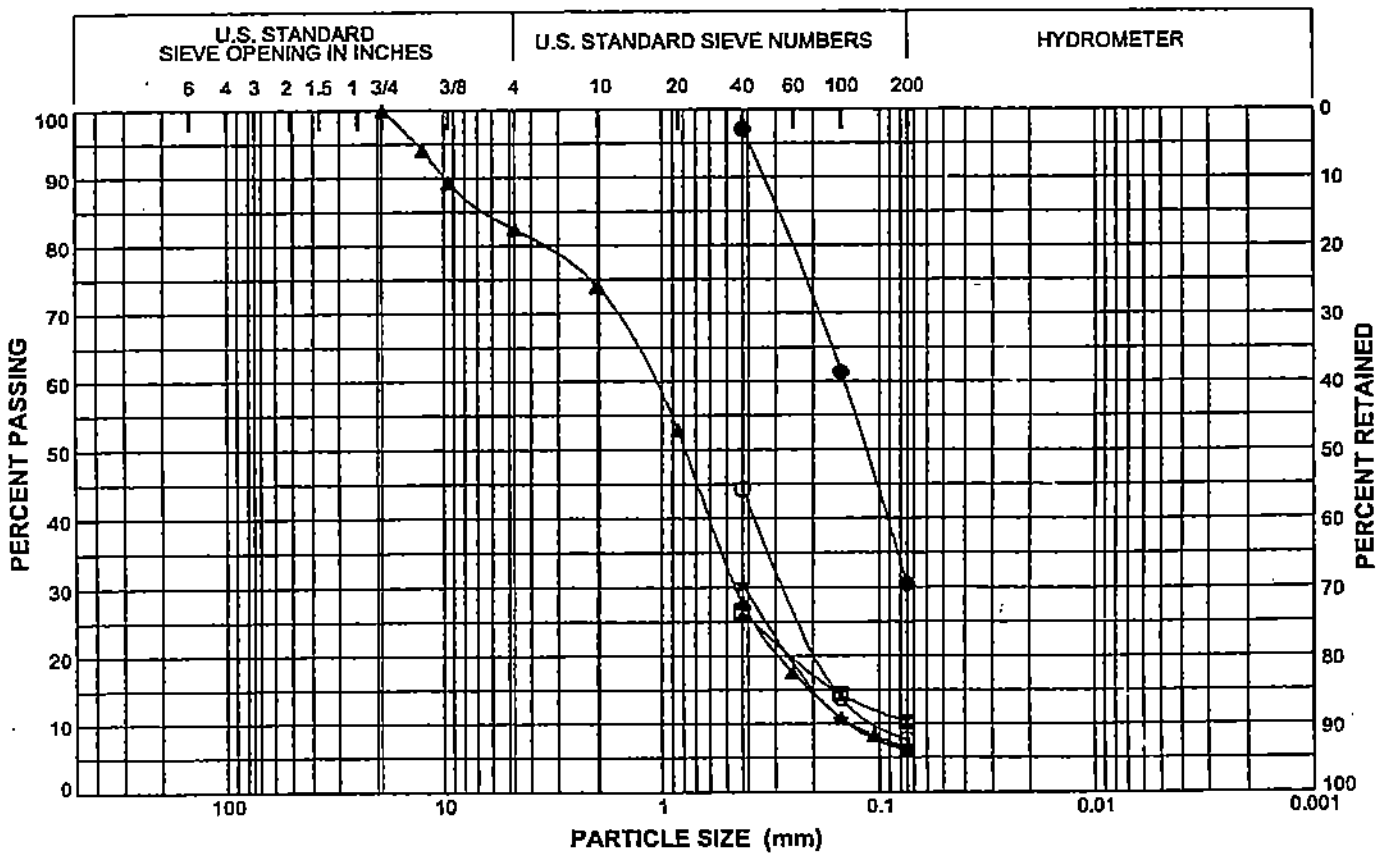
PARTICLE SIZE DISTRIBUTION CURVES

Figure B-7

URS

Report SIEVE_5_CURVES_SNA; File: DRSHORES.GPJ; 3/13/2001 B-09

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Classification
B-9	9	41.0	●			Silty Sand (SM)
B-9	10	45-46.5	⊠			Well-graded Sand with Silt and Gravel (SW-SM)
B-9	11	50-51.5	▲			Well-graded Sand with Silt and Gravel (SW-SM)
B-9	12	55-56.5	★			Well-graded Sand with Silt and Gravel (SW-SM)
B-9	13	60-61.5	⊙			Well-graded Sand with Silt and Gravel (SW-SM)

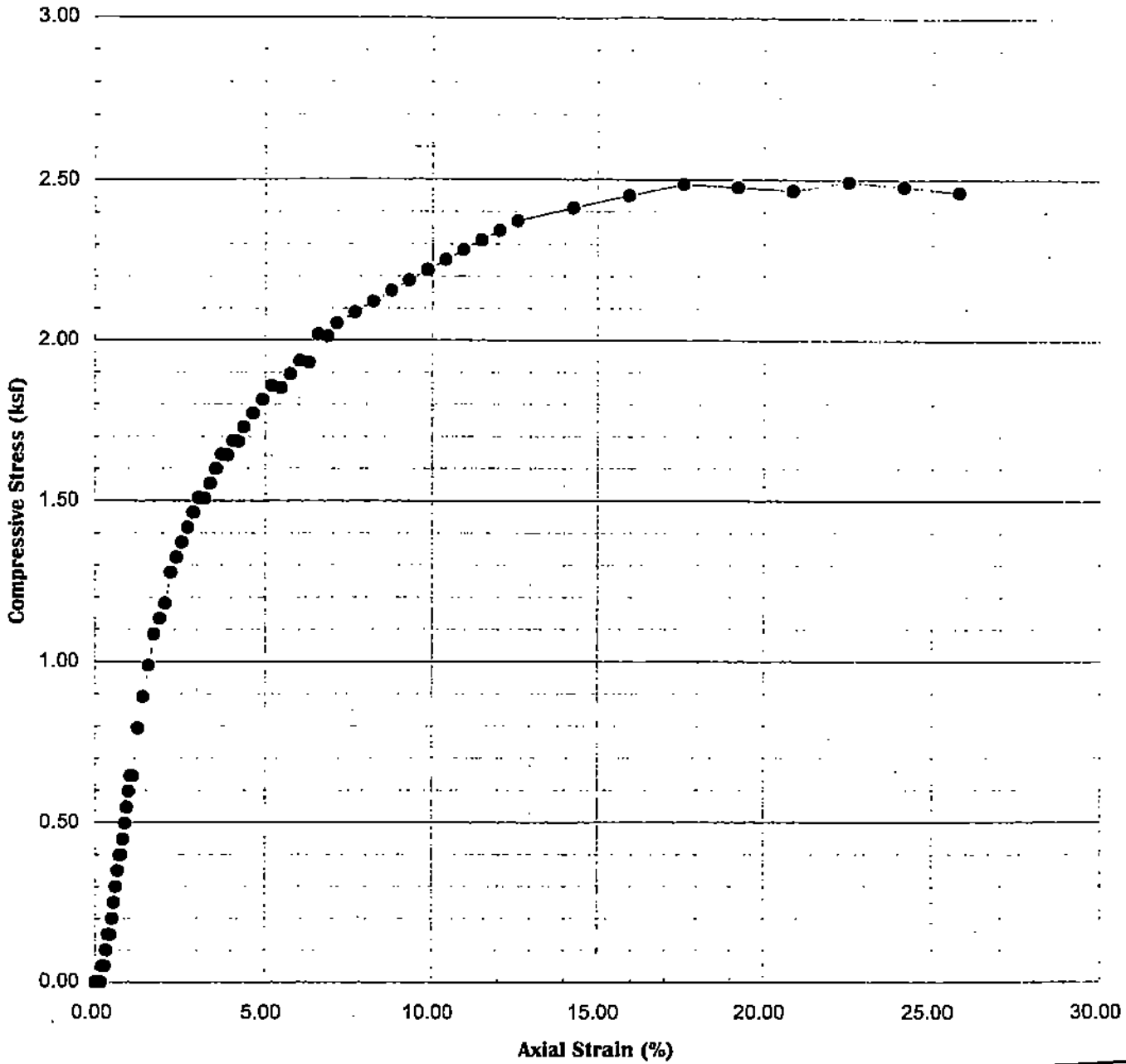
Del Rey Shores
Marina del Rey, California
57-00012019.01

PARTICLE SIZE DISTRIBUTION CURVES

Figure B-8

URS

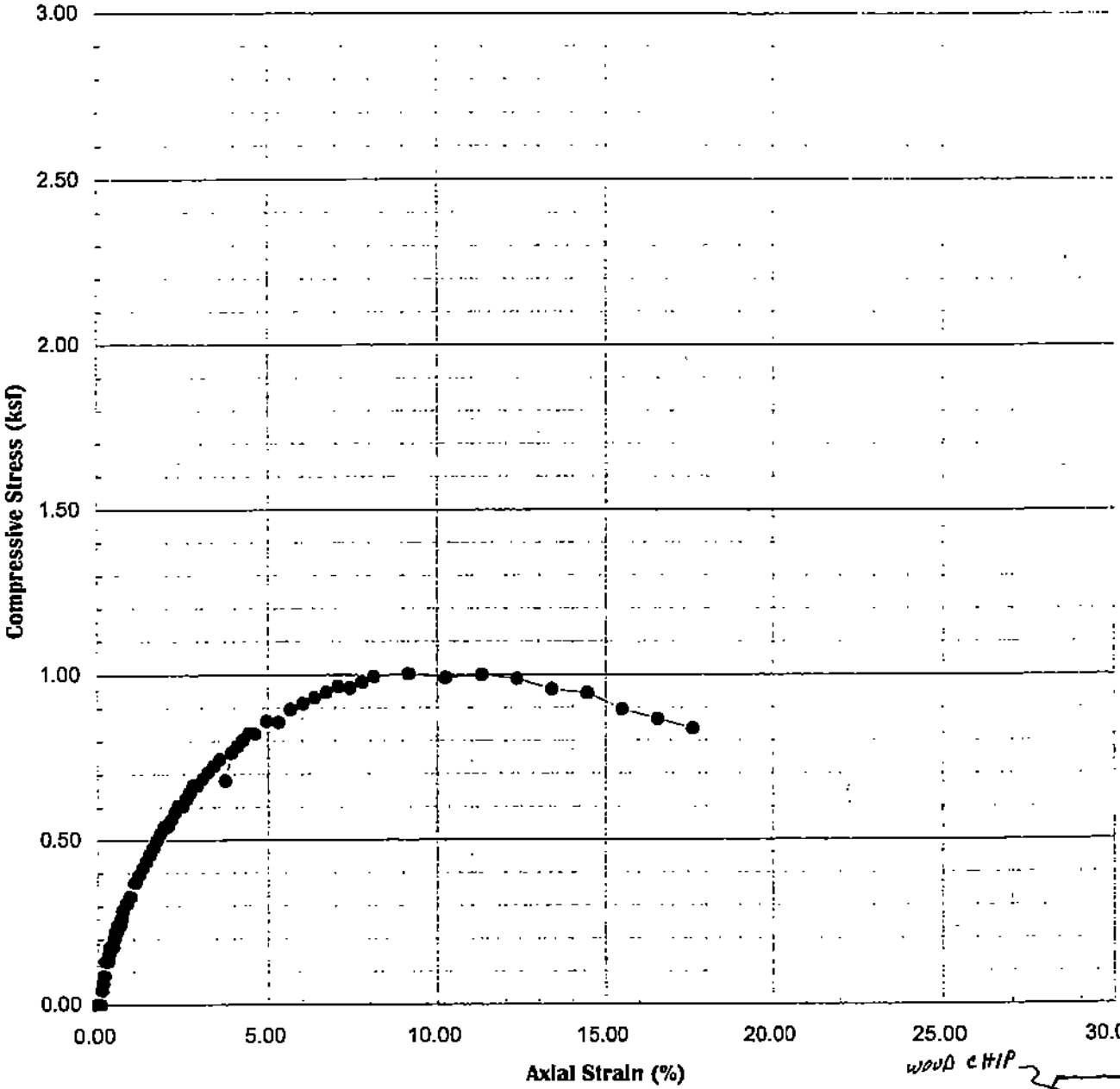
Report SIEVE_5_CURVES_SNA; File: DRSHORES.GPJ; 3/13/2001 8-09

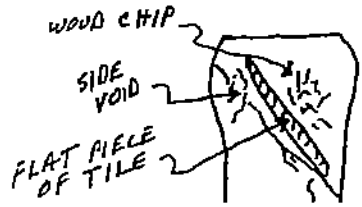


FAILURE SKETCH

Test Number UC000106	Water Content (%)	LL	PI	Length (in)	Diameter (in)	Wet Unit Weight (pcf)	Degree of Saturation (%)
Initial:	26.5	39	20	3.636	1.910	125.2	98.3

Project Name: Del Rey Shores	UNCONFINED COMPRESSION TEST
Project Number: 5700012019.01	
Exploration No: B-5 Sample No.: 9 Depth (ft): 30	
Description and/or Classification: Dark gray Clay (CL)	Figure : B-9

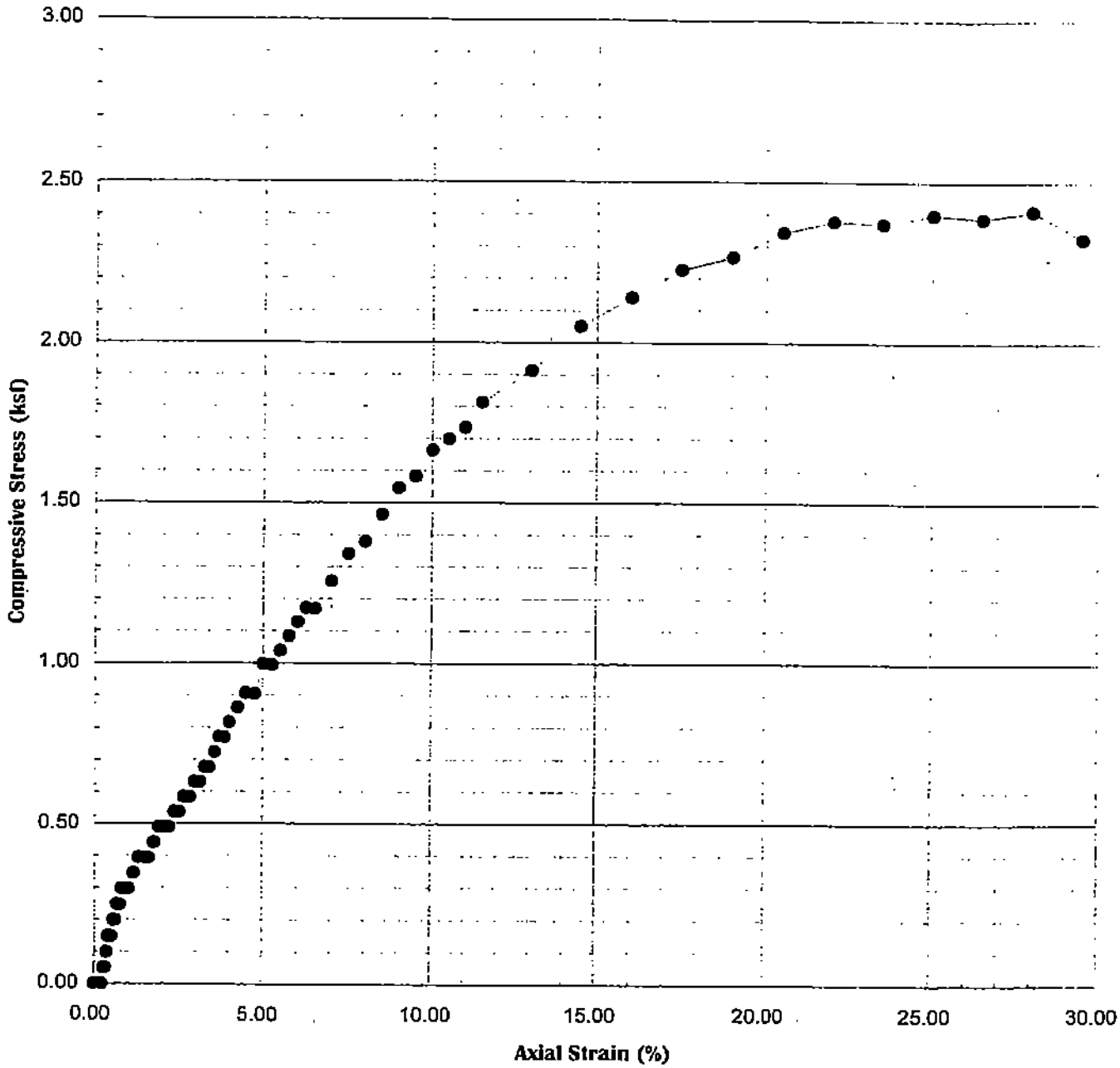




FAILURE SKETCH

Test Number UC000105	Water Content (%)	LL	PI	Length (in)	Diameter (in)	Wet Unit Weight (pcf)	Degree of Saturation (%)
Initial:	26.3	43	23	5.673	2.882	126.3	100.1

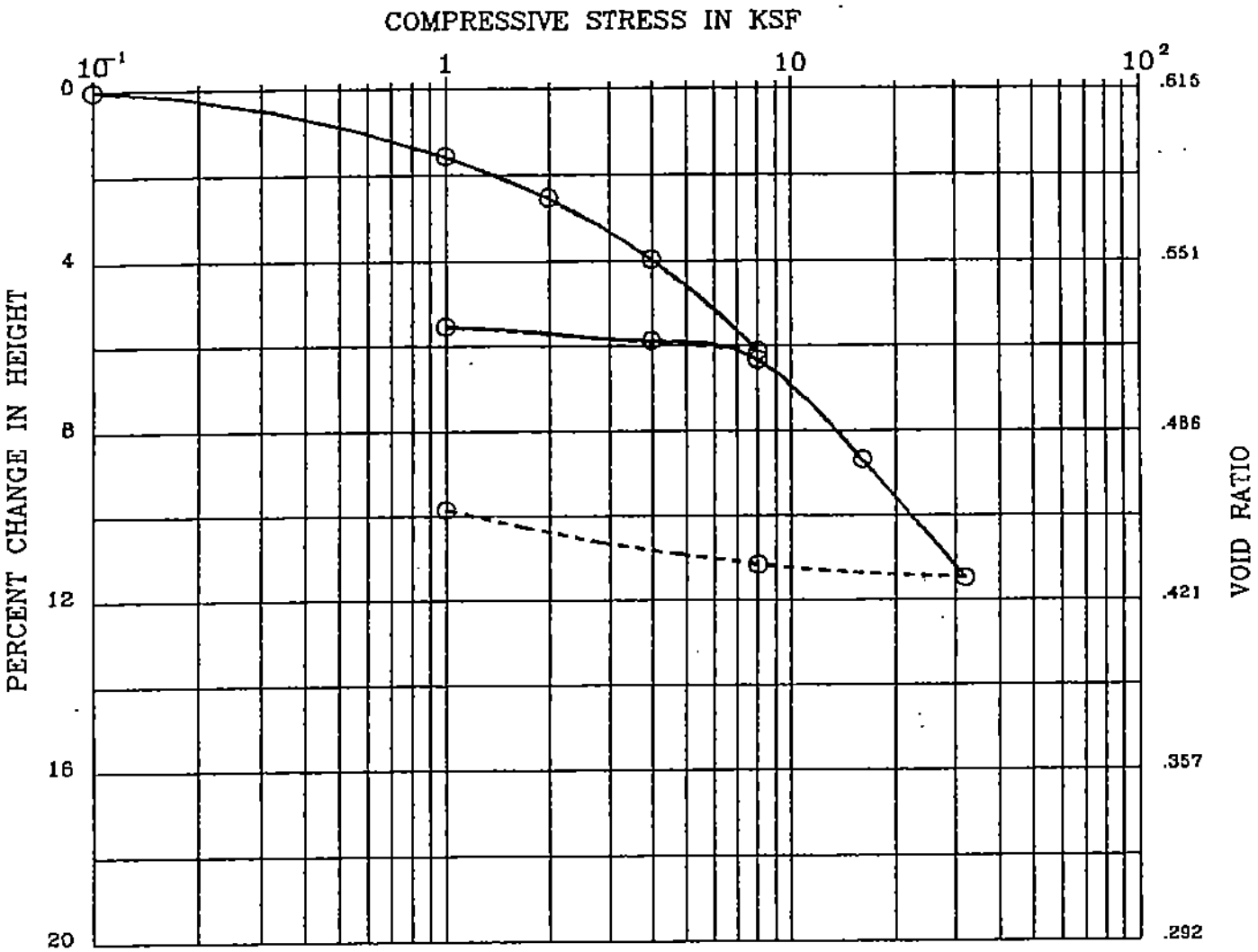
Project Name: Del Rey Shores	UNCONFINED COMPRESSION TEST
Project Number: 5700012019.01	
Exploration No: B-6 Sample No.: 5 Depth (ft): 13	
Description and/or Classification: Very dark gray to Black Clay (CL)	Figure : B-10



FAILURE SKETCH

Test Number UC000107	Water Content (%)	LL	PI	Length (in)	Diameter (in)	Wet Unit Weight (pcf)	Degree of Saturation (%)
Initial:	22.4	33	16	3.988	1.915	130.3	99.7

Project Name: Del Rey Shores	UNCONFINED COMPRESSION TEST
Project Number: 5700012019.01	
Exploration No: B-8 Sample No.: 11 Depth (ft): 40	
Description and/or Classification: Dark gray sandy Clay (CL)	Figure : B-11



BORING : B-1
DEPTH (ft) : 19 FT
SPEC. GRAVITY : 2.75

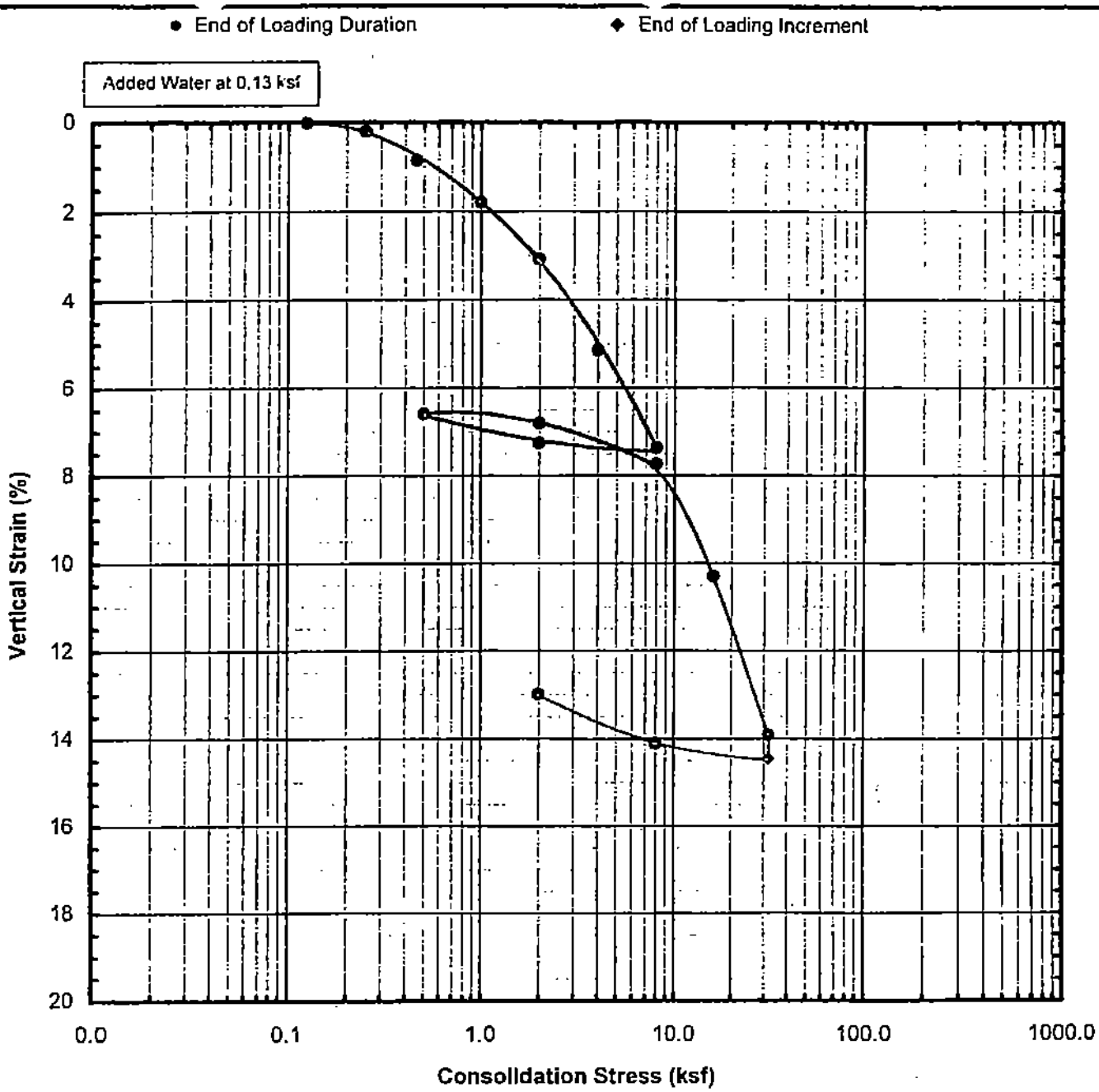
DESCRIPTION : SANDY CLAY TO CLAYEY SAND (CL-SC
LIQUID LIMIT :
PLASTIC LIMIT :

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	22.2	106.4	100	.615
FINAL	16.5	118.2	100	.455

DEL REY SHORES
Proj. No. 8840187B

CONSOLIDATION TEST

Fig. B-12



Exploration No.: B-6 Sample No.: 5 Depth (ft.): 13.5

Description/ Classification: **Very dark gray to black Clay with sand, seashells and roots (CL)**

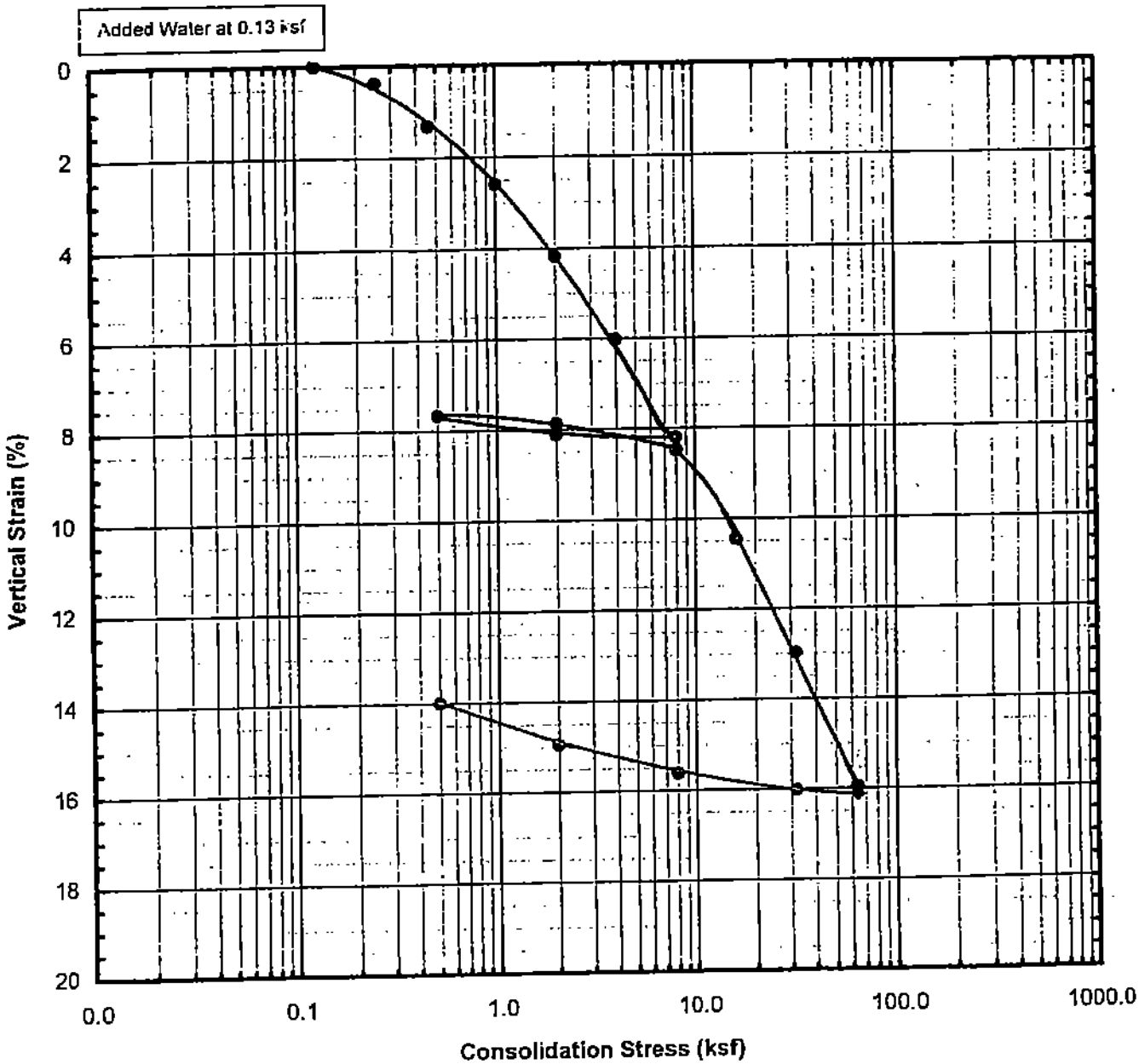
* Specific gravity is assumed low from quanity of seashells and organics

	Water Content, %	Total Unit Weight, pcf	Dry Unit Weight, pcf	Void Ratio	Saturation %	Height inches	Diameter inches	Specific Gravity	Liquid Limit	Plasticity Index
Initial:	23.7	116.7	94.4	0.72	85.9	1.096	2.870	2.60	43	23
Final:	22.2	123.6	101.1	0.60	95.8	1.019		*assumed		

Project Name: Del Rey Shores
Project Number: 5700012019.01

CONSOLIDATION TEST
Figure: B-13

● End of Loading Duration ◆ End of Loading Increment



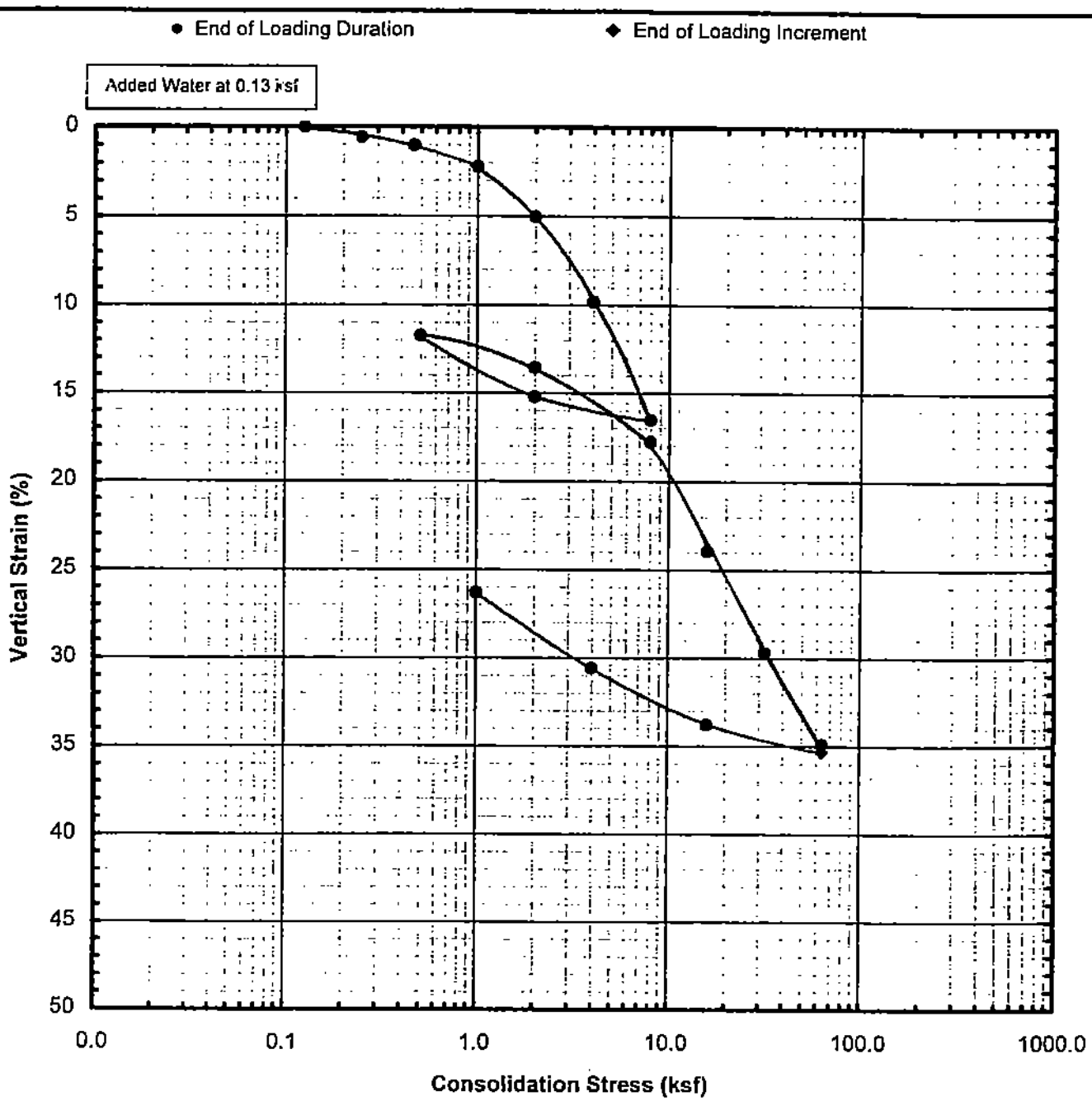
Exploration No.: B-6 Sample No.: 11 Depth (ft.): 40.0

Description/ Classification: Dark gray Clay (CL)

	Water Content, %	Total Unit Weight, pcf	Dry Unit Weight, pcf	Void Ratio	Saturation %	Height Inches	Diameter inches	Specific Gravity	Liquid Limit	Plasticity Index
Initial:	23.3	127.2	103.2	0.67	95.7	1.118	1.932	2.77	33	16
Final:	18.2	136.1	115.2	0.50	101.0	0.985		assumed		

Project Name: Del Rey Shores
Project Number: 5700012019.01

CONSOLIDATION TEST
Figure: B-14



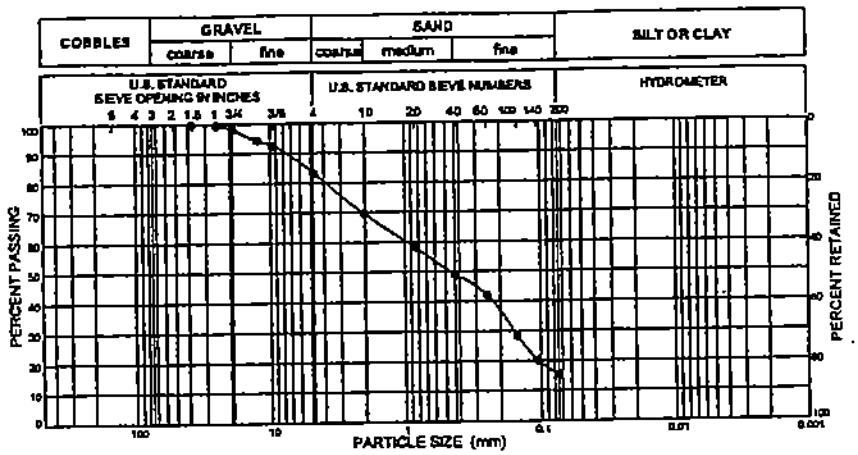
Exploration No.: B-7 Sample No.: 7 Depth (ft.): 25.0

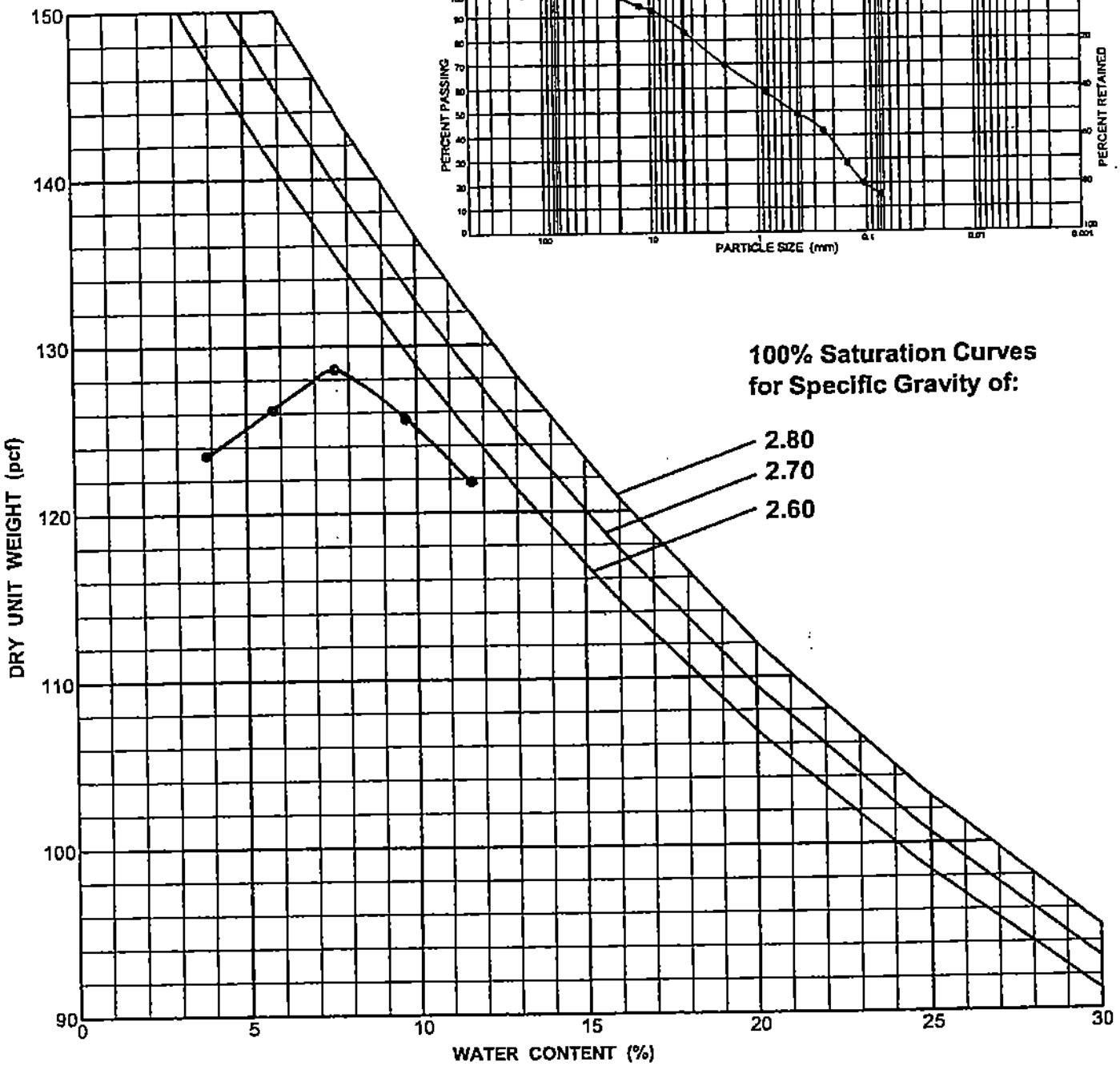
Description/ Classification: Gray Clay (CH)

	Water Content, %	Total Unit Weight, pcf	Dry Unit Weight, pcf	Void Ratio	Saturation %	Height inches	Diameter Inches	Specific Gravity	Liquid Limit	Plasticity Index
Initial:	56.6	102.8	65.6	1.63	96.1	1.127	1.931	2.77	70	42
Final:	44.9	113.3	78.2	1.21	103.1	0.931		assumed		

Project Name: Del Rey Shores
Project Number: 5700012019.01

CONSOLIDATION TEST
Figure: B-15





Boring Number / Sample Number	B-5 / SK-1 at 0-5 ft	Maximum Dry Unit Weight	128.5 pcf
Test Method	ASTM D1557-B	Optimum Water Content	7.5 %
Description	Silty Sand with Gravel (SM) [Fill]		
Liquid Limit	Plasticity Index	Specific Gravity	

Del Rey Shores
Marina del Rey, California
57-00012019.01

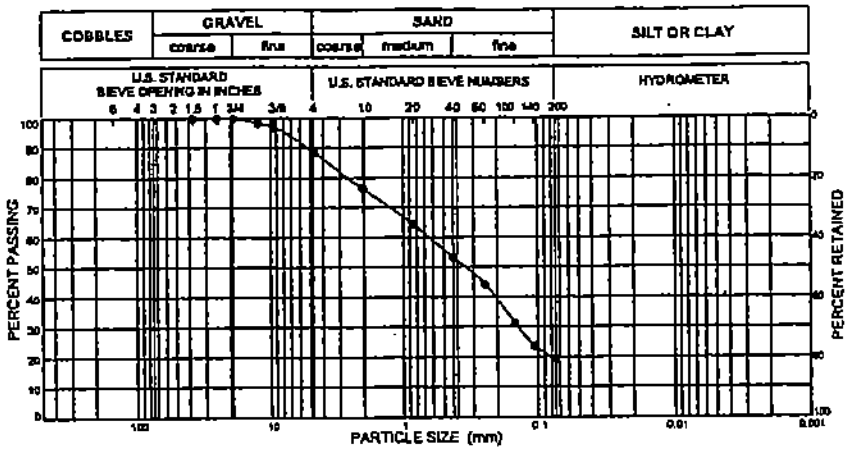
COMPACTION TEST

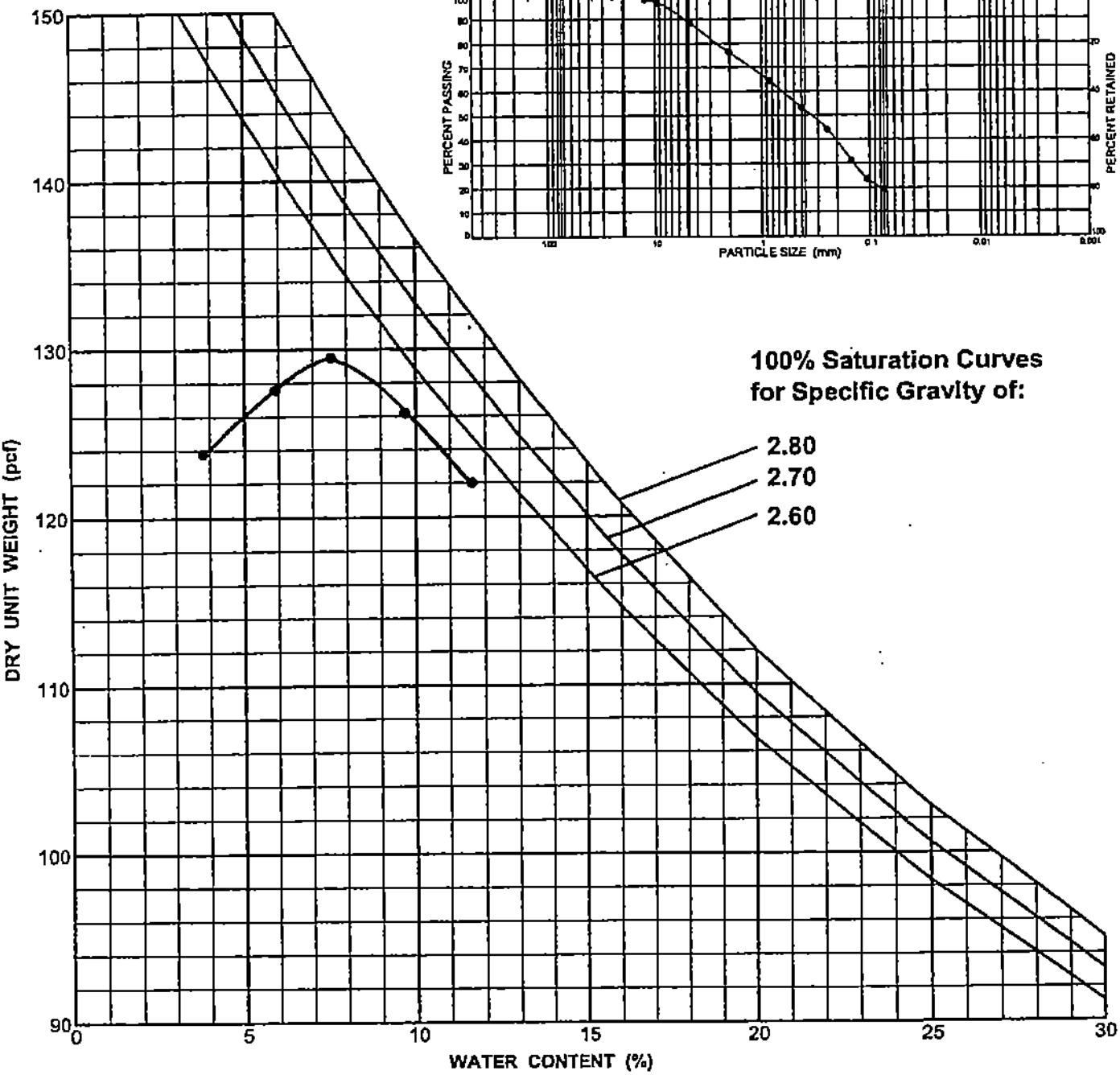
URS

Figure B-16

B-05 2.00

Report: COMPACTION_NO_LINE File: ORSHORES.GPJ: 3/13/2001 B-05





Boring Number	B-8	Maximum Dry Unit Weight	129.5 pcf
Sample Number	SK-1 at 0-5 ft		
Test Method	ASTM D1557-B	Optimum Water Content	7.5 %
Description	Silty Sand (SM) (Fill)		
Liquid Limit	Plasticity Index	Specific Gravity	

Del Rey Shores
Marina del Rey, California
57-00012019.01

COMPACTION TEST

URS

Figure B-17

B-08 2.00 2.00
Report: COMPACTION_NO_LINE; File: DRSHORES.GPJ; 3/13/2001 B-08

Calscience
Environmental
Laboratories, Inc.

July 27, 2000

Larry Rapp
URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Subject: **Calscience Work Order No.:** **00-07-0619**
Client Reference: **Del Rey Shores/5700012019.01**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 07/21/00 and analyzed in accordance with the attached chain-of-custody.

The results in this analytical report are limited to the samples tested and any reproduction of this report must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Marycarol Valenzuela
Project Manager

William H. Christensen
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Total Digestion
Method: EPA 6010B / EPA 7471A

Project: Del Rey Shores/5700012019.01

Client Sample Number:	Lab Sample Number:	Date Collected:	Matrix:	Date Prepared:	Date Analyzed:	QC Batch ID:
1	00-07-0619-1	07/21/00	Solid	07/21/00	07/24/00	000721lcs6

Comment(s): Mercury was analyzed on 7/24/00 12:57:33 with batch 000724lcs1

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Antimony	ND	0.750	1		mg/kg	Mercury	ND	0.0835	1		mg/kg
Arsenic	2.75	0.75	1		mg/kg	Molybdenum	0.577	0.250	1		mg/kg
Barium	30.8	0.5	1		mg/kg	Nickel	7.23	0.25	1		mg/kg
Beryllium	ND	0.250	1		mg/kg	Selenium	1.22	0.75	1		mg/kg
Cadmium	ND	0.500	1		mg/kg	Silver	ND	0.250	1		mg/kg
Chromium (Total)	9.11	0.25	1		mg/kg	Thallium	ND	0.750	1		mg/kg
Cobalt	2.66	0.25	1		mg/kg	Vanadium	12.9	0.2	1		mg/kg
Copper	8.42	0.50	1		mg/kg	Zinc	20.2	1.0	1		mg/kg
Lead	4.86	0.50	1		mg/kg						

2	00-07-0619-2	07/21/00	Solid	07/21/00	07/24/00	000721lcs6

Comment(s): Mercury was analyzed on 7/24/00 13:00:35 with batch 000724lcs1

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Antimony	ND	0.750	1		mg/kg	Mercury	ND	0.0835	1		mg/kg
Arsenic	2.19	0.75	1		mg/kg	Molybdenum	0.576	0.250	1		mg/kg
Barium	28.6	0.5	1		mg/kg	Nickel	7.85	0.25	1		mg/kg
Beryllium	ND	0.250	1		mg/kg	Selenium	1.40	0.75	1		mg/kg
Cadmium	ND	0.500	1		mg/kg	Silver	ND	0.250	1		mg/kg
Chromium (Total)	8.80	0.25	1		mg/kg	Thallium	ND	0.750	1		mg/kg
Cobalt	2.67	0.25	1		mg/kg	Vanadium	13.0	0.2	1		mg/kg
Copper	11.9	0.5	1		mg/kg	Zinc	22.2	1.0	1		mg/kg
Lead	5.91	0.50	1		mg/kg						

Method Blank	099-04-007-505	N/A	Solid	07/24/00	07/24/00	000724lcs1

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0835	1		mg/kg

Method Blank	097-01-002-1,691	N/A	Solid	07/21/00	07/21/00	000721lcs6

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Antimony	ND	0.750	1		mg/kg	Molybdenum	ND	0.250	1		mg/kg
Arsenic	ND	0.750	1		mg/kg	Nickel	ND	0.250	1		mg/kg
Barium	ND	0.500	1		mg/kg	Selenium	ND	0.750	1		mg/kg
Beryllium	ND	0.250	1		mg/kg	Silver	ND	0.250	1		mg/kg
Cadmium	ND	0.500	1		mg/kg	Thallium	ND	0.750	1		mg/kg
Chromium (Total)	ND	0.250	1		mg/kg	Vanadium	ND	0.250	1		mg/kg
Cobalt	ND	0.250	1		mg/kg	Zinc	ND	1.00	1		mg/kg
Copper	ND	0.500	1		mg/kg	Lead	ND	0.500	1		mg/kg

RL - Reporting Limit . DF - Dilution Factor . Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Ext. + D/I
Method: EPA 8015M

Project: Del Rey Shores/5700012019.01

Client Sample Number:	Lab Sample Number:	Matrix:	Date Collected:	Date Prepared:	Date Analyzed:	QC Batch ID:
1	00-07-0619-1	Solid	07/21/00	07/22/00	07/23/00	00072204sa

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard..

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	5.9	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	127	52-135	

2	00-07-0619-2	Solid	07/21/00	07/22/00	07/23/00	00072204sa

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard..

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	12	5	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	115	52-135	

Method Blank	098-03-002-621	Solid	N/A	06/22/00	07/22/00	00072204sa

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	125	52-135	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: EPA 5030B
Method: EPA 8015M

Project: Del Rey Shores/5700012019.01

Client Sample Number:	Lab Sample Number:	Matrix:	Date Collected:	Date Prepared:	Date Analyzed:	QC Batch ID:
1	00-07-0619-1	Solid	07/21/00	N/A	07/25/00	00072501sa

Parameter	Result	RL	DF	Qual	Units
TPH for Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	77	34-141	

Client Sample Number:	Lab Sample Number:	Matrix:	Date Collected:	Date Prepared:	Date Analyzed:	QC Batch ID:
2	00-07-0619-2	Solid	07/21/00	N/A	07/25/00	00072501sa

Parameter	Result	RL	DF	Qual	Units
TPH for Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	79	34-141	

Method Blank	098-03-008-558	Solid	N/A	N/A	07/25/00	00072501sa

Parameter	Result	RL	DF	Qual	Units
TPH for Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	101	34-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Project: Del Rey Shores/5700012019.01

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Total Digestion
Method: EPA 6010B

Spiked Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
00-07-0632-5	Solid	ICP 3300	07/21/00	07/21/00	072100ms6

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Antimony	42	39	50-115	7	0-20	3
Arsenic	101	101	75-125	0	0-20	
Barium	95	95	75-125	0	0-20	
Beryllium	94	97	75-125	3	0-20	
Cadmium	93	94	75-125	0	0-20	
Chromium (Total)	95	94	75-125	1	0-20	
Cobalt	93	94	75-125	1	0-20	
Copper	105	104	75-125	1	0-20	
Lead	92	94	75-125	1	0-20	
Molybdenum	93	94	75-125	1	0-20	
Nickel	95	96	75-125	2	0-20	
Selenium	99	96	75-125	2	0-20	
Silver	98	100	75-125	2	0-20	
Thallium	93	93	75-125	1	0-20	
Vanadium	99	98	75-125	0	0-20	
Zinc	4X	4X	75-125	4X	0-20	Q

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Project: Del Rey Shores/5700012019.01

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Total Digestion
Method: EPA 7471A

Spiked Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
00-07-0528-1	Solid	Mercury	07/24/00	07/24/00	072400ms1

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	110	96	76-136	14	0-16	

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Total Digestion
Method: EPA 6010B

Project: Del Rey Shores/5700012019.01

LCS Sample Number	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-002-1,691	Solid	ICP 3300	07/21/00	000721lc	000721lcs6

Parameter	Conc Added	Conc Recovered	%Rec	%Rec CL	Qualifiers
Antimony	50	45.3	91	80-120	
Arsenic	50	45.6	91	80-120	
Barium	50	50.0	100	80-120	
Beryllium	50	48.2	96	80-120	
Cadmium	50	50.0	100	80-120	
Chromium (Total)	50	48.7	97	80-120	
Cobalt	50	50.3	101	80-120	
Copper	50	48.8	98	80-120	
Lead	50	48.5	97	80-120	
Molybdenum	50	48.6	97	80-120	
Nickel	50	50.4	101	80-120	
Selenium	50	48.2	96	80-120	
Silver	25	23.9	96	80-120	
Thallium	50	50.6	101	80-120	
Vanadium	50	48.6	97	80-120	
Zinc	50	48.5	97	80-120	

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Project: Del Rey Shores/5700012019.01

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Total Digestion
Method: EPA 7471A

LCS Sample Number	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-04-007-505	Solid	Mercury	07/24/00	000724 l	000724lcs1

Parameter	Conc Added	Conc Recovered	%Rec	%Rec CL	Qualifiers
Mercury	0.835	0.831	100	82-124	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Project: Del Rey Shores/5700012019.01

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: Ext. + D/I
Method: EPA 8015M

LCS Sample Number	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
098-03-002-621	Solid	GC 6	06/22/00	07/23/00	00072204sa

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	104	100	79-137	4	0-29	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Project: Del Rey Shores/5700012019.01

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: EPA 5030B
Method: EPA 8015M

Spiked Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
00-07-0699-10	Solid	GC 21	N/A	07/25/00	00072501ms

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH for Gasoline	112	112	44-122	1	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

URS Corporation
2020 East 1st Street, Suite 400
Santa Ana, CA 92705

Project: Del Rey Shores/5700012019.01

Date Received: 07/21/00
Work Order No: 00-07-0619
Preparation: EPA 5030B
Method: EPA 8015M

LCS Sample Number	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
098-03-008-558	Solid	GC 21	07/25/00	048F0101	00072501sa

Parameter	Conc Added	Conc Recovered	%Rec	%Rec CL	Qualifiers
TPH for Gasoline	2.00	2.30	115	57-132	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 00-07-0619

Qualifier	Definition
3	Spike or Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
ND	Not detected at indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the sample concentration exceeding the spike concentration by a factor of four or greater.

0619

URS Greiner Woodward-Clyde

CHAIN OF CUSTODY RECORD

SHIPMENT NO.: _____

PAGE 1 OF 1

DATE 7/21/00

PROJECT NAME: DEL REY SHORES

PROJECT NO.: 5700012019.01

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
1	B-7	DRILLING MUD		GLASS JAR	X		TPH, TLC, STLC Pb, TTLC Pb
2	B-9	DRILLING MUD		GLASS JAR	X		TPH, TLC, STLC Pb, TTLC Pb

Total Number of Samples Shipped: 2 | Sampler's Signature: [signature]

Relinquished By: Signature [signature] Printed Name _____ Company _____ Reason _____	Received By: Signature [signature] Printed Name JAY PATEL Company CEL	Date 7/21/00 Time 0810
Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	Received By: Signature _____ Printed Name _____ Company _____	Date / / Time _____
Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	Received By: Signature _____ Printed Name _____ Company _____	Date / / Time _____
Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	Received By: Signature _____ Printed Name _____ Company _____	Date / / Time _____

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

LARRY RAPP (PROJECT MANAGER)
415.788

Appendix C
Potential Seismic Sources

The following near-field (close to the site) and regional (relatively distant from the site) faults that most likely represent sources of future strong seismic shaking at the site were evaluated as part of this study. The following paragraphs summarize the more significant aspects of these faults.

Palos Verdes Fault

The Palos Verdes fault forms the abrupt northern front of the Palos Verdes Hills. The fault is composed of several en-echelon strands that strike approximately N50W and dip approximately 70 degrees to the southwest (Ziony and Yerkes, 1985). Most of the mapped length of the Palos Verdes fault is offshore of southern California. The fault has been mapped northward of the Palos Verdes Hills under Santa Monica Bay to the Redondo Canyon Fault and may extend further north. Southeast of the Palos Verdes Hills the fault has been mapped offshore to where it bifurcates around Lasuen Knoll, which is located offshore of San Clemente (Nardin and Henyey, 1978). The fault length is approximately 96 (+/- 10) kilometers (km), (Petersen *et al.*, 1996).

Movement on the fault is considered to be oblique with reverse and right lateral components of movement. Based on studies performed at Los Angeles Harbor (McNeilan *et al.* 1996) the fault's style appears to be dominantly right lateral southeast of the harbor. North of Los Angeles Harbor, the fault's style appears to be oblique. Yerkes and Wentworth (1965) reported 1.8-km vertical separation of the Catalina Schist basement rock with southwest side up sense of movement. Davis *et al.* (1989) interprets the Palos Verdes fault as a back thrust on an active decollement, and similarly Shaw (1993) interprets the decollement as the Compton-Los Alamitos thrust fault system. The CDMG (Petersen *et al.*, 1996) considers the Palos Verdes fault to be predominately right-lateral strike-slip, based on the interpretations of Henyey (1994).

Although no evidence of surface rupture is displayed for the onshore segment of the Palos Verdes fault, there are several lines of evidence that suggest continuing uplift and thus continuing activity of the fault. The fault is considered to be active based on the following lines of evidence: 1) the large, youthful topographic expression of the uplifted Palos Verdes Hills; 2) geodetic data that suggest continuing uplift of the Palos Verdes Hills; 3) uplift of marine terraces on the flanks of the Palos Verdes Hills, which Valensise and Ward (1992) have interpreted to be the result of 3.0 mm/yr. of dip slip motion on the Palos Verdes fault; 4) recent seismicity that has been associated with fault up to magnitude 3.9 (Teng and Henyey, 1975), and seismicity that has been concentrated near the northern portion of the fault and is primarily located at depths shallower than 15 km (Petersen *et al.*, 1996); and 5) the apparent offset of the seafloor and late

Pleistocene and Holocene sediments based on interpretation of offshore seismic reflection surveys completed across the trend of the fault (Clark *et al.*, 1985).

The Newport-Inglewood Fault Zone System

The Newport-Inglewood fault zone (NIFZ) is the northern part of a coastal strike-slip fault and associated fold system that extends between Los Angeles and San Diego. The northern NIFZ extends southeast from the Santa Monica fault, which defines the southern border of the Transverse Ranges, to Newport Beach (Bryant, 1988). The southern portion of the fault system continues on a southeasterly trend offshore until it comes back onshore near San Diego as the Rose Canyon fault (Grant *et al.*, 1997). The northern onshore fault trace is approximately 70 km long and consists of a series of domal uplifts and low mesas arranged in en-echelon pattern within a right-lateral strike-slip fault zone (Wilcox *et al.*, 1973; Barrows, 1974; Wright, 1991).

The fault zone consists of a complex series of discontinuous strike-slip traces and shorter subsidiary normal and reverse faults (Barrows, 1974; Bryant, 1988; Grant *et al.*, 1997). Right lateral displacement of 1 to 2 km in the lower Pliocene strata and more than 1 km of apparent vertical separation in the basement rocks have been documented along the zone (Yerkes, *et al.*, 1965). A maximum displacement of approximately 3-km has accumulated since the late Miocene time (Woodward-Clyde Consultants, 1979).

The historical seismicity forms a broad distribution around the fault zone and does not clearly delineate the fault trace (Petersen and Wesnousky, 1994). Estimates of the slip rates vary along the fault, and the CDMG used a slip rate value of 1.0 +/- 0.5 mm/yr based on findings reported by WGCEP (1995). The estimated maximum credible earthquake assigned to the fault by CDMG (Petersen *et al.*, 1996) is a moment magnitude 6.9 calculated from relationships derived by Wells and Coppersmith (1994). Subsurface movement on the NIFZ produced the 1933 Long Beach Earthquake (M_w 6.4; Hauksson and Gross, 1991), and the 1941 Torrance-Gardena earthquakes (M_L 5.0 and 5.4; Richter, 1958), and the estimated 4.9 1920 Inglewood Earthquake.

Santa Monica Fault

The Santa Monica fault is an east-west trending, northward dipping, left-lateral, reverse fault. It extends along the southern margin of the Santa Monica Mountains and offshore into Santa Monica Bay. Based on trenching across the fault in the west Los Angeles area, Crook (1983) concluded that the most recent displacement of the Santa Monica fault is at least several thousand years old and more likely pre-Holocene. However, Hauksson and Saldivar (1986) reviewed the historic earthquakes recorded in Santa Monica Bay and suggested that the 1930,

magnitude 5.2 Santa Monica earthquake occurred on the offshore western end of the Santa Monica fault. Ziony and Yerkes (1985) link the western portion of the Santa Monica fault with the Anacapa-Dune fault, located approximately 13 km off the Santa Monica coastline. However, studies by Hauksson and Saldivar (1986) suggest that the Santa Monica fault and the Anacapa-Dune fault are distinct fault segments, separated by a 8 to 10 km left step occurring in Santa Monica Bay. This interpretation appears to be supported by mapping in the offshore area by Vedder *et al.*, (1986), which suggest the Santa Monica fault may connect with the Malibu Coast fault.

Paleoseismic trench studies have revealed at least six surface ruptures have occurred along the Santa Monica fault within the last 50,000 (50 ka) years, with the most recent definite rupture occurring approximately 10 ka to 17 ka years ago. However a possible younger rupture event may have occurred between 1 ka to 3 ka years ago (Dolan, *et al.*, 2000). Recent studies by Tsutsumi *et al.*, (2000) and Dolan, *et al.*, (2000), indicate that the mapped trace of the Santa Monica fault along the base of the Santa Monica Mountains is inactive, and the active strand is located further south west of the West Beverly Hills lineament.

The CDMG (Petersen *et al.*, 1996) assign a length of 28 +/-3 km, a slip rate of 1.0 +/- 0.5 mm/yr., and a maximum moment magnitude earthquake of 6.6 to the Santa Monica fault.

Hollywood Fault

The Hollywood fault is located near the southern edge of the Santa Monica Mountains, north and parallel to the Santa Monica fault. The fault dips steeply to the north beneath the mountains and can be traced for approximately 17 km from the Los Angeles River to the northwestern Beverly Hills. The Hollywood fault is primarily a left-lateral reverse oblique fault that is considered to be part of the active Transverse Ranges Southern Boundary fault system (Dolan *et al.*, 1997). Movement along the fault has juxtaposed the granite, metamorphic, and sedimentary rocks of the Santa Monica Mountains up and over the sedimentary deposits south of the mountains.

Investigations in the Hollywood area (Converse Consultants, 1981) have revealed an apparent vertical displacement of 270 feet (north side up) involving Pleistocene and Holocene alluvium. Investigations of the fault by Dolan, *et al.* (2000) have documented that the latest recognized surface rupture occurred during the early to mid-Holocene time, between approximately 6,000 to 11,000 years ago. The locus of activity appears to step 1.2 km south along the West Beverly Hills lineament to the Santa Monica fault (Dolan, *et al.*, 1997).

Investigations by Lindvall *et al.* (2001) indicate that the active portion of the Hollywood fault steps southward away from an alignment of crystalline bedrock exposures that was previously mapped as the active trace. Lindvall *et al.* (2001) have interpreted the lineament along the range front west of the intersection of Sunset and Las Cienega Boulevard in West Beverly Hills as a paleo-shoreline. Extensive investigations in this area have revealed inactive north dipping dip-slip faults and several south-southeast dipping normal faults, with south-side down displacement. The active strand of the Hollywood fault is believed to be located south of these inactive hanging wall structures (Lindvall *et al.*, 2001).

Differential uplift across the Hollywood fault has been interpreted to be 0 to 0.14 mm/yr based on a comparison of an uplifted marine abrasion platform in the hanging wall of the fault (Lindvall, *et al.*, 2001), and a footwall block in the La Brea Plain (Quinn *et al.*, 2001). The CDMG (Petersen *et al.*, 1996) assign a length of 17 +/-2 km, a slip rate of 1.0 +/- 0.5 mm/yr., and a maximum moment magnitude earthquake of 6.4 to the Hollywood fault.

The Compton-Los Alamitos Blind Thrust Fault

Active blind thrust fault systems (i.e., low-angle reverse faults with no surface exposure) capable of generating moderate to large earthquakes have been interpreted to exists beneath the Los Angeles Basin (Shaw, 1993; Shaw and Suppe, 1996; and Davis *et* al., 1989). Modeling of these blind thrust fault systems was based on active folding and faulting as recognized from balanced kinematic models and geologic cross sections developed using fault-bend fold theory. The fault systems and associated slip are inferred based on structural interpretation of fold geometries that were recognized from seismic reflection profiles, hydrocarbon exploration and production well logs, and published ages of sedimentary horizons. The modeled slip rates are based on the assumption that the deformation rates (uplift) established for pre-Pliocene and Pleistocene structures have remained constant and can be extrapolated to represent present day uplift rates.

The Compton-Los Alamitos blind thrust fault system as proposed by Shaw (1993) trends sub-parallel the NIFZ. A strand along the trend was previously mapped as a concealed, near surface fault that expressed Quaternary deformation Ziony and Jones, 1987; Jennings, 1992). This previously mapped trend is shown on Figure 3 as the Compton and Los Alamitos faults. Interpretation of high-resolution seismic reflection profiles across the previously mapped trends confirms the presence of a northeast dipping monoclinal fold that deforms near surface horizons, but precludes a through-going high-angle fault (Shaw 1993). The Compton-Los Alamitos blind thrust system is modeled as dipping 23 degrees to the northeast at an approximate depth of 10 km beneath the previously mapped Compton–Los Alamitos fault trend (Shaw, 1993). Shaw

(1993) interprets the Compton-Los Alamitos blind thrust fault system as continuing southwestward truncating the NIFZ and projecting to the surface approximately 30 km offshore in Santa Monica Bay. Based on cross-sections by Shaw (1993), the Compton-Los Alamitos blind thrust fault system is located at an approximate depth of 6 to 8 km beneath the Del Rey Shores site. Based on the above-described fault geometries the near source distance determined to the site is zero kilometers (following the procedures to determine the distance to active near source fault zones, as outlined by the International Conference of Building Officials, 1998).

However recent studies suggest that the deformation of Plio-Pleistocene sediments have slowed as compared to pre Plio-Pleistocene deformation rates, and may have stopped altogether. Structural isopach (thickness) maps on the Plio-Pleistocene San Fernando Formation indicate that underlying structures, such as the Compton-Los Alamitos blind thrust fault, are inactive (Yeats, 2001).

Quinn *et al.* (2001) has utilized borehole data to construct a three-dimensional stratigraphic and structural model to evaluate the growth of a complex northeast-dipping monoclinal fold that has been previously proposed to be undergoing active uplift and folding by a blind thrust in the northern margin of the Los Angles basin. The results of this model indicate that the monoclinal fold has continued to be uplifted into the early Pleistocene, but the rates of uplift have slowed significantly during middle Pleistocene, and have virtually ceased by oxygen-isotope Stage 9 (approximately 320,000 years ago).

Continued uplift of the Oxygen-isotope Stage 9 paleo-shoreline along the western margin of the northern shelf has constrained uplift to 0.11 to 0.13 mm/yr. These rates are within the ambient regional uplift range and are less than the rates modeled from long-term uplift rates by more than a factor of 2 (Quinn *et al.*, 2001). These results indicate that model-driven long-term rates may not adequately predict blind-fault activity in other parts of the basin, and that caution should be used when applying long-term rates for present-day seismic analysis (Quinn *et al.*, 2001). Recent rates are significantly slower than previously proposed and may have essentially ceased (Quinn *et al.*, 2001).

The above observations suggest that the Compton-Los Alamitos blind thrust is inactive, and therefore is not considered a likely or significant source of shaking at the Del Rey Shores site.

San Andreas Fault System

The San Andreas is a system of right-lateral strike –slip faults that extend over 1120 kilometers from the Imperial Valley to Cape Mendocino in northern California. The fault system has been

subdivided along its length into distinct fault segments that are considered capable of rupturing independently based on their seismic characteristics. Earthquakes of differing magnitude or duration may result depending on how many segments rupture during a single event. Historically the San Andreas has produced large magnitude earthquakes such as the 1857 Fort Tejon event, which ruptured along the Parkfield, Cholame, Carrizo and Mojave fault segments. The greatest potential for generating ground shaking associated with a rupture on the San Andreas fault system is from the combined segments that ruptured during the historic 1857 event. This portion of the San Andreas fault system is approximately 73 km from the site. The combined length of these segments is approximately 345 +/- 35 kilometers and the maximum moment magnitude earthquake is estimated to be 7.8 (Petersen *et al.*, 1996). Slip rates of 35 +/- 5 mm/yr. are based from slip rates associated with the Carrizo segment (Petersen *et al.*, 1996).

Appendix D

Suggested Items For Inclusion In Specifications For Engineered Fill

APPENDIX D Suggested Items For Inclusion In Specifications For Engineered Fill

1.0 - GENERAL

1.1 DESCRIPTION

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled, and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 ROLE OF THE GEOTECHNICAL ENGINEER

1.2.1 Construction - The Owner will employ a Geotechnical Engineer to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Engineer and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by URS Corporation, Santa Ana, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that

the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed in a single continuous operation, with a minimum of at least one test (1) per every 2 feet of vertical height of large fills; (2) per every 50 feet of continuous trench; or (3) one foot of vertical height in limited backfill areas. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Engineer nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 REFERENCE STANDARDS

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D422 - "Standard Test Method for Particle-Size Analysis of Soils"

D1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D2922 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D3017 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

The State of California Department of Transportation Standard Specifications shall be used for pavement and drainage materials.

1.4 DEGREE OF FILL COMPACTION

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio, expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. The optimum water content shall be obtained in the same test used to obtain the reference maximum dry density.

Correction of the maximum dry density and optimum water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D2922 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D3017 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

PART 2.2 - PRODUCTS

2.1 MATERIALS

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Engineer for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, are suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass

through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches but less than 6 inches in maximum dimension shall be placed by the Contractor so that it is completely surrounded by compacted, finer material; no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select Fill shall meet all criteria for General Fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. At least 15 percent of material shall pass through a U.S. Standard No. 200 sieve. The expansion index of select material shall be less than 30 (i.e. 3.0 percent swell) when tested in accordance with ASTM D4829.

2.1.4 Class 2 Permeable Material - Class 2 permeable material shall meet the requirements of Caltrans Standard Specifications, latest edition, Section 68-1.025. For reference, the gradation of the permeable material, as indicated, is the following:

Sieve Size	Percentage Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

2.1.4 Aggregate Road Base

Road Base materials should conform to Section 26 of the Caltrans Standard Specifications and have a minimum R-value of 78. Proposed material should be provided to the Geotechnical Engineer in advance to confirm acceptability prior to placement on site.

2.1.5 Coarse Gravel

The coarse gravel placed beneath the structural slab and used for construction support should consist of material that has at least 95% between 1½ inch and 5 inches in size

PART 3.0 - EXECUTION

3.1 CLEARING AND GRUBBING

Within the project limits, the Contractor shall demolish structures as specified on the Drawings. Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials which are to be used in fill is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils which may result from roots deeper than those encountered during clearing and grubbing operations. All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 COMPACTED FILLS

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil and uncertified fill to firm material, as approved by the Geotechnical Engineer. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent for general fill areas, and 95 percent for select fill areas, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting Fill Material - Onsite soil materials obtained from removals, borrow, or cut areas may be reused as compacted fill provided they are free from deleterious debris and meet the other requirements of the "Materials" portion of this Specification Section. Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent for general fill, and 95 percent for select fill, of the maximum dry density as determined by ASTM D1557. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydroconsolidation techniques shall not be used.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. In general, topsoil may be used in landscaped areas that will not be covered by structures. Do not place topsoil beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Larger roots, branches, and other organic debris are not permitted within the compacted topsoil layer. At the end of each day, remove from the site roots, branches, or other objectionable materials that are segregated and accumulated during earthwork operations.

When backfilling and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have a minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow (such as within the drainage layer beneath the building), and is subject to the approval of the Geotechnical Engineer. The use of slurry to replace the 2 feet of select fill beneath shallow foundations or slab-on-grade is not acceptable.

3.3 PROTECTION OF WORK AND ADJACENT PROPERTIES

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. The Contractor shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

The Contractor shall dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

The Contractor shall protect benchmarks, monuments, and other reference points against displacement or damage. The Contractor shall repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed unless the Geotechnical Engineer is informed and observes the work.

APPENDIX 5.1(B)

URS, Soil Gas Survey Letter Report, Proposed Apartment Complex Redevelopment, Del Rey Shores, Marina del Rey, California (May 12, 2005)

URS

May 12, 2005
Project No. 29871356

David Levine
Del Rey Shores Joint Venture
Del Rey Shores North Joint Venture
4201 Via Marina
Marina Del Rey, California 90292

c/o David J. Gaulton
Pacific Development Services
21515 Vanowen Street, Suite 101
Canoga Park, California 91303

SUBJECT: SOIL GAS SURVEY LETTER REPORT
PROPOSED APARTMENT COMPLEX REDEVELOPMENT
DEL REY SHORES
MARINA DEL REY, CALIFORNIA

Dear Mr. Levine:

URS Corporation (URS) is pleased to submit this letter report summarizing soil gas survey activities conducted at the proposed apartment complex site (the "Site") on April 21 and 22, 2005. The proposed apartment complex redevelopment property is located at 4201 Via Marina in the city of Marina del Rey, California (Figure 1). The purpose of this work was to assess the nature of volatile substances including methane that may be present in shallow soil gas within the unsaturated zone at the Site, their concentration, and general extent.

Based on the results of the soil gas survey discussed herein, neither volatile organic compounds (VOCs) nor methane were detected above method detection limits within all samples of the fill soil tested beneath the site. In addition, we evaluated the characterizations and the previous headspace readings taken from soil samples obtained within the upper 13 feet of the site (the depth of proposed redevelopment construction) as well as published data. Based on these factors, the current findings indicate the potential for methane hazards is considered low and, with respect to soil gas, no further action is recommended at this time for the proposed redevelopment project.

The following sections provide in greater detail the proposed project, subsurface findings, test results, and conclusions.

URS Corporation
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1.0 INTRODUCTION

The proposed apartment complex site (the "Site") is located at 4201 Via Marina in Marina del Rey, California. The Site is bordered by Via Marina on the east, Marquesas Way to the south, Dell Avenue to the west, and Admiralty Loop to the north as shown in Figures 1 and 2. The Site has historically been divided into two parcels, referred to as the southern parcel and the northern parcel, or "Parcel A" and "Parcel B," respectively. Parcel A is approximately 3.2 acres in size, while Parcel B is approximately 4.8 acres. As shown on Figure 2, Parcels A and B, are collectively referred to herein as "the Site".

A Geotechnical Investigation (GI) was previously conducted at the Site by URS Corporation (URS), formerly Woodward Clyde Consultants, on behalf of Cox, Castle, and Nicholson (URS Corporation, 2001). Based on the findings of the GI, URS recommended additional site characterization activities to evaluate the odoriferous and oil material encountered below grade during the GI. The additional investigation included a soil gas survey.

The soil gas survey was performed on April 21 and 22, 2005. This report has been prepared to present the scope and summarize the results of that survey, in accordance with both the Advisory document titled Active Soil Gas Investigations, January 28, 2003, jointly issued by the Department of Toxic Substances Control (DTSC) and the California Regional Water Quality Control Board – Los Angeles Region (LARWQCB) (DTSC/LARWQCB Advisory), and the LARWQCB Interim Guidance for Active Soil Gas Investigations (February 25, 1997).

2.0 BACKGROUND

2.1 Historical Onsite Use

Our knowledge of the site use history is excerpted from the GI report. That information was based on review of historic aerial photographs and a review in 1988 of oil well records at the California Department of Conservation, Division of Oil and Gas in Long Beach, California.

In the late 1920's, the site consisted primarily of lagoon and tidal marshes, at and slightly above high tide levels. Lagoon channels crossed portions of the Site; in particular, one channel looped through the northeast corner of the Site, and a smaller eddy or channel protruded into the south end of the site. Between 1928 and 1936 the site was explored and developed for oil production. Site development included a tank farm, sump, miscellaneous structures, and associated piping.

By 1940, oil operations appear to have been on the decrease. By January 1956, all tanks and structures appear to have been removed from the site, except for the sump areas. By November of 1956, Marina Del Rey marina had been constructed, and the site began to change from being a topographic low area to a topographically high area. At this time, Via Marina and Via Dolce were constructed, but no structures were on site.

Currently, the site lies north of Ballona Creek, between the Ballona Lagoon to the west and Marina Del Rey Harbor to the east. The site is used as a medium density apartment complex with surrounding covered parking areas.

2.2 Previous Site Investigations

A Preliminary Geotechnical Investigation was conducted by Woodward Clyde Consultants in 1988 for Parcel A of the Site. The field investigation in 1988 was conducted on April 25 and consisted of advancing three exploratory borings to depths ranging from 24.5 to 46 feet below grade, designated WCC B-1 through WCC B-3 as shown on Figure 3. As discussed above, URS also conducted a GI for the entire Site between July 17 and 20, 2000 (report dated May 8, 2001). This investigation consisted of 6 rotary wash borings (URS B-4 through URS B-9) at the locations shown on Figure 3. The depths of the six borings ranged from 36½ to 81½ feet below existing grade.

2.3 Subsurface Soil Conditions

Information regarding subsurface soil conditions was excerpted from the previous site investigations performed by URS. Site soil consists of fill to a depth of 13 to 26 feet below existing grade. This fill was encountered in all borings conducted during the GI. The soil gas survey was conducted entirely within the fill soil within the unsaturated zone (above the water table). The deeper depths of fill generally coincide with the location of the aforementioned lagoon channels at the site, except at location URS B-5, as discussed below. The uppermost 7 feet of fill (extending to 5 feet below the bottom of footings) is documented in "Report of Inspection and Testing, Proposed Apartment Development, Marina del Rey Project," dated March 22, 1972 by R.T. Frankian and Associates. A boring log from the GI presenting typical Site soil conditions is included in Appendix A.

The fill consists primarily of loose to medium dense sand, silty sand, and clayey sand, with occasional gravel and seashells. In the middle of the site, as encountered in WCC B-1, WCC B-3, URS B-5, URS B-6, and URS B-8, a 5 to 7 foot thick layer of fine-grained material was encountered at the bottom of the fill, above the native soil. This fine-grained material consisted primarily of very soft to soft, wet clay and sandy clay, and contained occasional foreign items such as wood chips, glass, copper wire, tile pieces, and roots.

In boring URS B-5, fill was encountered down to a depth of about 7 feet deeper than the previously existing grade. However, the location of URS B-5 approximately coincides with the location of a structure and piping on the west side of the site, where perhaps trenching or other man-made excavations could have been performed. At this location, the fill consisted of very dense, well-graded gravel with silt and sand, and pieces of glass, rubber, wire, and wood.

Below the fill lies silts and clay of lagoonal and fluvial origin (Poland, 1959), and organic-rich tidal muds with interbedded floodplain deposits that are primarily composed of fine- to medium- grained sand (Castle, 1960). The soft to very stiff clay layers are generally consolidated. These tidal deposit materials generally extended to a depth of about 43 to 47 feet below existing grade in the borings.

Petroleum hydrocarbon odor was encountered during 1988 field drilling operations at WCC B-1 and WCC B-3. In WCC B-1, dark olive gray, sandy silt with gravel, lenses of peat, clay, and a significant odor was found from 17 to 22 feet below the ground surface. In boring WCC B-3, a layer of gravelly sand to sandy gravel with clay, and trace of petroleum hydrocarbon with a significant petroleum hydrocarbon odor extended from about 14 to 25 feet below the existing ground surface.

Similar odors at similar depths were also encountered during the 2000 investigation. A strong petroleum odor was encountered emanating from the boring URS B-5 between 18 and 19 feet. In this boring, the qualitative headspace readings (as measured with an Organic Vapor Analyzer [OVA]) on samples between a depth of 14 and 23 feet ranged from 8 to 10 ppm above background. This material was a black well-graded gravel fill, apparently coinciding with various piping and possibly trenching activities during the previous oil operations. In URS B-6, black sandy clay was encountered at 16 feet that had a headspace reading of 38 ppm above background, with a slight sulfur (rotten egg) odor noticed at about 26 feet. In URS B-7, a sulfur odor was noticed at a depth of about 25 feet, with headspace readings of 6 ppm from samples at 21 and 26 feet. In URS B-8, a sulfur odor was noticed at a drill depth of around 23 feet, but no readings above background were measured (there was no recovery of the sample at 21 feet). The strongest odors were encountered in URS B-9 in black sandy clay and clayey sand, starting at about 14 feet in depth and extending to about 20 feet below grade. The headspace in the sample at 16 feet in this boring reached 90 ppm. No odors or headspace readings above background levels were encountered in URS B-4 or WCC B-2.

2.4 Groundwater

Based on information obtained from the GI report, the static water level was reportedly not observed during the 1988 field investigation. An attempt was made to measure the depth to the groundwater table by bailing the drilling fluid out of borings WCC B-1 and WCC B-3 after completion during the 1988 field investigation. However, these two boreholes caved in at a depth of about 18 feet below existing grade in boring WCC B-1 and about 12 feet in boring WCC B-3. Because of the cohesionless nature of the shallow subsurface soil, soils below the water table tended to cave in after the drilling fluid was removed. It was believed that the static groundwater table at the site was below the depths where the soil caved in those borings.

The depth to groundwater was measured in all 6 borings during the 2000 investigation. The depth to groundwater ranged from 13 to 23 feet below existing grade, corresponding to elevations between +1.5 and +11.5 feet Mean Sea Level (MSL).

Because of the proximity of the site to the waterfront, it is reasonable to assume that the water table beneath the site is influenced by tidal variations. Data on the overall depth to groundwater and its fluctuations can be obtained by installing groundwater monitoring wells. Because of the apparent variability in the groundwater elevations measured during the previous investigations and in the absence of monitoring well data, the depth to groundwater can only be estimated. For the purposes of determining sampling depths during preparations for this soil gas survey, we assumed a groundwater level of 13 feet below the existing ground surface, which was consistent with the shallowest water level actually measured in the 2000 investigation.

As discussed in Section 3.6, the depth to water appeared to be much shallower during this soil gas survey investigation in comparison with previous geotechnical investigations. Groundwater was encountered at approximately 7 to 8 feet bgs in all soil gas probes, except along the west portion of the Site, where it was encountered at 3 feet bgs.

3.0 SAMPLING ACTIVITIES

3.1 Sampling Locations and Rationale

The soil gas survey was conducted to establish, through a field sampling and analyses program, the nature of volatile substances including methane that may be present in shallow soil gas within the unsaturated zone at the Site, their concentration, and general extent. A total of 15 locations were selected for sampling to assess potential impacts within the fill soil associated with prior oil field production activities at the Site. The soil gas sampling

locations are shown on Figure 3. At each location, soil gas samples were to be obtained at depths of 5 and 10 feet bgs. The soil gas locations were placed in an approximate grid pattern based on three criteria: 1) locations of proposed redevelopment structures as shown in Figure 4; 2) locations of existing structures which determined accessible versus inaccessible areas as shown in Figure 2; and 3) locations of historical oil production facilities as shown on Figure 5.

The soil gas samples were analyzed onsite by a mobile laboratory for VOCs by modified EPA Method 8260B, and for methane using a gas chromatograph equipped with a Flame Ionization Detector (FID). Soil gas sampling and analyses were conducted in general accordance with the Advisory — Active Soil Gas Investigations dated January 28, 2003, jointly issued by the DTSC and the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) (DTSC/LARWQCB Advisory).

3.2 Pre-Field Activities

Prior to commencement of field activities, Underground Services Alert (USA) was notified of the intent to conduct subsurface investigations prior to initiation of intrusive field tasks. All locations of subsurface investigation were clearly marked with paint as required by USA. At each planned sampling location, a geophysical utility survey was also conducted to help identify subsurface lines and other features/obstructions. Several boring locations were moved as a result of conflict with underground utilities.

3.3 Soil Gas Sampling

Soil gas sampling was conducted by PCR Laboratories (PCR) of San Marcos, California. At the time of the sampling, the weather was sunny (it had not rained for 24 days – since March 28, 2005). Soil gas sampling logs are provided in Appendix B.

A description of the sample collection procedures is provided below.

Probe Installation: Probes were constructed of 1-inch diameter steel and were equipped with a removable "drop" tip that allowed the bottom of the probe to be opened for sampling. The probes were installed using a truck-mounted direct-push device. At probe locations that were inaccessible to the truck-mounted rig, probes were installed with pneumatic-powered handheld drilling tools. Polyethylene tubing ran down the center of the probe to the sampling port beneath the tip. Once at the desired depth, the probe was raised approximately 4 to 6 inches to allow the retractable tip to be exposed to the soil. To prevent surface air from affecting the soil gas sample from the targeted depth interval, a conical-shaped granular bentonite mound was placed and hydrated around the probe where the probe

entered the ground surface. The probe was allowed to equilibrate for a minimum of 20 minutes prior to tracer testing and subsequent sample collection in accordance with the DTSC/LARWQCB Advisory.

Tracer Testing: To check for communication between the ground surface and the sampling point at depth, shaving cream containing isopentane as a propellant was used at each soil gas sampling location as a tracer test. The tracer was released at the top of the probe and near the ground surface adjacent to the probe to evaluate if ambient air had broken through and diluted the soil gas sample. The tracer was quantified and reported as a target analyte. Isopentane was not detected in any of the soil gas samples analyzed (Table 1).

Purge Testing: A purge volume test was conducted at the beginning of the soil gas investigation to evaluate the appropriate purge volume to use during this investigation per the DTSC/ LARWQCB Advisory. The test was conducted by collecting samples after applying 1, 3, and 7 purge volumes and analyzing the samples for VOCs. The purge tests were conducted at SG-1 and SG-2 at a depth of 5 feet bgs. There were no targeted VOCs or methane detected in the purge volume tests. Therefore, three purge volumes were selected as the appropriate purge volume for the soil gas survey.

Sample Collection: Soil vapor was withdrawn from the probe tubing using an oil-less vacuum pump at 200 milliliters per minute (ml/min) or less. Once the appropriate purge volume was removed, each sample was collected into a 100-ml glass syringe and immediately transferred to the mobile lab for analysis. Each sample was injected into a gas chromatograph/mass spectrometer for analysis of VOCs by modified EPA Method 8260B; methane was separately analyzed using a gas chromatograph equipped with an FID. All analyses were conducted in a manner that was consistent with the DTSC/LARWQCB Advisory. All soil gas samples were analyzed within 30 minutes of field collection.

Decontamination and Backfill: To minimize the potential for cross-contamination between sampling locations, all external probe parts were cleaned of soil and moisture prior to insertion. The probes were pressure washed with hot soapy water and thoroughly rinsed before being brought to the Site. New (dedicated/disposable) tubing was used for each sample. The used tubing was bagged, along with other housekeeping wastes, e.g., gloves, paper towels, etc., and handled as Class III waste. Sample syringes were baked in a vacuum oven at a temperature of approximately 100 °C for at least 1 hour before each use. Once sampling had been completed, the probe was withdrawn from the borehole, and the borehole annulus was backfilled with hydrated granular bentonite from total depth to surface grade.

3.4 Soil Gas Sample Analysis

Onsite analytical services were provided by American Analytics of Chatsworth, California. Analyses were requested on chain-of-custody records. A total of 24 soil gas samples (17 primary field samples, two field duplicates [one per day], and five additional purge volume test samples) were analyzed for VOCs by modified EPA Method 8260B, including methane, consistent with the DTSC/LARWQCB Advisory. A list of analytes and their reporting limits are provided in Table 1. Copies of the chain-of-custody records are included with the laboratory reports in Appendix C.

3.5 HSP Implementation

URS performed all site work under the Site-specific Health and Safety Plan (HSP) prepared for the soil gas survey. The plan was prepared in accordance with the requirements of Title 29 Code of Federal Regulations, Section 5192. URS field personnel reviewed the HSP prior to commencing fieldwork. Daily safety briefings were conducted to identify potential physical and chemical hazards and outline measures to be taken in the event of an emergency. All onsite personnel were required to sign the daily safety briefing form.

During field activities, all personnel within the exclusion zone wore appropriate Level D personal protective equipment. The workers' breathing zone was monitored for organic vapors using a PID as required by the HSP. Based on the breathing zone PID measurements, all fieldwork was performed under Level D conditions.

No incidents or emergency actions occurred during the field program.

3.6 Field Variances

Groundwater was encountered at higher levels than previous investigations and reported water depth from nearby sites had indicated. In general, the water table occurred in the vicinity of 7 to 8 feet below existing grade, but was shallower in the northwest and deeper in the south. Determination of the exact depth of the groundwater was not possible during the soil gas survey investigation, but is generally considered accurate to within a couple feet of that reported. Because groundwater would flood the sample chamber during the applied vacuum, a soil gas sample could not be obtained at depths below the water table. The following list the variances to the planned soil gas sampling procedure:

1. The samples at the 10-foot depth in SG-1 through SG-8, and SG-10 through SG-12 could not be obtained

2. The 5-foot sample in SG-8 was collected at 3 feet bgs, and

3. With a groundwater depth of only 3 feet, no soil gas samples could be obtained at SG-9

Nevertheless, based on the spread and quantity of samples we did obtain and test, combined with our previous site observations during the geotechnical investigation, it is our opinion that the study is sufficient to develop conclusions regarding current soil gas potential.

3.7 Quality Assurance/Quality Control (QA/QC)

Field and laboratory QA/QC procedures were implemented to ensure the integrity of the collected data. The field procedures included the use of new disposable tubing for the soil gas sampling and collection of one field duplicate soil gas sample per day to evaluate sampling and analytical precision. The sample duplicates are identified on Table 1.

The data for the field quality control samples were reviewed as part of the data validation, along with laboratory quality control results (which are included with the laboratory reports in Appendix C). The data was reviewed utilizing the data summary and QA/QC summary provided in the laboratory standard report, in general accordance with URS Standard Operating Procedures and the principles presented in USEPA National Functional Guidelines for Laboratory Data Review, Organics (EPA, 1999).

All the soil gas samples were analyzed as requested and all holding times were met. A memorandum summarizing the results of the data validation is presented in Appendix D. As indicated in Appendix D, no data were qualified with footnotes, or other extenuating remarks (a list of data validation definitions is also provided as Attachment A within the appendix). Therefore, the data are useable for meeting project objectives.

4.0 INVESTIGATIVE RESULTS

4.1 Soil Gas Analytical Results

The soil gas analytical results are summarized in Table 1. There were no VOCs or methane detected in any of the samples collected during the soil gas investigation.

4.2 Discussion of Results

There were no VOCs or methane detected in the soil gas samples collected from all shallow soil gas sample locations.

As discussed previously, the deeper (10-foot deep) soil gas samples could only be collected and analyzed at the three southernmost locations, SG-13 through SG-15, due to the currently

high groundwater conditions encountered at the Site. Although this limits the amount of test result data obtained at the deeper depth, we have combined the results we did obtain with other findings. For example, the previous geotechnical investigation did not encounter soil with OVA headspace readings above background in the upper 13 feet of the site. In addition, no signs of discoloration or odor were observed. Also, the City of Los Angeles Methane Seepage District Map, dated April 28, 2004, indicates that the Site is not located within a potential zone or a high potential zone of methane seepage occurrence.

5.0 HUMAN HEALTH SCREENING EVALUATION

As discussed previously, there were no VOCs or methane detected in any of the soil gas samples collected and analyzed during this soil gas survey. As a result, no human health screening evaluation is necessary.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the soil gas survey described in Section 4.1, neither VOCs nor methane were detected above method detection limits within all samples of the fill soil tested beneath the site. In addition, as discussed in Section 4.2, no other signs of potential methane seepage, including regulatory mapping of likely seepage areas, were observed. Therefore, we consider the potential for methane hazards within the zone tested to be low. The City of Los Angeles document entitled "Proposed Methane Mitigation Requirements for Potential Methane Hazard Sites throughout the City," dated August 22, 2003 defines methane concentrations between 0 to 100 ppmv as a low hazard. Based on this information and the currently proposed construction, no additional recommendations for additional study are necessary at this time.

In the event that a redesign of the proposed project results in substantial dewatering below 13 feet, or in–excavation/removal into deeper soil below a depth of 13 feet bgs, these findings should be reviewed at that time, prior to commencement of such activities, as additional subsurface characterization may then become recommended.

The Site is built upon an area of historic oil production facilities. Historically, such facilities often result in the presence of impacted soils that are subsequently used for fill during site grading activities. Although no signs of such material have been encountered to date during our investigations within the upper 13 feet of the site, we suggest that it would be prudent to have an OVA or other flame ionization detector (FID) available for site use in case soil associated with the previous oil production operations is encountered.

7.0 CLOSING

This report presents our conclusions and recommendations pertaining to the subject site, based on the assumption that the geologic and subsurface conditions do not deviate appreciably from those used in this study. Any guarantee is limited to the extent that URS's work and judgments rendered meet the standard of care of our profession at this time.

If you have any questions, or require additional information, please do not hesitate to telephone either of the undersigned at (714) 835-6886. Thank you for the opportunity to assist with this important project.

Sincerely,

URS CORPORATION

Thomas F. Zdeb, C.I.H.
C.I.H. Certification No. 8324
Project Scientist

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PE Registration No. C67930
Senior Project Manager

cc: Mr. David Gaulton – Pacific Development Services

Attachments:

Table 1 Analytical Results

Figure 1 Vicinity Map
Figure 2 Site Plan
Figure 3 Boring Locations
Figure 4 Proposed Development Plan and Soil Gas Survey Locations
Figure 5 Historical Site Use

Appendices

Appendix A Representative Boring Log
Appendix B Soil Gas Sampling Logs
Appendix C Soil Gas Analytical Report
Appendix D Data Validation Memorandum

Table

TABLE 1
SOIL GAS ANALYTICAL RESULTS VOLATILE ORGANIC COMPOUNDS AND METHANE
Proposed Apartment Complex Redevelopment
Del Rey Shores, Marina Del Rey, California
Page 1 of 2

	Site ID:	SG-1	SG-1	SG-1	SG-1	SG-2	SG-2	SG-2	SG-3	SG-4	SG-5	SG-6	SG-7	SG-7
	Sample ID:	SG-01-5	SG-01-5	SG-01-5	SG-01-5	SG-02-5	SG-02-5	SG-02-5	SG-03-5	SG-04-5	SG-05-5	SG-06-5	SG-07-5	SG-07-5-D
	Purge Volume:	3	1	3	7	1	3	7	3	3	3	3	3	3
	Sample Date:	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05	04/21/05
	Sample Depth (ft bgs):	5	5	5	5	5	5	5	5	5	5	5	5	5
	Approximate Depth of Water Table (ft bgs):	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
ANALYTE	Units	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC
Benzene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Carbon Tetrachloride	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Chloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Chloroform	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Dichlorodifluoromethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1-Dichloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,2-Dichloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1-Dichloroethene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
cis-1,2-Dichloroethene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
trans-1,2-Dichloroethene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Ethylbenzene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Methylene Chloride	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,1,2-Tetrachloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,2,2-Tetrachloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Tetrachloroethene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Toluene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,1-Trichloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,2-Trichloroethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Trichloroethene	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Trichlorofluoromethane	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Vinyl chloride	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
m,p-Xylenes	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
o-Xylenes	ug/l	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Isopentane (Tracer)	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane	ppmv	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)

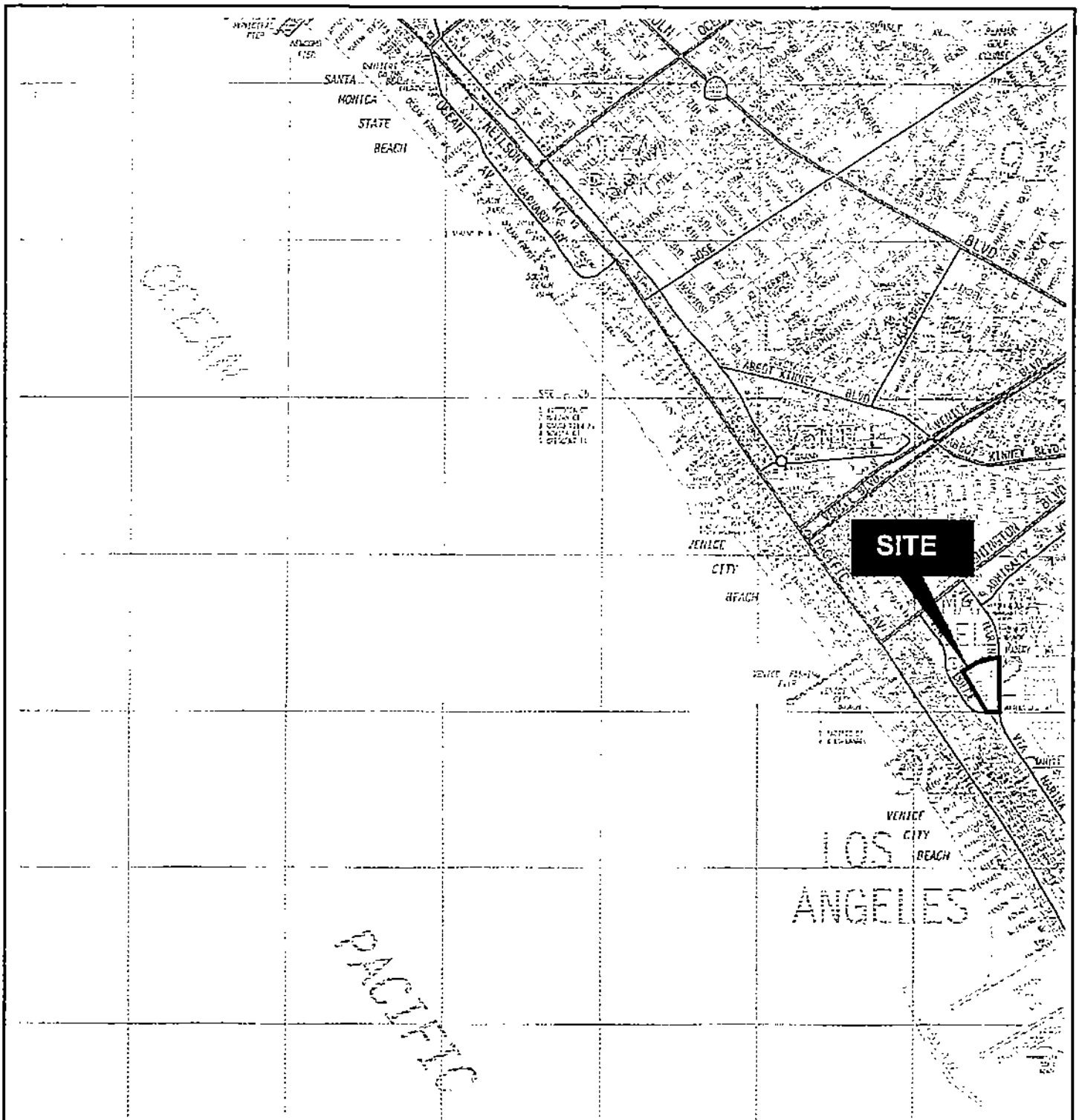
Notes:
ft bgs - feet below ground surface
ug/l - microgram per liter
ppmv - parts per million volume
ND - not detected at the stated reporting limit
-- - not analyzed

TABLE 1
SOIL GAS ANALYTICAL RESULTS VOLATILE ORGANIC COMPOUNDS AND METHANE
Proposed Apartment Complex Redevelopment
Del Rey Shores, Marina Del Rey, California

	Site ID:	SG-8	SG-8	SG-9	SG-10	SG-11	SG-12	SG-13	SG-13	SG-14	SG-14	SG-15	SG-15
	Sample ID:	SG-08-3	SG-08-3Dup	NA	SG-10-5	SG-11-5	SG-12-5	SG-13-5	SG-13-10	SG-14-5	SG-14-10	SG-15-5	SG-15-10
	Purge Volume:	3	3	NA	3	3	3	3	3	3	3	3	3
	Sample Date:	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05	04/22/05
Sample Depth (ft bgs):		3	3	NA	5	5	5	5	10	5	10	5	10
Approximate Depth of Water Table (ft bgs):		5	5	3	6-10	6-10	6-10	>10	>10	>10	>10	>10	>10
ANALYTE	Units	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC	CONC
Benzene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Carbon Tetrachloride	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Chloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Chloroform	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Dichlorodifluoromethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1-Dichloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,2-Dichloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1-Dichloroethene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
cis-1,2-Dichloroethene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
trans-1,2-Dichloroethene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Ethylbenzene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Methylene Chloride	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,1,2-Tetrachloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,2,2-Tetrachloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Tetrachloroethene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Toluene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,1-Trichloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
1,1,2-Trichloroethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Trichloroethene	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Trichlorofluoromethane	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Vinyl chloride	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
m,p-Xylenes	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
o-Xylenes	ug/l	ND (<1.0)	ND (<1.0)	--	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
Isopentane (Tracer)	ug/l	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane	ppmv	ND (<25)	ND (<25)	--	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)	ND (<25)

Notes:
ft bgs - feet below ground surface
ug/l - microgram per liter
ppmv - parts per million volume
ND - not detected at the stated reporting limit
-- - not analyzed

Figures



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N

0 2400' 4800'

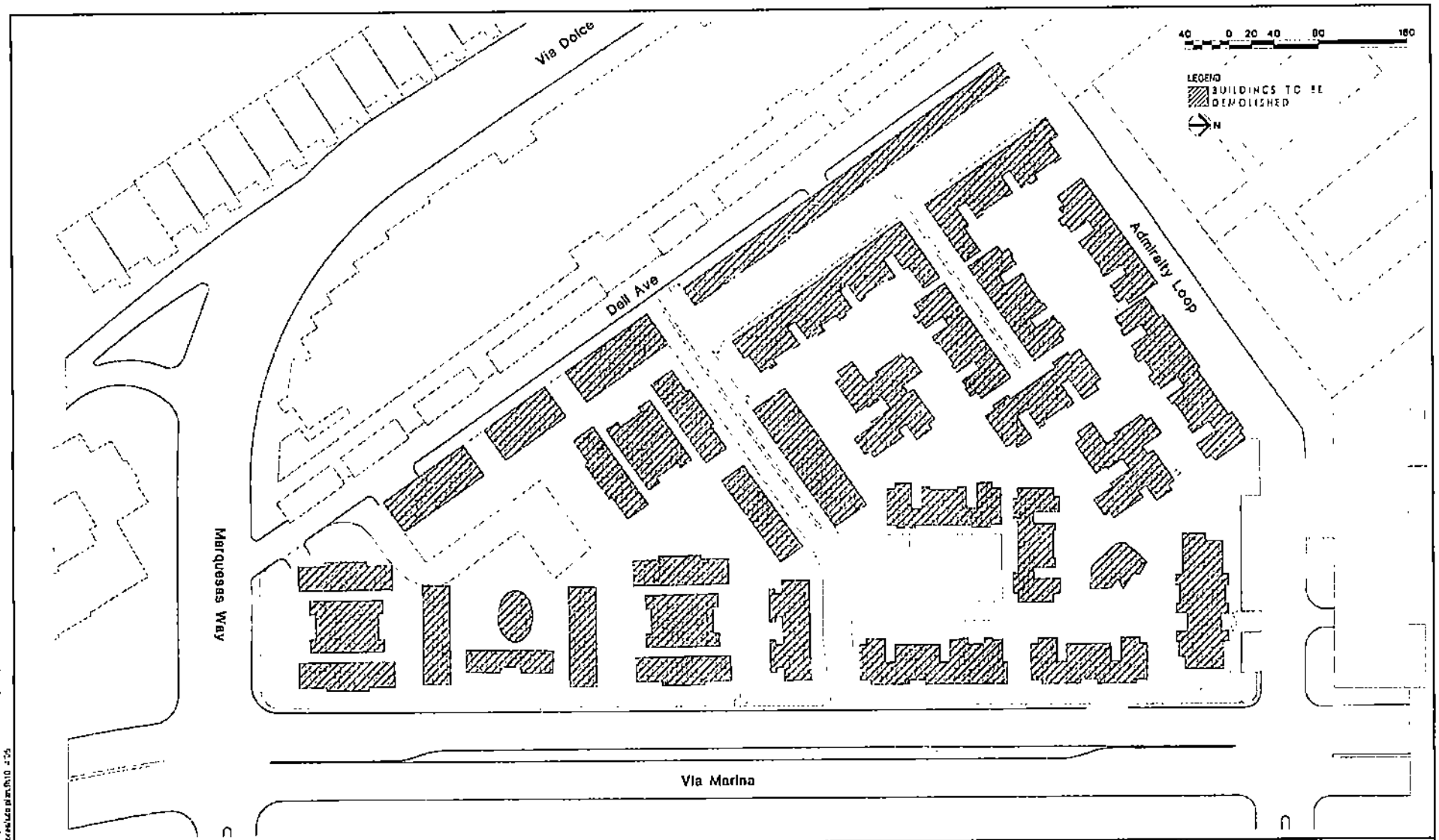
Scale in Feet

VICINITY MAP

Project No.: 29871356	Date: APRIL 2005	Project: SOIL GAS SURVEY PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES, MARINA DEL REY, CALIFORNIA	Figure 1

T:/2005/Del Roy Shores Apartments/Soil Gas Survey/site vicinity
L:/Del Rey Shores/site vic map.fh10 4/05

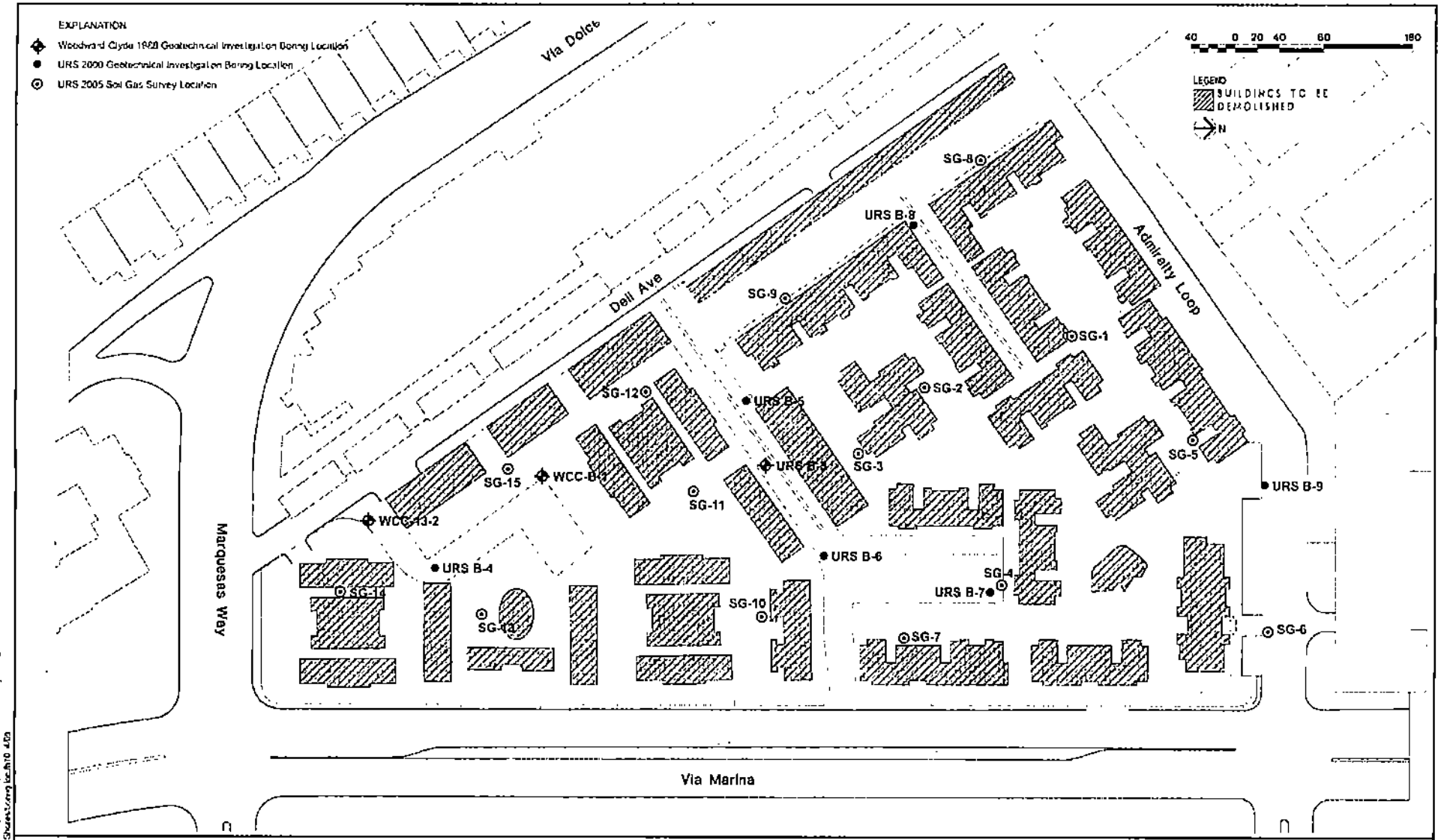
URS



SITE PLAN

Project No.: 28871356	Date: APRIL 2005	Project: SOIL GAS SURVEY PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES, MARINA DEL REY, CALIFORNIA	Figure 2

URS

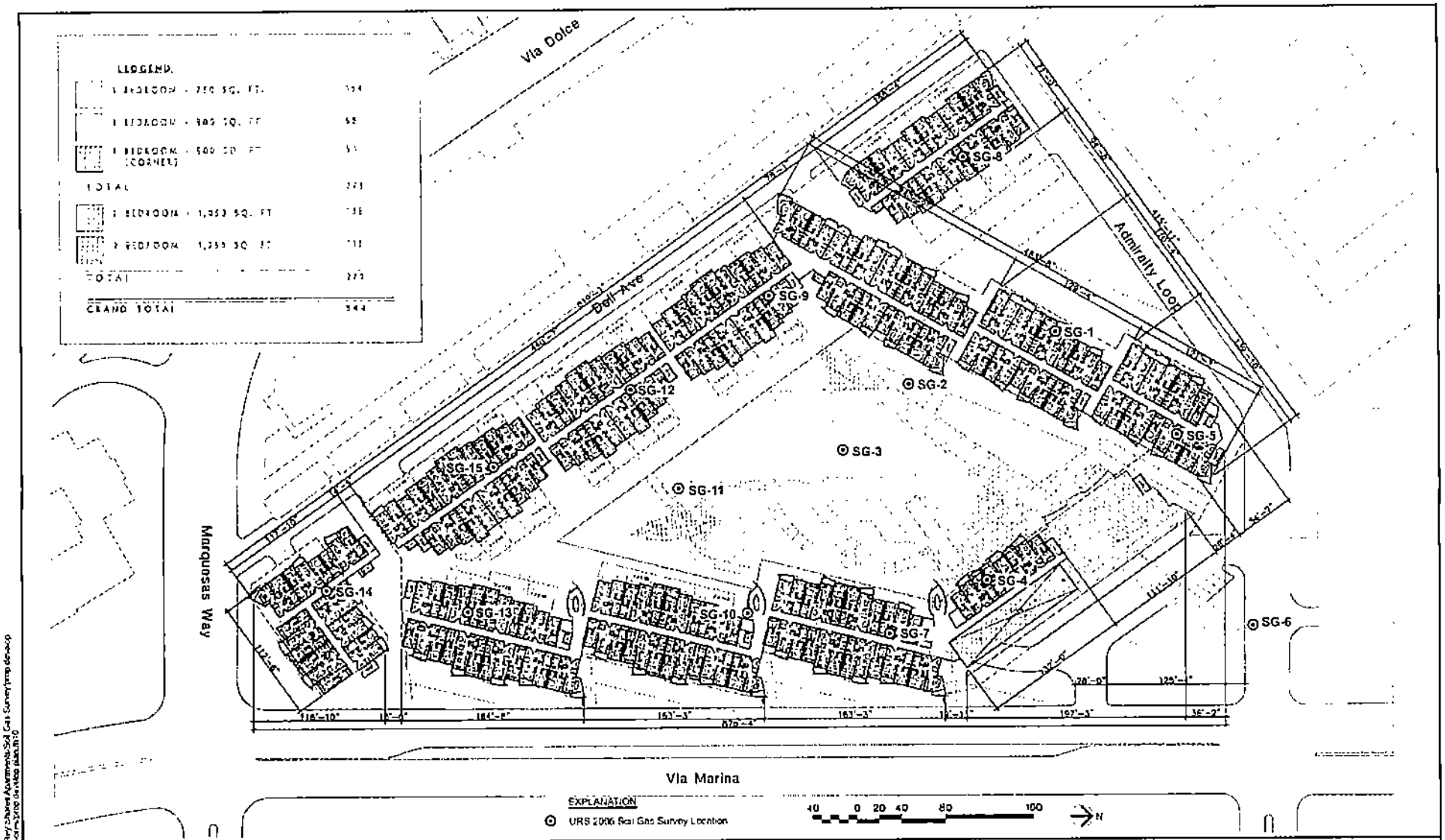


BORING LOCATIONS

Project No : 29871356	Date: APRIL 2005	Project: SOIL GAS SURVEY PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES MARINA DEL REY CALIFORNIA	Figure 3

URS

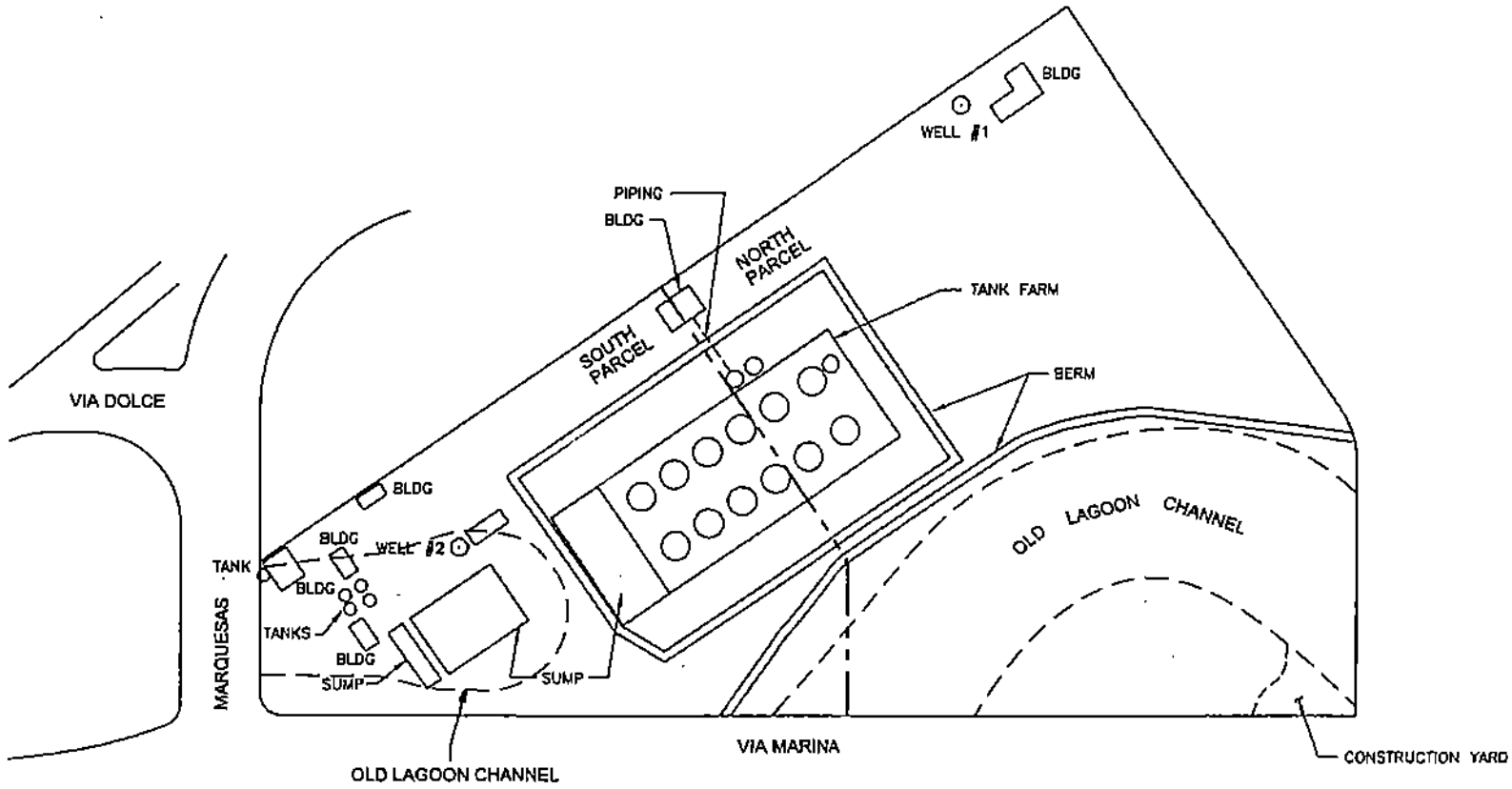
T:\2005\Del Rey Shores Apartments\Soil Gas Survey\boring loc Del Rey Shores\boring loc.fh10 4/05



PROPOSED DEVELOPMENT PLAN AND SOIL GAS SURVEY LOCATIONS

Project No : 29871356	Date: APRIL 2005	Project: SOIL GAS SURVEY, PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES MARINA DEL REY, CALIFORNIA	Figure 4

URS



NOTE: ALL LOCATIONS FOR HISTORIC OIL FIELD OPERATIONS ARE APPROXIMATE AND ARE ESTIMATED FROM INTERPRETING AERIAL PHOTOGRAPHS. THE LOCATION OF THE OLD LAGOON CHANNEL(S) IS BASED ON HISTORIC TOPOGRAPHY (CASTLE, 1960) AND INTERPRETATION OF AERIAL PHOTOGRAPHS.

0 50' 100' 200' 400'
SCALE: 1"=100'

HISTORIC SITE USE

Project No.: 29871356	Date: APRIL 2005	Project: SOIL GAS SURVEY, PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES, MARINA DEL REY, CALIFORNIA	Figure 5

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Appendix A

Representative Boring Log

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Key to Log of Boring

Sheet 1 of 1

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	Sampling Resistance	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number.

5 **Sampling Resistance:** Number of blows required to advance driven sampler 12 inches beyond first 6-inch interval, or distance noted, using a 140-lb hammer with a 30-inch drop.

6 **Headspace OVA:** Organic vapor analyzer field sample headspace reading in parts per million.

7 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

8 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density/consistency.

9 **Water Content:** Water content of soil sample measured in laboratory, expressed as percentage of dry weight of specimen.

10 **Dry Unit Weight:** Dry density of soil sample measured in laboratory, in pounds per cubic foot.

11 **Remarks and Other Tests:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other field and laboratory test results, using the following abbreviations:

CHEM	Chemical tests for corrosivity
COMP	Compaction test by modified effort
CONS	One-dimensional consolidation test
LL	Liquid limit (from Atterberg limits test), %
PI	Plasticity index [LL - PL], %; NP=nonplastic
OC	Organic content test, %
R-Value	Resistance value
SA	Sieve analysis, %<#200 sieve
UC	Unconfined compressive strength test, Qu in ksf
WA	Three-point wash sieve, %<#200 sieve

TYPICAL MATERIAL GRAPHIC SYMBOLS

SAND (SP)
SAND with silt (SP-SM)
Silty SAND (SM)
Clayey SAND (SC)
Lean CLAY (CL)
Fat CLAY (CH)
Silty CLAY (CL/CL-ML)
SILT (ML)
GRAVEL (GP)
GRAVEL with silt (GP-GM)
CLAYEY to SILTY SAND (SC/SM)
Seashells

TYPICAL SAMPLER GRAPHIC SYMBOLS

2-inch-OD unlined split spoon (SPT)
Bulk sample
2.5-inch-OD Modified California with brass liners
Grab sample
Shelby Tube (thin-walled, fixed head)
3-inch-OD California sampler

OTHER GRAPHIC SYMBOLS

First water encountered at time of drilling and sampling (ATD)
Water level measured at specified time after completion of drilling and sampling
Minor change in material properties within a stratum
--- Inferred or gradational contact between strata

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Report: GEO_1082_SOLON_KEY; File: DRSHORES.GPJ; 3/13/2001 keyhole

URS

Figure A-6

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-6

Sheet 1 of 2

Date(s) Drilled	7/18/00	Logged By	V. Timmins	Checked By	L. Rapp
Drilling Method	Rotary Wash	Drill Bit Size/Type	5-inch tricone bit	Total Depth of Borehole	51.5 feet
Drill Rig Type	Mayhew 1000	Drilling Contractor	A & W Drill Rentals	Surface Elevation	23 feet
Groundwater Level(s)	19 feet bgs after drilling on 7/18	Sampling Method(s)	Modified California, SPT, Shelby tube	Hammer Data	140 lbs, 30-inch drop
Borehole Backfill	Cement-bentonite grout, asphalt patch	Location	Between Parcels A and B		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0						2 inches of asphalt concrete			OVA background reading=6 ppm.
			1	21	0		Medium dense, damp, brown, SILTY SAND (SM) with gravel and seashells [Fill]			
							Becomes loose, fine-grained, with no gravel and seashells	8	103	
-20			2	10	0					
	5						Becomes moist			
			3	5	0					
-15										
	10		4	2	–		Very soft, wet, black, SANDY CLAY (CL) with wood chips, roots, tile pieces, and seashells [Fill]			No sample recovery.
			5	Push	–		With organic odor	26	100	OC=4.1% LL=43, PI=23 UC=1.0 ksf
-10								24	94	CONS
	15						Very stiff, wet, black, SANDY CLAY (CL) with seashells			
			6	24	38			23	102	
-5										
							Becomes stiff, with trace gravel			Rig chattering.
	20		7	9	4					
0							Very dense, wet, dark gray, poorly graded SAND with silt (SP-SM)			
	25		8	64	4					WA: 10%<#200
										Slight sulfur odor.
-5							Very stiff, wet, gray, SILTY CLAY (CL)			
	30									

Report: GEO_1082_SOLON; File: DRSHORES.GPJ; 3/13/2001 8:08

Figure A-9

Project: Del Rey Shores
Project Location: Marina del Rey, California
Project Number: 57-00012019.01

Log of Boring B-6

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Headspace OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	30		9A	25	0		Very stiff, wet, gray, SILTY CLAY (CL) (continued)			Sulfur odor.
			9B				Medium dense, wet, dark gray, SILTY SAND (SM)			
-10							Becomes loose, with seashells			
	35		10A	3	0					
			10B				Soft, wet, dark gray, SILTY CLAY (CL) with seashell fragments			WA: 21%<#200
-15							Becomes sandy, with mica, trace gravel			
	40		11	15	0			23	103	No odor. CONS LL=33, PI=16 WA: 78%<#200
-20							Medium dense, wet, greenish gray, SILTY SAND (SM)			
	45		12	28	0			26	99	
-25							Very dense, wet, gray, poorly graded SAND with silt and gravel (SP-SM), coarse-grained			
	50		13	66	0					
-30							Bottom of boring at 51.5 feet			
	55									
-35										
	60									
-40										
	65									

Report: GEO_10B2_SOLON; File: DR8HORE9.GPJ; 3/13/2001 B-06

URS

Figure A-9

Appendix B

Soil Gas Sampling Logs

PCR LABORATORIES

Mobile Chemical Analyses • Environmental Support Services

Soil Gas Chain of Custody

Site | Vic 01 Rey Shores

Date 4/21/05

Page 1 of

	Sample Identification				Initial
1	SG-01-5'	3PV	9:20		SL
2	SG-02-5'	1PV	10:25		SL
3	SG-02-5'	3PV	10:35		SL
4	SG-02-5'	7PV	11:35		SL
5	SG-03-5'	3PV	12:20		SL
6	SG-04-5'	3PV	12:57		SL
7	SG-01-5'	1PV	1:40		SL
8	SG-01-5'	3PV	1:51		SL
9	SG-01-5'	7PV	2:10		SL
10	SG-05-5'	3PV	3:10		SL
11	SG-06-5'	3PV	4:00		SL
12	SG-07-5'	3PV	4:25		SL
13	SG-07-5'-D	3PV	4:26		SL
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Analyst (printed) Sam Lee Sampler (printed) Eric Johnson

(signed) (signed)

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PCR LABORATORIES

Mobile Chemical Analyses • Environmental Support Services

Soil Gas Chain of Custody

Site Del Rey Shores

Date 4/22/05

Page 1 of 1

	Sample Identification				Initial
1	SG-08-3'	3PV	9:00		SL
2	SG-08-3' dup	3PV	9:00		SL
3	SG-10-5'	3PV	9:50		SL
4	SG-11-5'	3PV	10:28		SL
5	SG-12-5'	3PV	11:35		SL
6	SG-13-10'	3PV	11:58		SL
7	SG-13-5'	3PV	12:10		SL
8	SG-14-5'	3PV	12:40		SL
9	SG-14-10'	3PV	12:45		SL
10	SG-15-5'	3PV	1:25		SL
11	SG-15-10'	3PV	1:35		SL
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Analyst (printed) Sam Lee Sampler (printed) Eric Johnson

(signed) Sam Lee (signed) Eric T. Johnson

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PCR
Laboratories

Page _____ of _____

SOIL GAS SAMPLING LOG

Date: 4/21/05

Field Crew: Eric

Facility: ~~Lot~~ Del Rey Shores

Carl

NO.	Probe ID	Sample Time	Depth	Flow Rate ml/min	Purge Volumes	Bentonite 5 min. Yes	Bentonite 5 min. No	Other Notes
1	SG-01-5	9:20	5'	200	3PV	8:50		
2	SG-01-10	—	10'	—	—	—		no sample hit water table
3	SG-02-5	10:25	5'	200	1PV	10:00		
4	SG-02-5	10:35	5'	200	3PV	10:01		
5	SG-02-5	11:35	5'	200	7PV	1		
6	SG-02-10	—	10'	—	—	—		no sample hit water table
7	SG-03-5	12:20	5'	200	3PV	11:00		
8	SG-03-10	—	—	—	—	—		no sample
9	SG-04-5	12:57	5'	200	3PV	12:35		
10	SG-04-10	—	10'	200	3PV	12:45		no sample
11	SG-01-5	1:40	5'	200	1PV	1:20		
12	SG-01-5	1:51	5'	200	3PV	1		
13	SG-01-5	2:10	5'	200	7PV	1		
14	SG-05-5	3:10	5'	200	3PV	2:30		
15	SG-05-10	—	—	—	—	—		no sample
16	SG-06-5	4:00	5'	200	3PV	3:25		
17	SG-06-10	—	—	—	—	—		no sample
18	SG-07-5	4:25	5'	200	3PV	4:10		
19	SG-07-5-D	4:26	5'	200	3PV	1		dup.
20	SG-07-10	—	—	—	—	—		—

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PCR
Laboratories

Page _____ of _____

SOIL GAS SAMPLING LOG

Date: 4/22/01 Field Crew: Eric

Facility: Del Rey Shores Carl

NO.	Probe ID	Sample Time	Depth	Flow Rate ml/min	Purge Volumes	Bentonite 5 min. Yes	Bentonite 5 min. No	Other Notes
1	SG-08-5-3	9:00	5'3'	200	3PV	8:10		water at 5', pulled up
2	SG-08-10	—	—	—	—	—		no sample hit water
3	SG-09-5	—	—	—	—	—		hit water
4	SG-09-3	—	3'	200	3PV	8:50		hit water no sample
5	SG-10-5	9:50	5'	200	3PV	9:10		
6	SG-10-10	—	10'	—	—	—		no sample water
7	SG-08-3 dup	9:00	3'	200	3PV	8:10		analytical dup
8	SG-11-5	10:28	5'	200	3PV	10:05		
9	SG-11-10	—	—	—	—	—		no sample, water
10	SG-12-5	11:15	5'	200	3PV	10:45		
11	SG-12-10	—	—	—	—	—		no sample, water
12	SG-13-5	12:10	5'	200	3PV	11:28		
13	SG-13-10	11:58	10'	200	3PV	11:35		wet
14	SG-14-5	12:40	5	200	3PV	12:20		
15	SG-14-10	12:45	10'	200	3PV	1:25		wet
16	SG-15-5	1:25	5	200	3PV	1:05		
17	SG-15-10	1:35	10	200	3PV	1:10		wet
18								
19								
20								

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Appendix C

Soil Gas Analytical Report

AMERICAN ANALYTICS

Client:	URS (SA)	AA Project No.:	MB32125
Project No.:	N/A	Date Received:	04/21-22/05
Project Name:	Marina Del Rey		
Sample Matrix:	Vapor		

Case Narrative

On April 21, 2005 and April 22, 2005, the American Analytics mobile laboratory was onsite at the corner of Via Dolce and Marquesas avenues in Marina Del Rey. On April 21, 2005 the mobile lab received 13 vapor samples to be analyzed for VOCs (23 compound list) by GC/MS and Methane by GC. On April 22, 2005 the mobile lab received 11 vapor samples for the above mentioned analyses.

VOCs by GC/MS

An unknown peak was detected in seven of the samples analyzed on April 21 - 22, 2005. This unknown compound was searched for as a tentatively identified compound (TIC), and identified as alpha-Pinene. The compound was detected in the following samples: SG1-05', SG2-05'-PV1, SG2-05'-PV3, SG2-05'-PV7, SG1-05'-PV1, SG1-05'-PV3, SG1-05'-PV7, SG10-05' and SG15-05'. The highest concentration of alpha-Pinen was found in sample SG1-05'.

According to the Merck Index "alpha-Pinene is obtained from oil of turpentine. It is used in the manufacturing of camphor, insecticides, solvents, plasticizers, perfume bases and synthetic pine oil." A copy of the TIC scan is included with this report.

The compound Trichlorofluoromethane is slightly below acceptance criteria in the LCS. The LCS was reanalyzed and produced an acceptable percent recovery of 70% .

Methane by GC/FID

The LCS value for this compound is slightly below the acceptance limit. It is the opinion of American Analytics that the sample results have not been significantly affected.

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client: URS (SA)
Project No.: NA
Project Name: Marina DelRey
Sample Matrix: Vapor
Method: Methane by GC/FID

AA Project No.: MB32125
Date Received: 04/21/05
Date Reported: 05/09/05
Units: ppm V

AA ID. No.	Client ID. No.	Date Sampled	Date Analyzed	DF	Results	MRL
186020	SG1-05'	04/21/05	04/21/05	1.0	<25	20
186021	SG2-05'PV1	04/21/05	04/21/05	1.0	<25	20
186022	SG2-05'PV3	04/21/05	04/21/05	1.0	<25	20
186023	SG2-05'PV7	04/21/05	04/21/05	1.0	<25	20
186024	SG3-05'	04/21/05	04/21/05	1.0	<25	20
186025	SG4-05'	04/21/05	04/21/05	1.0	<25	20
186026	SG1-05'PV1	04/21/05	04/21/05	1.0	<25	20
186027	SG1-05'PV3	04/21/05	04/21/05	1.0	<25	20
186028	SG1-05'PV7	04/21/05	04/21/05	1.0	<25	20
186029	SG5-05'	04/21/05	04/21/05	1.0	<25	20
186030	SG6-05'	04/21/05	04/21/05	1.0	<25	20
186031	SG7-05'	04/21/05	04/21/05	1.0	<25	20
186032	SG7-05'Dup	04/21/05	04/21/05	1.0	<25	20
186033	SG8-03'	04/22/05	04/22/05	1.0	<25	20
186034	SG8-03'Dup	04/22/05	04/22/05	1.0	<25	20
186035	SG10-05'	04/22/05	04/22/05	1.0	<25	20
186036	SG11-05'	04/22/05	04/22/05	1.0	<25	20
186037	SG12-05'	04/22/05	04/22/05	1.0	<25	20
186038	SG13-10'	04/22/05	04/22/05	1.0	<25	20
186039	SG13-05'	04/22/05	04/22/05	1.0	<25	20
186040	SG14-05'	04/22/05	04/22/05	1.0	<25	20
186041	SG14-10'	04/22/05	04/22/05	1.0	<25	20
186042	SG15-05'	04/22/05	04/22/05	1.0	<25	20
186043	SG15-10'	04/22/05	04/22/05	1.0	<25	20

MRL: Method Reporting Limit J: Estimated Value DF: Dilution Factor

Eydie Schwartz
Project Manager

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Tel: (818) 998 - 5547 • • Fax: (818) 998 - 7258

AMERICAN ANALYTICS

LABORATORY ANALYSES RESULTS

Client:	URS (SA)	AA Project No.:	MB32125
Project No.:	NA	Date Received:	04/21/05
Project Name:	Marina DelRey	Date Reported:	05/09/05
Sample Matrix:	Vapor	Units:	ug/L
Method:	VOCs by GC/MS		

Date Sampled:	04/21/05	04/21/05	04/21/05	04/21/05	
Date Analyzed:	04/21/05	04/21/05	04/21/05	04/21/05	
AA ID No.:	186020	186021	186022	186023	
Client ID No.:	SG1-05'	SG2-05'-PV1	SG2-05'-PV3	SG2-05'-PV7	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<1	<1	<1	<1	1
Carbon tetrachloride	<1	<1	<1	<1	1
Chloroethane	<1	<1	<1	<1	1
Chloroform	<1	<1	<1	<1	1
1,2-Dichloroethane (EDC)	<1	<1	<1	<1	1
1,1-Dichloroethane	<1	<1	<1	<1	1
1,2-Dichloroethene-(cis)	<1	<1	<1	<1	1
1,2-Dichloroethene-(trans)	<1	<1	<1	<1	1
1,1-Dichloroethene	<1	<1	<1	<1	1
Ethylbenzene	<1	<1	<1	<1	1
Freon-113	<5	<5	<5	<5	5
Freon-12	<1	<1	<1	<1	1
Methylene chloride	<5	<5	<5	<5	5
1,1,1,2-Tetrachloroethane	<1	<1	<1	<1	1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	1
Tetrachloroethene	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	1
1,1,1-Trichloroethane	<1	<1	<1	<1	1
1,1,2-Trichloroethane	<1	<1	<1	<1	1
Trichloroethene	<1	<1	<1	<1	1
Trichlorofluoromethane	<1	<1	<1	<1	1
Vinylchloride	<1	<1	<1	<1	1
m,p-Xylenes	<1	<1	<1	<1	1
o-Xylene	<1	<1	<1	<1	1

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY ANALYSES RESULTS

Client: URS (SA)
Project No.: NA
Project Name: Marina DelRey
Sample Matrix: Vapor
Method: VOCs by GC/MS

AA Project No.: MB32125
Date Received: 04/21/05
Date Reported: 05/09/05
Units: ug/L

Date Sampled:	04/21/05	04/21/05	04/21/05	04/21/05	
Date Analyzed:	04/21/05	04/21/05	04/21/05	04/21/05	
AA ID No.:	186024	186025	186026	186027	
Client ID No.:	SG3-05'	SG4-05'	SG1-05'-PV1	SG1-05'-PV3	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<1	<1	<1	<1	1
Carbon tetrachloride	<1	<1	<1	<1	1
Chloroethane	<1	<1	<1	<1	1
Chloroform	<1	<1	<1	<1	1
1,2-Dichloroethane (EDC)	<1	<1	<1	<1	1
1,1-Dichloroethane	<1	<1	<1	<1	1
1,2-Dichloroethene-(cis)	<1	<1	<1	<1	1
1,2-Dichloroethene-(trans)	<1	<1	<1	<1	1
1,1-Dichloroethene	<1	<1	<1	<1	1
Ethylbenzene	<1	<1	<1	<1	1
Freon-113	<5	<5	<5	<5	5
Freon-12	<1	<1	<1	<1	1
Methylene chloride	<5	<5	<5	<5	5
1,1,1,2-Tetrachloroethane	<1	<1	<1	<1	1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	1
Tetrachloroethene	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	1
1,1,1-Trichloroethane	<1	<1	<1	<1	1
1,1,2-Trichloroethane	<1	<1	<1	<1	1
Trichloroethene	<1	<1	<1	<1	1
Trichlorofluoromethane	<1	<1	<1	<1	1
Vinylchloride	<1	<1	<1	<1	1
m,p-Xylenes	<1	<1	<1	<1	1
o-Xylene	<1	<1	<1	<1	1

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client: URS (SA)
Project No.: NA
Project Name: Marina DelRey
Sample Matrix: Vapor
Method: VOCs by GC/MS

AA Project No.: MB32125
Date Received: 04/21/05
Date Reported: 05/09/05
Units: ug/L

Date Sampled:	04/21/05	04/21/05	04/21/05	04/21/05	
Date Analyzed:	04/21/05	04/21/05	04/21/05	04/21/05	
AA ID No.:	186028	186029	186030	186031	
Client ID No.:	SG1-05'-PV7	SG5-05'	SG6-05'	SG7-05'	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<1	<1	<1	<1	1
Carbon tetrachloride	<1	<1	<1	<1	1
Chloroethane	<1	<1	<1	<1	1
Chloroform	<1	<1	<1	<1	1
1,2-Dichloroethane (EDC)	<1	<1	<1	<1	1
1,1-Dichloroethane	<1	<1	<1	<1	1
1,2-Dichloroethene-(cis)	<1	<1	<1	<1	1
1,2-Dichloroethene-(trans)	<1	<1	<1	<1	1
1,1-Dichloroethene	<1	<1	<1	<1	1
Ethylbenzene	<1	<1	<1	<1	1
Freon-113	<5	<5	<5	<5	5
Freon-12	<1	<1	<1	<1	1
Methylene chloride	<5	<5	<5	<5	5
1,1,1,2-Tetrachloroethane	<1	<1	<1	<1	1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	1
Tetrachloroethene	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	1
1,1,1-Trichloroethane	<1	<1	<1	<1	1
1,1,2-Trichloroethane	<1	<1	<1	<1	1
Trichloroethene	<1	<1	<1	<1	1
Trichlorofluoromethane	<1	<1	<1	<1	1
Vinylchloride	<1	<1	<1	<1	1
m,p-Xylenes	<1	<1	<1	<1	1
o-Xylene	<1	<1	<1	<1	1

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client: URS (SA)
Project No.: NA
Project Name: Marina DelRey
Sample Matrix: Vapor
Method: VOCs by GC/MS

AA Project No.: MB32125
Date Received: 04/21/05
Date Reported: 05/09/05
Units: ug/L

Date Sampled:	04/21/05	04/22/05	04/22/05	04/22/05	
Date Analyzed:	04/21/05	04/22/05	04/22/05	04/22/05	
AA ID No.:	186032	186033	186034	186035	
Client ID No.:	SG7-05'Dup	SG8-03'	SG8-03'Dup	SG10-05'	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<1	<1	<1	<1	1
Carbon tetrachloride	<1	<1	<1	<1	1
Chloroethane	<1	<1	<1	<1	1
Chloroform	<1	<1	<1	<1	1
1,2-Dichloroethane (EDC)	<1	<1	<1	<1	1
1,1-Dichloroethane	<1	<1	<1	<1	1
1,2-Dichloroethene-(cis)	<1	<1	<1	<1	1
1,2-Dichloroethene-(trans)	<1	<1	<1	<1	1
1,1-Dichloroethene	<1	<1	<1	<1	1
Ethylbenzene	<1	<1	<1	<1	1
Freon-113	<5	<5	<5	<5	5
Freon-12	<1	<1	<1	<1	1
Methylene chloride	<5	<5	<5	<5	5
1,1,1,2-Tetrachloroethane	<1	<1	<1	<1	1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	1
Tetrachloroethene	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	1
1,1,1-Trichloroethane	<1	<1	<1	<1	1
1,1,2-Trichloroethane	<1	<1	<1	<1	1
Trichloroethene	<1	<1	<1	<1	1
Trichlorofluoromethane	<1	<1	<1	<1	1
Vinylchloride	<1	<1	<1	<1	1
m,p-Xylenes	<1	<1	<1	<1	1
o-Xylene	<1	<1	<1	<1	1

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client:	URS (SA)	AA Project No.:	MB32125
Project No.:	NA	Date Received:	04/21/05
Project Name:	Marina DelRey	Date Reported:	05/09/05
Sample Matrix:	Vapor	Units:	ug/L
Method:	VOCs by GC/MS		

Date Sampled:	04/22/05	04/22/05	04/22/05	04/22/05	
Date Analyzed:	04/22/05	04/22/05	04/22/05	04/22/05	
AA ID No.:	186036	186037	186038	186039	
Client ID No.:	SG11-05'	SG12-05'	SG13-10'	SG13-05'	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<1	<1	<1	<1	1
Carbon tetrachloride	<1	<1	<1	<1	1
Chloroethane	<1	<1	<1	<1	1
Chloroform	<1	<1	<1	<1	1
1,2-Dichloroethane (EDC)	<1	<1	<1	<1	1
1,1-Dichloroethane	<1	<1	<1	<1	1
1,2-Dichloroethene-(cis)	<1	<1	<1	<1	1
1,2-Dichloroethene-(trans)	<1	<1	<1	<1	1
1,1-Dichloroethene	<1	<1	<1	<1	1
Ethylbenzene	<1	<1	<1	<1	1
Freon-113	<5	<5	<5	<5	5
Freon-12	<1	<1	<1	<1	1
Methylene chloride	<5	<5	<5	<5	5
1,1,1,2-Tetrachloroethane	<1	<1	<1	<1	1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	1
Tetrachloroethene	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	1
1,1,1-Trichloroethane	<1	<1	<1	<1	1
1,1,2-Trichloroethane	<1	<1	<1	<1	1
Trichloroethene	<1	<1	<1	<1	1
Trichlorofluoromethane	<1	<1	<1	<1	1
Vinylchloride	<1	<1	<1	<1	1
m,p-Xylenes	<1	<1	<1	<1	1
o-Xylene	<1	<1	<1	<1	1

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY ANALYSES RESULTS

Client: URS (SA)
Project No.: NA
Project Name: Marina DelRey
Sample Matrix: Vapor
Method: VOCs by GC/MS

AA Project No.: MB32125
Date Received: 04/21/05
Date Reported: 05/09/05
Units: ug/L

Date Sampled:	04/22/05	04/22/05	04/22/05	04/22/05	
Date Analyzed:	04/22/05	04/22/05	04/22/05	04/22/05	
AA ID No.:	186040	186041	186042	186043	
Client ID No.:	SG14-05'	SG14-10'	SG15-05'	SG15-10'	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<1	<1	<1	<1	1
Carbon tetrachbride	<1	<1	<1	<1	1
Chbroethane	<1	<1	<1	<1	1
Chbroform	<1	<1	<1	<1	1
1,2-Dichbroethane (EDC)	<1	<1	<1	<1	1
1,1-Dichbroethane	<1	<1	<1	<1	1
1,2-Dichbroethene-(cis)	<1	<1	<1	<1	1
1,2-Dichbroethene-(trans)	<1	<1	<1	<1	1
1,1-Dichbroethene	<1	<1	<1	<1	1
Ethylbenzene	<1	<1	<1	<1	1
Freon-113	<5	<5	<5	<5	5
Freon-12	<1	<1	<1	<1	1
Methylene chbride	<5	<5	<5	<5	5
1,1,1,2-Tetrachbroethane	<1	<1	<1	<1	1
1,1,2,2-Tetrachbroethane	<1	<1	<1	<1	1
Tetrachbroethene	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	1
1,1,1-Trichbroethane	<1	<1	<1	<1	1
1,1,2-Trichbroethane	<1	<1	<1	<1	1
Trichbroethene	<1	<1	<1	<1	1
Trichbrofluoromethane	<1	<1	<1	<1	1
Vinylchbride	<1	<1	<1	<1	1
m,p-Xylenes	<1	<1	<1	<1	1
o-Xylene	<1	<1	<1	<1	1

MRL: Method Reporting Limit J: Estimated Value

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: VOCs by GC/MS
Sample ID: Reagent Blank

Project No.: NA
AA Project No.: MB32125
Date Analyzed: 04/21/05
Date Reported: 05/09/05

Compounds	Results ug/L	MRL
Benzene	<1	1
Carbon tetrachloride	<1	1
Chloroethane	<1	1
Chloroform	<1	1
1,2-Dichloroethane (EDC)	<1	1
1,1-Dichloroethane	<1	1
1,2-Dichloroethene-(cis)	<1	1
1,2-Dichloroethene-(trans)	<1	1
1,1-Dichloroethene	<1	1
Ethylbenzene	<1	1
Freon-113	<5	5
Freon-12	<1	1
Methylene chloride	<5	5
1,1,1,2-Tetrachloroethane	<1	1
1,1,2,2-Tetrachloroethane	<1	1
Tetrachloroethene	<1	1
Toluene	<1	1
1,1,1-Trichloroethane	<1	1
1,1,2-Trichloroethane	<1	1
Trichloroethene	<1	1
Trichlorofluoromethane	<1	1
Vinylchloride	<1	1
m,p-Xylenes	<1	1
o-Xylene	<1	1

Eydie Schwartz

Eydie Schwartz
Project Manager

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: VOCs by GC/MS
Sample ID: Reagent Blank

Project No.: NA
AA Project No.: MB32125
Date Analyzed: 04/21/05
Date Reported: 05/09/05

Compounds	Results ug/L	MRL

MRL: Method Reporting Limit

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: VOCs by GC/MS
Sample ID: Reagent Blank

Project No.: NA
AA Project No.: MB32125
Date Analyzed: 04/22/05
Date Reported: 05/09/05

Compounds	Results ug/L	MRL
Benzene	<1	1
Carbon tetrachbride	<1	1
Chbroethane	<1	1
Chbroform	<1	1
1,2-Dichbroethane (EDC)	<1	1
1,1-Dichbroethane	<1	1
1,2-Dichbroethene-(cis)	<1	1
1,2-Dichbroethene-(trans)	<1	1
1,1-Dichbroethene	<1	1
Ethybenzene	<1	1
Freon-113	<5	5
Freon-12	<1	1
Methylene chbride	<5	5
1,1,1,2-Tetrachbroethane	<1	1
1,1,2,2-Tetrachbroethane	<1	1
Tetrachbroethene	<1	1
Toluene	<1	1
1,1,1-Trichbroethane	<1	1
1,1,2-Trichbroethane	<1	1
Trichbroethene	<1	1
Trichbrofluoromethane	<1	1
Vinylchbride	<1	1
m,p-Xylenes	<1	1
o-Xylene	<1	1

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: VOCs by GC/MS
Sample ID: Reagent Blank

Project No.: NA
AA Project No.: MB32125
Date Analyzed: 04/22/05
Date Reported: 05/09/05

Compounds	Results ug/L	MRL

MRL: Method Reporting Limit

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: Methane by GC/FID
Sample ID: Reagent Blank

Project No.: NA
AA Project No.: MB32125
Date Analyzed: 04/21/05
Date Reported: 05/09/05

Compounds	Results ppm V	MRL
Methane	<25	25

MRL: Method Reporting Limit

Eydie Schwartz

Eydie Schwartz
Project Manager

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AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: Methane by GC/FID
Sample ID: Reagent Blank

Project No.: NA
AA Project No.: MB32125
Date Analyzed: 04/22/05
Date Reported: 05/09/05

Compounds	Results ppm V	MRL
Methane	<25	25

MRL: Method Reporting Limit

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AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina Del Rey
Method: VOCs by GC/MS
Sample ID: Laboratory Control Standard
Concentration: 10 ug/L

Project No.: NA
AA Project No. MB32125
Date Analyzed: 04/21/05
Date Reported: 05/09/05

Compounds	Recovered Amount (ug/L)	Recovery (%)	Acceptable Range (%)
Benzene	9.0	90	70 - 130
Carbon tetrachloride	7.0	70	70 - 130
Chloroethane	8.3	83	70 - 130
Chloroform	9.1	91	70 - 130
Dichlorodifluoromethane	8.1	81	70 - 130
1,1-Dichloroethane	8.9	89	70 - 130
1,2-Dichloroethene-(cis)	9.3	93	70 - 130
1,2-Dichloroethene-(trans)	9.3	93	70 - 130
1,1-Dichloroethene	9.6	96	70 - 130
Ethylbenzene	9.3	93	70 - 130
Freon-113	9.5	95	70 - 130
Methylene chloride	8.1	81	70 - 130
1,1,1,2-Tetrachloroethane	10.0	100	70 - 130
Tetrachloroethene	9.5	95	70 - 130
Toluene	9.6	96	70 - 130
1,1,1-Trichloroethane	8.5	85	70 - 130
1,1,2-Trichloroethane	10.0	100	70 - 130
Trichloroethene	9.2	92	70 - 130
Trichlorofluoromethane	6.9	69	70 - 130
Vinylchloride	9.0	90	70 - 130
m,p-Xylenes	9.4	94	70 - 130
o-Xylene	9.4	94	70 - 130

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: VOCs by GC/MS
Sample ID: Laboratory Control Standard
Concentration: 10 ug/L

Project No.: NA
AA Project No. MB32125
Date Analyzed: 04/21/05
Date Reported: 05/09/05

Compounds	Recovered Amount (ug/L)	Recovery (%)	Acceptable Range (%)

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina Del Rey
Method: VOCs by GC/MS
Sample ID: Laboratory Control Standard
Concentration: 10 ug/L

Project No.: NA
AA Project No. MB32125
Date Analyzed: 04/22/05
Date Reported: 05/09/05

Compounds	Recovered Amount (ug/L)	Recovery (%)	Acceptable Range (%)
Benzene	8.4	84	70 - 130
Carbon tetrachloride	11.8	118	70 - 130
Chloroethane	12.3	123	70 - 130
Chloroform	9.3	93	70 - 130
Dichlorodifluoromethane	10.3	103	70 - 130
1,1-Dichloroethane	10.0	100	70 - 130
1,2-Dichloroethene-(cis)	9.2	92	70 - 130
1,2-Dichloroethene-(trans)	9.1	91	70 - 130
1,1-Dichloroethene	9.3	93	70 - 130
Ethylbenzene	10.0	100	70 - 130
Freon-113	9.5	95	70 - 130
Methylene chloride	10.0	100	70 - 130
1,1,1,2-Tetrachloroethane	10.1	101	70 - 130
Tetrachloroethene	9.3	93	70 - 130
Toluene	9.6	96	70 - 130
1,1,1-Trichloroethane	10.0	100	70 - 130
1,1,2-Trichloroethane	8.4	84	70 - 130
Trichloroethene	9.1	91	70 - 130
Trichlorofluoromethane	11.4	114	70 - 130
Vinylchloride	8.9	89	70 - 130
m,p-Xylenes	10.0	100	70 - 130
o-Xylene	9.8	98	70 - 130

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina DelRey
Method: VOCs by GC/MS
Sample ID: Laboratory Control Standard
Concentration: 10 ug/L

Project No.: NA
AA Project No. MB32125
Date Analyzed: 04/22/05
Date Reported: 05/09/05

Compounds	Recovered Amount (ug/L)	Recovery (%)	Acceptable Range (%)

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina Del Rey
Method: Methane by GC/FID
Sample ID: Laboratory Control Standard
Concentration: 100 ppm V

Project No.: NA
AA Project No. MB32125
Date Analyzed: 04/21/05
Date Reported: 05/09/05

Compounds	Recovered Amount (ppm V)	Recovery (%)	Acceptable Range (%)
Methane	72	72	70 - 130

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LABORATORY QA/QC REPORT

Client: URS (SA)
Project Name: Marina Del Rey
Method: Methane by GC/FID
Sample ID: Laboratory Control Standard
Concentration: 100 ppm V

Project No.: NA
AA Project No. MB32125
Date Analyzed: 04/22/05
Date Reported: 05/09/05

Compounds	Recovered Amount (ppm V)	Recovery (%)	Acceptable Range (%)
Methane	66	66	70 - 130

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AMERICAN ANALYTICS

Laboratory Analysis Results

Client: URS (SA)
Project No.: NA
Project Name: Marina DelRey
Sample Matrix: Vapor
Method: VOCs by GC/MS (Isobutane)

AA Project No.: MB32125
Date Received: 04/21-22/05
Date Reported: 04/28/05
Units: ug/L

AA ID No.	Client ID No.	Dilution Factor	Date Sampled	Date Analyzed	Result	MRL
186020	SG1-05'	1	4/21/2005	4/21/2005	<10	10
186021	SG2-05'PV1	1	4/21/2005	4/21/2005	<10	10
186022	SG2-05'PV3	1	4/21/2005	4/21/2005	<10	10
186023	SG2-05'PV7	1	4/21/2005	4/21/2005	<10	10
186024	SG3-05'	1	4/21/2005	4/21/2005	<10	10
186025	SG4-05'	1	4/21/2005	4/21/2005	<10	10
186026	SG1-05'PV1	1	4/21/2005	4/21/2005	<10	10
186027	SG1-05'PV3	1	4/21/2005	4/21/2005	<10	10
186028	SG1-05'PV7	1	4/21/2005	4/21/2005	<10	10
186029	SG5-05'	1	4/21/2005	4/21/2005	<10	10
186030	SG6-05'	1	4/21/2005	4/21/2005	<10	10
186031	SG7-05'	1	4/21/2005	4/21/2005	<10	10
186032	SG7-05'Dup	1	4/21/2005	4/21/2005	<10	10
186033	SG8-03'	1	4/22/2005	4/22/2005	<10	10
186034	SG8-03'Dup	1	4/22/2005	4/22/2005	<10	10
186035	SG10-05'	1	4/22/2005	4/22/2005	<10	10
186036	SG11-05'	1	4/22/2005	4/22/2005	<10	10
186037	SG12-05'	1	4/22/2005	4/22/2005	<10	10
186038	SG13-10'	1	4/22/2005	4/22/2005	<10	10
186039	SG13-05'	1	4/22/2005	4/22/2005	<10	10
186040	SG14-05'	1	4/22/2005	4/22/2005	<10	10
186041	SG14-10'	1	4/22/2005	4/22/2005	<10	10
186042	SG15-05'	1	4/22/2005	4/22/2005	<10	10
186043	SG15-10'	1	4/22/2005	4/22/2005	<10	10

Eydie Schwartz

Eydie Schwartz
Project Manager

AMERICAN ANALYTICS

Laboratory QA/QC Report - Surrogates

Client: URS (SA)
Project No.: NA
Project Name: Marina Del Rey
Sample Matrix: Vapor
Method: VOCs by GC/MS

AA Project No.: MB32125
Units: %

AA ID No.	Client ID No.	Surrogate Recovery S1	S2	S3
186020	SG1-05'	89	98	98
186021	SG2-05-PV1	91	97	97
186022	SG2-05-PV3	89	95	99
186023	SG2-05-PV7	90	96	99
186024	SG3-05'	95	98	104
186025	SG4-05'	97	98	102
186026	SG1-05-PV1	94	99	100
186027	SG1-05-PV3	84	96	96
186028	SG1-05-PV7	97	98	99
186029	SG5-05'	93	99	105
186030	SG6-05'	95	97	103
186031	SG7-05'	95	96	100
186032	SG7-05-DUP	87	93	98
186033	SG8-03'	92	101	107
186034	SG8-03-DUP	93	100	106
186035	SG10-05'	95	98	103
186036	SG11-05'	94	95	103
186037	SG12-05'	98	99	106
186038	SG13-10'	95	100	107
186039	SG13-05'	85	97	105
186040	SG14-05'	87	97	104
186041	SG14-10'	82	99	103
186042	SG15-05'	94	102	108
186043	SG15-10'	90	97	106
042105MBLK	Method Blank (4/21/05)	93	102	105
042105LCS	Laboratory Control Sample (4/21/05)	98	98	96
042205MBLK	Method Blank (4/22/05)	84	102	107
042205LCS	Laboratory Control Sample (4/22/05)	99	100	100

Acceptance Ranges	
S1-Dibromofluoromethane	80-120
S2-Toluene-d8	88-110
S3-Bromofluorobenzene	80-115

Eydie Schwartz

Eydie Schwartz
Project Manager

Appendix D

Data Validation Memorandum

URS

Data Validation Memorandum
2020 East First Street, Suite 400
Santa Ana, CA 90703
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Fax:(714) 667-7147

TO: Bryan Stone **FILE:** 29871356.30000

FROM: Tom Zdeb, Santa Ana QA/QC Group **SITE:** Del Rey Shores

DATE: May 12, 2005

SUBJECT: Summary of Data Validation for American Analytics Report: MB32125

Introduction
This report summarizes the findings of the limited validation (completeness check) of twenty-four soil gas samples (including two field duplicates). These samples were collected on April 21, and 22, 2005 as part of the Del Rey Shores – Soil Gas Survey. American Analytics in Chatsworth, California analyzed all samples onsite. Samples are listed in Table 1 included at the end of this document. The data were reviewed in accordance with URS Standard Operating Procedures and the principles presented of *USEPA National Functional Guidelines for Laboratory Data Review, organics* (EPA, 1999).

Executive Summary
All samples were analyzed as requested and all holding times were met. Eleven soil gas samples were qualified due to low LCS recovery. However, based on this limited validation covering the QC parameters listed below, these data are useable for meeting project objectives.

1.0 Data Review Narratives
Twenty-four soil gas samples were analyzed onsite for methane (GC/FID), and volatile organic compounds (VOCs by GC/MS). The laboratory data were reviewed to evaluate compliance with these methods, and the quality of the data reported. This data review process did not include result recalculation or transcription error checking from the raw data. The following summarizes the results of this review.

The areas of review are listed below. A leading check mark (✓) indicates an area of review in which all data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Data Completeness
- ✓ Holding Times and Preservation
- ✓ Method Blanks
- ✓ System Monitoring Compounds (Surrogates)
- ⊗ Laboratory Control Samples
- ✓ Field Duplicates
- ✓ Analyte Identification

1.1 Overall Assessment
The data reported in this package, as qualified, are considered to be usable for meeting project objectives. All results are considered to be valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples

submitted for analysis, for the project is 100%. Additionally, because all samples in this data set were collected and analyzed under similar prescribed conditions, the data within this set are considered to be comparable.

1.2 Data Completeness

All analyses were performed as requested on the chain-of-custody records.

1.3 Holding Times and Preservation

All analyses were performed within the method-specified holding times.

1.4 Method Blanks

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed. No target analytes were detected in the associated method blanks.

1.5 System Monitoring Compounds (Surrogates)

The surrogates employed, dibromofluoromethane, bromofluorobenzene, and toluene-d8, are appropriate to the method. All surrogate recoveries met laboratory acceptance limits.

1.6 Laboratory Control Samples (LCS)

LCSs were prepared and analyzed for the applicable sample matrices at the proper frequency. The recoveries of all spiked analytes were within the laboratory's statistically determined acceptance ranges with the following exceptions.

Date Analyzed	Analysis	Analyte	LCS Recovery	Acceptable Range	Qualified Samples	Qualifier
04/21/05	VOCs by GC/MS	Trichlorofluoro-methane	69%	70%-130%	None*	None
04/22/05	Methane by GC/FID	Methane	66%	70%-130%	**SG8-03, SG8-03-Dup SG10-05, SG11-05 SG12-05, SG13-10 SG13-05, SG14-05 SG14-10, SG15-05 SG15-10**	**UJ**

Note:
* Data qualification was not considered necessary since the LCS recovery was only slightly below the acceptable range.

1.7 Field Duplicates

Samples **SG7-05/ SG7-05 Dup**, and **SG8-03/ SG8-03 Dup** were submitted to the laboratory as field duplicate pairs. Acceptable field and analytical precision was demonstrated for all field duplicate pairs.

1.8 Analyte Identification

All detection limits comply with project specifications.

Table 1
Jones Environmental Laboratories, Inc.

Sample	SDG	Sample Number	Date Sampled	Analyses Performed
SG1-05	MB32125	186020	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG2-05PV1	MB32125	186021	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG2-05-PV3	MB32125	186022	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG2-05-PV7	MB32125	186023	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG3-05	MB32125	186024	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG4-05	MB32125	186025	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG1-05-PV1	MB32125	186026	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG1-05-PV3	MB32125	186027	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG1-05-PV7	MB32125	186028	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG5-05	MB32125	186029	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG6-05	MB32125	186030	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG7-05	MB32125	186031	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG7-05Dup	MB32125	186032	4/21/05	VOCs by GC/MS, Methane by GC/FID
SG8-03	MB32125	186033	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG8-03-Dup	MB32125	186034	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG10-05	MB32125	186035	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG11-05	MB32125	186036	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG12-05	MB32125	186037	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG13-10	MB32125	186038	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG13-05	MB32125	186039	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG14-05	MB32125	186040	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG14-10	MB32125	186041	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG15-05	MB32125	186042	4/22/05	VOCs by GC/MS, Methane by GC/FID
SG15-10	MB32125	186043	4/22/05	VOCs by GC/MS, Methane by GC/FID

Notes:
SDG: Sample Delivery Group
VOCs: Volatile Organic Compounds

ATTACHMENT A
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by URS's Data Review Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

URS DATA QUALIFIER DEFINITIONS — REASON CODE DEFINITIONS

a Analytical sequence deficiency or omission.
b Gross compound breakdown (4,4'-DDT/Endrin).
c Calibration failure; poor or unstable response.
d Laboratory duplicate imprecision.
e Laboratory duplicate control sample imprecision.
f Field duplicate imprecision.
g Poor chromatography.
h Holding time violation.
i Internal standard failure.
j Poor mass spectrographic performance.
k Serial dilution imprecision.
l Laboratory control sample recovery failure.
m Matrix spike/matrix spike duplicate recovery failure.
n Interference check sample recovery failure.
o Calibration blank contamination (metals/inorganics only).
p Preparation blank contamination (metals/inorganics only).
q Quantitation outside linear range.
r Linearity failure in initial calibration.
s Surrogate spike recovery failure (GC organics and GC/MS organics only).
t Instrument tuning failure.
u No valid confirmation column (GC Organics only).
v Value is estimated below the MDA (Rads only).
w Retention time (RT) outside of RT window.
x Field blank contamination.
y Trip blank contamination.
z Method blank contamination.
Q Poor agreement between columns (GC Organics only).

INTERPRETATION KEY

The following example shows how an analytical result which includes qualifiers assigned by both the URS data review team and the analytical laboratory could be displayed in the data tables:

<5.20 Uz | JB

The qualifier assigned by the URS data review team precedes the "|"; the qualifier assigned by the laboratory follows it. In this example, the result is qualified as a non-detection data to the bias introduced by contamination of the associated method blank. Presence of the analyte in the method blank is indicated by the laboratory qualifier (B). The qualifier assigned by the URS data review team (Uz) indicates that the analyte concentration is considered to be below the adjusted detection limit (quantitation limit) based on the level of contamination in the method blank.

APPENDIX 5.1(C)

URS, recent update of the Geotechnical Investigation (June 2, 2005)

URS

June 2, 2005
Project No. 29871356

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c/o David J. Gaulton
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SUBJECT: UPDATE LETTER OF MAY 8, 2001
GEOTECHNICAL INVESTIGATION
PROPOSED APARTMENT COMPLEX
The Shores, Marina Del Rey, California

Dear Mr. Gaulton:

URS Corporation (URS) previously performed a geotechnical investigation for the proposed apartment complex at The Shores facility in Marina Del Rey, California, approximately as located on Figure 1. The resulting report was dated May 8, 2001, and we understand that the project is proceeding. The purpose of this letter is to provide an update letter as required by the County of Los Angeles. This letter was provided in accordance with our proposal dated March 28, 2005.

We have reviewed our May 8, 2001 report, including field and laboratory results, analysis methodology, conclusions, and resulting recommendations. We have also performed a review of the preliminary design as shown on Figure 2. In addition, we have reviewed a recent soil gas survey performed by URS and described in a report dated May 12, 2005.

Based on our reviews, we conclude that the report dated May 8, 2001 remains valid, with the following exceptions:

1) In our May 2001 report, we recommended a design groundwater depth of 13 feet below the ground surface because this was the highest water we observed and it was higher than the historical highs reported on nearby sites, as discussed in our May 2001 report. However, based on results of the April 2005 soil gas survey, groundwater was generally encountered at still higher elevations than previously encountered in April 1998 and July 2000. We have summarized the recent groundwater depths on the attached Figure 3 as well as in the following table:

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Soil Gas Survey Point	Ground Surface Elevation, feet*	Depth to Water feet	Water Elevation feet
SG-1	+19	6 to 10	+9 to +13
SG-2	+18.5	6 to 10	+8.5 to +12.5
SG-3	+19	6 to 10	+9 to +13
SG-4	+20	6 to 10	+10 to +14
SG-5	+21	6 to 10	+11 to +15
SG-6	+18	6 to 10	+8 to +12
SG-7	+20	6 to 10	+10 to +14
SG-8	+17	5	+12
SG-9	+17	3	+14
SG-10	+19.5	6 to 10	+9.5 to +13.5
SG-11	+17	6 to 10	+7 to +11
SG-12	+15	6 to 10	+5 to +9
SG-13	+18.5	>10	<+8.5
SG-14	+17	>10	<+7
SG-15	+16	>10	<+6

*above mean sea level, based on survey provided to us through Nadel Architects.

We consider it likely that these shallower depths are due to the exceptionally heavy winter rains this year, resulting in a buildup of freshwater beneath the site that is apparently slow to dissipate above the salt water beneath the site and to the east and west. Note that the far south end (SG-13, -14, and -15) still exhibited the lowest groundwater levels.

A review of the California Division of Mines and Geology's (CDMG's) Seismic Hazard Evaluation indicates the historically highest groundwater beneath the site is mapped at a *depth* of 5 feet bgs. Based on CDMG's contour location and a recent elevation survey provided to us by Nadel Architects, this corresponds to a high water *elevation* of about +15 feet, going to +10 feet at the southwest part of the site. These elevations are relatively consistent with the elevations encountered during the soil gas survey, given that the survey was taken over a month after the heavy rains.

We therefore recommend that the design groundwater elevation be taken as +15 feet, consistent with CDMG's mapped high groundwater levels (although a lower elevation of +10 feet at the far south end of the site is still conforming and acceptable, if needed). Wall drainage should still be provided above this elevation to accommodate infiltration, etc. Although the design

groundwater level is now higher, this can still be handled by proper design and engineering. Corresponding revisions to the geotechnical design parameters are discussed in Item 2, below.

2) The presence of the higher water table may influence the final design. For instance, the ground floor may be raised to reduce exposure to the higher water level. This is an acceptable alternative design, and our recommendations remain valid for this alternative. However, the original finished floor elevation may still be desired. As such, we have reviewed the impact of the higher groundwater table with respect to the number of our recommendations in our report, and in general, except where noted below, the recommendations are generally satisfactory in their current state.

For example, the higher water table affects the results of the liquefaction analysis slightly. However, the potential for liquefaction was already considered high (Section 5.2.2), so these changes are not materially significant to the recommendations provided in the report, and no changes to the recommendations which were provided to accommodate liquefaction are required.

In Section 5.5.2, groundwater control during construction was discussed. The potential for "pumping" of the subgrade and "quick" conditions are increased by the higher water table, and the contractor should be apprised of these findings. The discussion on how to alleviate or prevent these conditions during construction remains valid, although the need for construction dewatering is increased if the original finish floor elevation is maintained.

In Section 5.6.1, the applied lateral design pressures assume that hydrostatic pressure against the wall will be prevented. Assuming this continues to be the case; no changes are required. Additional parameters can be provided if needed so as to include hydrostatic pressures, should they be required for design.

In Section 5.7, temporary cuts in the near surface material were recommended to be made no steeper than 1.7:1. If such slopes extend below water levels, the construction dewatering which would be necessary would need to include these slopes as well so that the slopes maintain their stability.

3) This item is intended to clarify Section 5.4, Slab-On-Grade. It was recommended that 3 feet of compacted, coarse gravel be placed beneath the slab, even though a structurally supported slab had been recommended. The purpose of including the gravel was mostly to provide an up-front condition for construction considerations, rather than subjecting the Owner to a change order from the Contractor when the weak subsurface soils were unable to withstand construction

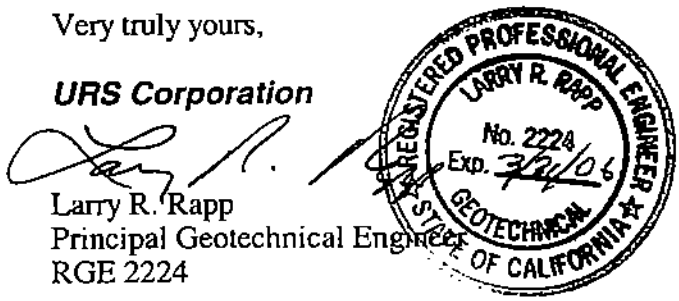
loading and import rock had to then be brought in. It was also to help facilitate dewatering (water levels were to be maintained at least 2 to 3 feet below the bottom of excavations, as indicated in Section 5.5.2). We did provide recommendations to get double use out of the gravel (sub-slab drainage) including helping to prevent migration of fines and additional settlement when the gravel is left in place. Nevertheless, the gravel layer was derived mostly from practical construction considerations from our experience with similar site conditions, rather than being derived from structural considerations, and so can be modified as the project team and contractor consider appropriate. The need for sub-slab drainage should be evaluated by the Structural Engineer with respect to potential distress should the water level rise and drainage not be present.

4) The County of Los Angeles 111 statement was not included in the May 8, 2001 report. Accordingly, based on the findings summarized in our May 8, 2001 investigation report and our May 12, 2005 soil gas survey, it is our opinion that the proposed construction will not adversely affect the geotechnical conditions or geologic stability of the property or the adjacent properties. In addition, it is our opinion that the proposed construction will be safe from hazards of slippage, landslide, or building settlement provided that the discussion, recommendations, conclusions, and limitations of our reports are incorporated into the proposed design and construction

We thank you for the opportunity to be of continued assistance on this project. This letter is subject to the same General Conditions as indicated in our May 8, 2001 report. All recommendations of our May 8, 2001 report remain valid unless modified herein. If you have any questions or require additional information, please call.

Very truly yours,

URS Corporation



Larry R. Rapp
Principal Geotechnical Engineer
RGE 2224

Attachments: Figures 1, 2, and 3

References:

URS Corporation, 2001. "Geotechnical Investigation, Proposed Apartment Complex, Del Rey Shores, Marina Del Rey, California" *for* Cox, Castle, and Nicholson, Project No. 57-00012019.01, May 8.

URS Corporation, 2005. Soil Gas Survey Letter Report, Proposed Apartment Complex Redevelopment, Del Rey Shores, Marina Del Rey, California," April 27

Department of Conservation, Division of Mines and Geology, 1998. "Seismic Hazard Evaluation of the Venice 7.5 Minute Quadrangle, Los Angeles County, California," Open-File Report 98-27.

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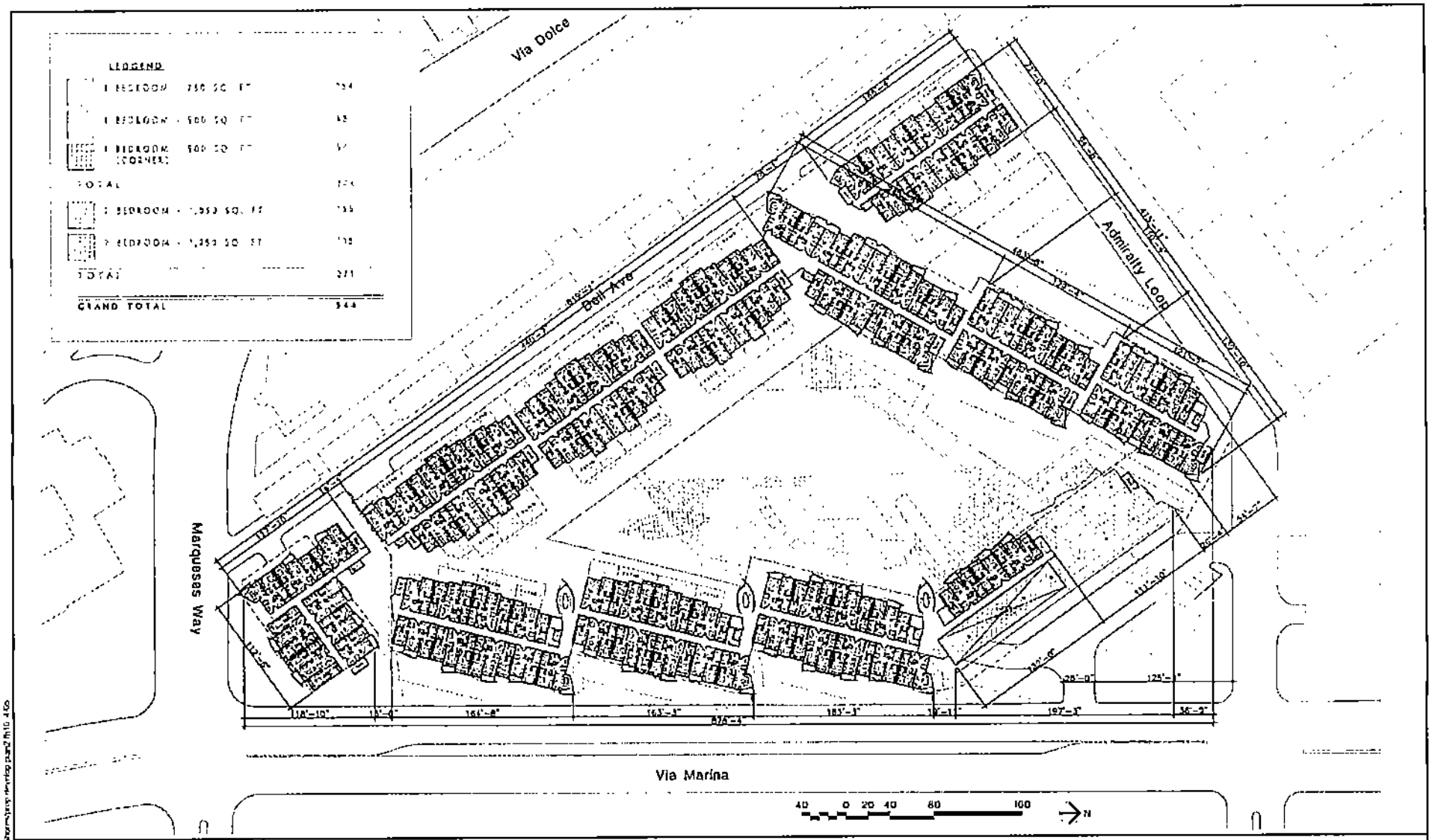
L:/Del Rey Shores/site vic map2.fh10 4/05

VICINITY MAP

Project No.: 29871356	Date: APRIL 2005	Project: PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES, MARINA DEL REY, CALIFORNIA	Figure 1

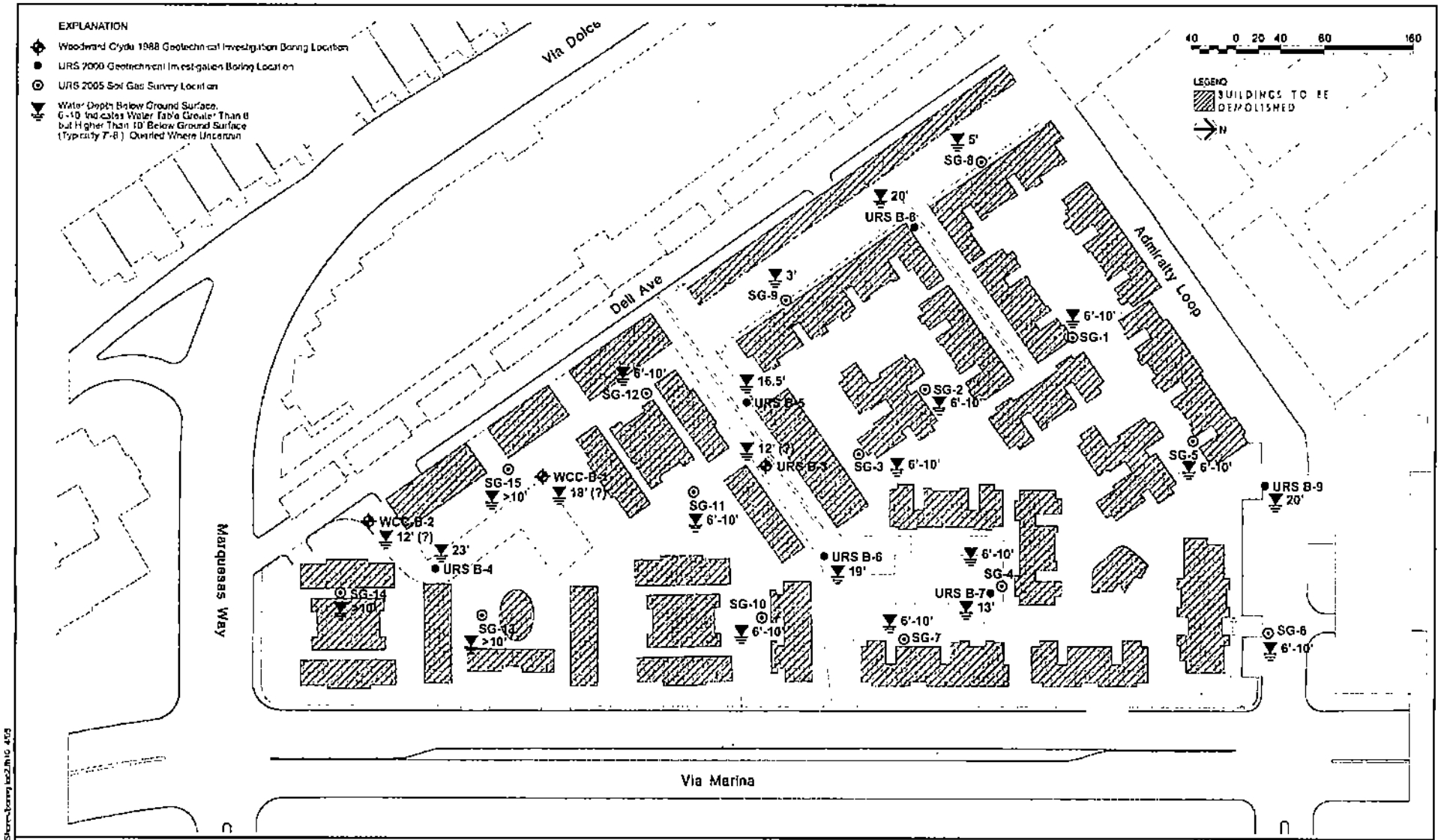
URS



PROPOSED DEVELOPMENT PLAN

Project No : 29871356	Date: APRIL 2005	Project: PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES, MARINA DEL REY, CALIFORNIA	Figure 2

URS



BORING LOCATIONS AND WATER LEVELS

Project No.: 2987 1356	Date: APRIL 2005	Project: PROPOSED APARTMENT COMPLEX REDEVELOPMENT DEL REY SHORES, MARINA DEL REY, CALIFORNIA	Figure 3

URS

APPENDIX 5.1(D)

URS, Addendum 2 to May 8, 2001 Geotechnical Report (September 26, 2005)

URS

September 26, 2005
Project No. 29871356

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SUBJECT: ADDENDUM 2 TO MAY 8, 2001 GEOTECHNICAL REPORT: 2ND UPDATE LETTER AND RESPONSE TO PRELIMINARY REVIEW COMMENTS PROPOSED APARTMENT COMPLEX The Shores, Marina Del Rey, California

Dear Mr. Gaulton:

This letter constitutes the second update letter to URS Corporation's (URS's) original May 8, 2001 geotechnical report (URS, 2001) for the proposed apartment complex at The Shores facility in Marina Del Rey, California. Due to its content, we are considering this letter to be Addendum 2 to that report, such that our June 2, 2005 update letter should be considered Addendum 1 (URS, 2005).

The purpose of this Addendum 2 is to respond to preliminary review comments by the County of Los Angeles, as well as to update some of our earlier findings. A copy of the County's preliminary review comments is attached. The review comments are considered preliminary because the original May 8, 2001 report was not a part of the County's review. The attached Table 1 provides a brief listing of the comments and where our responses may be found.

Faults and Seismicity

We understand there has been some discussion regarding faults closer to the site than those indicated in our May 8, 2001 report. However, those faults do not play a significant role in the overall site seismicity. Specifically, no changes to the design parameters because of them are required. To be complete, however, the following paragraphs can be considered added to the end of Section 4.2 of our May 8, 2001 report:

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There are two other known faults, the Charnock and the Overland Avenue faults, that are nearby, lying within approximately 3 miles (5 kilometers) and 4½ miles (7¼ kilometers), respectively, to the east of the proposed project (Jennings, 1994). Both of these faults were located by well log and water level data. The Charnock and Overland Avenue faults are considered by Jennings to be late Quaternary faults, meaning displacement occurred sometime in the last 700,000 years. However, the faults have no surface expression (Poland, 1959). The California Geological Survey (2003) does not consider the Charnock and the Overland Avenue faults as potential seismic sources with respect to seismic shaking. In summary, though close to the site, they are not controlling faults compared to the "significant active faults" discussed above.

A previous report in the nearby Playa Vista area, located within 2 miles (3 kilometers) to the east-southeast of the project site, inferred the presence of a previously unrecognized "potentially active" fault in the area (Exploration Technologies, Inc., 2000). That report located this near-surface fault, dubbed the "Lincoln Boulevard Fault," based on geochemical data collected during their investigation. However, no surface expression of the faults or evidence of surface displacement of recent sediments was found by that investigation. A subsequent study of faulting in the Playa Vista area using subsurface borings and cone penetrometer tests (CPTs) "found no evidence to support the existence of the inferred Lincoln Boulevard Fault" (Earth Consultants International, 2005). Earth Consultants determined these faults do not meet the California Geological Survey's definition of a fault that is sufficiently active and well-defined. In addition, evaluation by the California Geological Survey did not list this fault as a potential seismic source or as having the potential for surface fault rupture (California Geological Survey, 2003 and CDMG, 1997). Based on these factors, the theoretical Lincoln Boulevard Fault either does not exist or is not considered sufficiently active and well-defined for inclusion in seismic design.

Because there are no active or potentially active faults known to be present crossing the project site, the potential for surface fault rupture is considered unlikely.

In addition to the above, the California Geologic Survey has updated some details, such as fault length or slip rate, of faults discussed in our May 8, 2001 report. None of these change the design values indicated in Section 5.2.1 of our May 8, 2001 report, so were not included in Addendum 1. However, in the course of updating the liquefaction analysis discussed in the following section, it seemed appropriate to update our fault table at this time. The attached Table 2 replaces Table 1 of our May 8, 2001 report.

Liquefaction

Liquefaction potential and related phenomena are discussed in Sections 5.2.2 through 5.2.4 of our May 8, 2001 report. Since the time that report was written, the design acceleration indicated by the Building Code of 0.44g remains unchanged. However, we understand that for this area of California, a higher value of 0.5g is required for liquefaction analysis. Accordingly, we have re-performed the liquefaction analysis to meet current design issues. The analysis follows the same procedure previously discussed in our May 8, 2001 report, with the following revisions:

- The horizontal acceleration was increased from 0.44g to 0.5g
- The earthquake magnitude was raised from 7.1 to 7.3 (as shown on Table 2)
- In order to be consistent with recent groundwater levels discussed in Addendum 1, and conform to requirements of using the historical high groundwater level for analysis, the design groundwater table was raised to 10 feet below grade for borings B-1, B-2 and B-4, and raised to 5 feet below grade for borings B-3 and B-5 through B-9.

The results of the analysis are provided on the attached figures, numbered "6 (updated)" through "14 (updated)" so as to replace Figures 6 though 13, respectively, in our May 8, 2001 report. The points shown on the figures represent material that is considered potentially liquefiable. Points lying to the left of the solid black line have a factor of safety less than 1.0 against liquefaction, and points to the right indicate a factor of safety greater than 1.0 against liquefaction. As before, layers of non-liquefiable materials (such as fat clays) are not shown for clarity.

Our previous findings indicated the liquefaction potential was considered "high," and therefore our conclusions regarding site liquefaction remain essentially unchanged.

Because a higher groundwater level was used in the analysis, some layers located within the existing upper fill now exhibit liquefaction potential (such as the point at 11 feet in boring B-1 [Figure 6]). As stated in Section 5.2.4 of the May 8, 2001 report, the post-liquefaction settlement at the various boring locations, based on the earlier analysis, would range between 1 and 5 inches. However, the results of the current analysis indicate that the post-liquefaction settlement would be between 1½ to 5½ inches instead. Although this settlement is larger than before, the settlement was being mitigated by the use of a deep foundation (driven pile) system, and therefore no additional mitigation measures are necessary. Section 5.11 (using Stone Columns) also remains applicable.

Foundation Recommendations

We have reviewed our other foundation recommendations provided in Section 5 of our report, with respect to the higher groundwater table, the higher ground acceleration, the greater earthquake magnitude, the higher anticipated ground floor elevation, and recent site elevation surveys. In general, the majority of our recommendations remain unchanged, with the exceptions indicated in this section.

The static and seismic axial capacity curves were adjusted to be consistent with current findings and so are updated herein on Figures "15 (updated)" and "16 (updated)," respectively.

Based on recent extensive pile driving experience, we recommend that the minimum tip depth should be 45 feet below grade, or elevation -30 feet, whichever is deeper. We anticipate that this will results in at least 5 feet embedment into the site's underlying sand layer. Such piles may be designed for a dead-plus-live allowable axial compression bearing capacity of 45 ksf (factor of safety of 4) in addition to the friction values presented on Figures 15 (updated) and 16 (updated). Piles embedded between 52 and 60 feet below grade may be designed for the allowable 60 ksf bearing capacity indicated in Section 5.3 of our report (URS, 2001).

Tsunami

The tsunami hazard for coastal areas in California is not as well-defined as other seismic hazards, such as fault rupture, liquefaction, or slope movement, and is the subject of ongoing research.

As discussed by D. S. McCulloch (1985), there are analytical studies that have been found to be fairly accurate in predicting tsunami wave heights from distant major earthquakes. The published estimated tsunami wave heights at Marina del Rey as the wave crosses the shoreline are 9.6 feet for a 100-year tsunami and 15.3 feet for a 500-year tsunami. These heights include the effect of astronomical tides. The predicted heights are considered to equal run-up elevations, except where steep topography at or near the shoreline is encountered which may result in higher such elevations.

More recently, research performed for FEMA focused on estimating run-up heights from potential tsuamis resulting from local offshore earthquakes (Legg, et al 2003). Major earthquakes with magnitudes in the range of 7.0 to 7.6 were considered in these studies, which falls within the range appropriate for design at this site. The calculated run-up height was about 1.5 meters (5 feet) (or about 50% greater than a calculated wave height of 3.3 feet). However, Legg indicates that recent observations of tsunami run-up around the world following large

earthquakes tend to show that run-up values predicted from similar mathematical models underestimate the actual peak run-up values by a factor of 2. Consequently, the calculated run-up height would be about 10 feet – but then Legg says this does not yet include the effect of tides. Hence, in our opinion, this study for local major earthquakes shows similar results to earlier ones from distant major earthquakes as mentioned in the preceding paragraph.

Based on the available information, the possibility of the low lying areas of Marina del Rey being inundated by a tsunami cannot be discounted. The site is located about ¼ mile from the shore to the west, but about 500 feet from the marina to the east. The finish floor elevation of the lowest parking level is +15 feet. It is therefore conceivable that if the tsunamis are consistent with the maximum predicted from a 500-year return period event, there may be significant flooding of the basement level. The lowest finished floor elevation of the proposed residences is +35 feet, well above the wave height and anticipated run-up heights. From this perspective, mitigation of the potential tsunami hazard is more of an emergency preparedness issue rather than a design issue.

We thank you for the opportunity to be of continued assistance on this project. This addendum is subject to the same General Conditions as indicated in our May 8, 2001 report. All recommendations of our May 8, 2001 report and Addendum 1 remain valid unless modified herein. If you have any questions or require additional information, please call.

Very truly yours,

URS Corporation

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Attachments: Figures 6 (updated) to 16 (updated)

Additional References:

California Geological Survey (CGS), 2003. "The Revised California Probabilistic Seismic Hazard Maps," June 2003. Website: http://www.consrv.ca.gov/cgs/rghm/psha/fault_parameters/pdf/2002_CA_Hazard_Maps.pdf

California Division of Mines and Geology (CDMG), 1996. "Probabilistic Seismic Hazard Assessment for the State of California," in CDMG Open-File Report, 96 08, USGS Open-File Report 96-706.

Earth Consultants International, 2005. "Geologic Study to Evaluate the Potential for Active Faulting at the Playa Vista Development in the City of Los Angeles, California," website: http://www.earthconsultants.com/Playa_Vista.pdf

Exploration Technologies, 2000. "Subsurface Geochemical Assessment of Methane Gas Occurrences, Playa Vista Development, First Phase Project, Los Angeles, California," Houston, April 17.

Legg, Mark R,. Borrero, Jose C., and Synolakis, Costas W., 2003. "Evaluation of Tsunami Risk to Southern California Coastal Cities," the 2002 NEHRP Professional Fellowship Report, Earthquake Engineering Research Institute, January.

McCulloch, D.S., 1985. "Evaluating Tsunami Potential," *in* Evaluating Earthquake Hazards in the Los Angeles Region – An Earth-Science Perspective, U. S. Geological Survey Professional Paper 1360, pp 375-413.

Poland, J.F., Garrett, A.A., and Sinnott, A., 1959. "Geology, Hydrology, and Chemical Character of Ground Waters in the Torrance-Santa Monica Area, California," U.S. Geological Survey Water-Supply Paper 1461.

URS Corporation, 2001. "Final Report, Geotechnical Investigation, Proposed Apartment Complex, Del Rey Shores, Marina Del Rey, California," for Cox, Castle, and Nicholson, Project No. 57-00012019.01, May 8.

URS Corporation, 2005. "Update Letter of May 8, 2001, Geotechnical Investigation, Proposed Apartment Complex, The Shores, Marina Del Rey, California," June 2.

TABLE 1
RESPONSE AND DISPOSITION OF REVIEW COMMENTS

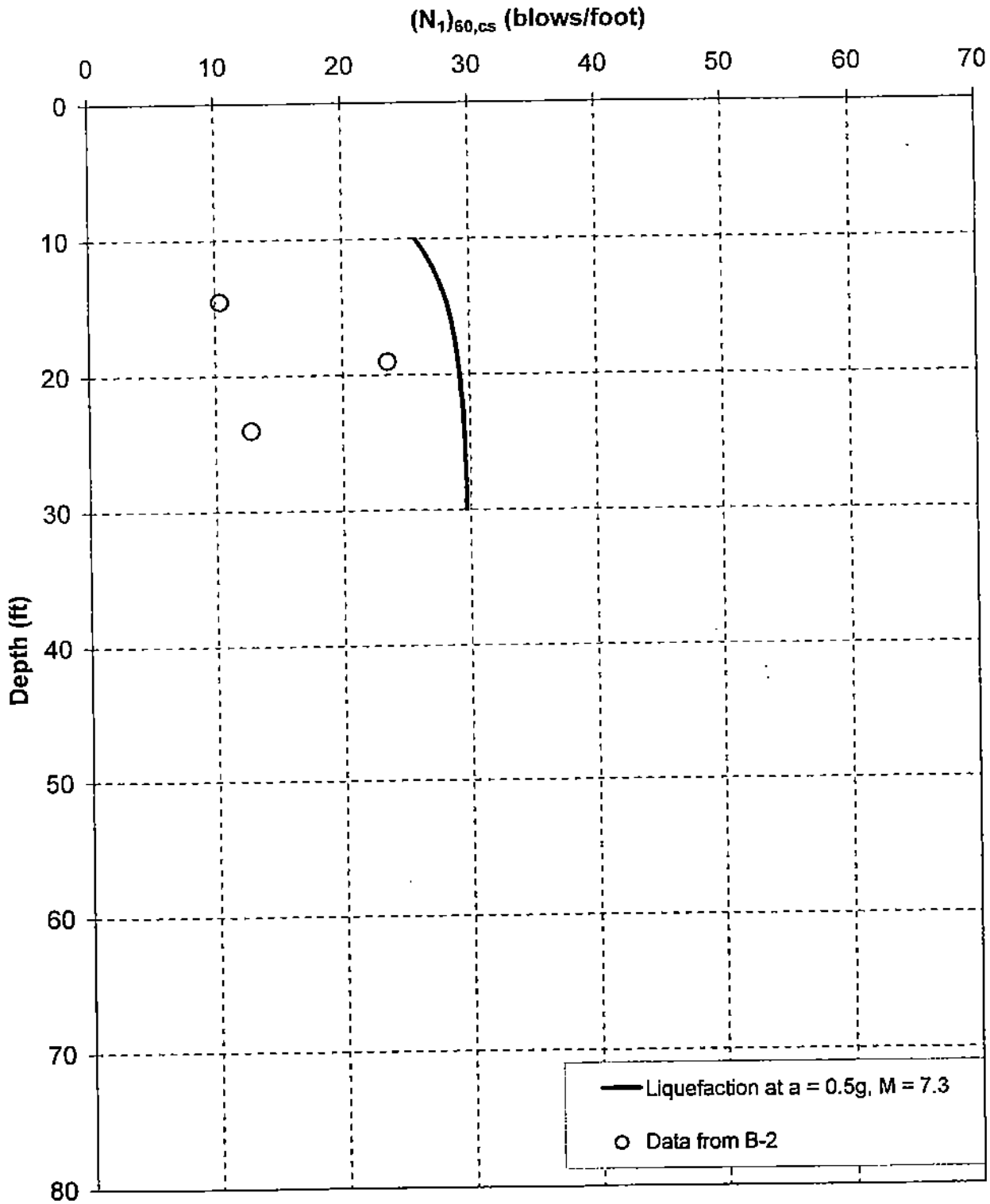
Brief description of comment	Where response can be found
Geologic Review Sheet	
1. Submit 2 copies of 5/8/01 report	Submitted along with this Addendum
2. Liquefaction	Sections 5.2.2 to 5.2.4 of 5/8/01 report, and updated herein
3. Refer to soils review sheet	Summarized below
4. Comments are preliminary	Understood; mentioned herein
Soils Engineering Review Sheet	
1. Submit 2 copies of 5/8/01 report	Submitted along with this Addendum
2. Liquefaction	Sections 5.2.2 to 5.2.4 of original report, and updated herein
3. Provide chemical test results	Section 5.8 and Figure B-18 of 5/8/01 report
4. Provide soil gas permit due to soil gas concerns	The 5/12/05 soil gas survey indicates that no soil gas was encountered
5. Tsunami	Addressed herein
6. Show mitigation on map	No mitigation - nothing to show.
7. See geology review sheet	Summarized above
8. Include copy of review sheet	Copies are attached
9. Comments are preliminary	Understood; mentioned herein

TABLE 2
(Revised Version of Table 1 in Our May 8, 2001 Report)
LIST OF SIGNIFICANT FAULTS

Fault Name	Fault Type [1]	Approximate Distance to Site (km)[2]	Approximate Fault Length (km) [3]	Estimated Slip Rate (mm/yr.)[4]	Estimated Maximum Credible Earthquake[5]
Palos Verdes	O/RL	6.5	96	3	~~7.1~~ ***7.3***
Newport-Inglewood Fault Zone (onshore)	RL	10	~~64~~ ***66***	1	~~6.9~~ ***7.1***
Santa Monica	O/LL, R	7.4	28	1	6.6
Hollywood	O/LL, R	13	17	1	6.4
San Andreas Fault System[6] (1857 rupture)	RL	73	~~345~~ ***348***	~~35~~ ***34***	7.8

Notes: Revisions are shown in ***bold italics*** with the previous values shown in ~~strikeout~~

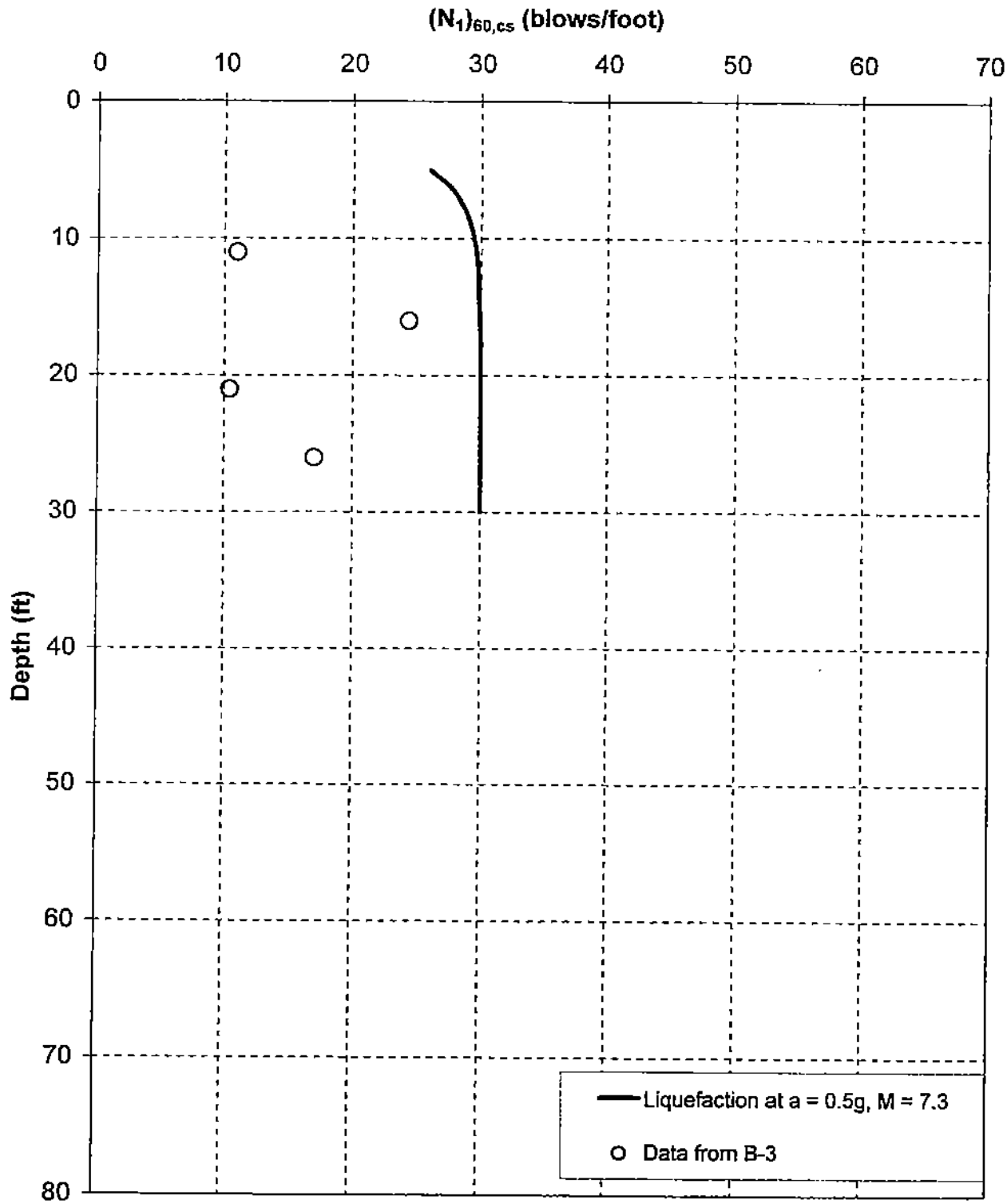
(1) RL = Right Lateral Strike-Slip Fault; O/RL = Oblique Right-Lateral Fault; O/LL = Oblique Left-Lateral Fault; R = Reverse Fault
(2) Distance estimated from "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada..." (International Conference of Building Officials, 1998).
(3) Fault lengths taken from CGS (2003).
(4) Slip-Rates from Fault Table from CGS (2003). Plus and minus factor not included in table.
(5) Maximum credible earthquake values reported as maximum moment magnitude from CGS (2003), and calculated from relationships derived by Wells and Coppersmith (1994).
(6) This particular 1857 rupture (CDMG, 1996) was removed from the CGS 2003 report, but it is included herein for completeness with May 8, 2001 report, with adjustments for revised CGS 2003 data findings.



"Clean Sand" Corrected Blow Counts versus Depth, WCC B-2

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 7 (updated)

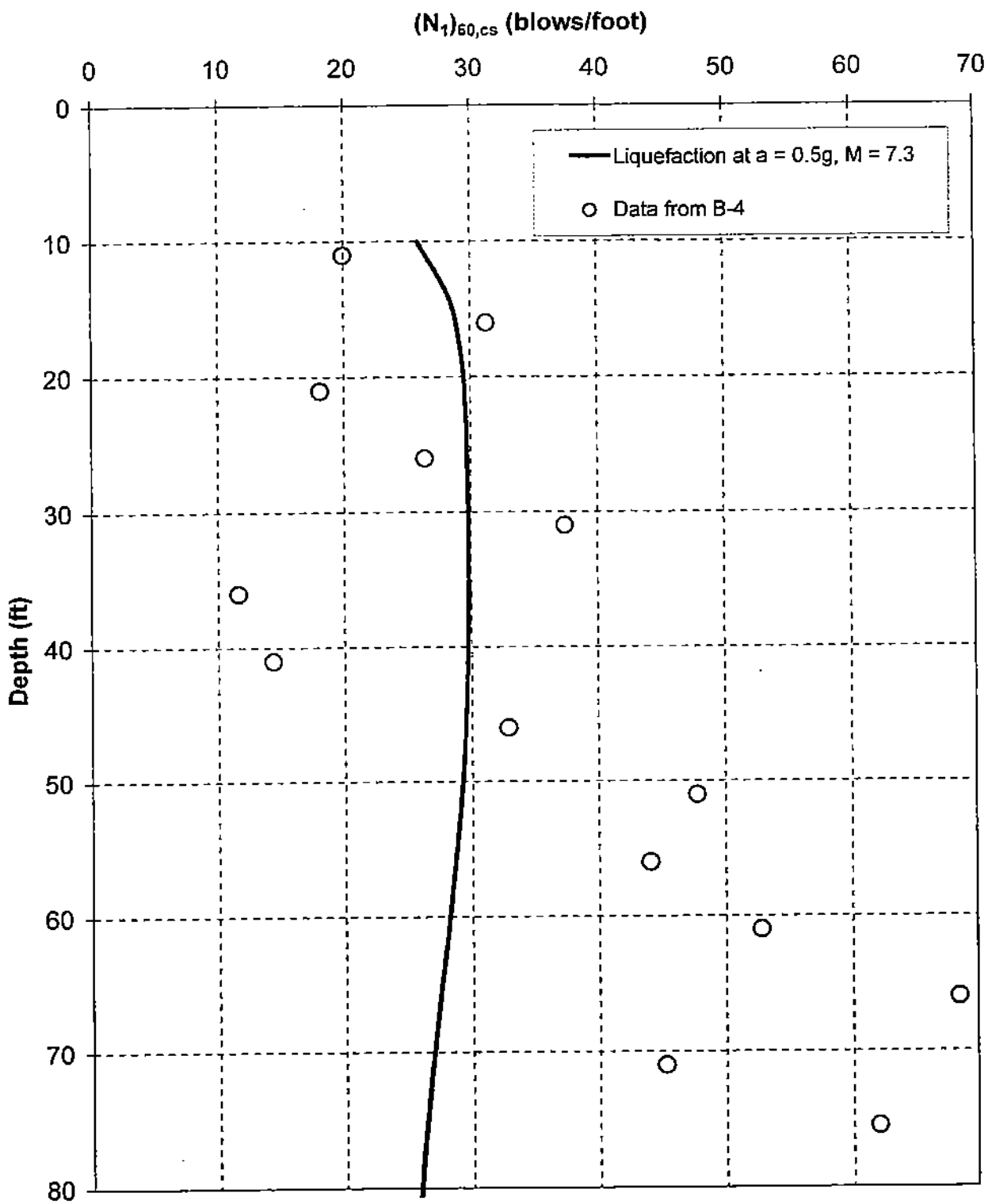
URS



"Clean Sand" Corrected Blow Counts versus Depth, WCC B-3

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 8 (updated)

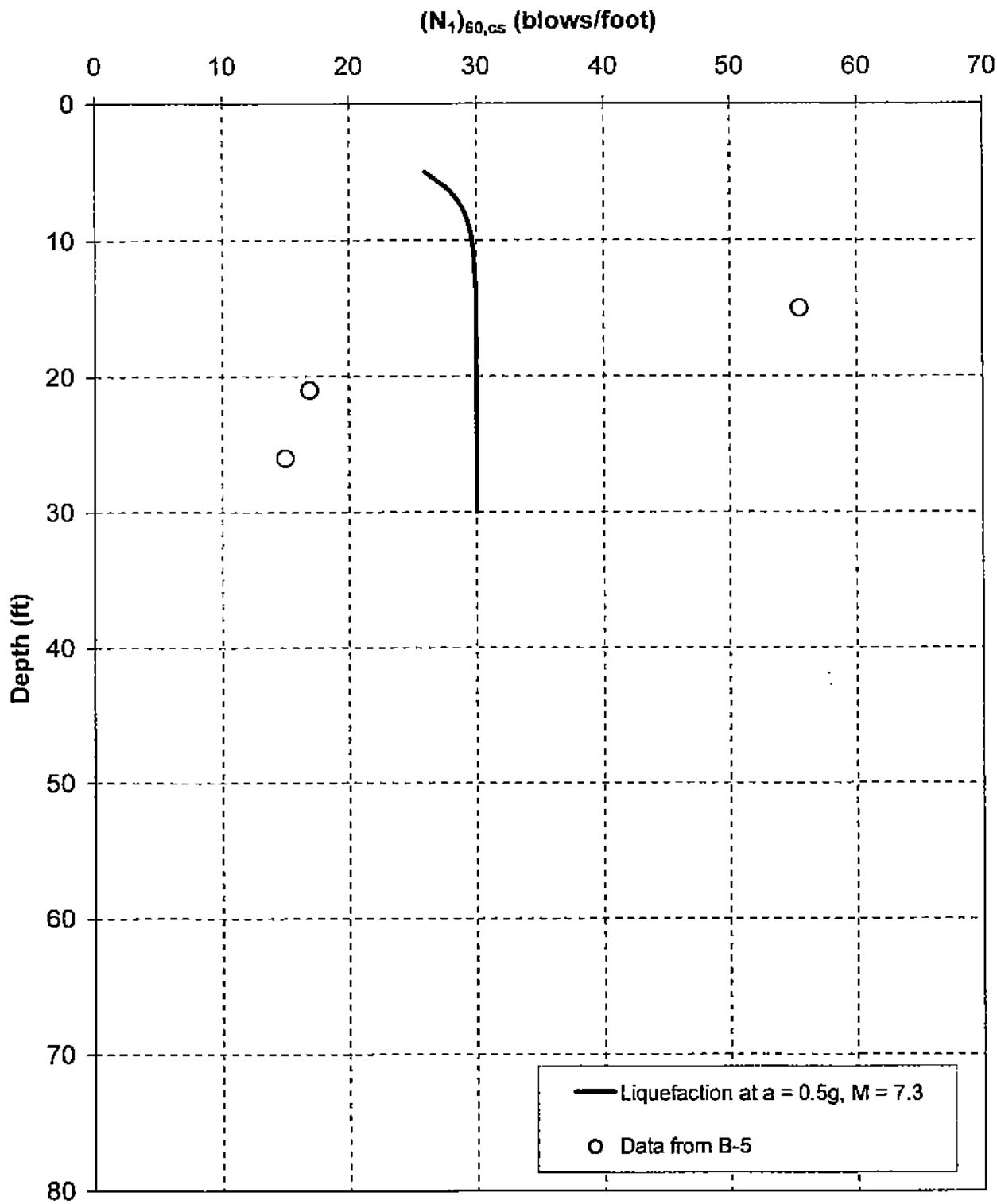
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-4

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 9 (updated)

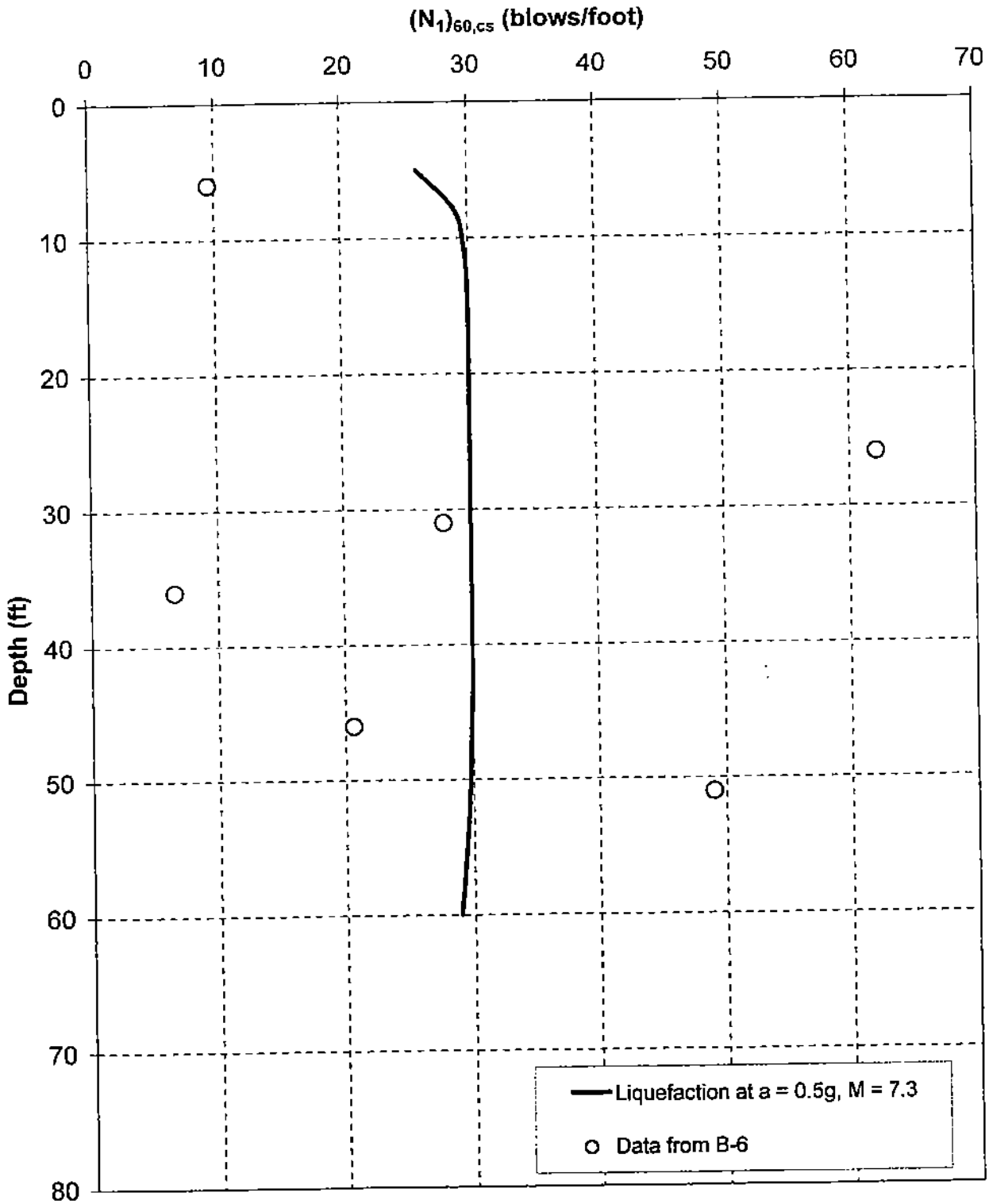
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-5

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 10 (updated)

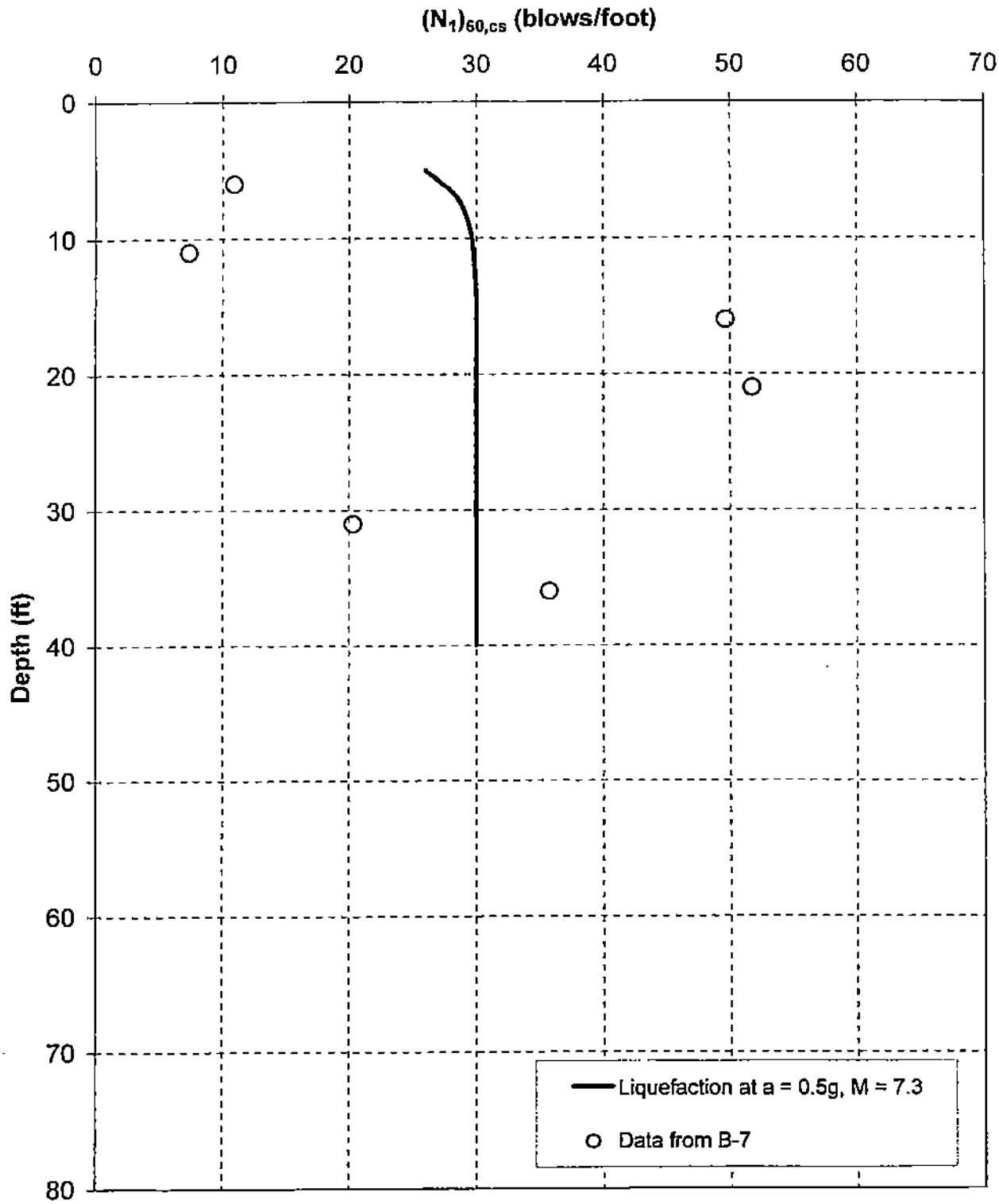
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-6

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 11 (updated)

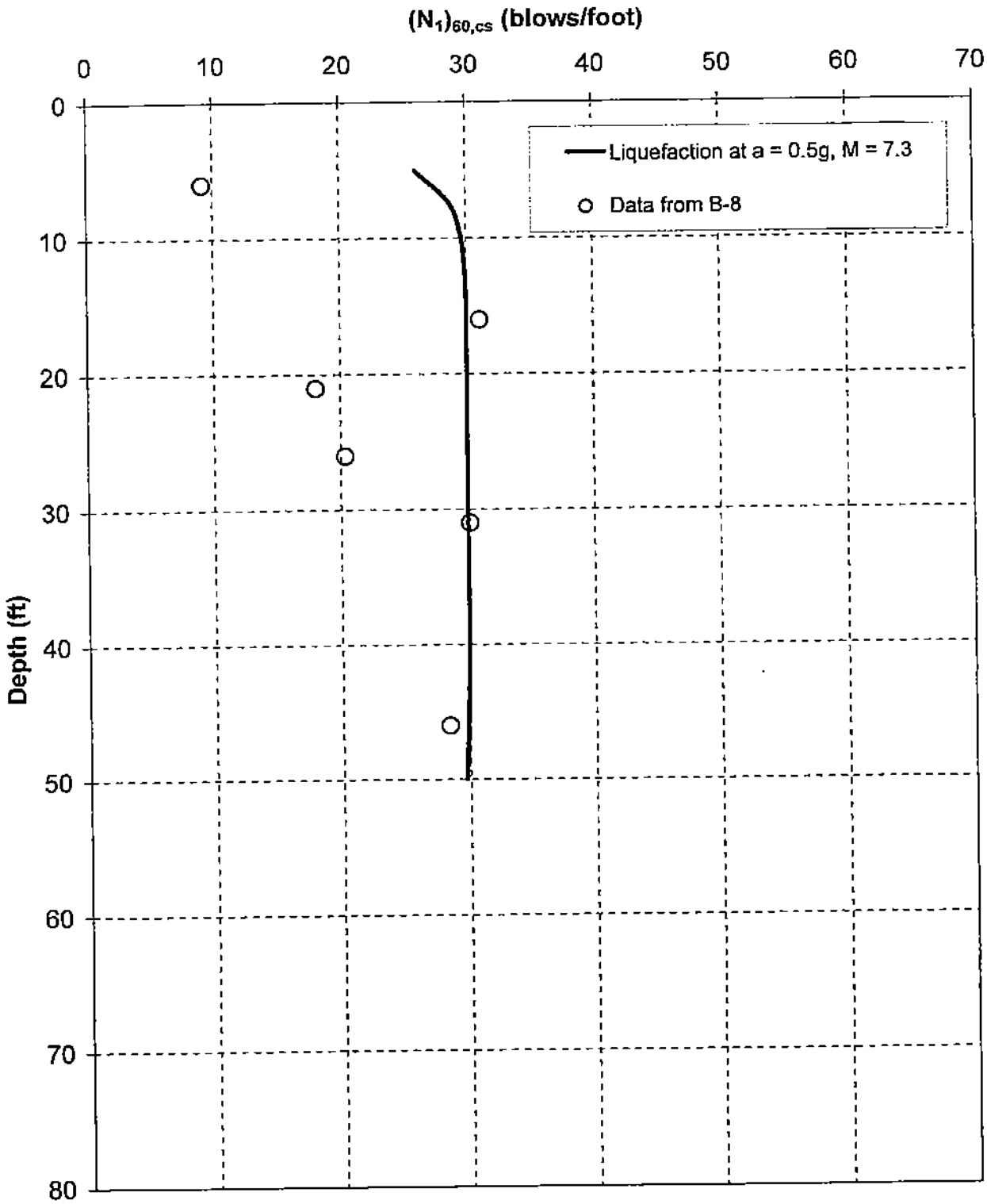
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-7

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 12 (updated)

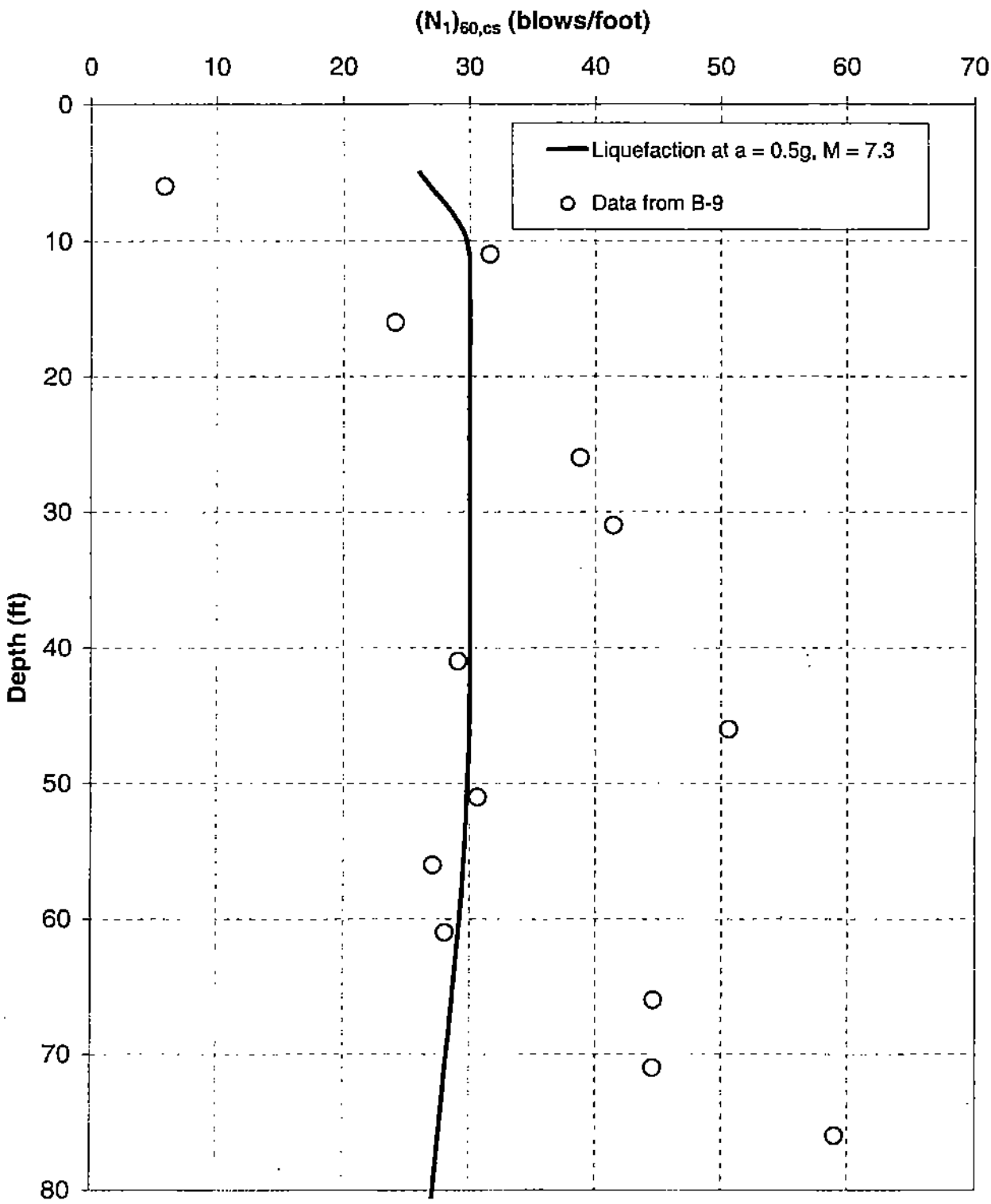
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-8

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 13 (updated)

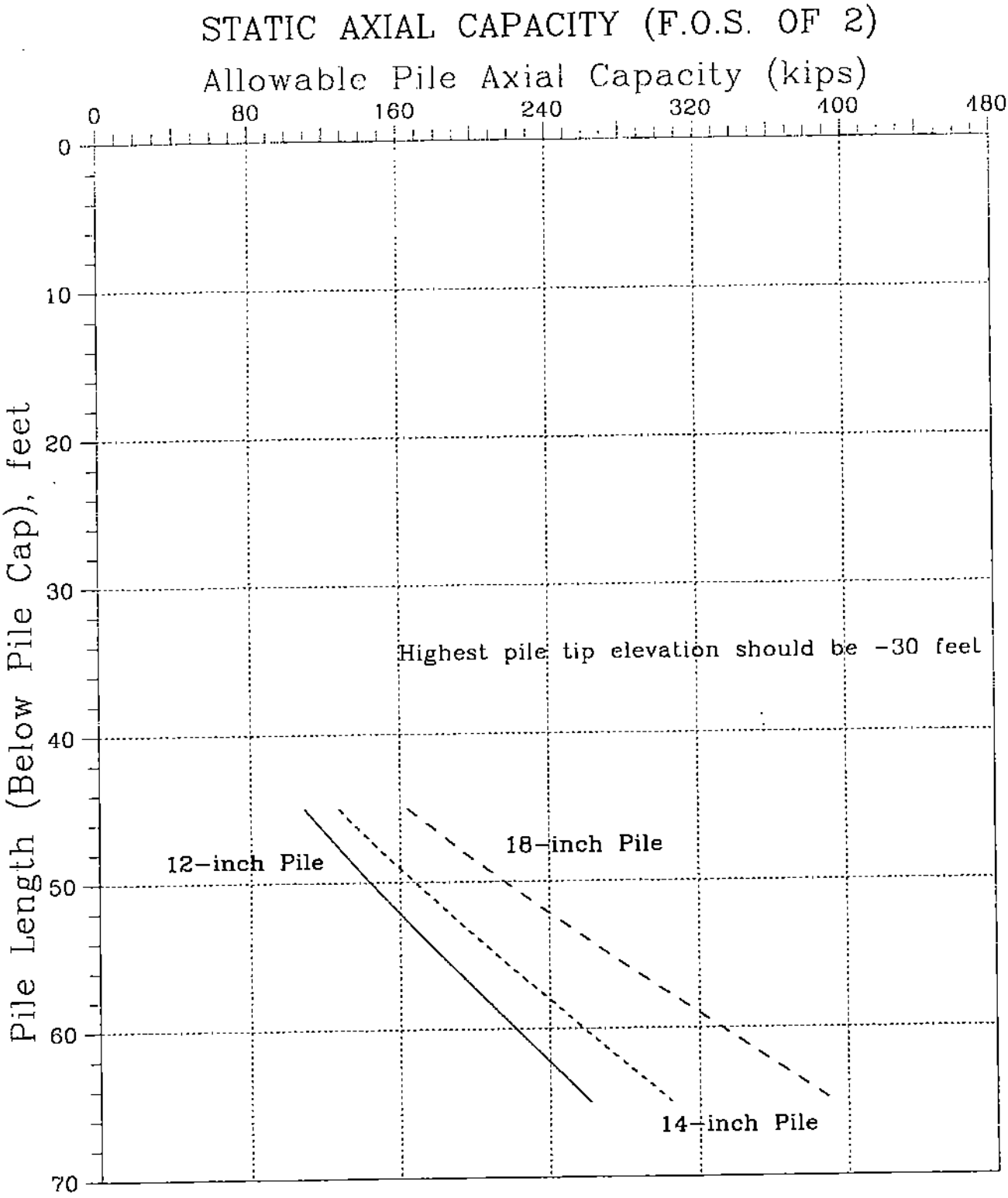
URS



"Clean Sand" Corrected Blow Counts versus Depth, URS B-9

Project No.: 57-00012019.01	Date: Mar 2001	Project: Del Rey Shores	Figure 14 (updated)

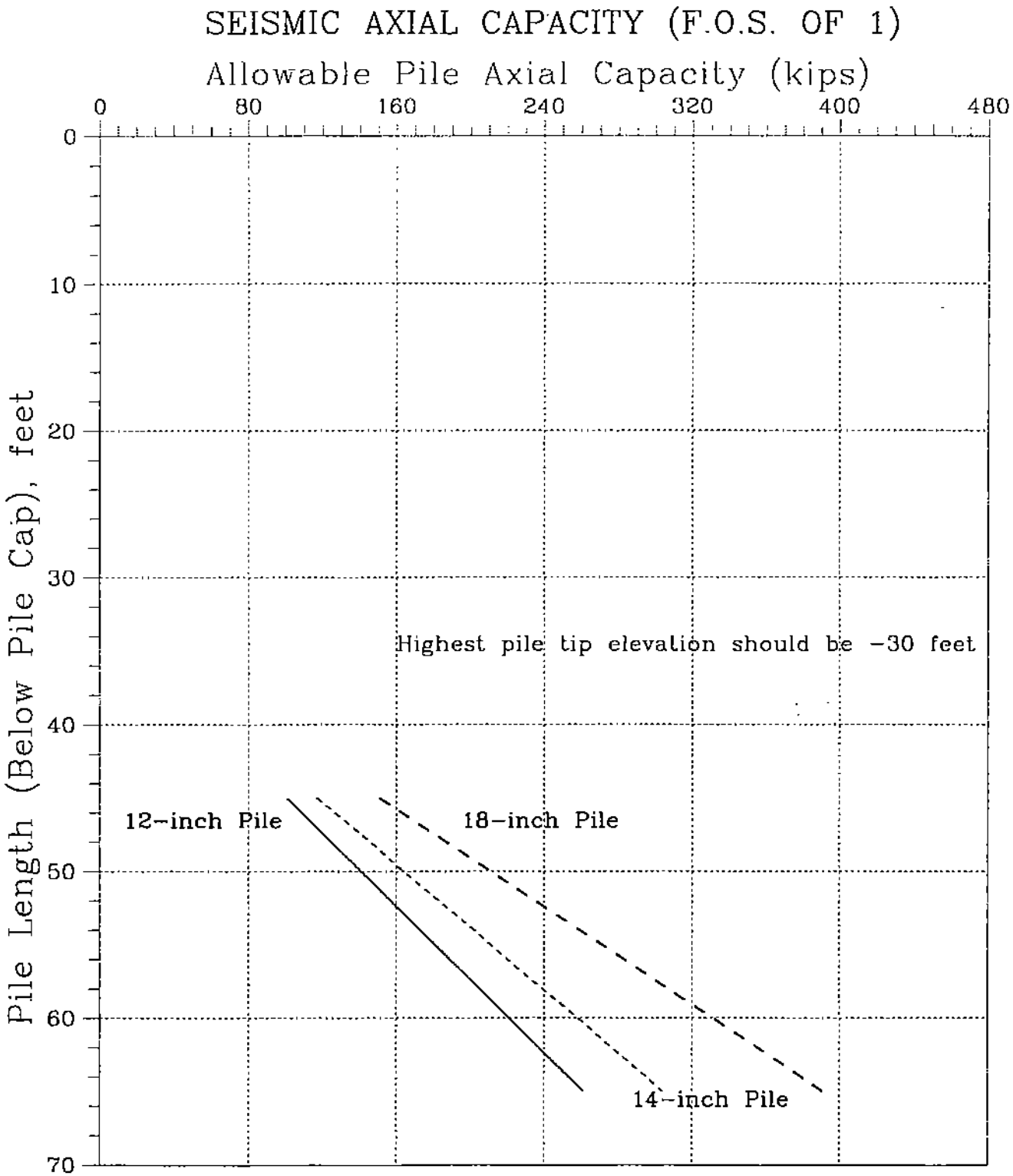
URS



Notes: 1) Capacities indicated assume a top of pile at about 7 feet below existing grade
2) Capacities shown are for single, driven, concrete, square piles

Pile Axial Capacity, Static Loads

Figure 15 (updated)



Notes: 1) Capacities indicated assume a top of pile at about 7 feet below existing grade
2) Capacities shown are for single, driven, concrete, square piles.

Pile Axial Capacity, Seismic Loads

Figure 16 (updated)

Dist. Office 12.0

Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Dist. Office
__ Geologist
__ Soils Engineer
1 GMED File

Tract / Parcel Map _____ **Lot(s)** _____
Parent Tract _____ **Location** Marina Del Rey
Site Address 4201 (4269) Via Marina **APN** (4224-005-903)
Geologist _____ **Developer/Owner** Del Rey Shores North
Soils Engineer URS **Engineer/Arch.** _____

Review of:

Miscellaneous Application No. 0506070001 For: Feasability for Apartment Buildings
Geologic Report(s) Dated _____
Soils Engineering Report(s) Dated URS 06-02-05, 05-12-05
Geology and Soils Engineering Report(s) Dated _____

Remarks/Conditions:

1. Submit 2 copies of the referenced report dated 05-08-01 for review and submittal to the State of California.

2. Based on the State of California Seismic Hazard Maps, the subject site is located in an area with a potential for liquefaction and may be subject to secondary effects of seismic shaking. The above requested report must address the potential for liquefaction and ground failure. The report must comply with the provisions of the "Manual for Preparation of Geotechnical Reports" prepared by the County of Los Angeles, Department of Public Works, and is available on the internet at http://ladpw.org/med/Manual.pdf . Provide this office with two (2) original copies of the report for review and distribution to the State of California.

   All parameters and data utilized in the liquefaction analysis must comply the requirements of the Geotechnical and Materials Engineering Division's Administrative Manual memo G045.0.

3. Refer to the soils review sheet dated 06-21-05

4. The Department of Public Works "Geologic Site Inspection" review is intended to preliminarily tell you if readily apparent conditions indicate that a geology or soils report may be required and/or to tentatively indicate possible conditions that may have to be met prior to issuance of a permit. Any comments, determinations, opinions or other statements concerning the property which are contained in this review sheet are tentative and subject to change. Additional data may be brought to the Department's attention which may materially affect and/or supersede statements made herein. Because of the very limited nature of the review conducted by the Department, any statements made in this review sheet are not binding on this Department and are not to be relied upon by anyone in deciding whether to build on or buy any property. Further review requires submittal of a permit application for Grading and/or Building.

Prepared by Robert O. Thomas Reviewed by _____ Date 06-21-05

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 12
Job Number GMMSRR
Sheet 1 of 1

DISTRIBUTION:
___ Drainage
___ Grading
1 Geo/Soils Central File
2 District Engineer
___ Geologist
1 Soils Engineer
___ Engineer/Architect

Apartment Complex

Location 4201 Via Marina, Marina Del Rey
Developer/Owner Del Rey Shores
Engineer/Architect ---
Soils Engineer URS Corporation
Geologist ---

Miscellaneous Application No. 0506070001

Review of:
Soils Engineering Report Dated **6/2/05**
Soil Gas Survey Report Dated **5/12/05**

REMARKS:

1. Provide 2 copies of the referenced 5/8/01 soils report to the Soils Section for review. **Upon receipt of the soils report requested, a complete review will be conducted.**

2. The site is located within a mapped liquefiable area, per the State of California Seismic Hazard Zone Map, Venice Quadrangle. Therefore, provide data and analyses to determine liquefaction potential of the on-site soils. Also, evaluate the potential for seismically induced settlement (dry and saturated soils), lateral spreading, surface manifestation, etc. The analyses must be performed for soils within the upper 50 feet, as a minimum, for shallow foundation, or greater depth where deep foundation and/or subterranean structure is proposed. The historic-high water table shall be used in the analyses, unless other information is provided which indicates a higher or lower level is appropriate. Recommend mitigation as necessary. The liquefaction data and analyses must conform to the State of California Division of Mines and Geology "Special Publication 117", dated 1997 and "Recommended Procedure For Implementation of DMG Special Publication 117", dated March 1999.

3. Provide chemical test results (sulfate, chloride, resistivity, etc.) for the on-site soils to address the presence of chemicals deleterious to concrete and ferrous metals. The tests must be in accordance with California Test Methods, Department of Transportation, or equivalent (aqueous solution tests, such as EPA Tests or similar methods are not acceptable for determination of resistivity). Resistivity tests must be performed on soils samples in a saturated condition.

4. Receipt of the 5/12/05 soil gas survey report is acknowledged. Due to environmental concerns, regarding soil gas as addressed in the 5/12/05 report, provide copy of permit, letter of non-objection, processed application, etc., as applicable, obtained from the appropriate State Agencies, i.e. Division of Oil, Gas and Geothermal Resources, Department of Toxic Substances Control, South Coast Air Quality Management District, Regional Water Quality Control Board, etc

5. Address the tsunami hazard potential at this site. Recommend mitigation measures from a health and safety standpoint as necessary.

6. Show all recommended mitigation measures on the geotechnical map.

7. Requirements of the Geology Section are attached.

8. Include a copy of this review sheet with your response.

9. The Department of Public Works "Geotechnical Site Inspection" review is intended to preliminarily tell you if readily apparent conditions indicate that a geology or soils report may be required and/or to tentatively indicate possible conditions that may have to be met prior to issuance of a permit. Any comments, determinations, opinions or other statements concerning the property which are contained in this review sheet are tentative and subject to change. Additional data may be brought to the Department's attention which may materially affect and/or supersede statements made herein. Because of the very limited nature of the review conducted by this Department, any statements made in this review sheet are not binding on this Department and are not to be relied upon by anyone in deciding whether to purchase or buy any property. Further review requires submittal of a permit application for Grading and/or Building.

Prepared by _____ Date 6/21/05
Gan Lem

REGISTERED PROFESSIONAL ENGINEER
GAN N. LEM
NO. 2328
EXP. 6/30/07
GEOTECHNICAL
STATE OF CALIFORNIA

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, CCR 8, Construction Safety Orders.
Gan:admiralty-4170

APPENDIX 5.2

Noise Data

Table N-1
NOISE LEVEL CONTOURS - Existing Plus Project

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	 Heavy Trucks	dB(A) CNEL
WASHINGTON BOULEVARD East of Via Marina	Residential	4	0	16,870	40	50	0	0	1.8%	0.7%	67.1
VIA MARINA South of Admiralty Way	Residential	4	0	15,332	40	50	0	0	1.8%	0.7%	66.7
ADMIRALTY WAY East of Via Marina	Park	4	0	18,912	40	50	0	0	1.8%	0.7%	67.6
LINCOLN BOULEVARD North of Fiji Way	Hospital	6	12	60,468	40	50	0	0	1.8%	0.7%	73.9
FIJI WAY West of Lincoln Boulevard	Residential	2	0	12,235	35	50	0	0	1.8%	0.7%	64.1
MINDANAO WAY East of Lincoln Boulevard	Residential	4	0	16,682	35	50	0	0	1.8%	0.7%	65.7
VENICE BOULEVARD East of Ocean Avenue	Residential School	6	12	16,368	45	50	0	0	1.8%	0.7%	69.5
MARQUESAS WAY East of Via Marina	Residential	2	0	1,010	30	50	0	0	1.8%	0.7%	52.2
PANAY WAY East of Via Marina	Residential	4	12	3,020	30	50	0	0	1.8%	0.7%	57.5
PALAWAN WAY South of Washington Boulevard		4	12	5,030	30	50	0	0	1.8%	0.7%	59.7
BALI WAY West of Lincoln Boulevard		2	0	4,047	35	50	0	0	1.8%	0.7%	59.3
TAHITI WAY East of Via Marina	Residential	2	0	2,010	30	50	0	0	1.8%	0.7%	55.2

(1) Distance to centerline of roadway.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-4
NOISE LEVEL CONTOURS - Future Without Project ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	 Heavy Trucks	dB(A) CNEL
WASHINGTON BOULEVARD											
East of Via Marina	Residential	4	0	16,920	40	50	0	0	1.8%	0.7%	67.1
VIA MARINA											
South of Admiralty Way	Residential	4	0	14,350	40	50	0	0	1.8%	0.7%	66.4
ADMIRALTY WAY											
East of Via Marina	Park	4	0	18,450	40	50	0	0	1.8%	0.7%	67.5
LINCOLN BOULEVARD											
North of Fiji Way	Hospital	6	12	61,520	40	50	0	0	1.8%	0.7%	74.0
FIJI WAY											
West of Lincoln Boulevar	Residential	2	0	12,300	35	50	0	0	1.8%	0.7%	64.1
MINDANAO WAY											
East of Lincoln Boulevard	Residential	4	0	16,400	35	50	0	0	1.8%	0.7%	65.7
VENICE BOULEVARD											
East of Ocean Avenue	Residential School	6	12	N/A	45	50	0	0	1.8%	0.7%	N/A*
MARQUESAS WAY											
East of Via Marina	Residential	2	0	1,030	30	50	0	0	1.8%	0.7%	52.3
PANAY WAY											
East of Via Marina	Residential	4	12	3,080	30	50	0	0	1.8%	0.7%	57.6
PALAWAN WAY											
South of Washington Boulevard		4	12	5,130	30	50	0	0	1.8%	0.7%	59.8
BALI WAY											
West of Lincoln Boulevard		2	0	4,100	35	50	0	0	1.8%	0.7%	59.4
TAHITI WAY											
East of Via Marina	Residential	2	0	2,050	30	50	0	0	1.8%	0.7%	55.3

(1) Distance to centerline of roadway.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

* Traffic volumes along Venice Boulevard cannot presently be calculated due to tentative roadway improvements.

Table N-5
NOISE LEVEL CONTOURS - Future With Project ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	 Heavy Trucks	dB(A) CNEL
WASHINGTON BOULEVARD East of Via Marina	Residential	4	0	17,190	40	50	0	0	1.8%	0.7%	67.2
VIA MARINA South of Admiralty Way	Residential	4	0	15,582	40	50	0	0	1.8%	0.7%	66.8
ADMIRALTY WAY East of Via Marina	Park	4	0	19,262	40	50	0	0	1.8%	0.7%	67.7
LINCOLN BOULEVARD North of Fiji Way	Hospital	6	12	61,588	40	50	0	0	1.8%	0.7%	74.0
FIJI WAY West of Lincoln Boulevard	Residential	2	0	12,435	35	50	0	0	1.8%	0.7%	64.2
MINDANAO WAY East of Lincoln Boulevard	Residential	4	0	16,982	35	50	0	0	1.8%	0.7%	65.8
VENICE BOULEVARD East of Ocean Avenue	Residential School	6	12	N/A	45	50	0	0	1.8%	0.7%	N/A*
MARQUESAS WAY East of Via Marina	Residential	2	0	1,030	30	50	0	0	1.8%	0.7%	52.3
PANAY WAY East of Via Marina	Residential	4	12	3,080	30	50	0	0	1.8%	0.7%	57.6
PALAWAN WAY South of Washington Boulevard		4	12	5,130	30	50	0	0	1.8%	0.7%	59.8
BALI WAY West of Lincoln Boulevard		2	0	4,127	35	50	0	0	1.8%	0.7%	59.4
TAHITI WAY East of Via Marina	Residential	2	0	2,050	30	50	0	0	1.8%	0.7%	55.3

(1) Distance to centerline of roadway.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

* Traffic volumes along Venice Boulevard cannot presently be calculated due to tentative roadway improvements.

Table N-7
NOISE LEVEL CONTOURS - Future Plus Cumulative ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	 Heavy Trucks	dB(A) CNEL
WASHINGTON BOULEVARD											
East of Via Marina	Residential	4	0	19,000	40	50	0	0	1.8%	0.7%	67.6
VIA MARINA											
South of Admiralty Way	Residential	4	0	21,180	40	50	0	0	1.8%	0.7%	68.1
ADMIRALTY WAY											
East of Via Marina	Park	4	0	23,075	40	50	0	0	1.8%	0.7%	68.5
LINCOLN BOULEVARD											
North of Fiji Way	Hospital	6	12	38,860	40	50	0	0	1.8%	0.7%	72.0
FIJI WAY											
West of Lincoln Boulevar	Residential	2	0	13,210	35	50	0	0	1.8%	0.7%	64.4
MINDANAO WAY											
East of Lincoln Boulevarc	Residential	4	0	19,760	35	50	0	0	1.8%	0.7%	66.5
VENICE BOULEVARD											
East of Ocean Avenue	Residential School	6	12	N/A	45	50	0	0	1.8%	0.7%	N/A*
MARQUESAS WAY											
East of Via Marina	Residential	2	0	2,950	30	50	0	0	1.8%	0.7%	56.9
PANAY WAY											
East of Via Marina	Residential	4	12	4,290	30	50	0	0	1.8%	0.7%	59.0
PALAWAN WAY											
South of Washington Boulevard		4	12	6,740	30	50	0	0	1.8%	0.7%	61.0
BALI WAY											
West of Lincoln Boulevard		2	0	4,218	35	50	0	0	1.8%	0.7%	59.5
TAHITI WAY											
East of Via Marina	Residential	2	0	3,640	30	50	0	0	1.8%	0.7%	57.8

(1) Distance to centerline of roadway.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

* Traffic volumes along Venice Boulevard cannot presently be calculated due to tentative roadway improvements.

APPENDIX 5.3

Hydrology and Water Quality Report
PSOMAS, Site Hydrology Study for Del Rey Shores (April 2005)

PSOMAS

SITE HYDROLOGY STUDY

For

Del Rey Shores

Psomas Project No.: 1DEL090100
April 15, 2005

Prepared by:

PSOMAS
11444 West Olympic Blvd., Suite 750
West Los Angeles, California 90064
Telephone: (310) 954-3700
Fax: (310) 954-3777

PSOMAS

SITE HYDROLOGY STUDY

For

Del Rey Shores

Psomas Project No.: 1DEL090100
April 15, 2005

Prepared by:

PSOMAS
11444 West Olympic Blvd., Suite 750
West Los Angeles, California 90064
Telephone: (310) 954-3700
Fax: (310) 954-3777

Andrew Nickerson, P.E. R.C.E. No. C056808 Date **15-04-05**

TABLE OF CONTENTS

TITLE SHEET

TABLE OF CONTENTS

Section 1.0: PROJECT SUMMARY

1.1 Project Purpose and Scope

1.2 Existing Drainage Facilities

1.3 Hydrologic Analysis

1.4 Design frequency and data

1.5 Results and proposed drainage facilities

1.6 References

Section 2.0: RATIONAL METHOD TC CALCULATIONS

Section 3.0: DRAINAGE EXHIBITS

Appendix: REFERENCE MATERIALS

1.0 PROJECT SUMMARY

1.1 PROJECT PURPOSE AND SCOPE

Del Rey Shores/ Del Rey Shores North Joint Venture are developing a property northwest of the intersection between Via Marina Way and Marquesas Way which has a total area of 8.35 ac. There is an existing 202-unit apartment complex located on Marina del Rey Parcels 100 & 101 in the County of Los Angeles that will be demolished to accommodate a new 544-unit apartment complex (consisting of 12 connected and/or adjacent apartment buildings with 5 stories of units over 2 stories of parking) with 1,114 on-site parking spaces. The new project will have perimeter landscaping and an interior courtyard, which will include an outdoor garden, pool and spa. The attached exhibits in section 5.0 show the existing and proposed conditions.

The purpose of this drainage study is to compare the storm water runoff in pre and post development conditions and to outline the design concept to deal with this runoff. This study does not intend to determine the adequacy or the capacity of the curb and gutter in Via Marina Way or the v-ditch in the alley to the West of the project, since that was done in previous hydrology studies. The purpose of this study is to determine the necessity of any detention devices needed to maintain peak runoff at the existing level. This report will also look at proposed water quality and drainage devices to ensure that flood control and water quality on the site are maintained or even improved.

1.2 EXISTING DRAINAGE FACILITIES

The existing site drains via surface runoff onto Via Marina Way and into a v-ditch running down the middle of the Dell Avenue alley to the west of the project. Approximately 5 acres from the site drain into the adjacent alley then along the alley into a catch basin where it joins Via Dolce. The remaining 3 acres drain into Via Marina Way which connects to Marquesas Way at the southeast corner of the project where the flow travels by gutter until it reaches a catch basin on Via Dolce a few hundred feet north of Marquesas Way.

1.3 HYDROLOGIC ANALYSIS

In order to determine the appropriate design flows to be utilized to size necessary drainage facilities, the contributing area was divided into appropriate sub-areas according to proposed grading and other boundaries such as roof lines.

The methodology described in the Los Angeles County Department of Public Works Hydrology Manual was used to compute storm water run-off rates from the project site for both existing and proposed conditions. The Los Angeles County Department of Public Works TC computer program was used for Rational Method time of concentration calculations. The Modified Rational Method was employed for runoff computation using sub-area times of concentration computed by the Rational Method.

1.4 DESIGN FREQUENCY AND DATA

Storm drains will be designed to convey a 10-year storm frequency.

The soil type for the site is 17 and was determined based on Plate 1H1-7 of the LACDPW Hydrology Manual.

The project has a 24-hour 50-year isohyet of 5.2 inches.

The associated hydrologic and isohyetal maps for this project have been included in the appendix of this report for reference purposes.

The proposed project site will have a residential (65% imperviousness) development type with large landscaped areas used for water quality and conveyance.

In the proposed condition the site will continue to drain to both Via Marina and Dell Ave. Runoff is collected in an on-site storm drain system and then discharged into bioswales that have been designed to convey the storm water into Via Marina Way and Dell Ave. Flows from these bioswales and the roof drains adjacent to Dell Ave. will outlet into the alley or through curb drains into Via Marina Way.

1.5 RESULTS AND PROPOSED DRAINAGE FACILITIES

Time of Concentration Computation

In both the existing and proposed conditions, the site was divided into two sub-areas and the TC values were computed for each of these sub-areas. The calculated TC values are given in section 2.0 of this report. In the existing condition stormwater drains into the street and alley without entering an on-site system. In the proposed condition flows needed to be collected and graded into planned bioswales in order to be able to treat the surface flow from the site. This resulted in longer TC's and ultimately lower peak flows in the proposed condition when compared to the existing condition. Due to the decrease in flows coming from the site in the proposed condition, peak flow and detention

hydrographs did not need to be generated. The existing and proposed condition flows are also given in section 2.0 of this report.

Stormwater Treatment:

To retain floating materials and sand on-site, bioswales have been proposed in strategic locations throughout the project. The bioswales are indicated on the proposed hydrology exhibit in section 3.0 of this report.

1.6 REFERENCES

1. Los Angeles County Hydrology Manual, 1992

2. Stahre, Peter and Urbonas, Ben, 1990, Storm Water Detention for Drainage, Water Quality and CSO Management, Prentice Hall, Englewood Cliffs, New Jersey

Section 2.0

Rational Method Tc Calculations

DEL REY SHORES EXISTING TC CALCULATIONS

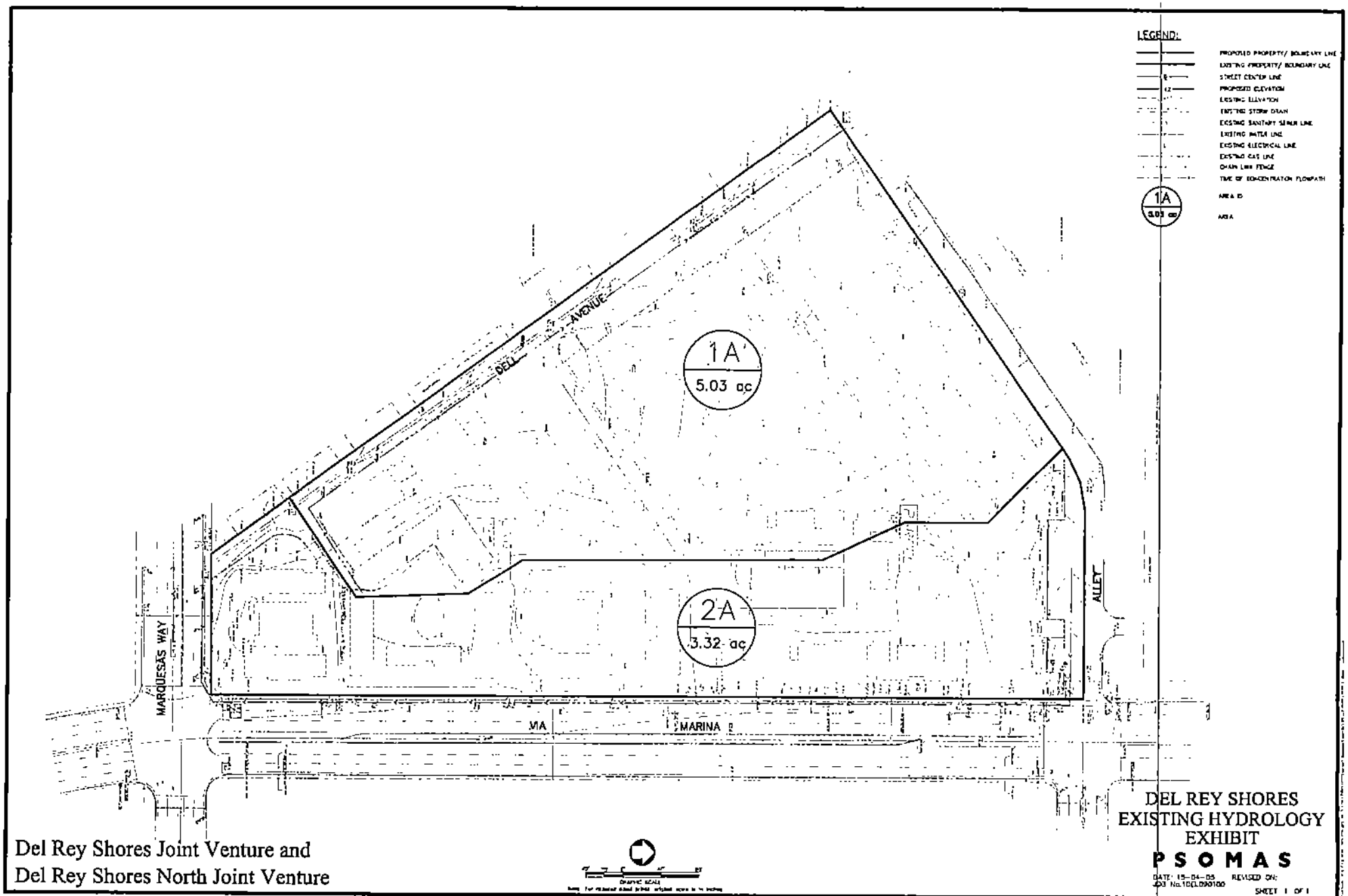
Subarea	Area (ac.)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc (min.)	Intensity (in./hr)	Flow cfs)
1a	5.03	0.75	25	17	800	0.012	4.6	11	1.89	8
2a	3.32	0.75	25	17	1212	0.006	4.6	16	1.59	5

DEL REY SHORES PROPOSED TC CALCULATIONS

Subarea	Area (ac.)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc (min.)	Intensity (in./hr)	Flow (cfs)
1a	2.51	0.8	25	17	750	0.006	4.6	12	1.82	4
2a	5.82	0.6	25	17	1560	0.005	4.6	20	1.43	7

Section 3.0

Drainage Exhibits



Del Rey Shores Joint Venture and
Del Rey Shores North Joint Venture

DEL REY SHORES
EXISTING HYDROLOGY
EXHIBIT

PSOMAS

DATE: 15-04-05 REVISED ON:
JOB No.10010090100

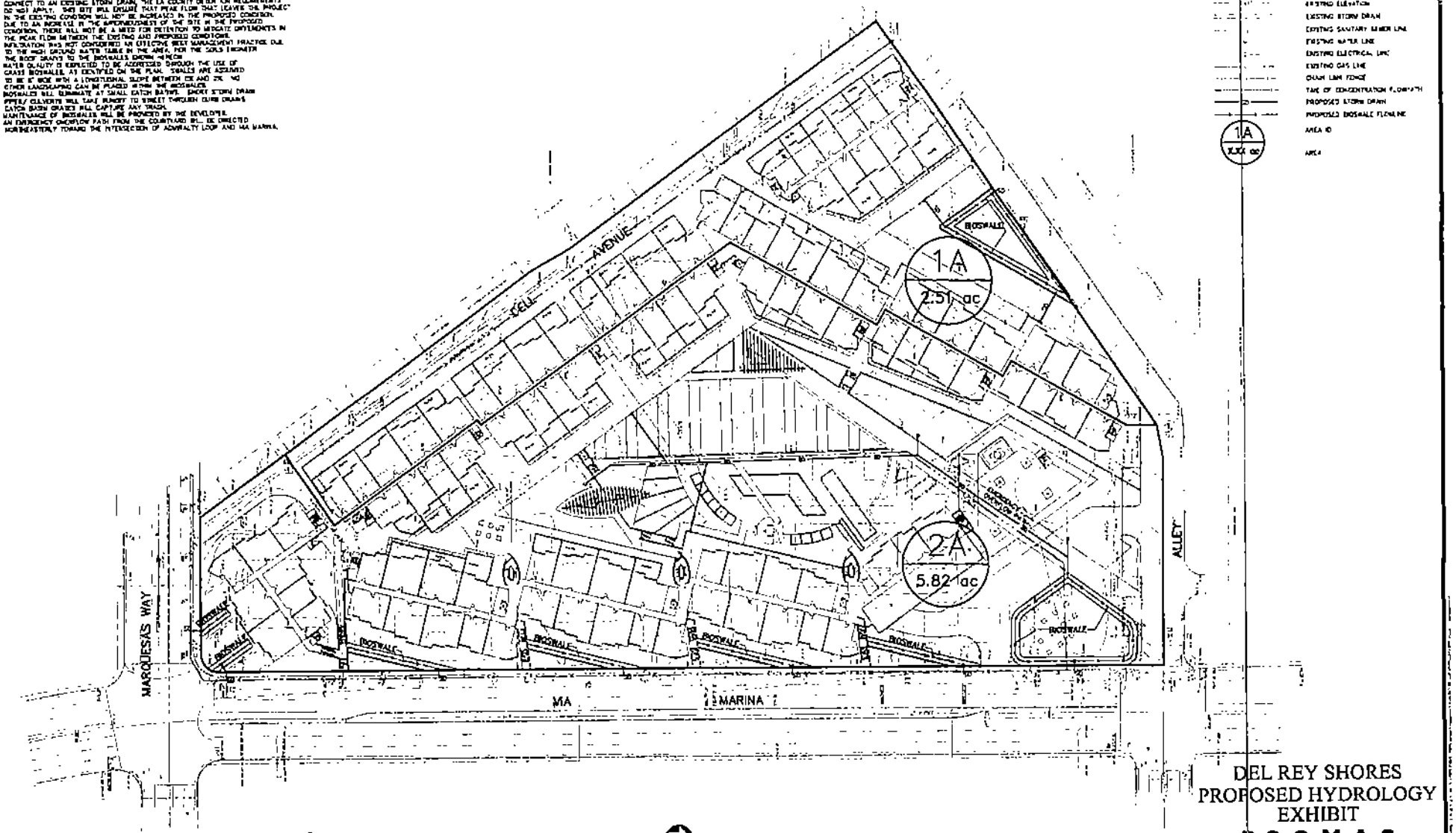
SHEET 1 OF 1

CONCEPTUAL DRAINAGE NOTES:

1. EXISTING RUNOFF SHEET FLOWS FROM THE SITE TO GUTTERS IN THE STREETS AND ALLEY. NO EXISTING STORM DRAIN LINES RUN ALONG THE IMMEDIATE PROJECT FRONTAGE.
2. WHEN CONNECTING TO AN EXISTING LA COUNTY STORM DRAIN, THE ALLOWABLE q/acre NEEDS TO BE USED IN ORDER TO SIZE THE DETENTION BASIN. SINCE THIS SITE WILL BE DESIGNED FOR THE RUNOFF TO SHEET FLOW FROM THE SITE RATHER THAN CONNECT TO AN EXISTING STORM DRAIN, THE LA COUNTY DETENTION REQUIREMENTS DO NOT APPLY. THIS SITE WILL DISCHARGE THAT PEAK FLOW THAT LEAVES THE PROJECT IN THE EXISTING CONDITION WILL NOT BE INCREASED IN THE PROPOSED CONDITION. DUE TO AN INCREASE IN THE IMPERVIOUSNESS OF THE SITE IN THE PROPOSED CONDITION, THERE WILL NOT BE A NEED FOR DETENTION TO MITIGATE DIFFERENCES IN THE PEAK FLOW BETWEEN THE EXISTING AND PROPOSED CONDITIONS. INFILTRATION WAS NOT CONSIDERED AN EFFECTIVE BEST MANAGEMENT PRACTICE DUE TO THE HIGH GROUND WATER TABLE IN THE AREA, PER THE SOILS ENGINEER. THE ROOF DRAINS TO THE BIOSWALES SHOWN HEREON.
3. WATER QUALITY IS EXPECTED TO BE ADDRESSED THROUGH THE USE OF GRASS BIOSWALES, AS IDENTIFIED ON THE PLAN. SWALES ARE ASSUMED TO BE 8' WIDE WITH A LONGITUDINAL SLOPE BETWEEN 0% AND 2%. NO OTHER LANDSCAPING CAN BE PLACED WITHIN THE BIOSWALES.
4. BIOSWALES WILL DISCHARGE AT SMALL CATCH BASINS. SHORT STORM DRAIN PIPES/ CULVERTS WILL TAKE RUNOFF TO STREET THROUGH CURB DRAINS. CATCH BASIN GRATES WILL CAPTURE ANY TRASH.
5. MAINTENANCE OF BIOSWALES WILL BE PROVIDED BY THE DEVELOPER.
6. AN EMERGENCY OVERFLOW PATH FROM THE COURTYARD WILL BE DIRECTED NORTHEASTERLY TOWARD THE INTERSECTION OF ADMIRALTY LOOP AND MA MARINA.

LEGEND:

- PROPOSED PROPERTY/ BOUNDARY LINE
- EXISTING PROPERTY/ BOUNDARY LINE
- STREET CENTER LINE
- PROPOSED ELEVATION
- EXISTING ELEVATION
- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER LINE
- EXISTING WATER LINE
- EXISTING ELECTRICAL LINE
- EXISTING GAS LINE
- CHAIN LINK FENCE
- TIME OF CONCENTRATION FLOWPATH
- PROPOSED STORM DRAIN
- PROPOSED BIOSWALE FLOWLINE
- 1A — AREA ID
- XXX ac — AREA



Del Rey Shores Joint Venture and
Del Rey Shores North Joint Venture

GRAPHIC SCALE

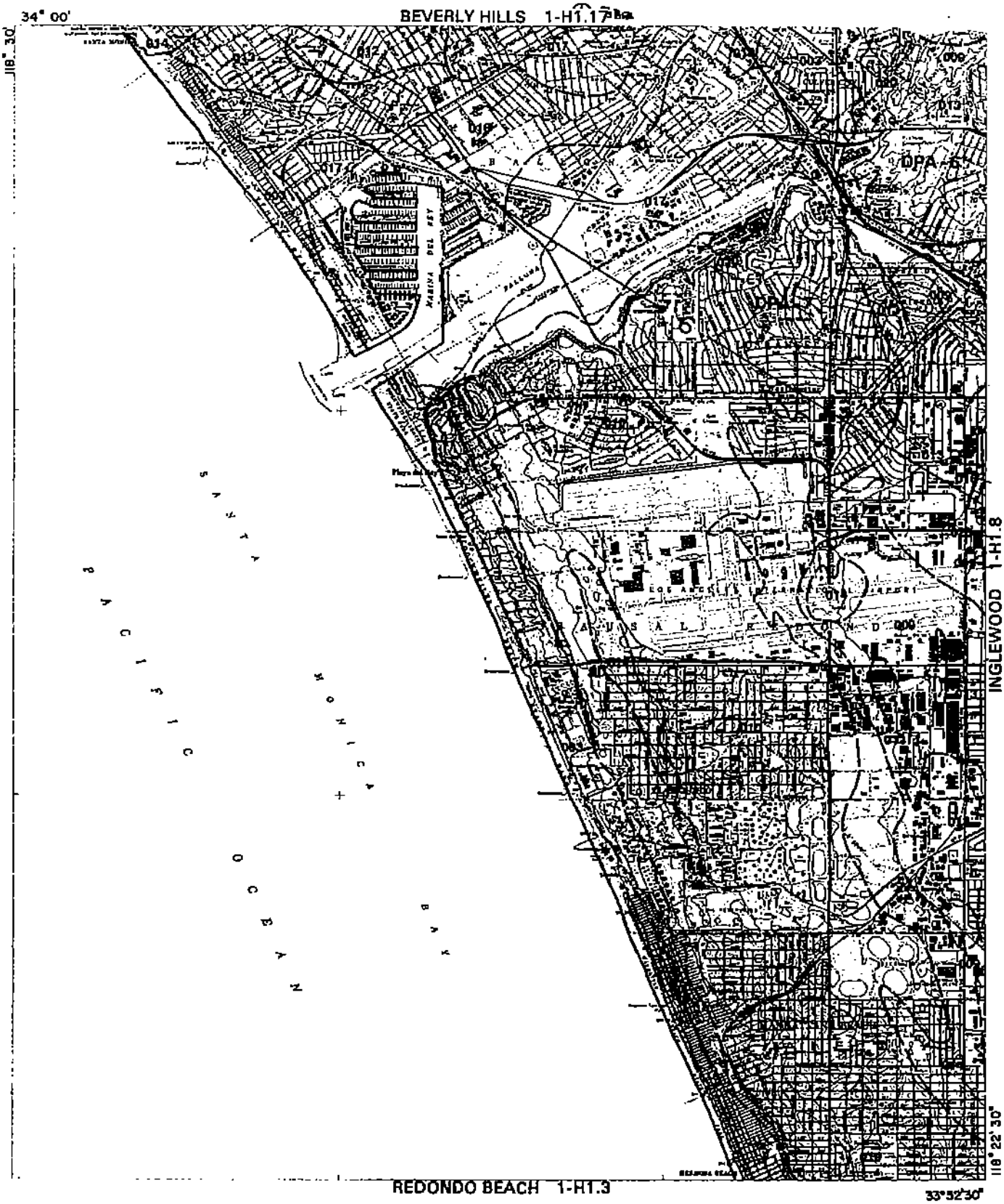
DEL REY SHORES
PROPOSED HYDROLOGY
EXHIBIT

PSOMAS

DATE: 15-04-05 REVISED ON:
JOB No 1DELO90100 SHEET 1 OF 1

Appendix:

Reference Materials



LEGEND

——— SOIL CLASSIFICATION AREA

····· DEBRIS POTENTIAL AREA

(K) RAINFALL ZONE

—12— 50-YEAR ISOHYET (MAX. 24-HOUR AMOUNT)

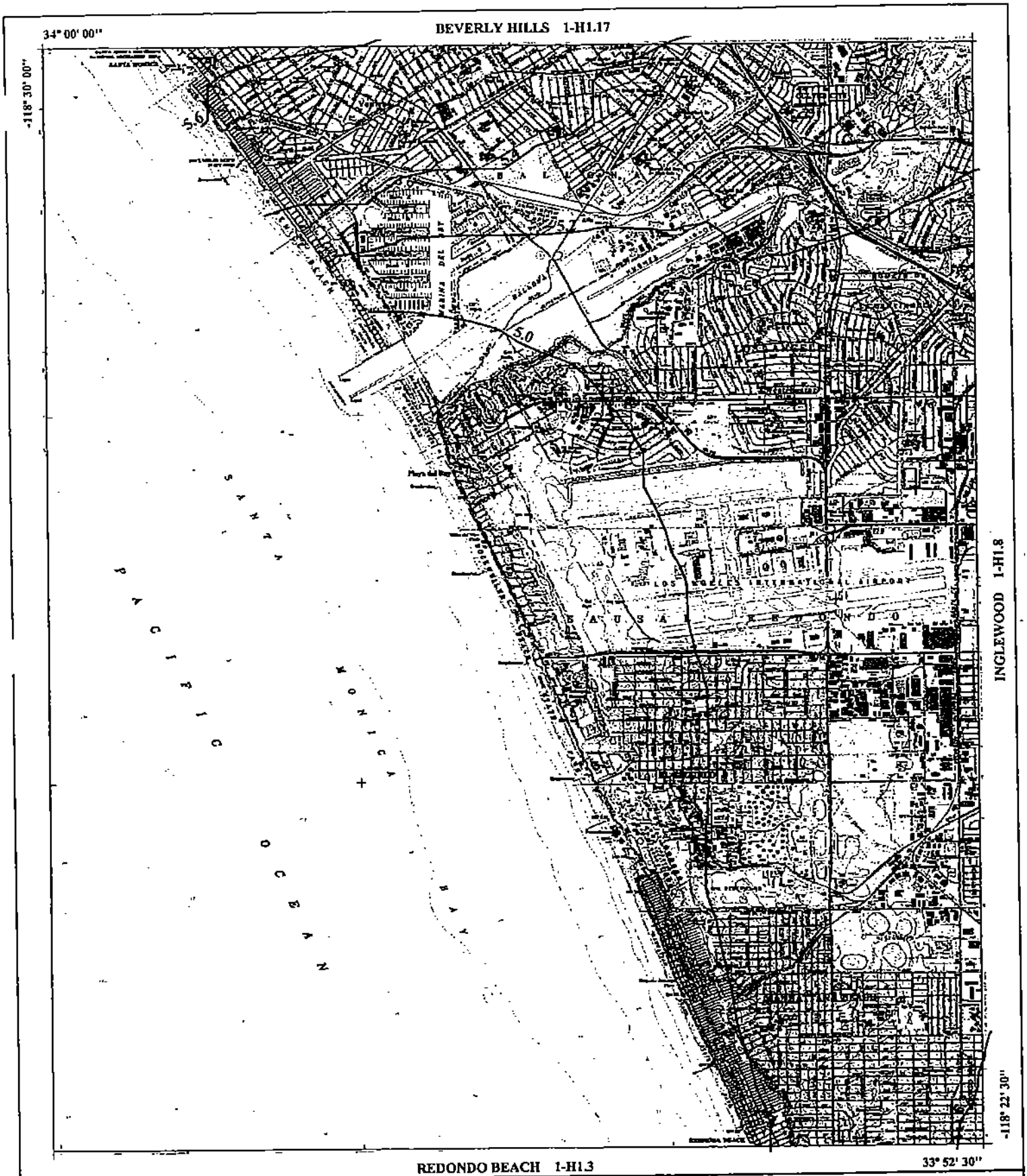
L A C D P W

N

0 FEET 5000

VENICE **1981**

hydrologic map



1 0 1 2 Miles

N W E S

7.2 INCHES OF RAINFALL

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

V E N I C E

50-YEAR 24-HOUR ISOHYET

1-H1.7

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

APPENDIX 5.4
Air Quality Data

APPENDIX 5.4(A)
Calculations

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\Del Ray Shores Operational 2005 11-21-05.urb
Project Name: Del Ray Shores Operational Emissions 2005 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	13.37	1.53	1.43	0.00	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	10.53	8.50	95.46	0.08	7.12

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	23.90	10.03	96.89	0.08	7.13

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\Del Ray Shores Operational 2005 11-21-05.urb
Project Name: Del Ray Shores Operational Emissions 2005 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	13.25	1.52	0.65	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	7.96	12.34	91.90	0.07	7.12

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	21.21	13.87	92.55	0.07	7.12

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\Del Ray Shores Operational 2005 11-21-05.urb
Project Name: Del Ray Shores Operational Emissions 2005 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.12	1.52	0.65	0	0.00
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping - No winter emissions					
Consumer Prdcts	9.88	-	-	-	-
Architectural Coatings	3.25	-	-	-	-
TOTALS(lbs/day,unmitigated)	13.25	1.52	0.65	0.00	0.00

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments low rise	7.96	12.34	91.90	0.07	7.12
TOTAL EMISSIONS (lbs/day)	7.96	12.34	91.90	0.07	7.12

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2005 Temperature (F): 50 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments low rise	0.00	3.96 trips/dwelling unit	202.00	799.92
		Sum of Total Trips		799.92
		Total Vehicle Miles Traveled		4,685.56

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	56.10	2.30	97.10	0.60
Light Truck < 3,750 lbs	15.10	4.00	93.40	2.60
Light Truck 3,751- 5,750	15.50	1.90	96.80	1.30
Med Truck 5,751- 8,500	6.80	1.50	95.60	2.90
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	10.00	20.00	70.00
Heavy-Heavy 33,001-60,000	0.80	0.00	12.50	87.50
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.60	87.50	12.50	0.00
School Bus	0.30	0.00	0.00	100.00
Motor Home	1.40	14.30	78.60	7.10

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/12.63 to 3.96/

Changes made to the default values for Area

The hearth option switch changed from on to off.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\Del Ray Shores Operational 2005 11-21-05.urb
Project Name: Del Ray Shores Operational Emissions 2005 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.12	1.52	0.65	0	0.00
Hearth - No summer emissions					
Landscaping	0.12	0.00	0.78	0.00	0.00
Consumer Prdcts	9.88	-	-	-	-
Architectural Coatings	3.25	-	-	-	-
TOTALS(lbs/day,unmitigated)	13.37	1.53	1.43	0.00	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments low rise	10.53	8.50	95.46	0.08	7.12
TOTAL EMISSIONS (lbs/day)	10.53	8.50	95.46	0.08	7.12

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2005 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments low rise	0.00	3.96 trips/dwelling unit	202.00	799.92
		Sum of Total Trips		799.92
		Total Vehicle Miles Traveled		4,685.56

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	56.10	2.30	97.10	0.60
Light Truck < 3,750 lbs	15.10	4.00	93.40	2.60
Light Truck 3,751- 5,750	15.50	1.90	96.80	1.30
Med Truck 5,751- 8,500	6.80	1.50	95.60	2.90
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	10.00	20.00	70.00
Heavy-Heavy 33,001-60,000	0.80	0.00	12.50	87.50
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.60	87.50	12.50	0.00
School Bus	0.30	0.00	0.00	100.00
Motor Home	1.40	14.30	78.60	7.10

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/12.63 to 3.96/

Changes made to the default values for Area

The hearth option switch changed from on to off.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2x2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2006 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	27.23	203.12	214.93	0.52	27.83	7.82	20.01
TOTALS (lbs/day, mitigated)	27.23	203.12	214.93	0.52	23.09	7.82	15.27

*** 2007 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	14.16	88.90	117.01	0.00	3.60	3.39	0.21
TOTALS (lbs/day, mitigated)	14.16	88.90	117.01	0.00	3.60	3.39	0.21

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	540.06	86.77	131.01	0.00	3.59	3.17	0.42
TOTALS (lbs/day, mitigated)	540.06	86.77	131.01	0.00	3.59	3.17	0.42

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: April, 2006
Construction Duration: 27
Total Land Use Area to be Developed: 8 acres
Maximum Acreage Disturbed Per Day: 2 acres
Single Family Units: 0 Multi-Family Units: 544
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	15.12	-	15.12
Off-Road Diesel	25.26	173.34	200.53	-	7.12	7.12	0.00
On-Road Diesel	1.62	29.35	6.03	0.52	0.82	0.69	0.13
Worker Trips	0.35	0.43	8.37	0.00	0.03	0.01	0.02
Maximum lbs/day	27.23	203.12	214.93	0.52	23.09	7.82	15.27
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	20.00	-	20.00
Off-Road Diesel	10.30	70.50	82.50	-	3.03	3.03	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.02	0.46	0.00	0.01	0.00	0.01
Maximum lbs/day	10.34	70.52	82.96	0.00	23.04	3.03	20.01
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	91.25	101.04	-	3.69	3.69	0.00
Bldg Const Worker Trips	1.25	0.71	14.96	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.24	91.95	115.99	0.00	3.91	3.70	0.21
Max lbs/day all phases	27.23	203.12	214.93	0.52	27.83	7.82	20.01
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	88.24	102.95	-	3.38	3.38	0.00
Bldg Const Worker Trips	1.16	0.66	14.06	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.16	88.90	117.01	0.00	3.60	3.39	0.21
Max lbs/day all phases	14.16	88.90	117.01	0.00	3.60	3.39	0.21
*** 2008***							

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	85.53	104.80	-	3.15	3.15	0.00
Bldg Const Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	524.93	-	-	-	-	-	-
Arch Coatings Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	540.06	86.77	131.01	0.00	3.59	3.17	0.42
Max lbs/day all phases	540.06	86.77	131.01	0.00	3.59	3.17	0.42

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Apr '06
Phase 1 Duration: 3 months
Building Volume Total (cubic feet): 2376000
Building Volume Daily (cubic feet): 36000
On-Road Truck Travel (VMT): 1267.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
1	Off Highway Tractors	255	0.410	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0
1	Rough Terrain Forklifts	94	0.475	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jul '06
Phase 2 Duration: 5 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
3	Graders	174	0.575	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Dec '06
Phase 3 Duration: 19 months
Start Month/Year for SubPhase Building: Dec '06
SubPhase Building Duration: 19 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Start Month/Year for SubPhase Architectural Coatings: Apr '08
SubPhase Architectural Coatings Duration: 2 months

Start Month/Year for SubPhase Asphalt: May '08
SubPhase Asphalt Duration: 0 months
Acres to be Paved: 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	15.12	-	15.12
Off-Road Diesel	25.26	173.34	200.53	-	7.12	7.12	0.00
On-Road Diesel	1.62	29.35	6.03	0.52	0.82	0.69	0.13
Worker Trips	0.35	0.43	8.37	0.00	0.03	0.01	0.02
Maximum lbs/day	27.23	203.12	214.93	0.52	23.09	7.82	15.27
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	6.40	-	6.40
Off-Road Diesel	10.30	70.50	82.50	-	3.03	3.03	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.02	0.46	0.00	0.01	0.00	0.01
Maximum lbs/day	10.34	70.52	82.96	0.00	9.44	3.03	6.41
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	91.25	101.04	-	3.69	3.69	0.00
Bldg Const Worker Trips	1.25	0.71	14.96	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.24	91.95	115.99	0.00	3.91	3.70	0.21
Max lbs/day all phases	27.23	203.12	214.93	0.52	23.09	7.82	15.27
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	88.24	102.95	-	3.38	3.38	0.00
Bldg Const Worker Trips	1.16	0.66	14.06	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.16	88.90	117.01	0.00	3.60	3.39	0.21
Max lbs/day all phases	14.16	88.90	117.01	0.00	3.60	3.39	0.21
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00

Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	85.53	104.80	-	3.15	3.15	0.00
Bldg Const Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	524.93	-	-	-	-	-	-
Arch Coatings Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	540.06	86.77	131.01	0.00	3.59	3.17	0.42
Max lbs/day all phases	540.06	86.77	131.01	0.00	3.59	3.17	0.42

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Rule 403: Water Disturbed Surfaces
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 68%)

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Apr '06
Phase 1 Duration: 3 months
Building Volume Total (cubic feet): 2376000
Building Volume Daily (cubic feet): 36000
On-Road Truck Travel (VMT): 1267.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
1	Off Highway Tractors	255	0.410	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0
1	Rough Terrain Forklifts	94	0.475	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jul '06
Phase 2 Duration: 5 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
3	Graders	174	0.575	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Dec '06
Phase 3 Duration: 19 months
Start Month/Year for SubPhase Building: Dec '06
SubPhase Building Duration: 19 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Start Month/Year for SubPhase Architectural Coatings: Apr '08
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: May '08
SubPhase Asphalt Duration: 0 months
Acres to be Paved: 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/34. to 3.96/

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Demolition Truck Hauling Miles/Round Trip changed from 30 to 19
Phase 2 mitigation measure Soil Disturbance: Rule 403: Water Disturbed Surfaces
has been changed from off to on.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	35.78	4.11	2.41	0.00	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	21.96	17.08	188.79	0.13	19.15

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	57.73	21.19	191.19	0.13	19.16

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	35.68	4.10	1.75	0.00	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	15.93	24.65	181.20	0.10	19.15

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	51.61	28.75	182.94	0.10	19.16

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.32	4.10	1.75	0	0.01
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping - No winter emissions					
Consumer Prdcts	26.61	-	-	-	-
Architectural Coatings	8.75	-	-	-	-
TOTALS(lbs/day,unmitigated)	35.68	4.10	1.75	0.00	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments low rise	15.93	24.65	181.20	0.10	19.15
TOTAL EMISSIONS (lbs/day)	15.93	24.65	181.20	0.10	19.15

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2009 Temperature (F): 50 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments low rise	0.00	3.96 trips/dwelling unit	544.00	2,154.24
		Sum of Total Trips		2,154.24
		Total Vehicle Miles Traveled		12,618.53

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.90	1.30	98.40	0.30
Light Truck < 3,750 lbs	15.10	2.60	95.40	2.00
Light Truck 3,751- 5,750	16.10	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	75.00	25.00	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/34. to 3.96/

Changes made to the default values for Area

The hearth option switch changed from on to off.
The landscape year changed from 2005 to 2009.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.
The operational emission year changed from 2005 to 2009.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.32	4.10	1.75	0	0.01
Hearth - No summer emissions					
Landscaping	0.10	0.00	0.66	0.00	0.00
Consumer Prdcts	26.61	-	-	-	-
Architectural Coatings	8.75	-	-	-	-
TOTALS(lbs/day,unmitigated)	35.78	4.11	2.41	0.00	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments low rise	21.96	17.08	188.79	0.13	19.15
TOTAL EMISSIONS (lbs/day)	21.96	17.08	188.79	0.13	19.15

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2009 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments low rise	0.00	3.96 trips/dwelling unit	544.00	2,154.24
		Sum of Total Trips		2,154.24
		Total Vehicle Miles Traveled		12,618.53

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.90	1.30	98.40	0.30
Light Truck < 3,750 lbs	15.10	2.60	95.40	2.00
Light Truck 3,751- 5,750	16.10	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	75.00	25.00	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/34. to 3.96/

Changes made to the default values for Area

The hearth option switch changed from on to off.
The landscape year changed from 2005 to 2009.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.
The operational emission year changed from 2005 to 2009.

APPENDIX 5.4(B)

Analysis of Construction Emissions

Localized Significance Threshold Analysis
for
The Shores

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November 2005

List of Tables

Table	Title	Page
1	Peak Background Concentrations for SRA 2 for the Period of 2002 to 2004	1
2	Localized Significance Criteria	3
3	Estimated Construction Emissions Associated with the Proposed Project	4
4	NO_2-to-NO_X Ratio as a Function of Downwind Distance	6
5	Modeling Results	7

1.0 GENERAL

1.1 Project Description

The Shores project consists of twelve apartment buildings totaling 544 units with 1,114 parking spaces. Development of The Shores project will require the removal of 202 existing multi-family residential units. Grading and construction are anticipated to occur over a 25-month period, following a two-month demolition period.

1.2 Regional Air Quality

The project is located in the South Coast Air Basin (SCAB) portion of Los Angeles County that is a severe-17 nonattainment area for the federal 8-hour ozone standard and an extreme nonattainment area for the state 1-hour ozone standard. It is designated as a serious nonattainment area for the federal 1-hour and 8-hour carbon monoxide (CO) standards and as an attainment area for the state 1-hour and 8-hour CO standards. Also, it is designated as an attainment/unclassifiable area for the federal nitrogen dioxide (NO_2) standard and as an attainment area for the state NO_2 standard. It has been designated as a serious nonattainment area for the federal 24-hour and annual respirable particulate matter (PM_{10}) standard and a nonattainment area for the state 24-hour and annual PM_{10} standard.[1,2]

1.3 Thresholds of Significance

Table 1, Peak Background Concentrations for SRA 2 for the Period of 2002 to 2004, shows the peak background concentrations of NO_2 and CO in Source Receptor Area (SRA) 2 (Northwest Coastal Los Angeles County) in which the proposed project is located. These are the values on which LST criteria for NO_x and CO are based.

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1 California Air Resources Board. "Area Designations (Activities and Maps)." [Online] [September 22, 2005]. http://www.arb.ca.gov/desig/desig.htm.

2 U.S. Environmental Protection Agency. "Region 9: Air Programs, Air Quality Maps." [Online] [November 21, 2005]. http://www.epa.gov/region9/air/maps/maps_top.html.

Table 1
Peak Background Concentrations for SRA 2 for the Period of 2002 to 2004

Pollutant	Averaging Period	Unit	2002	2003	2004	Peak Concentration
Nitrogen Dioxide (NO_2)	1 hour	ppm	0.11	0.12	0.09	0.12
Carbon Monoxide (CO)	1 hour	ppm	4	5	4	5
	8 hours	ppm	2.7	2.7	2.3	2.7

Source: South Coast Air Quality Management District "Historical Data by Year." [Online] [August 2005], http://www.aqmd.gov/smog/historicaldata.htm.

Table 2, Localized Significance Criteria, shows the threshold criteria recommended by the SCAQMD for determining whether the emissions resulting from construction of a development project have the potential to generate significant adverse local impacts on ambient air quality. The SCAQMD's concentration-based PM_{10} threshold from its *Localized Significance Threshold Methodology* (*LST Methodology*)[3] is a 24-hour average concentration of 10.4 micrograms per cubic meter ($\mu g/m^3$) based on compliance with Rule 403. The thresholds for NO_2 and CO were based on the maximum concentrations that occurred during the last three years (2002 to 2004) as shown in **Table 1**. These thresholds represent the allowable increase in NO_2 and CO ambient concentrations above current levels that could occur in SRA 2 without causing or contributing to exceedances of the California Ambient Air Quality Standards (CAAQS). For reference, the applicable CAAQS are also shown in **Table 2**.

3 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, June 2003.

Table 2
Localized Significance Criteria

Pollutant	Averaging Period	CAAQS µg/m³	CAAQS ppm	Peak Conc. in ppm	LST Criteria[1] µg/m³	LST Criteria[1] ppm
Respirable Particulate Matter (PM_{10})	24 hours	50	NA	NA	10.4	NA
Nitrogen Dioxide (NO_2)	1 hour	470	0.25	0.12	244	0.13
Carbon Monoxide (CO)	1 hour	23,000	20	5	17,165	15
	8 hours	10,000	9.0	2.7	7,209	6.3

Source: South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, *June 2003.*
[1] *LST Criteria is the difference between CAAQS and the Peak Concentration.*

2.0 EMISSION ESTIMATION METHODOLOGY

URBEMIS 2002 (version 8.7.0) was used to estimate the construction emissions for criteria pollutants as directed by SCAQMD's *CEQA Air Quality Handbook*. The following information provided by the applicant was used to set up the model. In case of unavailable information, the model default values were used. The model inputs are as follows. Additional details are shown in the URBEMIS 2002 output found in Appendix A.

The Shores Apartments

- Anticipated grading schedule (start and end month and year): July 2006 to November 2006;
- Total number of acres of land to be graded: 8 acres;
- Maximum acres graded per day: 2 acres;
- Amount of soil to be exported: 0 cubic yards;
- Number of days to conduct soil hauling and grading: 110 days (five months with 22 days each);
- Dust control measures: As required by SCAQMD Rule 403; and
- Anticipated construction schedule (including demolition and grading, start and end month and year): April 2006 to June 2008.

The maximum daily emissions that could occur on the project site from any construction phase were selected for the LST analysis. The maximum daily emissions for each pollutant may occur during a different subphase (e.g., grading, building construction). **Table 3, Estimated Construction Emissions Associated with the Proposed Project**, shows the estimated construction emissions associated with each proposed project that would occur on the project site.

Table 3
Estimated Construction Emissions Associated with the Proposed Project

	Emissions (pounds per day)	
Pollutant	Fugitive Dust	Mobile Sources
PM_{10}	15.12	7.12
NO_x	—	173.34
CO	—	200.53

Source: Construction emissions were estimated using URBEMIS2002 (Version 8.7.0). Emissions reflect the worst-case scenario (i.e., highest daily emissions associated with the project). The worst-case daily emissions may occur in different project subphases.

3.0 LOCALIZED SIGNIFICANCE THRESHOLD ANALYSIS

Per the recommendation of the SCAQMD, ambient PM_{10}, NO_2, and CO concentrations due to the operation of proposed project were analyzed using methods described in the its *LST Methodology*.[4] The USEPA-approved dispersion model Industrial Source Complex – Short Term, ISCST3[5], was used for the analysis to model the dispersion of the pollutants of concern.

3.1 Modeling Approach

The modeling approach is as follows:

- Sources: The project site for The Shores was divided into four, roughly equal-sized areas. This approach was based on the assumption that grading or construction activity would occur on a potion of the overall project site on the day with the worst-case emissions and that the grading or construction activity was equally likely to occur in any of these portions. Fugitive dust emissions were treated as area sources distributed over the project sites. Per the LST methodology, the area sources were given a ground level release height and a one-meter initial vertical dimension to represent the initial vertical spread of the emissions. Equipment and motor vehicle exhaust emissions of PM_{10}, NO_2, and CO were modeled as volume sources with a 1.16 meters (m) initial vertical dimension to represent the initial vertical spread of the emissions and a release height of five meters to represent the mid-range of the expected plume rise from frequently used construction equipment during daytime atmospheric conditions.[6] To simulate the exhaust emissions, elevated volume sources with dimensions of 20 m by 20 m were distributed throughout the four portions of The Shores project site.

- Receptors: Discrete fenceline receptors and discrete Cartesian receptors were used to determine air quality impacts in the vicinity of the project sites. The fenceline receptors were placed at 25-m intervals up to first 100 m from the construction site boundaries, and the Cartesian receptors were placed at 100-m intervals from the construction site boundaries to 2000 meters. Since the project area is relatively flat, flat terrain was assumed.

4 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, June 2003.

5 Lakes Environmental Software, ISC-AERMOD View (Version 4.8.6).

6 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, June 2003, p. 2-2.

- Meteorology: West Los Angeles was identified as the nearest meteorological monitoring station for the proposed project. Data were obtained from SCAQMD website.[7]

- Model Options: SCAQMD model options were selected (NOCALM, URBAN, MSGPRO).

3.2 Modeling Results

3.2.1 Adjustment of NO_2 Impacts

The SCAQMD's *LST Methodology* discusses an adjustment of the NO_2 impacts due to the fact that most of NO_x in the combustion exhaust will occur in the form of nitric oxide (NO), rather than as NO_2. Nitric oxide is converted in the atmosphere through chemical reactions to NO_2. The LST methodology discusses this adjustment as follows:

> *NO_X emissions are simulated in the air quality dispersion model and the NO_2 conversion rate is treated by an NO_2-to-NO_X ratio, which is a function of downwind distance. Initially, it is assumed that only five percent of the emitted NO_x is NO_2. At 5,000 meters downwind, 100 percent conversion of NO-to-NO_2 is assumed.*[8]

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7 Source: South Coast Air Quality Management District Meteorological Data for Dispersion Modeling http://www.aqmd.gov/smog/metdata/MetDataTable1.html.

8 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, June 2003, p. 2-8. The NO_2 conversion rates are adapted by the SCAQMD from Arellano, J.V., A.M. Talmon, and P.J.H. Builtjes, "A Chemically Reactive Plume Model for the NO-NO_2-O_3 System," Atmospheric Environment 24A, 2237-2246.

The following table from the *LST Methodology* demonstrates how the NO_2-to-NO_X ratio varies with distance from the source.

Table 4
NO_2-to-NO_X Ratio as a Function of Downwind Distance

Downwind Distance	NO_2/NO_x Ratio
20	0.053
50	0.059
70	0.064
100	0.074
200	0.114
500	0.258
1000	0.467
2000	0.75
3000	0.9
4000	0.978
5000	1.0

Source: Impact Sciences, Inc.
[1] *South Coast Air Quality Management District*, Final Localized Significance Threshold Methodology, *June 2003, Table 2-4, p. 2-9.*

For this analysis, the distance from the boundary of the project site to the receptor with the highest impact was determined. A NO_x-to-NO_2 ratio was determined from the values in **Table 4**. Ratios at distances between the values in Table 3 were interpolated. For the site at which The Shores project would be located, the distance to the maximum receptor was found to be 25 meters and a NO_x-to-NO_2 ratio of 0.054 was applied to the modeled results.

3.2.2 Project-Specific Impacts

Table 5, Modeling Results shows the maximum PM_{10}, NO_2, and CO concentrations associated with the proposed project at receptors within 500 meters of the project site. As stated in Section 3.1, the project site was divided into four areas. The values shown in these tables are the maximum results associated with the area producing the highest impacts because the activity could occur in any of the areas on any given day.

Table 5
Modeling Results

Pollutant	Averaging Period	Modeling Results $\mu g/m^3$	Modeling Results ppm	LST Criteria[1] $\mu g/m^3$	LST Criteria[1] ppm	Exceeds Threshold?
Respirable Particulate Matter (PM_{10})	24 hours	183.0	NA	10.4	NA	YES
Nitrogen Dioxide (NO_2)	1 hour	242.3	0.13	244	0.13	NO
Carbon Monoxide (CO)	1 hour	4,859.4	4.25	17,165	15	NO
	8 hours	3,588.6	3.14	7,209	6.3	NO

Source: Impact Sciences, Inc.
[1] *South Coast Air Quality Management District*, Final Localized Significance Threshold Methodology, *June 2003, Table B-1, p. B-1.*

4.0 CONCLUSIONS

The LST analysis was conducted to estimate worst-case ambient air quality impacts during construction of The Shores project. The analysis indicates that the 24-hour PM_{10} threshold would be exceeded for the project. The impacts suggest that PM_{10} emissions could exceed the limitations in SCAQMD Rule 403. Based on the results of this analysis, the air quality impact due to the construction of the proposed project is significant.

APPENDIX A

URBEMIS 2002 Output
The Shores Construction Emissions

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2006 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	27.23	203.12	214.93	0.52	27.83	7.82	20.01
TOTALS (lbs/day, mitigated)	27.23	203.12	214.93	0.52	23.09	7.82	15.27

*** 2007 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	14.16	88.90	117.01	0.00	3.60	3.39	0.21
TOTALS (lbs/day, mitigated)	14.16	88.90	117.01	0.00	3.60	3.39	0.21

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	540.06	86.77	131.01	0.00	3.59	3.17	0.42
TOTALS (lbs/day, mitigated)	540.06	86.77	131.01	0.00	3.59	3.17	0.42

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Del Rey Shores\2.Del Ray Shores Construction (R2) 11-17-05.urb
Project Name: Del Ray Shores Construction Emissions (R2) 11-17-05
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: April, 2006
Construction Duration: 27
Total Land Use Area to be Developed: 8 acres
Maximum Acreage Disturbed Per Day: 2 acres
Single Family Units: 0 Multi-Family Units: 544
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	15.12	-	15.12
Off-Road Diesel	25.26	173.34	200.53	-	7.12	7.12	0.00
On-Road Diesel	1.62	29.35	6.03	0.52	0.82	0.69	0.13
Worker Trips	0.35	0.43	8.37	0.00	0.03	0.01	0.02
Maximum lbs/day	27.23	203.12	214.93	0.52	23.09	7.82	15.27
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	20.00	-	20.00
Off-Road Diesel	10.30	70.50	82.50	-	3.03	3.03	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.02	0.46	0.00	0.01	0.00	0.01
Maximum lbs/day	10.34	70.52	82.96	0.00	23.04	3.03	20.01
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	91.25	101.04	-	3.69	3.69	0.00
Bldg Const Worker Trips	1.25	0.71	14.96	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.24	91.95	115.99	0.00	3.91	3.70	0.21
Max lbs/day all phases	27.23	203.12	214.93	0.52	27.83	7.82	20.01
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	88.24	102.95	-	3.38	3.38	0.00
Bldg Const Worker Trips	1.16	0.66	14.06	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.16	88.90	117.01	0.00	3.60	3.39	0.21
Max lbs/day all phases	14.16	88.90	117.01	0.00	3.60	3.39	0.21

*** 2008***

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	85.53	104.80	-	3.15	3.15	0.00
Bldg Const Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	524.93	-	-	-	-	-	-
Arch Coatings Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	540.06	86.77	131.01	0.00	3.59	3.17	0.42
Max lbs/day all phases	540.06	86.77	131.01	0.00	3.59	3.17	0.42

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Apr '06
Phase 1 Duration: 3 months
Building Volume Total (cubic feet): 2376000
Building Volume Daily (cubic feet): 36000
On-Road Truck Travel (VMT): 1267.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
1	Off Highway Tractors	255	0.410	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0
1	Rough Terrain Forklifts	94	0.475	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jul '06
Phase 2 Duration: 5 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
3	Graders	174	0.575	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Dec '06
Phase 3 Duration: 19 months
Start Month/Year for SubPhase Building: Dec '06
SubPhase Building Duration: 19 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Start Month/Year for SubPhase Architectural Coatings: Apr '08
SubPhase Architectural Coatings Duration: 2 months

Start Month/Year for SubPhase Asphalt: May '08
SubPhase Asphalt Duration: 0 months
Acres to be Paved: 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	15.12	-	15.12
Off-Road Diesel	25.26	173.34	200.53	-	7.12	7.12	0.00
On-Road Diesel	1.62	29.35	6.03	0.52	0.82	0.69	0.13
Worker Trips	0.35	0.43	8.37	0.00	0.03	0.01	0.02
Maximum lbs/day	27.23	203.12	214.93	0.52	23.09	7.82	15.27
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	6.40	-	6.40
Off-Road Diesel	10.30	70.50	82.50	-	3.03	3.03	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.02	0.46	0.00	0.01	0.00	0.01
Maximum lbs/day	10.34	70.52	82.96	0.00	9.44	3.03	6.41
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	91.25	101.04	-	3.69	3.69	0.00
Bldg Const Worker Trips	1.25	0.71	14.96	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.24	91.95	115.99	0.00	3.91	3.70	0.21
Max lbs/day all phases	27.23	203.12	214.93	0.52	23.09	7.82	15.27
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	88.24	102.95	-	3.38	3.38	0.00
Bldg Const Worker Trips	1.16	0.66	14.06	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.16	88.90	117.01	0.00	3.60	3.39	0.21
Max lbs/day all phases	14.16	88.90	117.01	0.00	3.60	3.39	0.21
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00

Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.00	85.53	104.80	-	3.15	3.15	0.00
Bldg Const Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Arch Coatings Off-Gas	524.93	-	-	-	-	-	-
Arch Coatings Worker Trips	1.07	0.62	13.11	0.00	0.22	0.01	0.21
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	540.06	86.77	131.01	0.00	3.59	3.17	0.42
Max lbs/day all phases	540.06	86.77	131.01	0.00	3.59	3.17	0.42

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Rule 403: Water Disturbed Surfaces
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 68%)
Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Apr '06
Phase 1 Duration: 3 months
Building Volume Total (cubic feet): 2376000
Building Volume Daily (cubic feet): 36000
On-Road Truck Travel (VMT): 1267.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
1	Off Highway Tractors	255	0.410	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0
1	Rough Terrain Forklifts	94	0.475	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jul '06
Phase 2 Duration: 5 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
3	Graders	174	0.575	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Dec '06
Phase 3 Duration: 19 months
Start Month/Year for SubPhase Building: Dec '06
SubPhase Building Duration: 19 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Bore/Drill Rigs	218	0.750	8.0
1	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
1	Crawler Tractors	143	0.575	8.0
1	Excavators	180	0.580	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Start Month/Year for SubPhase Architectural Coatings: Apr '08
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: May '08
SubPhase Asphalt Duration: 0 months
Acres to be Paved: 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/34. to 3.96/

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Demolition Truck Hauling Miles/Round Trip changed from 30 to 19
Phase 2 mitigation measure Soil Disturbance: Rule 403: Water Disturbed Surfaces
has been changed from off to on.

APPENDIX B
Selected ISCST3 Modeling Output

ISCST3 (02035): one- and eight-hour CO
MODELING OPTIONS USED:
CONC URBAN FLAT FLGPOL NOCALM MSGPRO
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: GRP1
FOR A TOTAL OF 2033 RECEPTORS.
FORMAT: (3(1X,F13.5),1X,F8.2,3X,A5,2X,A8,2X,A4,6X,A8)

X	Y	AVERAGE CONC	ZELEV	AVE	GRP	HIVAL	NET ID
363797.00000	3760516.50000	157.51636	0.00	1-HR	GRP1	1ST	NA
363897.00000	3760516.50000	175.60069	0.00	1-HR	GRP1	1ST	NA
363997.00000	3760516.50000	197.68909	0.00	1-HR	GRP1	1ST	NA
364097.00000	3760516.50000	225.14189	0.00	1-HR	GRP1	1ST	NA
364197.00000	3760516.50000	259.96561	0.00	1-HR	GRP1	1ST	NA
364297.00000	3760516.50000	305.22906	0.00	1-HR	GRP1	1ST	NA
364397.00000	3760516.50000	365.82452	0.00	1-HR	GRP1	1ST	NA
364497.00000	3760516.50000	449.94736	0.00	1-HR	GRP1	1ST	NA
364597.00000	3760516.50000	572.18341	0.00	1-HR	GRP1	1ST	NA
364697.00000	3760516.50000	760.61438	0.00	1-HR	GRP1	1ST	NA
364797.00000	3760516.50000	1073.87305	0.00	1-HR	GRP1	1ST	NA
364897.00000	3760516.50000	1647.86975	0.00	1-HR	GRP1	1ST	NA
364997.00000	3760516.50000	2801.69165	0.00	1-HR	GRP1	1ST	NA
365097.00000	3760516.50000	4859.42383	0.00	1-HR	GRP1	1ST	NA
365297.00000	3760516.50000	3378.57227	0.00	1-HR	GRP1	1ST	NA
365397.00000	3760516.50000	1895.10388	0.00	1-HR	GRP1	1ST	NA
365497.00000	3760516.50000	1208.07043	0.00	1-HR	GRP1	1ST	NA
365597.00000	3760516.50000	840.70605	0.00	1-HR	GRP1	1ST	NA

* ISCST3 (02035): one- and eight-hour CO
* MODELING OPTIONS USED:
* CONC   URBAN FLAT FLGPOL   NOCALM MSGPRO
*   PLOT FILE OF HIGH 1ST HIGH 8-HR VALUES FOR SOURCE GROUP: GRP1
*   FOR A TOTAL OF 2033 RECEPTORS.
*   FORMAT: (3(1X,F13.5),1X,F8.2,3X,A5,2X,A8,2X,A4,6X,A8)
*

X	Y	AVERAGE CONC	ZELEV	AVE	GRP	HIVAL	NET ID
365138.43800	3760329.00000	860.14862	0.00	8-HR	GRP1	1ST	NA
365113.28100	3760365.75000	1026.53174	0.00	8-HR	GRP1	1ST	NA
365088.15600	3760402.50000	1569.47070	0.00	8-HR	GRP1	1ST	NA
365168.15600	3760249.00000	550.64490	0.00	8-HR	GRP1	1ST	NA
365209.90600	3760223.50000	513.78516	0.00	8-HR	GRP1	1ST	NA
365142.93800	3760278.25000	615.67395	0.00	8-HR	GRP1	1ST	NA
365117.81300	3760315.00000	776.15845	0.00	8-HR	GRP1	1ST	NA
365092.65600	3760351.75000	706.59729	0.00	8-HR	GRP1	1ST	NA
365067.53100	3760388.25000	1463.40808	0.00	8-HR	GRP1	1ST	NA
365103.21900	3760469.25000	3588.58105	0.00	8-HR	GRP1	1ST	NA
365089.75000	3760489.50000	3058.49658	0.00	8-HR	GRP1	1ST	NA
365076.25000	3760509.50000	2787.30688	0.00	8-HR	GRP1	1ST	NA
365095.96900	3760435.25000	2903.61035	0.00	8-HR	GRP1	1ST	NA
365082.46900	3760455.50000	3201.81689	0.00	8-HR	GRP1	1ST	NA
365069.00000	3760475.50000	2253.75610	0.00	8-HR	GRP1	1ST	NA

* ISCST3 (02035): one-hour NOx
* MODELING OPTIONS USED:
* CONC URBAN FLAT FLGPOL NOCALM MSGPRO
* PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: GRP3(18)
* FOR A TOTAL OF 2033 RECEPTORS.
* FORMAT: (3(1X,F13.5),1X,F8.2,3X,A5,2X,A8,2X,A4,6X,A8)
*

X	Y	AVERAGE CONC	ZELEV	AVE	GRP	HIVAL	NET ID
365381.40600	3760430.00000	1457.10315	0.00	1-HR	GRP3(18)	1ST	NA
365381.12500	3760407.50000	1467.04138	0.00	1-HR	GRP3(18)	1ST	NA
365380.84400	3760385.00000	1481.44958	0.00	1-HR	GRP3(18)	1ST	NA
365380.56300	3760362.25000	1493.94897	0.00	1-HR	GRP3(18)	1ST	NA
365380.28100	3760339.75000	1498.41565	0.00	1-HR	GRP3(18)	1ST	NA
365380.00000	3760317.25000	1492.37744	0.00	1-HR	GRP3(18)	1ST	NA
365281.18800	3760293.50000	4487.53711	0.00	1-HR	GRP3(18)	1ST	NA
365239.18800	3760291.50000	3658.99951	0.00	1-HR	GRP3(18)	1ST	NA
365299.15600	3760276.25000	3185.05298	0.00	1-HR	GRP3(18)	1ST	NA
365261.37500	3760267.50000	3519.12500	0.00	1-HR	GRP3(18)	1ST	NA
365300.37500	3760251.25000	2753.42822	0.00	1-HR	GRP3(18)	1ST	NA

* ISCST3 (02035): 24-hour PM10
* MODELING OPTIONS USED:
* CONC URBAN FLAT FLGPOL NOCALM MSGPRO MULTYR
* PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: GRP3
* FOR A TOTAL OF 2033 RECEPTORS.
* FORMAT: (3(1X,F13.5),1X,F8.2,3X,A5,2X,A8,2X,A4,6X,A8)
*

X	Y	AVERAGE CONC	ZELEV	AVE	GRP	HIVAL	NET ID
366497.00000	3762616.50000	0.70223	0.00	24-HR	GRP1	1ST	NA
366597.00000	3762616.50000	0.72574	0.00	24-HR	GRP1	1ST	NA
366697.00000	3762616.50000	0.82542	0.00	24-HR	GRP1	1ST	NA
366797.00000	3762616.50000	0.84373	0.00	24-HR	GRP1	1ST	NA
366897.00000	3762616.50000	0.78386	0.00	24-HR	GRP1	1ST	NA
366997.00000	3762616.50000	0.83056	0.00	24-HR	GRP1	1ST	NA
367097.00000	3762616.50000	0.89117	0.00	24-HR	GRP1	1ST	NA
367197.00000	3762616.50000	0.89884	0.00	24-HR	GRP1	1ST	NA
367297.00000	3762616.50000	0.85784	0.00	24-HR	GRP1	1ST	NA
365211.00000	3760620.50000	99.73386	0.00	24-HR	GRP1	1ST	NA
365235.34400	3760620.50000	118.84934	0.00	24-HR	GRP1	1ST	NA
365259.65600	3760620.50000	113.12328	0.00	24-HR	GRP1	1ST	NA
365284.00000	3760620.50000	86.04028	0.00	24-HR	GRP1	1ST	NA
365197.65600	3760641.50000	56.59483	0.00	24-HR	GRP1	1ST	NA
365235.34400	3760645.50000	80.04083	0.00	24-HR	GRP1	1ST	NA
365259.65600	3760645.50000	81.15592	0.00	24-HR	GRP1	1ST	NA
365284.00000	3760645.50000	82.73918	0.00	24-HR	GRP1	1ST	NA

* ISCST3 (02035): 24-hour PM10
* MODELING OPTIONS USED:
* CONC URBAN FLAT FLGPOL NOCALM MSGPRO MULTYR
* PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: GRP3
* FOR A TOTAL OF 2033 RECEPTORS.
* FORMAT: (3(1X,F13.5),1X,F8.2,3X,A5,2X,A8,2X,A4,6X,A8)
*

X	Y	AVERAGE CONC	ZELEV	AVE	GRP	HIVAL	NET ID
366697.00000	3762616.50000	0.53791	0.00	24-HR	GRP5	1ST	NA
366797.00000	3762616.50000	0.55067	0.00	24-HR	GRP5	1ST	NA
366897.00000	3762616.50000	0.51301	0.00	24-HR	GRP5	1ST	NA
366997.00000	3762616.50000	0.54209	0.00	24-HR	GRP5	1ST	NA
367097.00000	3762616.50000	0.58196	0.00	24-HR	GRP5	1ST	NA
367197.00000	3762616.50000	0.58777	0.00	24-HR	GRP5	1ST	NA
367297.00000	3762616.50000	0.56208	0.00	24-HR	GRP5	1ST	NA
365211.00000	3760620.50000	55.88360	0.00	24-HR	GRP5	1ST	NA
365235.34400	3760620.50000	64.15118	0.00	24-HR	GRP5	1ST	NA
365259.65600	3760620.50000	61.36182	0.00	24-HR	GRP5	1ST	NA
365284.00000	3760620.50000	49.72614	0.00	24-HR	GRP5	1ST	NA
365197.65600	3760641.50000	34.87358	0.00	24-HR	GRP5	1ST	NA
365235.34400	3760645.50000	44.32048	0.00	24-HR	GRP5	1ST	NA
365259.65600	3760645.50000	44.74967	0.00	24-HR	GRP5	1ST	NA

APPENDIX 5.4(C)

Wind Study

RWDI, Wind Study Del Rey Shores Apartments (March 30, 2005)

RWDI

WIND STUDY
DEL REY SHORES APARTMENTS
MARINA DEL REY, CALIFORNIA

Project Number: 05-1234A

Date: March 30, 2005

Submitted by: Rowan Williams Davies & Irwin Inc.

Project Engineer - Hanqing Wu, Ph.D., P.Eng.

Project Manager - Dan Bacon

Project Director - Bill Waechter, CET, Associate

Submitted to: Del Rey Shores Apartments

Armbruster & Goldsmith LLP

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U.S. Contacts:
RWDI LLC
- California (909) 793-7080

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was requested by Del Rey Shores Apartments and Armbruster & Goldsmith LLP to undertake a detailed wind study on the proposed Del Rey Shores Apartments in Marina del Rey, California. The study addressed the wind study requirements of the Los Angeles County Zoning Code, including an assessment of the effects of the proposed development on wind patterns within the marina, loss of surface winds used by sailboats and birds, and general air circulation.

2. TEST METHODOLOGY

Wind tunnel tests were conducted on a scale model of a section of Marina del Rey to determine the impact on the wind conditions resulting from the proposed Del Rey Shores Apartments. This report provides a summary of the results of these wind tunnel tests.

A 1:500 scale model of the study area and the proposed developments were assembled as shown in Figures 1a, 1b and 1c. Tests were conducted to simulate and measure wind conditions for the following three building configurations:

A. Existing - Existing surroundings and existing buildings on the development site circa 1998;

B. Proposed - Existing surroundings with the proposed Del Rey Shores Apartments; and

C. Future - Expected future developments in the area with the proposed Del Rey Shores Apartments.

The results presented in this report pertain to the model of the proposed Del Rey Shores Apartments constructed using the architectural design drawings received by RWDI on December 22, 2004, site photos on March 4, 2005, and other in-house information, such as city maps and aerial photos.

The wind tunnel model was instrumented with a total of 44 wind sensors on Basins B, C and D. It was tested in RWDI's boundary layer wind tunnel for the predominant wind directions, which are the west, west-southwest, southwest and east. The sensors were developed by RWDI for use on scale models and are capable of measuring both changes in wind speed and wind direction.

The wind tunnel results for all predominant wind directions in the Los Angeles area have been examined in detail and are presented in this report. The west, west-southwest, southwest and east wind directions together account for winds that occur a majority of the time, as shown in Figure 2. The wind roses in Figure 2 show the percentage of the time that wind blows from each of 16 directions during spring, summer, fall and winter for the hours of 7:00 am through 9:00 pm, when most sailing would occur. All of the tests were conducted for the above four wind directions.

Information on the changes in wind speed and direction recorded at each sensor location can be obtained from Figures 3 through 6 for the four wind directions tested. Each figure presents local wind data at each location for one of the four approaching wind directions that were tested. The length of the arrows is proportional to the speed of the wind at each location. In each figure there are three colour coded arrows at each sensor location: black to indicate the local wind direction for existing site conditions, red for the proposed Del Rey Shores Apartments and green for future developments with Del Rey Shores Apartments present.

The wind analysis considered if the proposed development would result in changes to the local wind direction or mean speed between adjacent sensors that are greater than the difference presently experienced between any two adjacent sensors. Until criteria are established by the County of Los Angeles, this is the best method of assessing the impact of the proposed developments on the sailing conditions in the marina.

3. EFFECTS ON SAILING CONDITIONS

For the four wind directions tested (Figures 3 through 6), the red arrows (proposed conditions) are aligned closely with the black arrows (existing conditions) and have a similar length at a great majority of measurement locations on Basins B, C and D. Therefore, the wind direction and speed are not affected by the addition of the proposed Del Rey Shores Apartments. The green arrows (future conditions) were found to be different from those for the existing and proposed conditions in both wind speed and direction, especially in Basin C, indicating potential wind impacts of the future developments. However, the changed wind directions between adjacent sensors were generally comparable.

When the black arrows (existing conditions) and the red arrows (proposed conditions) were compared in Figures 3 through 6, they were virtually identical for all 44 test locations and for all four wind directions. This is due to (1) the proposed development is not immediately adjacent to the basins; and (2) the massing of the proposed development is similar to that of the low existing buildings on the development site. Small variations were observed in localized areas, for instance, at Locations 7, 8 and 9 for the west and west-southwest wind directions (Figures 3 and 4, respectively) and at Locations 25 through 35 for the southwest wind direction (Figure 5). It is assumed that these localized, minor changes in wind speed and/or direction will not be an issue.

Variations in wind speed and direction were observed when the expected future developments were in place, as indicated by green arrows in Figures 3 through 6. These variations were more evident in areas close to the future developments, for instance, at Locations 1, 2, 8 and 9 for the west wind direction (Figure 3), at Locations 1 and 7 through 10 and 12 for the west-southwest wind direction (Figure 4), at Locations 7 through 12 for the southwest wind direction (Figure 5), and, to a lesser extent, at Locations 1 and 7 for the east wind direction (Figure 6).

4. LOSS OF SURFACE WINDS USED BY BIRDS

In order to assess the effects on birds of changes in the surface winds a report was prepared by an expert in the aerodynamics, kinematics and behavior of birds. This report has been attached as Appendix A. The author of the report considered the following issues:

- the types of birds likely to inhabit Marina del Rey
- the ability of birds to take off and land,
- soaring conditions upwind and downwind of the proposed building,
- effects on local thermal soaring conditions, and
- changes to flight efficiency due to turbulence.

From our test results, the minimal change on existing wind fields due to the proposed development will not result in changes to the birds' use of the area.

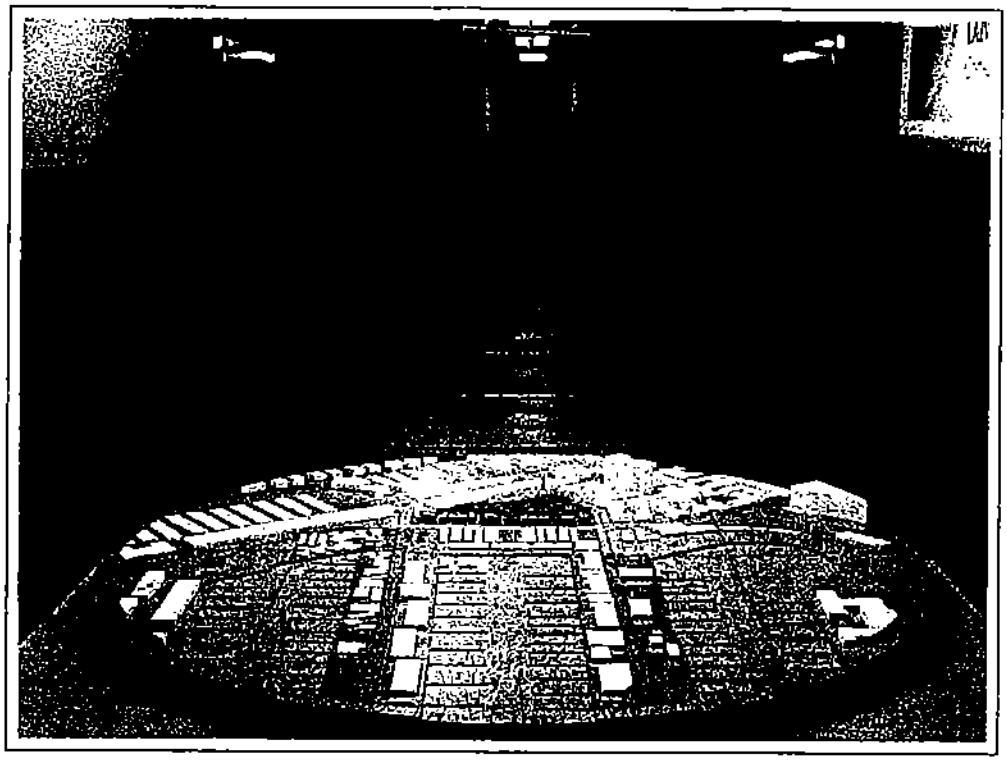
5. GENERAL AIR CIRCULATION PATTERNS

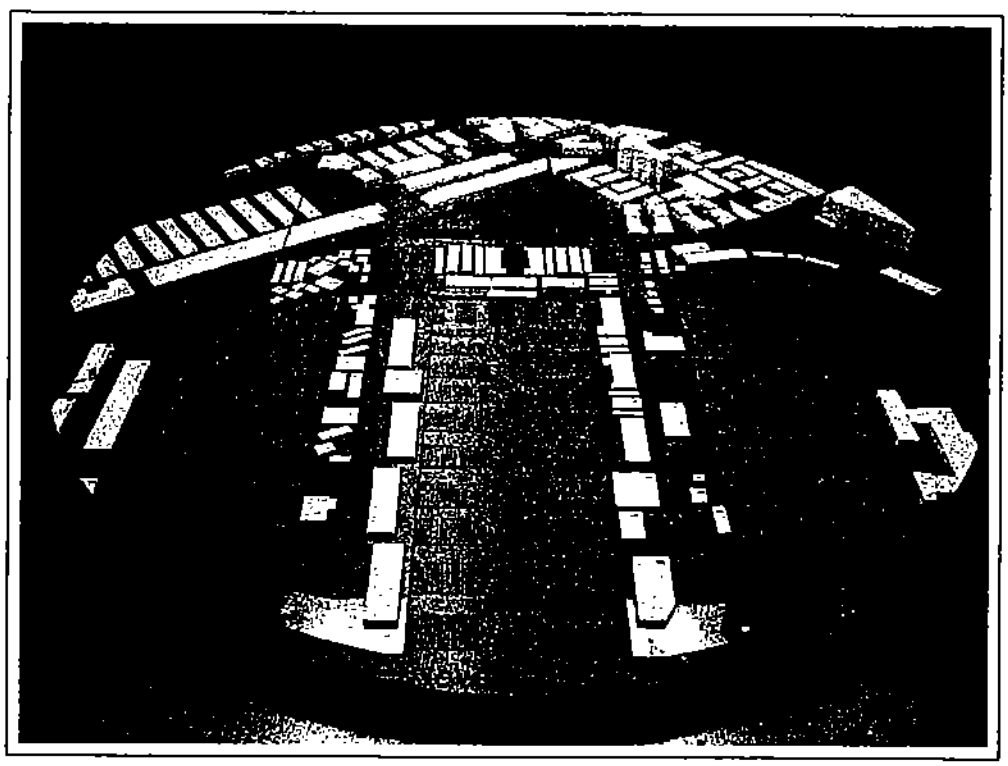
Small changes in wind speed and direction were recorded only in localized areas in the vicinity of the proposed development. Due to the localized nature of these changes and the low height of the proposed development, there will be no effect on the general air circulation patterns within Marina del Rey.

6. CONCLUSIONS

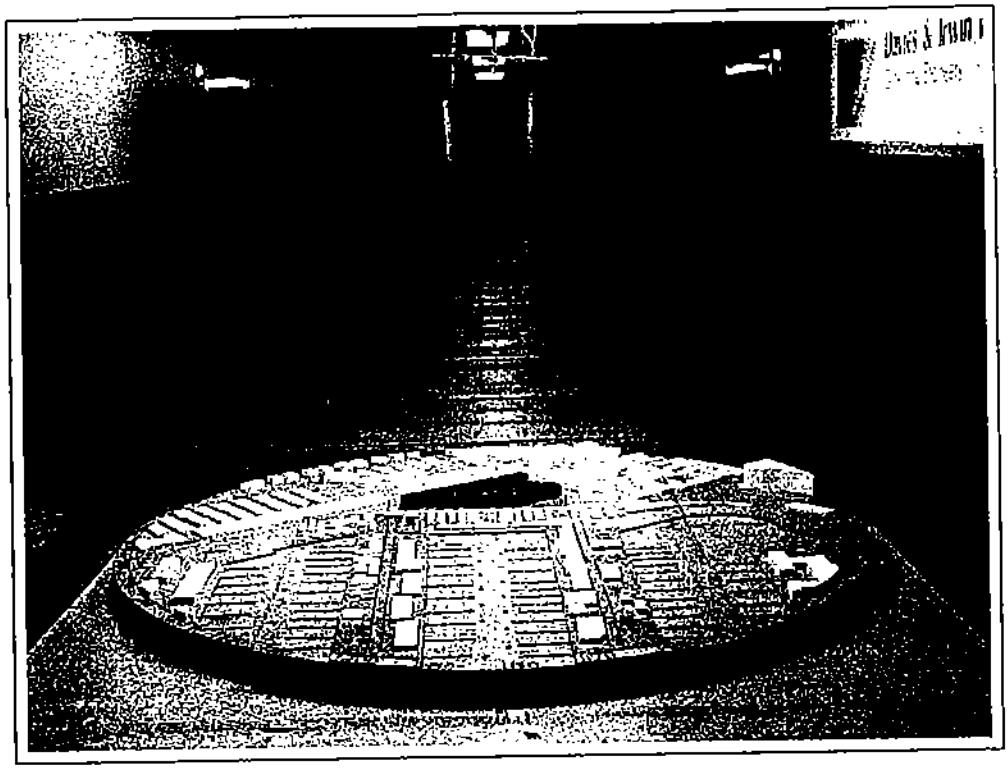
From the results of this wind study, it has been concluded that the proposed Del Rey Shores Apartments will not affect the existing wind conditions in Marina del Rey. Some variations in wind speed and direction were observed when the expected future developments were in place.

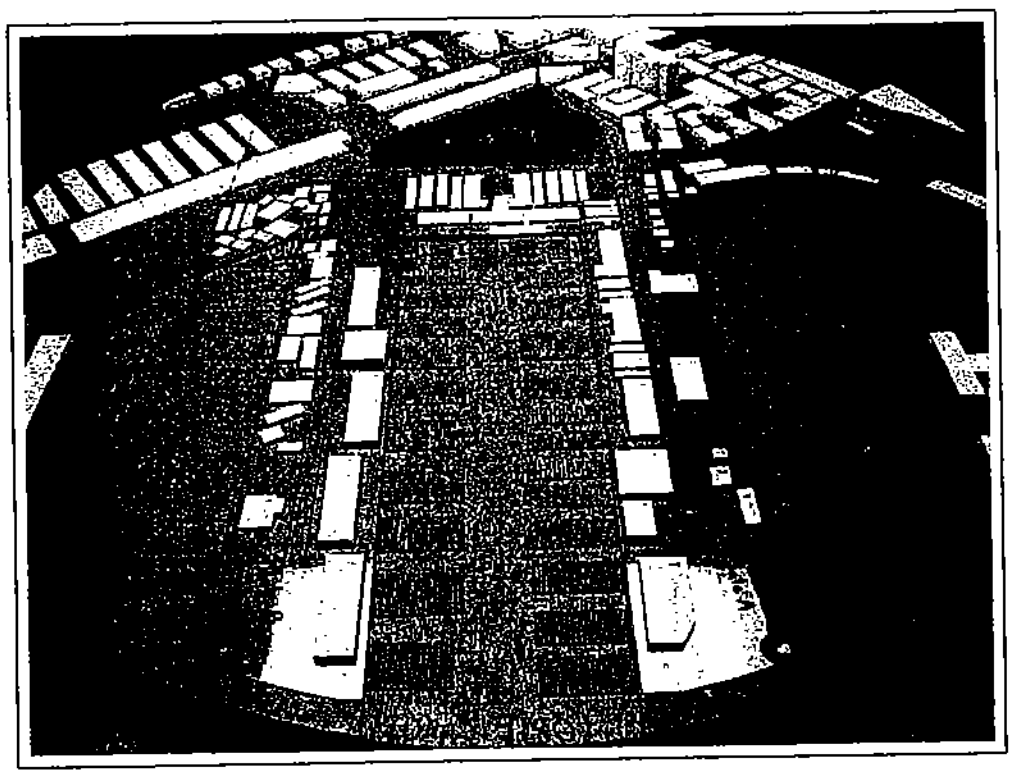
The overall wind conditions predicted with the proposed development in place are similar to those presently experienced in and around the marina and therefore the general air circulation patterns and the use of surface winds by birds will not be affected.





Wind Tunnel Study Model **Existing Configuration**		Figure No. 1a	RWDI
Del Rey Shores Apartments - Marina del Rey, California	Project #05-1234	Date: March 30, 2005	





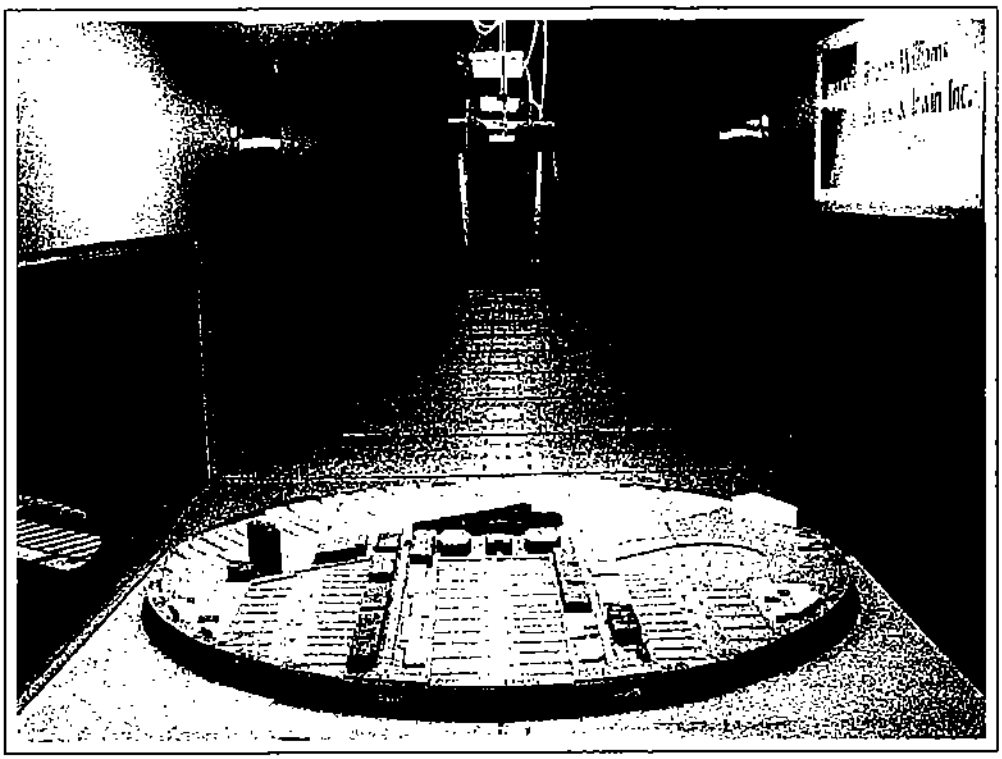
Wind Tunnel Study Model
Proposed Configuration

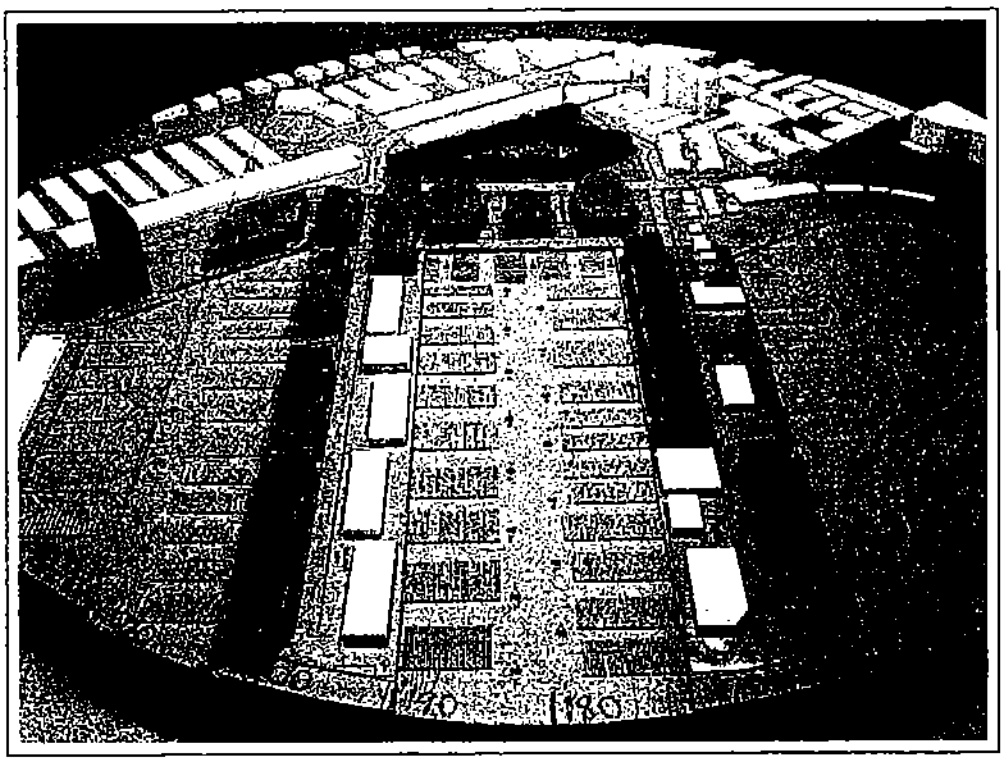
Del Rey Shores Apartments - Marina del Rey, California Project #05-1234

Figure No. 1b

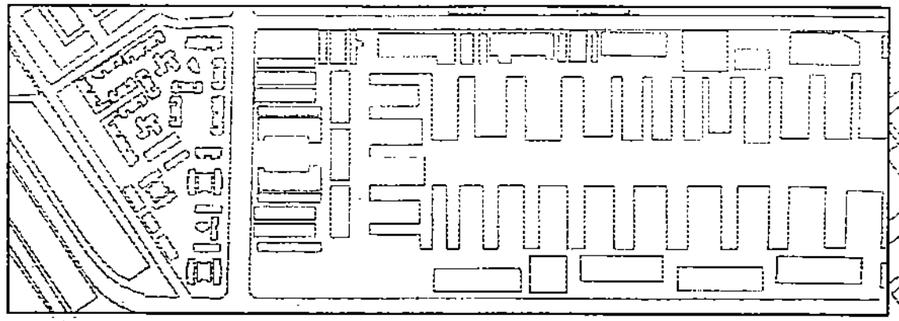
Date: March 30, 2005

RWDI

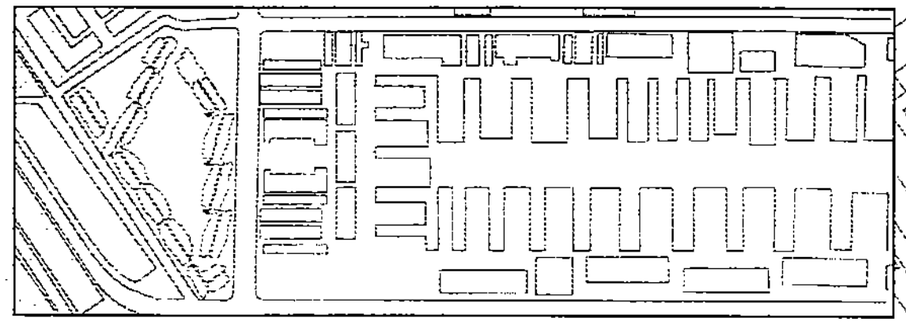




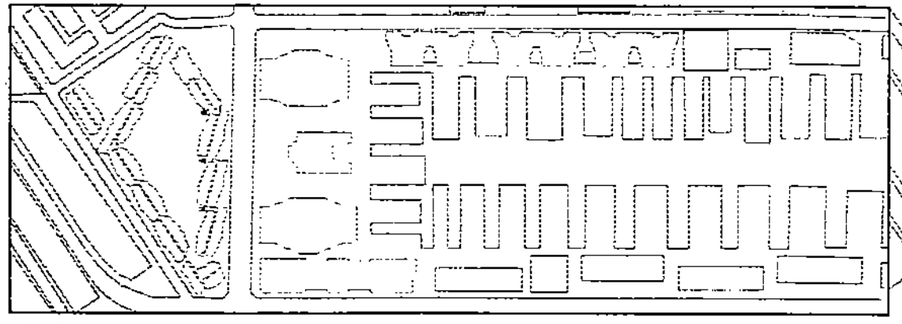
Wind Tunnel Study Model **Future Configuration** Del Rey Shores Apartments - Marina del Rey, California Project #05-1234	Figure No. 1c Date: March 30, 2005	RWDI



EXISTING

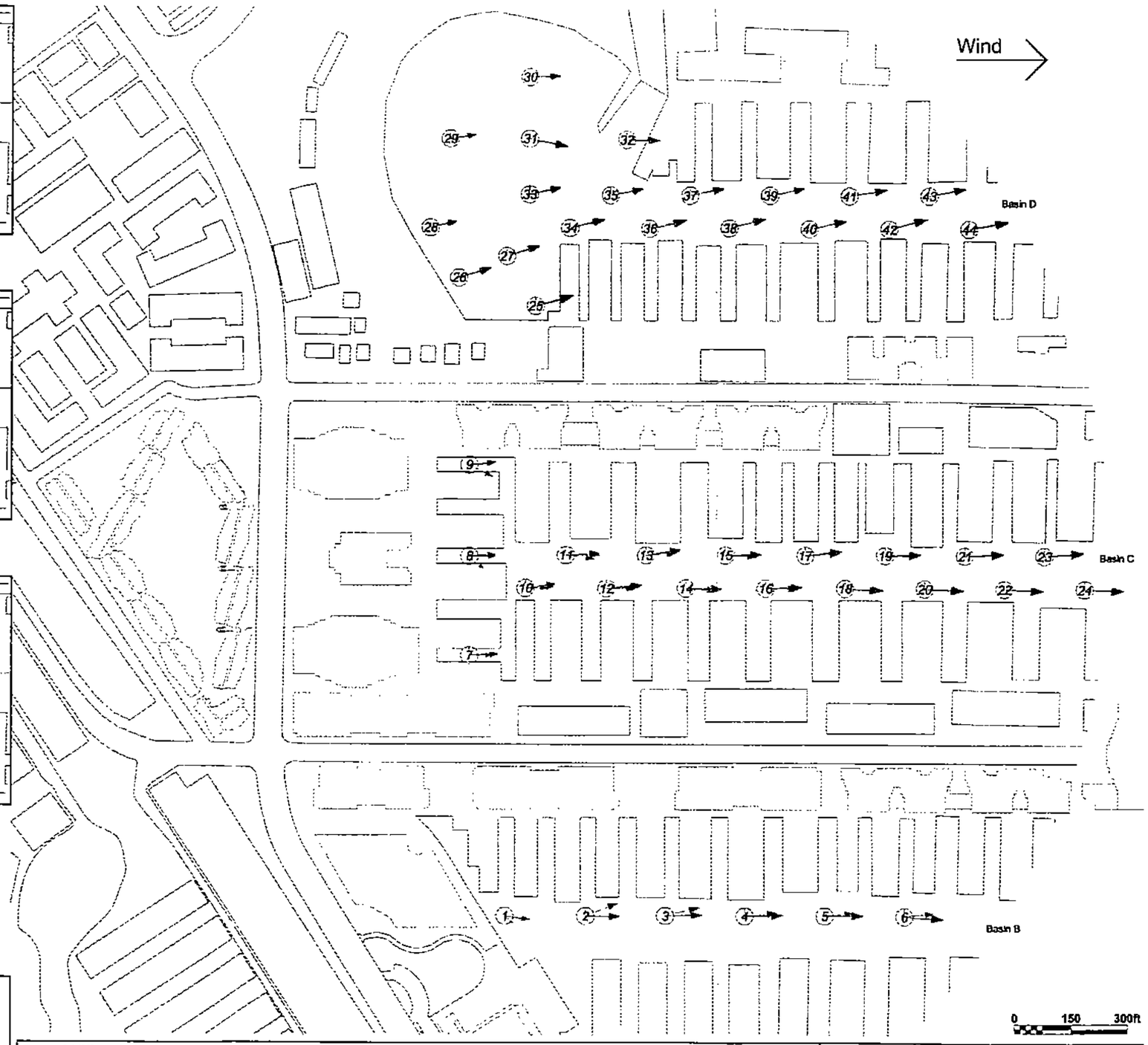


PROPOSED



FUTURE

TEST CONFIGURATIONS - N.T.S.



WIND DIRECTION LEGEND:

WIND SPEED CATEGORIES:

- EXISTING
- PROPOSED
- FUTURE

Note:
Arrow length is proportional to mean wind speed.

Local Wind Direction - Wind from 270° (West)

True North

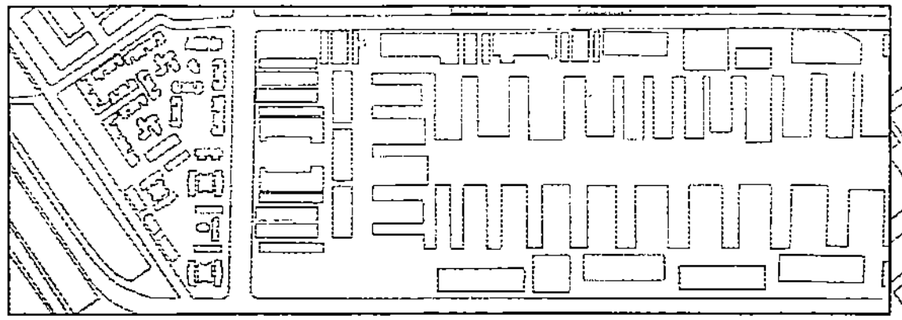
Del Rey Shores Apartments - Marina del Rey, California

Project #05-1234

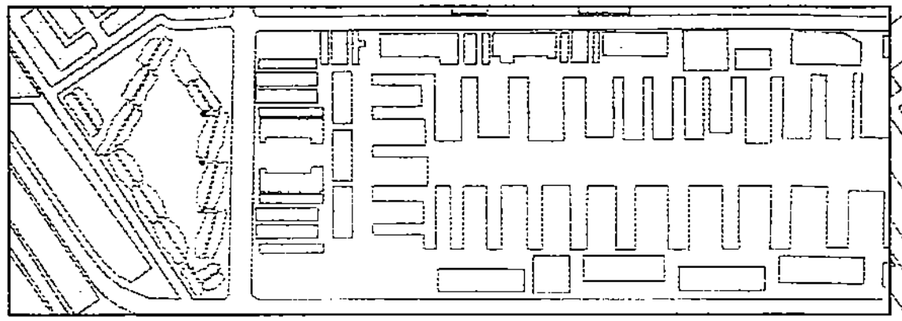
Drawn by: DJM	Figure: 3		
Approx. Scale:	1"=300'		
Date Revised: Mar. 30, 2005			

0 150 300ft

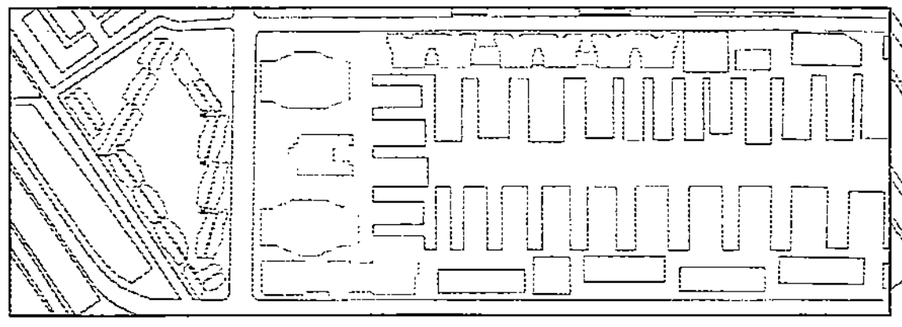
RWDI



EXISTING



PROPOSED



FUTURE

TEST CONFIGURATIONS - N.T.S.

WIND DIRECTION LEGEND:

WIND SPEED CATEGORIES:

- EXISTING
- PROPOSED
- FUTURE

Note:
Arrow length is proportional to mean wind speed.

Local Wind Direction - Wind from 247° (West-southwest)

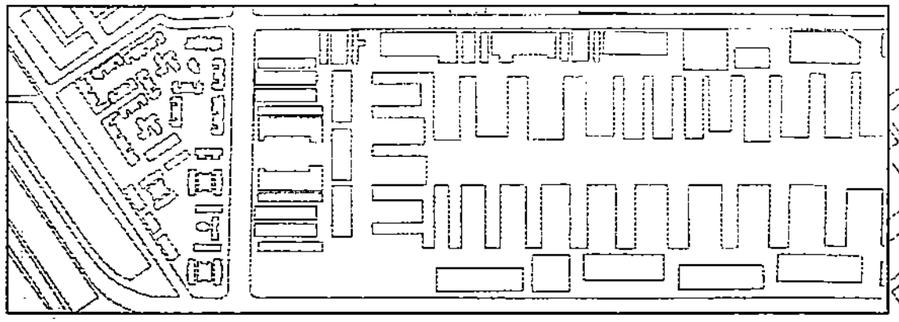
True North

Del Rey Shores Apartments - Marina del Rey, California

Project #05-1234

Drawn by: DJM	Figure: 4
Approx. Scale:	1"=300'
Date Revised:	Mar. 30, 2005

RWDI



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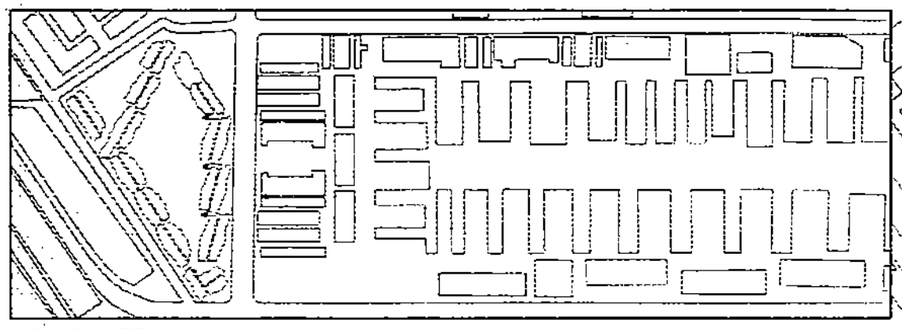
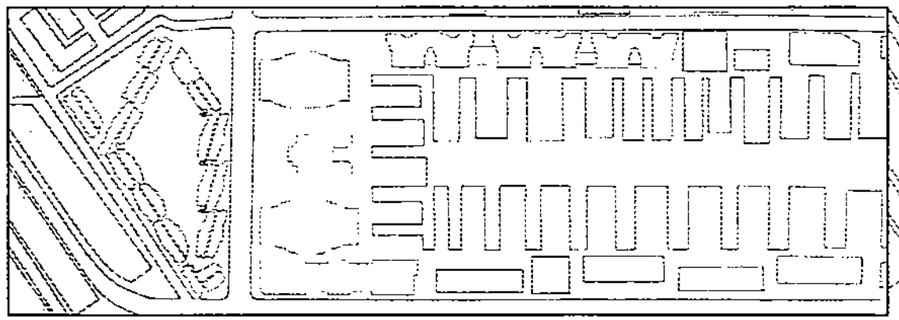


PROPOSED



FUTURE

TEST CONFIGURATIONS - N.T.S.

WIND DIRECTION LEGEND:

WIND SPEED CATEGORIES:

- EXISTING
- PROPOSED
- FUTURE

Note:
Arrow length is proportional to mean wind speed.

Local Wind Direction - Wind from 225° (Southwest)

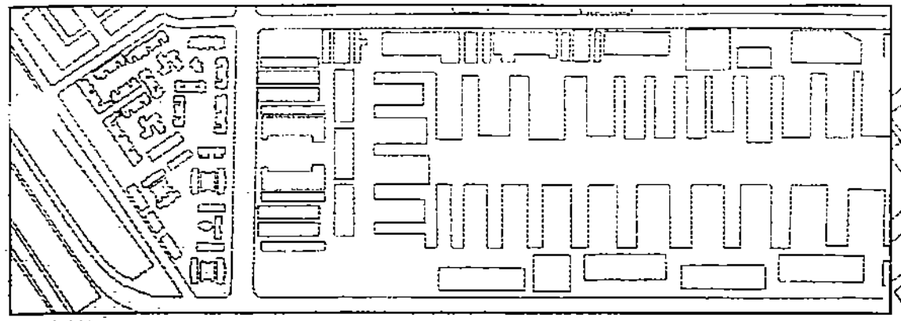
True North

Del Rey Shores Apartments - Marina del Rey, California

Project #05-1234

Drawn by: DJM	Figure:	5
Approx. Scale:	1"=300'	
Date Revised: Mar. 30, 2005		

RWDI



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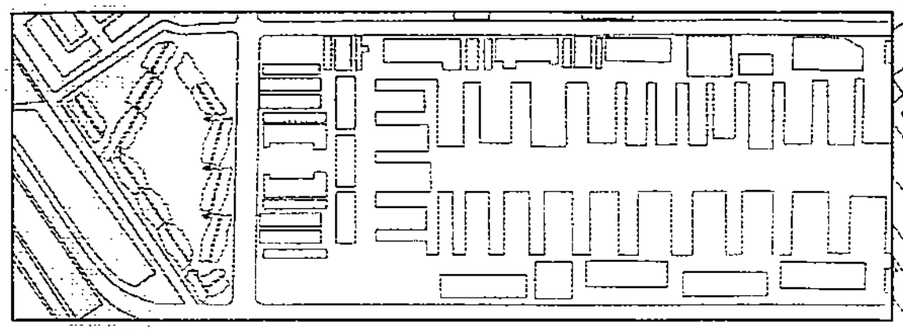
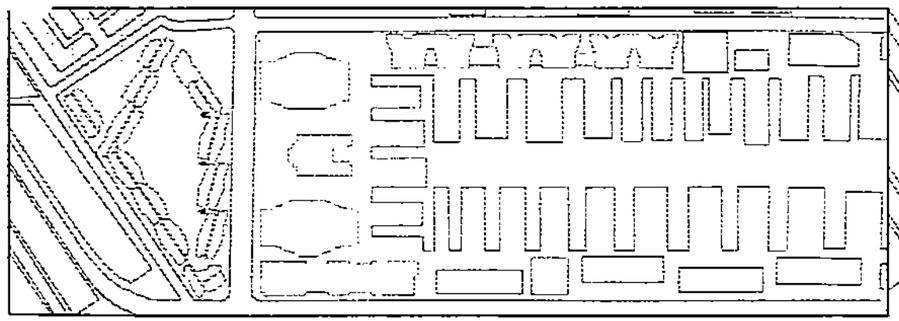
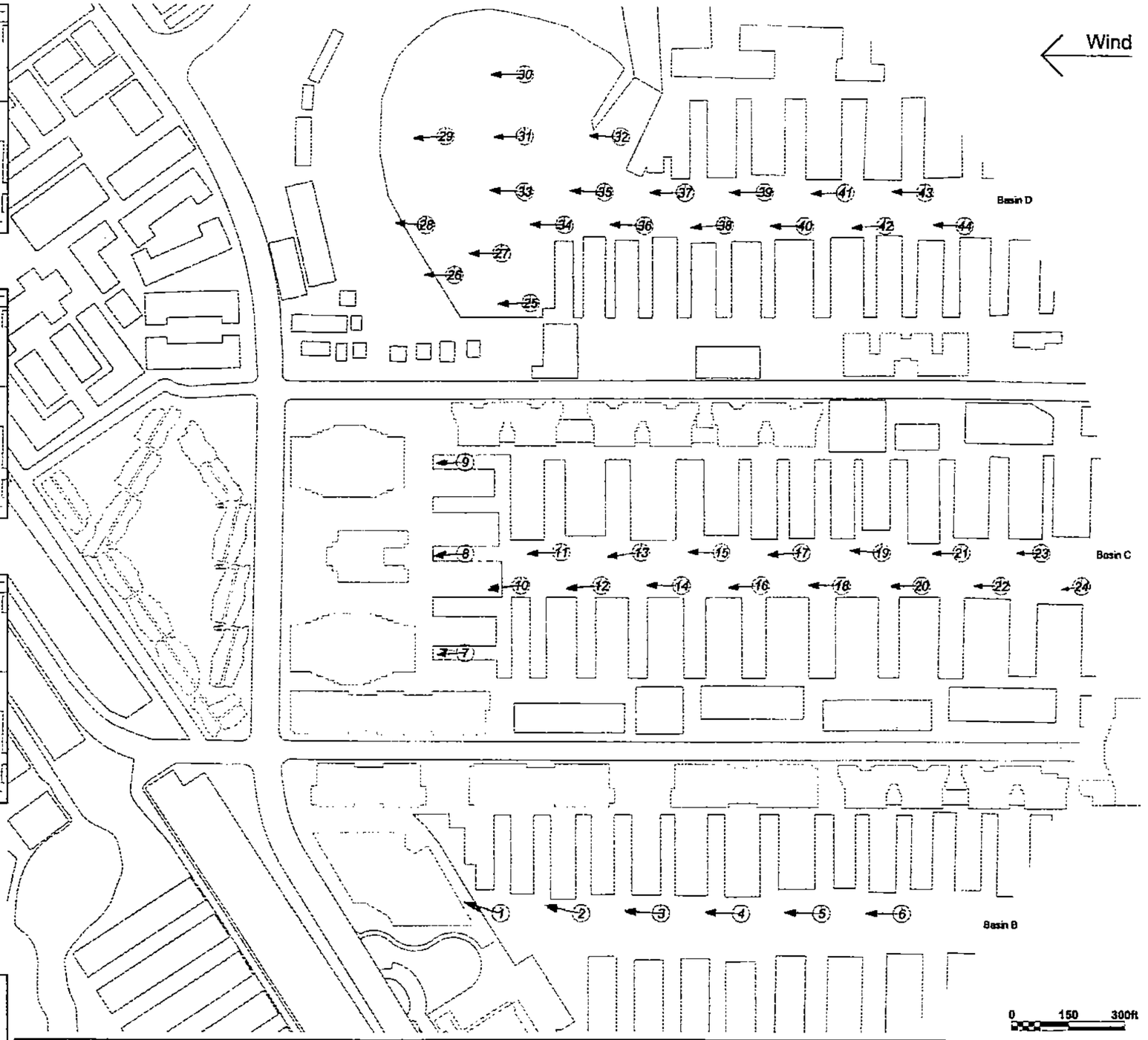


PROPOSED



FUTURE

TEST CONFIGURATIONS - N.T.S.



WIND DIRECTION LEGEND:

WIND SPEED CATEGORIES:

- EXISTING
- PROPOSED
- FUTURE

Note:
Arrow length is proportional to mean wind speed.

Local Wind Direction - Wind from 90° (East)

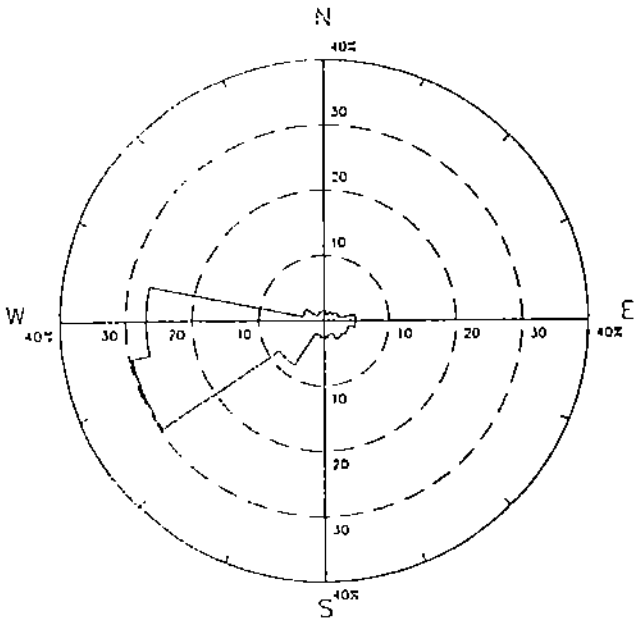
True North

Del Rey Shores Apartments - Marina del Rey, California

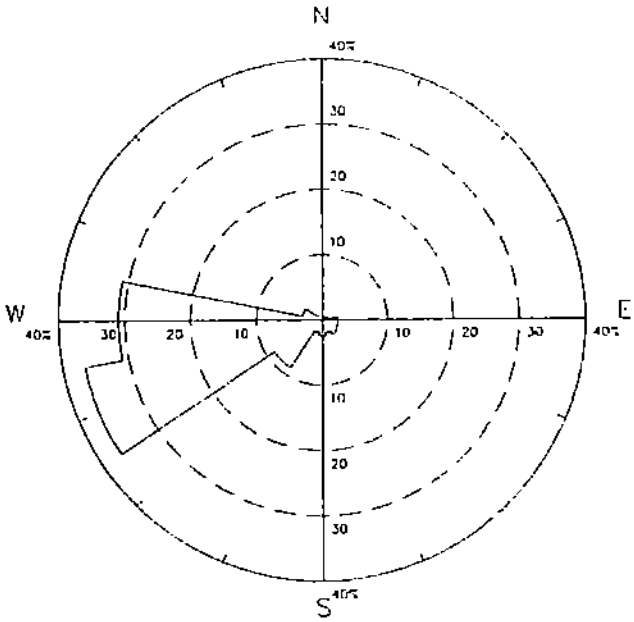
Project #05-1234

Drawn by: DJM	Figure:	6
Approx. Scale:		1"=300'
Date Revised:		Mar. 30, 2005

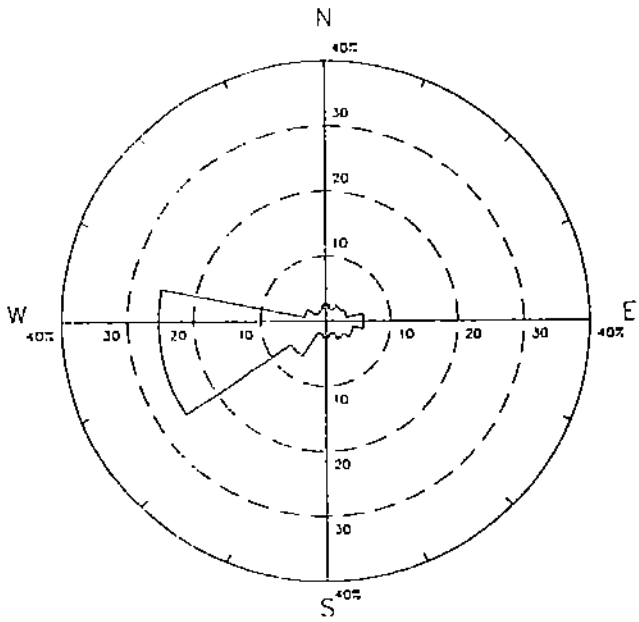
RWDI



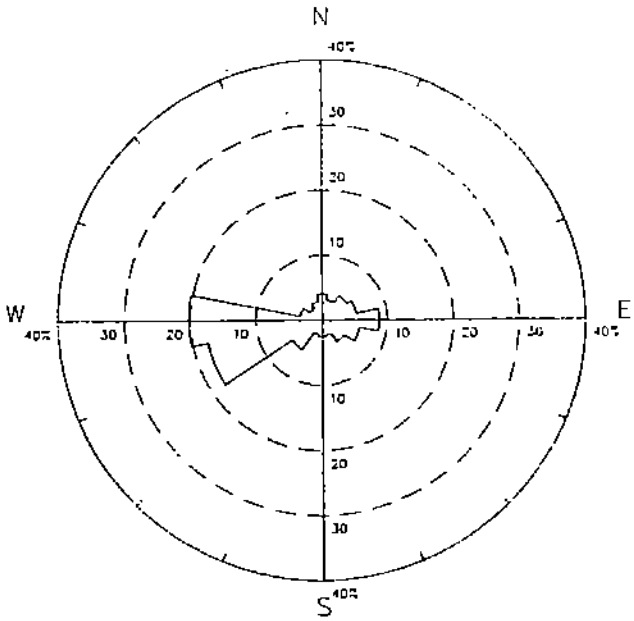
SPRING
(March, April, May)



SUMMER
(June, July, August)



FALL
(September, October, November)



WINTER
(December, January, February)

Directional Distribution of Seasonal Winds **(7:00 am - 9:00 pm)** **Los Angeles International Airport (1947 - 1990)**	Figure No. 2	RWDI
Del Rey Shores Apartments - Marina del Rey, California Project #05-1234	Date: March 30, 2005	

APPENDIX A

Effect of a proposed structure at Marina Del Rey, California on surface winds used by local birds.

A report prepared For Rowan Williams Davies & Irwin Inc.

Wayne Bezner Kerr
Migratory Bird Research Group

Attn: Colin Williams
Principal,
Rowan, Williams, Davies and Irwin Inc.

From: Wayne Bezner Kerr
Migratory Bird Research Group

Re: **Effect of a proposed structure at Marina del Rey, California on surface winds used by local birds.**

The proposed structure at Marina del Rey appears to be fairly straight forward, insofar as use of surface winds by local and/or transient populations of birds are concerned. In response to your request I have undertaken a literature search on the aerodynamics, kinematics and behaviors of flying birds. Combined with my own observations from four seasons of experimental work with flying birds of different weights, wing loadings and Reynolds numbers (Re), I have formed some basic conclusions regarding the project under discussion. My conclusions are presented under five general subheadings.

1. Changes to surface winds on open water:

The concept of "surface winds" does not necessarily apply to birds in powered flight, at least as far as wind strength and direction are concerned. Unlike humans who experience wind relative to a fixed frame of reference on the ground, birds in flight always experience a direct headwind exactly equal to their airspeed and heading. Thus, a gull in steady state flight at 21 knots on a heading of 090 degrees will always experience a 21 knot east wind, regardless of actual wind strength and direction at the time of observation. The actual track described by a bird in flight will be the vector of the birds heading less the vector of the wind at that moment. Birds in translational, foraging and migratory flight may fly with wind speeds equal to or greater than their actual flying speed at angles greater than 90 degrees to their intended course (Kerlinger 1989). By altering airspeeds and headings, birds are able to complete flights along a desired ground track in a range of winds much greater than the expected changes to winds measured at the surface at Marina Del Rey.

In our experiments with migratory waterfowl and wading birds, we have seen that changes to

wind direction and strength can create problems for birds when taking off or landing in confined areas. For the few moments while a bird is accelerating during takeoff or decelerating during landing it is generally limited to headings that take it directly against the wind. On open water such as the channel found at Marina Del Rey, birds are able to takeoff and land in almost any direction, allowing unrestricted flight in winds from any direction. In my opinion, predicted changes to surface winds at Marina Del Rey are unlikely to have a measurable negative effect on local birds.

2. Changes to ridge soaring conditions downwind of the structure:

Some species commonly observed at Marina Del Rey exploit winds deflected upwards against vertical structures in a behavior known as "ridge soaring". Ridge soaring birds minimize the energy expended to remain aloft while in translational, foraging and migratory flight. The energy savings gained through the use of ridge lift are proportional to wind speed and the proportion of wind directed perpendicular to the obstruction (Kerlinger 1989). Ridge soaring birds may use lift provided by wind deflecting over and around towers, buildings, boats, hills and other structures. In my opinion, the predicted changes in wind speed and direction as a result of the proposed structure at Marina Del Rey are unlikely to significantly affect ridge soaring birds exploiting flows directed upwards along the downwind shore of the channel.

3. Changes to ridge soaring conditions upwind of the structure.

It is reasonable to expect that some ridge soaring behavior will occur on the upwind facing side of the structure under discussion. A new structure with a face oriented within 45 degrees to the prevailing wind direction will generate lift on days when winds are sufficiently strong. Soaring birds moving across the area can derive energetic benefits by diverting slightly to pass through the area of rising air. In my opinion, several species of birds observed at Marina Del Rey will likely utilize ridge lift created by the proposed structure at least occasionally.

4. Changes to local thermal soaring conditions:

Some species present at Marina Del Rey utilize small columns of rising warm air known as thermals to reduce the energy expended while climbing. Thermal conditions are relatively rare in coastal areas, especially at sites surrounded by water where stable marine air suppresses thermal

activity (Lindsay 1988). Thermal lift at Marina Del Rey is most likely found over larger built up or constructed areas such as docks, parking lots and buildings. In my opinion, a microscale change to the total built horizontal area at Marina Del Rey such as the addition or removal of a single building is unlikely to result in a measurable change to thermal frequency, size or distribution.

5. Changes to flight efficiency due to turbulence.

Birds, like miniature aircraft are subject to basic laws of aerodynamics. Generally speaking, birds of the weights and speeds observed at Marina Del Rey operate at Reynolds numbers (Re) between approximately 70,000 and 250,000 (Pennycuick 1989). Like artificially constructed airfoils, bird wings can be adversely affected by turbulence (Lissaman 1983), at least hypothetically reducing lift by a large degree. It is important to note that atmospheric turbulence occurs over a broad range of scales. Low speed airfoils operating at Re similar to birds observed at Marina Del Rey are most likely to suffer reduced aerodynamic performance where turbulence occurs at scales approximately 1/4 the average wingspan. Microscale turbulence in this range is short lived in the atmosphere, and is more typical of flows around small, complicated structures such as sailboat rigging or tree branches than larger solid structures. Larger scale wake vortices and eddies typical of flow downwind of large buildings is likely experienced by birds as long period changes to the free stream air, rather than aerodynamically disruptive turbulence *per se.* In my opinion, turbulence created by the proposed structure is unlikely to result in reduced aerodynamic efficiency of birds flying at Marina Del Rey.

Conclusion:

The addition or removal of a building at Marina Del Rey will undoubtably result in changes to local winds in the altitudes and areas utilized by birds. However, due to the relatively minor nature of the changes expected, the wide variety of airspeeds birds are capable of flying at, the diverse flight strategies employed by birds and the relatively small percentage of total area where measurable impacts will be observable, it is my opinion that the proposed structure will not result in major changes to birds' use of surface winds at Marina Del Rey.

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1995. **The moment of inertia of bird wings and the inertial power requirement for flapping flight**. The Journal of Experimental Biology 198, 1655-1664

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Recent Work and Research Experience:

1998 - Present	M.Sc. Candidate.	Dept of Zoology University of Guelph Guelph, Ontario
1996 - 1999	Coordinator	Trumpeter Swan Migration Project Migratory Bird Research Group Guelph, Ontario
1995	Researcher	Sandhill Crane Induced Migration - Experiment Operation Migration Blackstock, Ontario

Publications:

1999 W. Bezner Kerr. **Imprinting techniques and the development of in flight following behavior in migratory trumpeter swans.** North American Swans 28 (3) (in press).

1998 W. Bezner Kerr. **No Swan Songs Here.** FAI AirSports International. Vol 1. http://airsports.fai.org/

1997 W. Bezner Kerr. **Swan Songs.** Dofasco Illustrated News. Dec. Pp 12-13

1996 Lishman, W.A., T.L. Teets, J. Duff, W.J.L. Sladen, G.G. Shire, K. Goolsby, W.A. Bezner Kerr, and R.P. Urbanek. 1997. **A reintroduction technique for migratory birds: Leading canada geese and isolation-reared sandhill cranes with ultralight aircraft.** Proc. North Am. Crane Workshop 7:114-122

Wayne Bezner Kerr, *continued ...*

Presentations:

September 1999 **The Use of Induced Migration Techniques in the Restoration of Migratory Populations of Trumpeter Swans (Cygnus buccinator).** 17th Trumpeter Swan Society Conference. Idaho Falls (scheduled)

July 1999 **The Use of Ultralight Aircraft in Waterfowl Restoration and Research.** COPA Annual Convention. North Bay

March 1998 **Trumpeter Swan Migration Project Overview.** North Bay Naturalists Association.

Awards, Scholarships and Research Support:

1999 Ontario Graduate Scholarship in Science and Technology
1999 Trumpeter Swan Society Certificate of Special Appreciation.
1999 USUA Public Service Award.
1999 Elgin Card Scholarship in Terrestrial Ecology
1999 University of Guelph Graduate Scholarship.
1998 Canada Trust Friends of the Environment Grant
1998 - 99 EcoAction 2000 Grant
1998 University of Guelph Graduate Scholarship.
1998 University of Guelph Graduate Scholarship.
1998 OFAH Waterfowl Ecology Grant.
1998 Conrad N Hilton Foundation Research Grant

APPENDIX 5.6

Crain & Associates, Traffic Analysis for a Proposed 544-Unit Residential Development on Parcels 100 and 101 In Marina del Rey (June 2005)

DRAFT

TRAFFIC ANALYSIS FOR A PROPOSED 544-UNIT RESIDENTIAL DEVELOPMENT ON PARCELS 100 AND 101 IN MARINA DEL REY

Prepared for:

DEL REY SHORES

Prepared by:

Crain & Associates
2007 Sawtelle Boulevard, Suite 4
Los Angeles, California 90025
(310) 473-6508

June 2005

EXECUTIVE SUMMARY

The project under consideration is the development of a total of 544 apartments on Parcels 100 and 101 in Marina del Rey, within the County of Los Angeles. The project site is located near the northwest corner of Marina del Rey, and is bounded by Via Marina on the east, Dell Avenue on the West, Marquesas Way on the south, and Admiralty Loop on the north.The site is currently developed with an existing apartment complex containing a total of 202 apartments, which will be removed to construct the new project. A total of approximately 1,114 parking spaces will be provided for residents and guests of the new residential units, which is sufficient to meet the parking requirements for the development. The existing residential units will be removed to accommodate the proposed project.

Following completion and occupancy, the project could generate a total of approximately 1,354 net new daily trips, including 120 net new trips during the AM peak hour and 111 net new trips during the PM peak hour. This level of project traffic could produce a significant impact at one nearby intersection, Lincoln Boulevard and Mindanao Way, prior to mitigation. However, this single project-specific impact can be mitigated to less than significant levels through the implementation of area traffic improvement measures recommended in the adopted Marina del Rey Specific Plan Transportation Improvement Program (TIP). The project is also consistent with the Phase II Marina del Rey Land Use Plan (LUP) development allowances for Marina del Rey Development Zone 12, which it occupies. Further, the project does not significantly affect the overall Phase II trip cap limits, and will not trigger the need for any system-wide Category 1 (local Marina del Rey) roadway improvements prior to its construction.

The specific transportation and circulation improvements identified in the Marina del Rey Specific Plan Transportation Improvement Program (TIP) are designed to fully mitigate the traffic generation of the Phase II development in Marina del Rey. In order to fund the

recommended TIP roadway improvements, all projects within the Marina, including the proposed development, are required to pay a traffic mitigation fee imposed by the County of Los Angeles pursuant to the TIP. This fee is intended to fund the Category 1 (local Marina) and Category 3 (regional) roadway improvements described in the TIP, by providing "fair share" contributions toward the improvements, based on the amount of project PM peak hour trips. These improvements address local traffic generated in and confined to the Marina, as well as trips which leave or pass through the Marina (regional trips). The County's traffic mitigation fee structure is currently $5,690 per PM peak hour trip. Based on the expected project trip generation of 111 net new PM peak hour trips, the project would be required to pay $631,590 in trip mitigation fees.

The County Department of Public Works has expressed that it prefers to implement the Marina del Rey TIP-recommended roadway improvements as a single major project in order to minimize traffic disruptions and construction time. Therefore, payment of the traffic impact mitigation fee is the recommended mitigation over the partial construction by this project of portions of the relevant TIP roadway improvements. However, should the County decide that roadway improvement measures are necessary to address the immediate impacts of project traffic, the following measure is recommended to reduce the potential project traffic impact identified in this study to less than significant levels.

- Lincoln Boulevard and Mindanao Way – Widen Lincoln Boulevard, and relocate and narrow the existing median island to provide a northbound right-turn only or through lane at Mindanao Way. This measure is identical to the improvement described in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program.

Implementation of the improvement measure described above will reduce the project traffic impact at Lincoln Boulevard and Mindanao Way to less than significant levels, and no additional project-specific traffic improvements are necessary.

However, although the project itself would potentially significantly impact only one of the area intersections, an analysis of cumulative traffic impacts at the study intersections indicates that traffic resulting from total development throughout the project vicinity, including the proposed project, could produce significant impacts at 10 of the 17 locations analyzed. As with the project-specific improvement measure for Lincoln Boulevard and Mindanao Way, the TIP improvements are designed to address traffic growth due to cumulative development within and surrounding the Marina, and therefore, payment of the traffic impact mitigation fee described earlier is intended to mitigate the proposed project's incremental contributions toward cumulative traffic growth and the resulting impacts in the study area. However, the County acknowledges that traffic growth within the project vicinity has outpaced the projections upon which the TIP trip fees were based, and therefore, an analysis of cumulative impacts with respect to the effectiveness of the proposed TIP improvements was requested.

The intersection improvement measures recommended in the TIP to address cumulative traffic impacts in the project vicinity are described below.

- Admiralty Way and Via Marina – Participate in the reconstruction of the intersection to provide for a realignment of Admiralty Way as a "through roadway", with Via Marina intersecting into Admiralty Way in a "T" configuration. All turning movements at the intersection will be constructed as dual or right-turning movements. This improvement is identified in the Marina del Rey TIP, and will enhance flow within the Marina.

- Washington Boulevard and Via Marina/Ocean Avenue – No feasible physical improvements are identified in the TIP that remain available to mitigate this potential cumulative impact. However, the Los Angeles County Department of Public Works has identified an improvement at the nearby intersection of Washington Boulevard and Palawan Way which would provide additional egress

from the Marina, reducing traffic volumes at this intersection, and providing mitigation for the cumulative impacts. The proposed improvement would reconstruct the intersection of Washington Boulevard and Palawan Way to allow for dual northbound left-turns onto westbound Washington Boulevard, and install a new traffic signal at that intersection. The new northbound left-turn capability will provide an additional means of accessing westbound Washington Boulevard from westbound Admiralty Way, reducing the existing high northbound left-turn volumes at Washington Boulevard and Via Marina/Ocean Avenue. However, this proposed improvement is not included in the TIP improvement program, and the proposed Del Rey Shores project would be requested to contribute "fair share" funding to this improvement above and beyond the previously-identified traffic mitigation fees. Current estimates for this improvement indicate a total cost of approximately $120,000. The Del Rey Shores project's equitable share cost of the improvement is estimated at approximately 12.85 percent (average of the peak hours), or an approximately $15,420 contribution beyond the $631,590 in TIP trip mitigation fees already identified for the project.

- Admiralty Way and Palawan Way – Restripe the southbound approach to convert the through lane into a left/through shared lane. Restripe the northbound approach to provide an exclusive right-turn only lane, in addition to a shared left-turn/through lane. This improvement is currently being investigated by the County for implementation as a new TIP- type measure, funded by fair share contributions by projects within Marina del Rey. Also, add a third westbound through lane to Admiralty Way within the existing right-of-way by moving the median and restriping Admiralty Way, as identified in the TIP.

- Washington Boulevard and Palawan Way – Install the new traffic signal at this intersection (as described above as "in lieu" mitigation for the cumulative impact

at Washington Boulevard and Via Marina/Ocean Avenue). The northbound approach should be realigned to reduce the angle of the right-turn only lane, and provide a more perpendicular approach, plus provide dual left-turn lanes.

- Lincoln Boulevard and Washington Boulevard – No feasible physical improvements are currently available to mitigate this potential cumulative impact. However, payment of the Marina del Rey trip fees, as described earlier, is designed to fund major regional transportation improvements to address impacts at locations such as this one. Among the regional transportation improvements being considered is the future extension of the Marina Freeway (SR 90) westward to connect with Admiralty Way. The extension, slated for the year 2011, will help alleviate traffic congestion in the area, including at the key intersection of Lincoln Boulevard and Washington Boulevard. This measure is identified in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program and must have approval by the Board of Supervisors, the City of Los Angeles and Caltrans.

  However, should the extension of the SR-90 not be implemented, the traffic impact fees assessed to the project (and all projects within the Marina) could also be used to fund alternative improvements to address cumulative traffic growth that cannot be developed within the existing right-of-way, such as widening Lincoln Boulevard at Washington Boulevard to provide an additional through lane in the northbound and southbound directions.

- Lincoln Boulevard and Marina Expressway (SR 90) – Extend Route 90 to connect to Admiralty Way via a fly-over across Lincoln Boulevard. The extension would eliminate the at-grade intersection, thereby mitigating the cumulative impacts at this location. As described above, this improvement is currently included in the TIP improvements funded by the trip fee.

- Lincoln Boulevard and Mindanao Way – The TIP improvement for this location is identified previously as a project-impact mitigation feature. However, that improvement (installation of a northbound right-turn only lane on Lincoln Boulevard) will not fully mitigate the anticipated cumulative impacts at this intersection, and no further feasible physical improvements are currently available to mitigate this potential cumulative impact. However, payment of the Marina del Rey trip fees, as described earlier, is designed to fund major regional transportation improvements to address impacts at locations such as this one. Among the regional transportation improvements being considered is the future extension of the Marina Freeway (SR 90) westward to connect with Admiralty Way. The extension, slated for the year 2011, will help alleviate traffic congestion in the area, including at the intersection of Lincoln Boulevard and Mindanao Way, which currently provides direct access from the SR-90 to Admiralty Way in the Marina, by providing a direct access alternative route. The SR-90 extension is identified in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program and must have approval by the Board of Supervisors, the City of Los Angeles and Caltrans.

  However, should the extension of the SR-90 not be implemented, the traffic impact fees assessed to the project (and all projects within the Marina) could also be used to fund alternative improvements to address cumulative traffic growth, such as widening Lincoln Boulevard at Mindanao Way to provide for dual left-turn lanes in the southbound direction. This improvement may require acquisition of additional rights-of-way, which could also be funded through payment of the traffic impact fees described earlier.

- Lincoln Boulevard and Fiji Way – Widen the eastbound Fiji Way approach to Lincoln Boulevard to provide an additional left-turn lane at Lincoln Boulevard.

- Admiralty Way and Mindanao Way – Widen northbound Admiralty Way to provide a right-turn lane at Mindanao Way. Install dual left-turn lanes on Admiralty Way for southbound travel at the approach to Mindanao Way. In addition, modify the traffic signal to provide a westbound right-turn phase concurrent with the southbound left-turn movement. The dual left-turn lanes on Admiralty Way will enhance egress from the Marina at Mindanao Way, and has already been approved as part of a previous project (Marina Two).

- Marina Expressway (SR 90) Eastbound and Mindanao Way – Restripe the westbound approach of Mindanao Way at the eastbound Marina Expressway to provide dual left-turn lanes.

The improvements described above, with the exception of the new traffic signal at Washington Boulevard and Palawan Way, are identical to or consistent with roadway improvements identified in the TIP, and funded through payment of the traffic impact fees. Installation of the recommended measures will fully mitigate the effects of cumulative traffic growth, including project traffic, in the study area. The project will contribute its "fair share" toward implementation of these cumulative improvements through payment of the $631,590 trip fee, plus the pro-rata share for the new traffic signal and roadway improvement at Washington Boulevard and Palawan Way.

TABLE OF CONTENTS

	Page
Introduction	1
Project Description	5
Environmental Setting	7
Freeways	7
Streets and Highways	8
Existing Traffic Volumes	11
Public Transit	15
Analysis of Existing Traffic Conditions	17
Project Traffic	21
Traffic Generation	21
Trip Distribution	22
Traffic Assignment	23
Project Access	27
Project Parking	27
Future Traffic Conditions	28
Traffic Growth	28
Related Projects	29
Highway System Improvements	29
Analysis of Future Traffic Conditions	35
Cumulative Impacts	42
Impacts on Regional Transportation System	43
Consistency With Marina LUP	50
Mitigation Measures	57
Appendix A - Traffic Counts	
Appendix B - CMA Calculation Worksheets	

LIST OF FIGURES

Figure No.		Page
1	Site Vicinity Map	2
2	Study Intersection Locations Map	3
3	Site Plan	6
4	Existing (2005) Peak Hour Traffic Volumes	12
5	Project Traffic Assignment Percentages	24
6	Project Traffic Volumes	25
7	Related Projects Locations	30
8	Future (2009) Peak Hour Traffic Volumes - Without Project	36
9	Future (2009) Peak Hour Traffic Volumes - With Project	38
10	Related Projects Traffic	44
11	Future (2009) Peak Hour Traffic Volumes – Cumulative Traffic	46

LIST OF TABLES

Table No.		Page
1	Critical Volume Ranges - Level of Service	18
2	Level of Service - CMA Values	19
3	Critical Movement Analysis (2005) – Existing	20
4	Project Trip Generation Rates	22
5	Project Trip Generation	22
6	Directional Trip Distribution	23
7	Project Parking Summary	27
8	Related Projects Descriptions	31
9	Related Projects Descriptions and Trip Generation	33
10	Critical Movement Analysis (2009) - Without and With Project	40
11	Critical Movement Analysis (2009) – Cumulative Development	48
12	Phase II Development Potential Allocated By Development Zone	52
13	Development Zone 3 PM Peak Hour Trips	55
14	Summary of Project Impacts With Mitigation	59
15	Summary of Cumulative Impacts With Mitigation	65

INTRODUCTION

The developer, Del Rey Shores Joint Venture and Del Rey Shores North Joint Venture, proposes to construct a total of approximately 544 new residential apartment units on Parcels 100 and 101 in Marina del Rey, within the County of Los Angeles. The project site is located near the northwest corner of Marina del Rey, and is bounded by Via Marina on the east, Dell Avenue on the West, Marquesas Way on the south, and Admiralty Loop on the north.The site is currently developed with an existing apartment complex containing a total of 202 apartments, which will be removed to construct the new project. A total of approximately 1,114 parking spaces will be provided for residents and guests of the new residential units, which is sufficient to meet the parking requirements for the development. The existing residential units will be removed to accommodate the proposed project.

The County of Los Angeles has requested that a traffic study be conducted to assess the potential impacts of the proposed development on the surrounding street system. This report presents the results of an analysis of both existing conditions and projected future traffic conditions after completion of the project at the following 18 study intersections in and surrounding the Marina, listed below and shown in Figure 2.

1. Washington Boulevard/Dell Avenue/Via Dolce
2. Via Marina/Tahiti Way
3. Via Marina/Marquesas Way
4. Via Marina/Panay Way
5. Admiralty Way/Via Marina
6. Washington Boulevard/Ocean Avenue/Via Marina
7. Admiralty Way/Palawan Way
8. Washington Boulevard/Palawan Way
9. Lincoln Boulevard/Washington Boulevard
10. Lincoln Boulevard/Marina Expressway (SR 90)

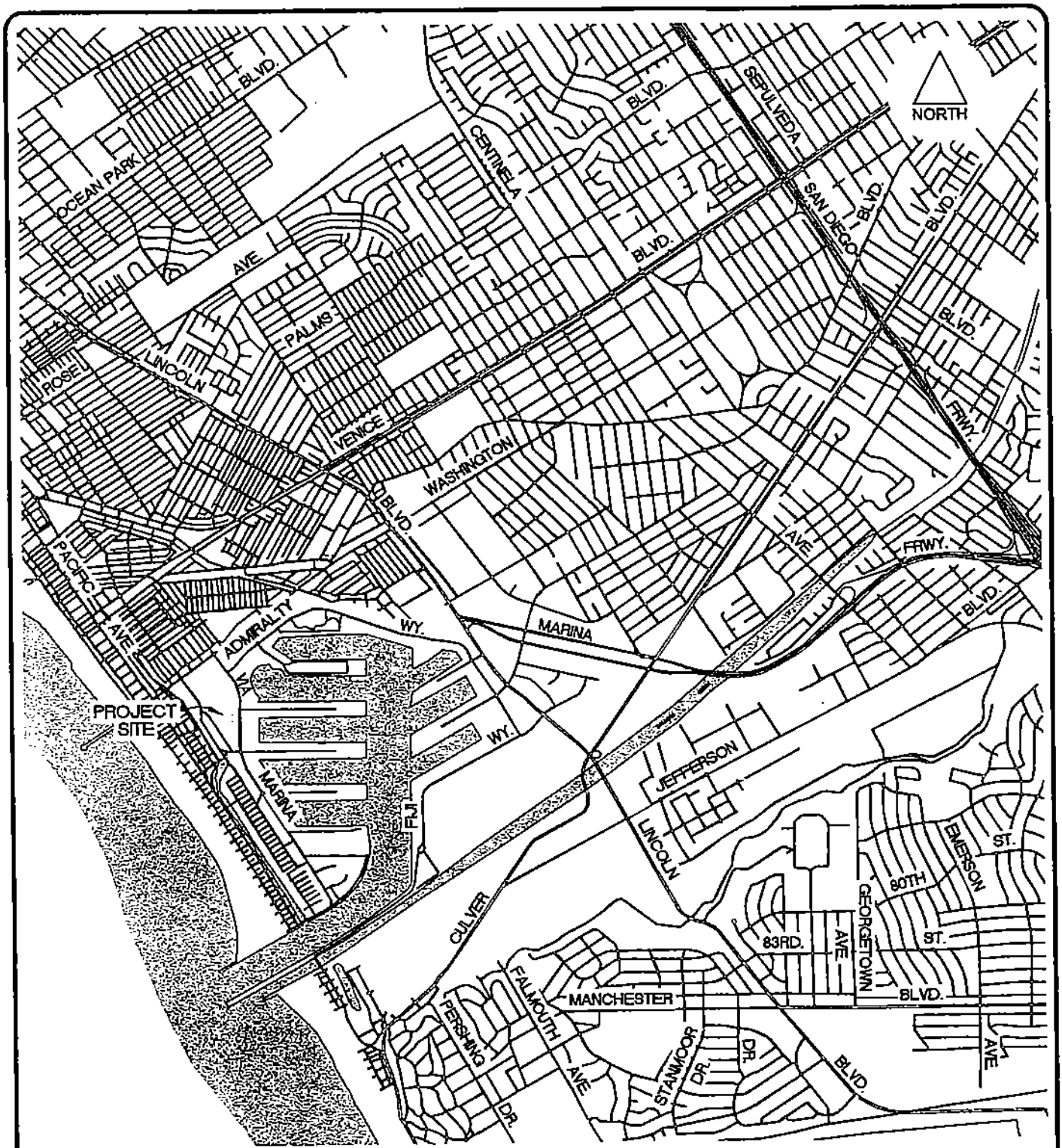

FIGURE 1

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SITE VICINITY MAP

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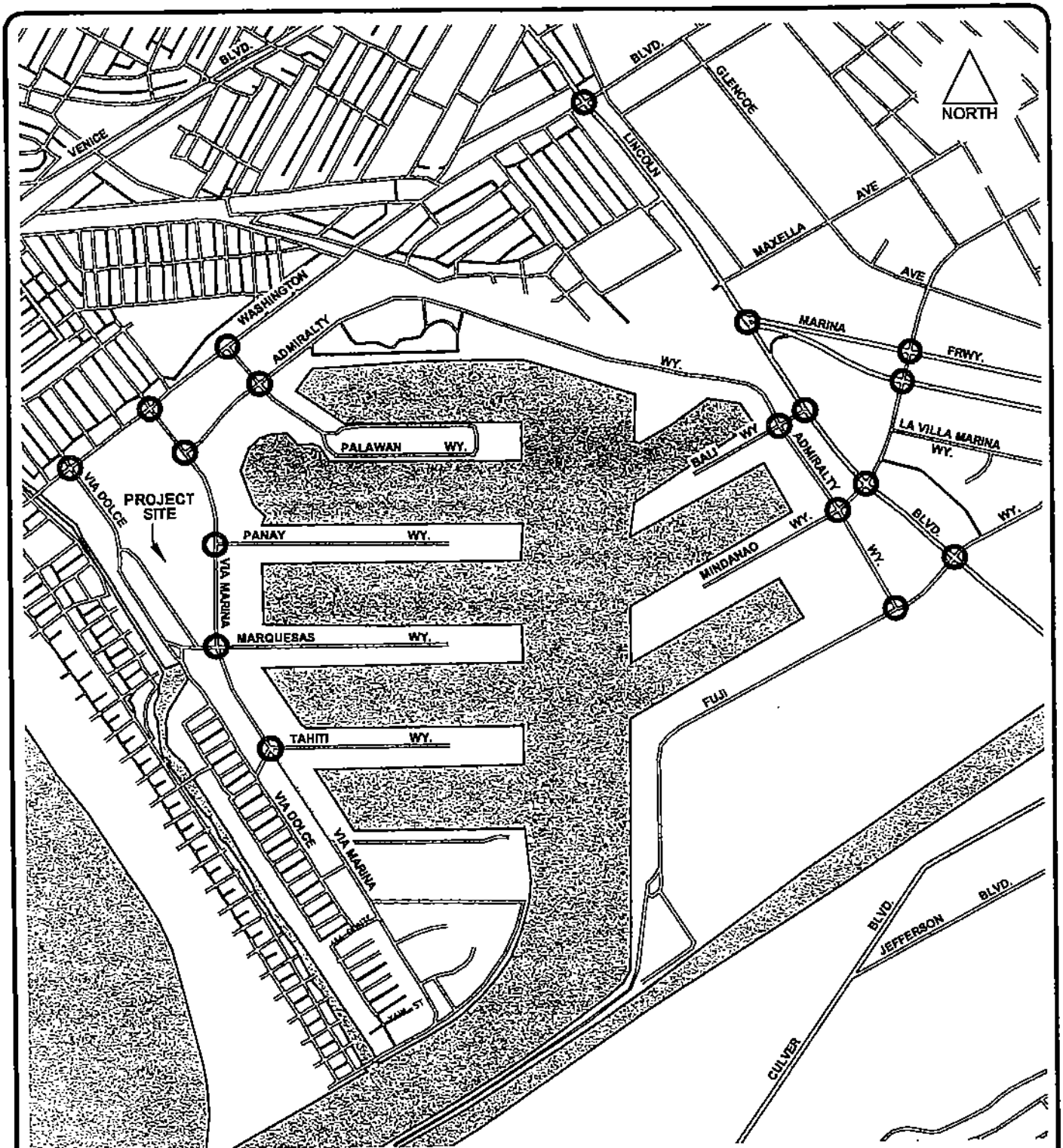

FIGURE 2

STUDY INTERSECTION LOCATION MAP

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11. Lincoln Boulevard/Bali Way
12. Lincoln Boulevard/Mindanao Way
13. Lincoln Boulevard/Fiji Way
14. Admiralty Way/Bali Way
15. Admiralty Way/Mindanao Way
16. Admiralty Way/Fiji Way
17. Marina Expressway (SR 90) Westbound/Mindanao Way
18. Marina Expressway (SR 90) Eastbound/Mindanao Way

The intersections are located within the area surrounding the project site, and were selected for detailed analyses as they are expected to be those locations most directly impacted by the proposed project's traffic generation. The selected locations include intersections under the jurisdiction of both the County and City of Los Angeles. These specific intersections were selected for detailed analyses as they are expected to be those locations most directly impacted by the project's traffic.

PROJECT DESCRIPTION

The project under consideration is the development of a total of approximately 544 new apartment units on the west side of Marina del Rey in the County of Los Angeles. The residential apartment units will be developed on a triangular-shaped site including both Parcels 100 and 101, and bounded by Via Marina on the east, Dell Avenue on the West, Marquesas Way on the south and Admiralty Loop on the north. The project will provide a total of approximately 1,114 parking spaces on site, which will be adequate to meet the parking requirements for the site. Access to the parking facilities will be provided from a single driveway along Via Marina just south of Marqueses Way, from Marquesas Way via multiple driveways along Admiralty Loop (the westerly private road extension of Marquesas Way across Via Marina), and from Dell Avenue. The driveway on Via Marina will provide right-turn-only ingress and egress access; all other driveways will provide full left and right-turn access. The project site layout is shown in Figure 3.

The project site is currently developed with an existing apartment complex containing a total of 202 units. Parcel 100 contains a total of 76 residential apartment units within the Del Rey Shores South apartment development, while Parcel 101 consists of the remaining 126 residential apartment units called Del Rey Shores North. Parcels 100 and 101 are approximately 3.18 and 5.13 acres, respectively, or a total of approximately 8.31 acres. The existing apartment units from both the Del Ray Shores North and South complexes will be removed in order to construct the proposed project.

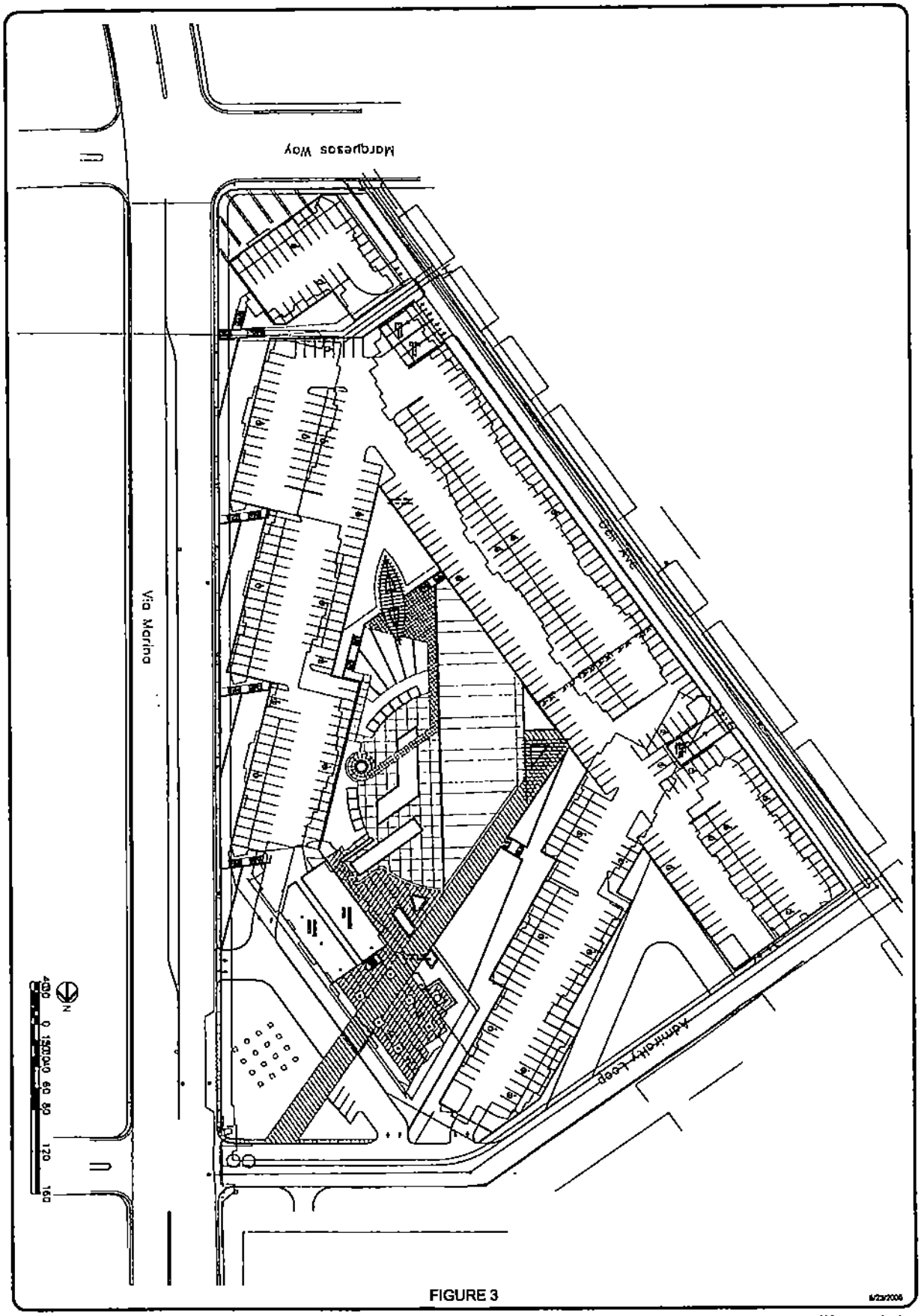

FIGURE 3

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FN DEL REY SHORES MDRFPLN-P1_V2

CONCEPTUAL PROJECT SITE PLAN

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ENVIRONMENTAL SETTING

The proposed project is located in Marina del Rey, in the County of Los Angeles. The site is served by the regional facilities of Lincoln Boulevard, the Marina Freeway/Expressway and the San Diego Freeway. The San Diego Freeway (Interstate Route 405) has a complete interchange at the Marina Expressway, approximately four miles east of the site. The Marina Freeway/Expressway (State Route 90) provides study area surface street access at Culver Boulevard, Mindanao Way, and at its western terminus at Lincoln Boulevard.

Most of the area surrounding the project site has been developed, with the exception of the Ballona Creek Wetlands, south of Culver Boulevard in Playa del Rey and Westchester, although some of this area has been approved for development. Surrounding areas to the north and east have been developed as single- and multi-family residential communities. The closest commercial areas that would serve the project site are situated along nearby Washington Boulevard, throughout Marina del Rey along and off of Admiralty Way, and along the Lincoln Boulevard corridor to the east.

Freeways

The San Diego Freeway (Interstate 405) is the most important traffic facility in the area. This freeway traverses north-south through the Greater Los Angeles metropolitan area, and provides convenient project access, via the regional freeway system, to all other areas of the Los Angeles region. This route is also an important link to the other parts of California. The San Diego Freeway, in this vicinity, is a nine- or ten-lane facility, depending on the segment, and currently carries in excess of 298,000 vehicles per day (VPD). The San Diego Freeway provides a full interchange with the western portion of the Marina Freeway/Expressway. Northbound-to-eastbound, and westbound-to-southbound movements are not allowed at this interchange.

The Marina Freeway/Expressway (State Route 90) is a short regional facility serving a roughly east-west alignment between Slauson Avenue (east of Sepulveda Boulevard) and Lincoln Boulevard. The elevated freeway sections of this facility, between Culver Boulevard on the west and the Slauson Avenue terminus on the east, provides a three-lane per direction configuration, with additional lanes provided at the interchange with the San Diego Freeway. Surface street access ramps are provided only from Sepulveda Boulevard (to the eastbound Marina Freeway), and at Centinela Avenue (full ramp set). This portion of the Marina Freeway carries more than 75,000 VPD.

The at-grade expressway portion of the facility, between Culver Boulevard and Lincoln Boulevard, exhibits a two-lane per direction configuration, with localized flarings at intersections to accommodate additional left and/or right-turn lanes. The Expressway is a divided roadway, with no crossover traffic permitted except from the cross street intersections with Culver Boulevard and Mindanao Way.

Streets and Highways

Important highway facilities in the area near the proposed project are Washington Boulevard, Lincoln Boulevard, and Admiralty Way. Both Washington Boulevard and Lincoln Boulevard have been designated as Major Highways on the General Plan for the City of Los Angeles. Admiralty Way traverses along the northern and eastern edges of Marina del Rey between Via Marina, just to the north of the project site, and Fiji Way near Lincoln Boulevard. Admiralty Way is a collector facility and provides the project's most direct access to/from the Marina Freeway/Expressway (via Mindanao Way), and other regional travel facilities.

Washington Boulevard is an east-west Major Highway located to the north of the project site. In the project vicinity, Washington Boulevard is approximately 80 feet wide, and provides two through lanes in each direction, plus full left-turn channelization at most cross streets. On-street parking is allowed along most portions of Washington Boulevard.

Admiralty Way is also a four-lane collector facility, serving as a "frontage road" around the north and east portions of the Marina, between Via Marina on the west and Fiji Way on the southeast. Admiralty Way provides two lanes per direction plus left-turn channelization at key intersections. A raised center median exists through the length of Admiralty Way. Admiralty Way "tees" at both ends, into Fiji Way on the south and into Via Marina to the west.

Via Marina is generally a north-south facility that serves the western portion of Marina del Rey. This roadway also forms the eastern boundary of the project site and serves as the main access roadway for the project. Via Marina extends from Washington Boulevard (where it aligns with Ocean Avenue) for about a mile and then bends to the west where it terminates at Pacific Avenue. Via Marina provides two to three through lanes in each direction plus left-turn channelization at key intersections.

Lincoln Boulevard is developed to a typical width of 80 feet in the study area, although south of the Culver Boulevard overpass, Lincoln Boulevard widens to provide three through lanes in each direction plus a raised median island. In the project area, this facility is striped to provide a six-lane roadway with left-turn channelization (designated or permissive left-turn lanes) at most intersections. A raised median island exists on Lincoln Boulevard from Fiji Way north to the Marina Expressway intersection. On-street parking is prohibited on this portion of Lincoln Boulevard at all times, but is allowed on a time-restricted basis on both sides of the street north of Maxella Avenue.

Tahiti Way is a short two-lane local street that provides access to the Marina del Rey "Basin A" and "Basin B" areas. Tahiti Way access west of Via Marina is restricted to westbound (entry only) traffic.

Marquesas Way is designated a local street. This two-lane facility is located opposite Via Dolce at Via Marina, and provides access to the "Basin B" and "Basin C" areas.

Panay Way is designated a local street and provides access to the Marina del Rey "Basin C" and "Basin D" areas. This facility provides one lane in each direction.

Palawan Way is designated a local street. This facility provides two lanes per direction on the segment between Admiralty Way and Washington Boulevard, separated by a raised median island. However, at the "tee" intersection with Washington Boulevard, northbound Palawan Way narrows to provide a right-turn lane only. This intersection is unsignalized, and is controlled by a STOP sign on the Palawan Way approach. Conversely, at the Admiralty Way signalized intersection, Palawan Way provides three lanes, including a left-turn only lane, a through lane, and a right-turn only lane. South of Admiralty Way, Palawan Way provides access to restaurant and commercial uses.

Bali Way is a short local street providing access from Lincoln Boulevard and Admiralty Way to the Marina del Rey "Basin F" and "Basin G" areas. Bali Way provides only a single lane in each direction.

Mindanao Way is a Secondary Highway providing two lanes in each direction, although some sections are widened to permit additional traffic lanes and/or turn-lane channelization, particularly at the Marina Expressway and Lincoln Boulevard intersections. At Lincoln Boulevard, Mindanao Way provides dual left-turn channelization. East of Alla Road, Mindanao Way changes names to become Short Avenue, which terminates at Centinela Avenue approximately 2/3 of a mile east of Alla Road. West of Lincoln Boulevard, Mindanao Way crosses Admiralty Way to provide access to Burton Chase Park and the Marina del Rey "Basin G" berths. Mindanao Way also provides the closest surface street link to the Marina Freeway in the project area.

Fiji Way is designated a local street. This facility provides one lane per direction plus on-street parking from east of Lincoln Boulevard to the eastern terminus at La Villa Marina. West of Lincoln Boulevard, Fiji Way typically provides two lanes per direction, and serves as access to the "Fisherman's Village" portion of Marina del Rey, as well as

to residential development and the U.S. Coast Guard Harbor Patrol station near the Ballona Creek "point". On-street parking is prohibited west of Lincoln Boulevard.

All of the study intersections are traffic signal-controlled, with the exception of Washington Boulevard and Palawan Way, which is a "tee" intersection, STOP sign controlled along Palawan Way. Additionally, all of the signalized intersections are upgraded with the City of Los Angeles' Automated Traffic Surveillance and Control (ATSAC) and second generation Adaptive Traffic Control System (ATCS) traffic signal coordination systems. These signal coordination systems monitor and evaluate traffic demands throughout the study area in real time, and adjust the traffic signal timings and phasings accordingly to maximize traffic capacity.

Existing Traffic Volumes

Traffic volume count data were obtained from recent counts conducted by independent traffic data collection companies for Crani & Associates. Additionally, San Diego Freeway and Marina Freeway/Expressway count data were obtained from the California Department of Transportation (Caltrans) publication. Existing AM and PM peak hour traffic volumes at the study intersections are shown on Figures 4(a) and 4(b), respectively, and are summarized for the key area roadways on the following pages.

The Marina Freeway/Expressway, east of Mindanao Way, carries approximately 52,000 vehicles per day (VPD). Peak hour directional traffic volumes in this area are approximately 1,400 vehicles per hour (VPH) northbound and 1,900 VPH southbound during the AM peak hour, and about 1,400 VPH northbound and 2,000 VPH southbound in the PM peak hour.

Washington Boulevard, near Lincoln Boulevard, accommodates nearly 60,000 VPD. Peak hour directional traffic volumes in this area are approximately 1,350 VPH eastbound and 1,150 VPH westbound in the morning peak hour, and 1,450 VPH eastbound and 1,350 VPH westbound in the afternoon peak hour.

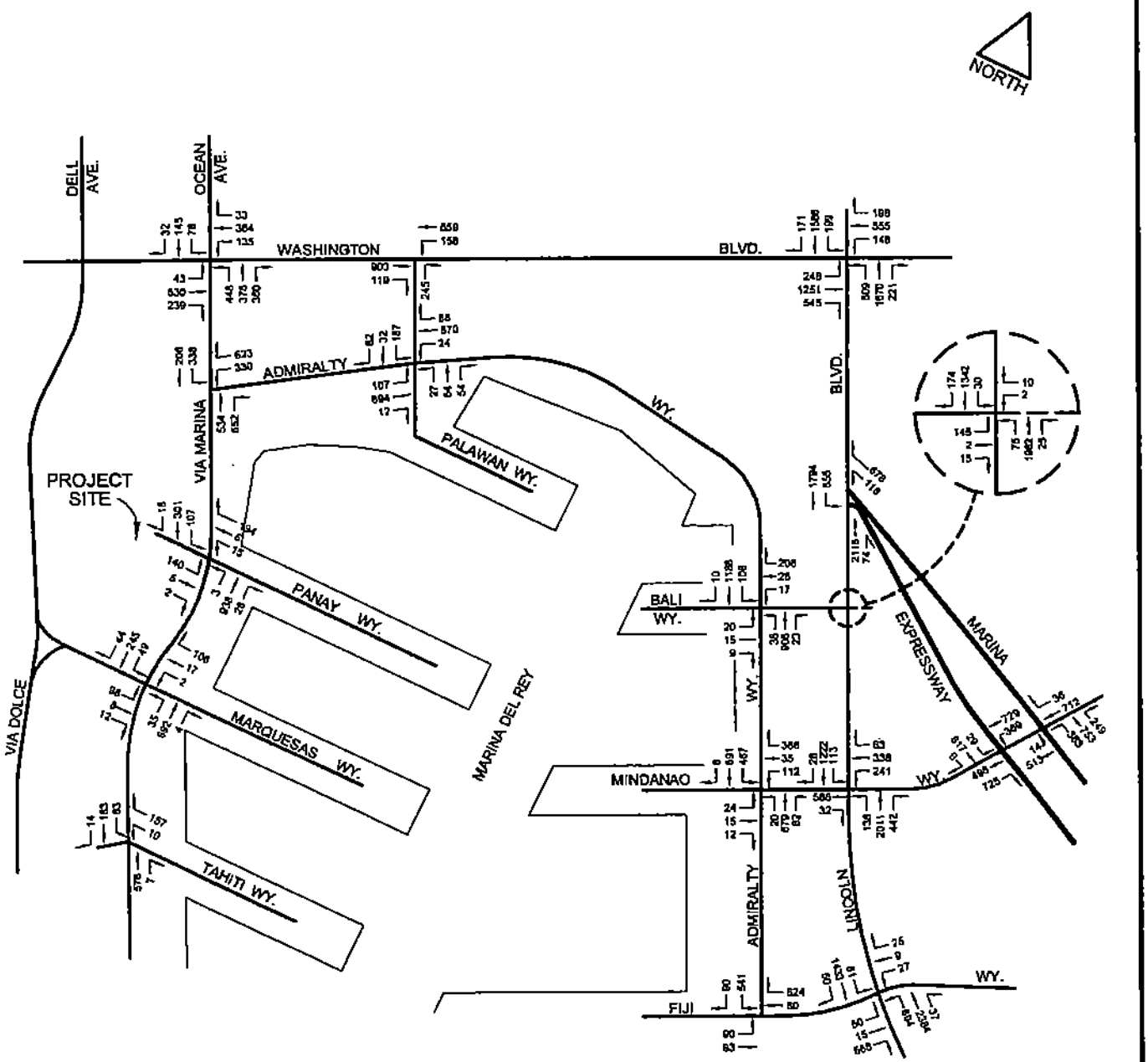

FIGURE 4(a)

EXISTING (2005) TRAFFIC VOLUMES
AM PEAK HOUR

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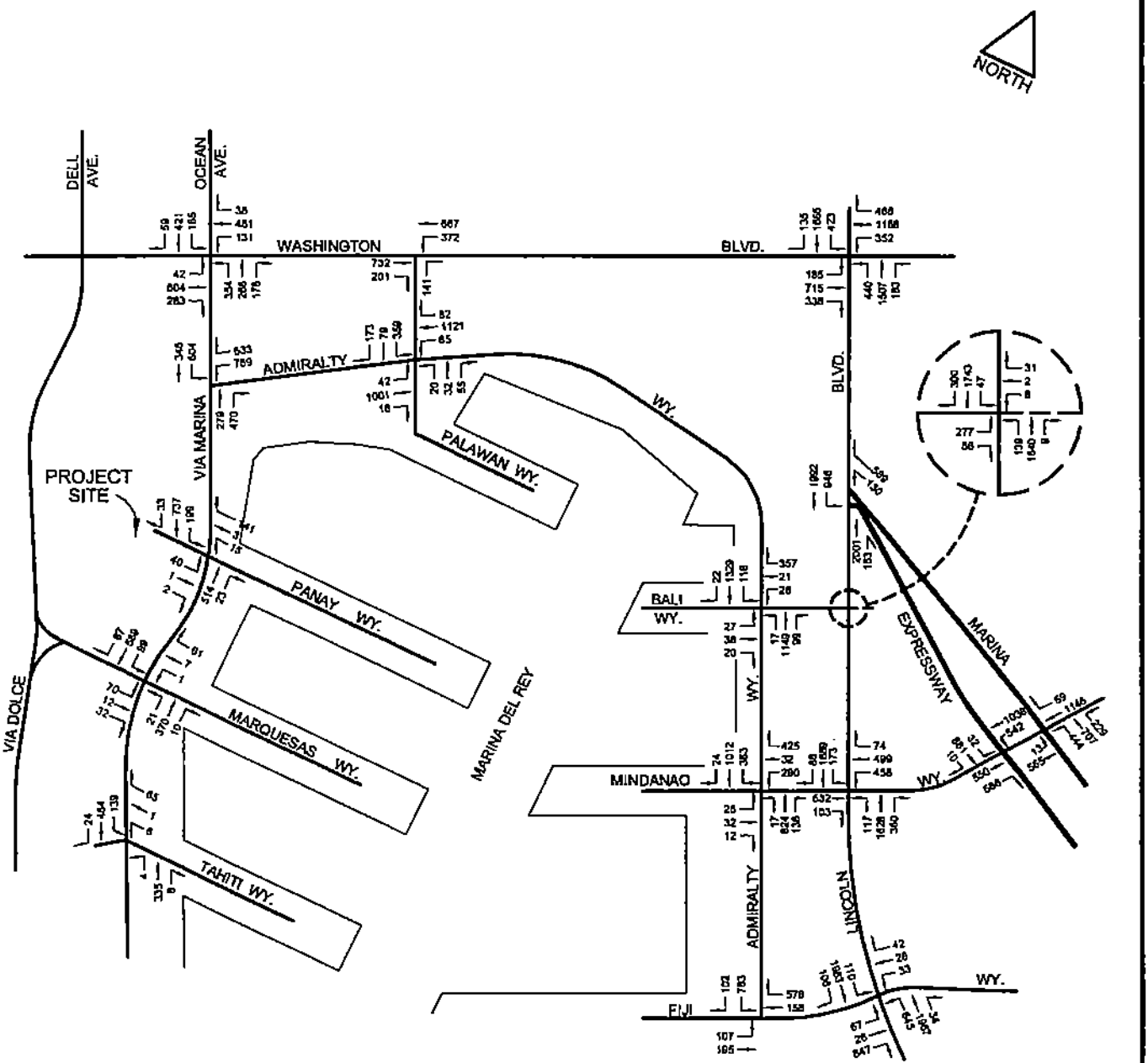

FIGURE 4(b)

EXISTING (2005) TRAFFIC VOLUMES
PM PEAK HOUR

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Admiralty Way near Via Marina exhibits daily traffic of approximately 18,000 VPD, including peak hour traffic of 1,300 VPH southbound and 1,150 VPH northbound in the morning peak hour, and 1,500 VPH northbound and 1,450 VPH southbound in the afternoon peak hour.

Lincoln Boulevard is one of the most heavily traveled highways in the area, carrying approximately 35,000 VPD. Directional peak hour traffic volumes on Lincoln Boulevard south of the Marina Freeway are approximately 2,600 VPH northbound and 1,500 VPH southbound during the AM peak hour, and approximately 2,200 VPH southbound and 2,100 VPH northbound in the PM peak hour.

Via Marina, south of Admiralty Way, currently carries about 14,000 VPD, including approximately 1,200 VPH northbound and 550 VPH southbound during the morning peak hour and approximately 750 VPH northbound and 1,100 VPH southbound during the afternoon peak hour.

Tahiti Way currently accommodates about 2,000 VPD just east of Via Marina, including directional peak hour volumes of about 170 VPH westbound and 70 VPH eastbound during the morning peak hour and approximately 150 VPH eastbound and 70 VPH westbound during the evening peak hour.

Marquesas Way carries approximately 1,000 VPD. Directional peak hour traffic volumes are approximately 130 VPH westbound and 60 VPH eastbound during the morning peak hour and approximately 70 VPH westbound and 120 VPH eastbound during the afternoon peak hour.

Panay Way carries about 3,000 VPD, including peak hour volumes of approximately 200 VPH westbound and 140 VPH eastbound during the AM peak hour and approximately 200 VPH eastbound and 160 VPH westbound during the PM peak hour.

Palawan Way, between Washington Boulevard and Admiralty Way, handles about 5,000 VPD. Directional peak hour traffic volumes are approximately 250 VPH northbound and 300 VPH southbound during the morning peak hour and approximately 150 VPH northbound and 550 VPH southbound during the afternoon peak hour.

Bali Way is traveled by an estimated 4,000 VPD, with peak hour directional volumes of 250 VPH westbound and 150 VPH eastbound in the AM, and 400 VPH westbound and 250 VPH eastbound in the PM.

Mindanao Way, between Lincoln Boulevard and the Marina Expressway, exhibits daily traffic of nearly 16,000 VPD, including approximately 1,200 VPH eastbound and 700 VPH westbound during the AM peak hour and approximately 1,050 VPH westbound and 1,100 VPH eastbound during the PM peak hour.

Fiji Way, west of Lincoln Boulevard, carries about 12,000 VPD, with directional peak hour volumes of over 750 VPH westbound and 650 VPH eastbound during the morning peak hour and approximately 950 VPH eastbound and 750 VPH westbound during the evening peak hour.

Public Transit

The Los Angeles County Metropolitan Transportation Authority (MTA) has established an extensive grid system of bus routes throughout the Los Angeles region, including the project vicinity, and adjacent jurisdictions such as the City of Los Angeles and the City of Culver City also provide transit service through the Marina del Rey study area. Although the site itself is not particularly well served by transit routes due to its location interior to a primarily residential area, several bus routes pass by within convenient walking distance of the project site on both Washington Boulevard and Admiralty Way. These bus routes, which provide the closest routes serving the project site, are described in the following section.

MTA Line 108 – This bus line provides service between Marina del Rey the Pico Rivera community. In the study area, Line 108 operates on a loop route through the Marina, then travels primarily along Mindanao Way/Short Avenue, Centinela Avenue, Jefferson Boulevard, and Slauson Avenue between the Marina and Pico Rivera. Line 108 also serves Fox Hills Mall and the adjacent office developments east of Sepulveda Boulevard, providing a link between the proposed project and these potential shopping and employment locations. Buses operate on this line on weekdays with headways of approximately 30 to 45 minutes. Weekend and holiday service is also provided on a limited schedule. Headways on the weekend and holidays are approximately 60 minutes throughout the day.

Commuter Express 437 – This line, a service of the City of Los Angeles Department of Transportation, provides service between Marina del Rey downtown Los Angeles. In the project vicinity, Line 437 provides several stops along Via Marina, including at Marquesas Way near the project site. In the project area, this line travels along Pacific Avenue, Via Marina and Admiralty Way, continuing on Mindanao Way and Alla Road to Culver Boulevard through Culver City. Line 437 travels eastbound to downtown Los Angeles during the morning peak period and westbound from downtown Los Angeles during the afternoon peak periods. Headways for this bus route near the project site are generally about 15 to 30 minutes.

Culver City Line 1 – This bus line runs between the Venice community on the west and the West Los Angeles Transit Center at Fairfax Avenue on the east. Line 1 travels south from Windward Avenue along Pacific Avenue to Washington Boulevard, turning east and continuing along Washington Boulevard through Mar Vista and Culver City to the West Los Angeles Transit Center. In the project vicinity, this line provides a stop along Washington Boulevard at Via Marina. Line 1 buses operate on weekdays, with limited weekend and holiday service. Weekday headways at the Washington Boulevard/Via Marina stop are approximately every 15 to 30 minutes throughout the day.

In addition to these key transit routes, which serve the immediate project vicinity, many more bus routes are available via transfers to other routes or transit providers. When these transfer opportunities are considered, all areas within the Los Angeles region are accessible via public transit. Thus, it is possible that some of the trips generated by the proposed project could choose to utilize public transit. However, project trip generation documented in this study represents a "more than typical" case, since none of the future project trips were assigned to public transit.

Analysis of Existing Traffic Conditions

An analysis of current traffic conditions was conducted on the streets and highways serving the project area. Detailed traffic analyses of existing conditions were performed at the 18 intersections noted previously in this report. The traffic analysis was performed through the use of established traffic engineering techniques. Recent traffic information was obtained from counts of the study intersections, although where necessary, supplemental traffic data were obtained from County of Los Angeles Department of Public Works or City of Los Angeles Department of Transportation (LADOT). Information pertaining to intersection geometrics, parking restrictions, and signal operations were obtained through recent field surveys of the study locations so as to reflect any recent changes in traffic demand patterns.

The methodology used in this study for the analysis and evaluation of traffic operations at each study intersection is based on procedures outlined in Circular Number 212 of the Transportation Research Board.[1] In the discussion of Critical Movement Analysis for signalized intersections, procedures have been developed for determining operating characteristics of an intersection in terms of the "Level of Service" provided for different levels of traffic volume and other variables, such as the number of signal phases. The

[1] Interim Materials on Highway Capacity, Circular Number 212, Transportation Research Board, Washington, D.C., 1980.

term "Level of Service" describes the quality of traffic flow. Levels of Service A to C operate quite well. Level D typically is the level for which a metropolitan area street system is designed. Level E represents volumes at or near the capacity of the highway which might result in stoppages of momentary duration and fairly unstable flow. Level F occurs when a facility is overloaded and is characterized by stop-and-go traffic with stoppages of long duration.

A determination of the Level of Service at an intersection, where traffic volumes are known or have been projected, can be obtained through a summation of the critical movement volumes at that intersection. Once the sum of critical movement volumes has been obtained, the values indicated in Table 1 can be used to determine the applicable Level of Service.

Table 1
Critical Movement Volume Ranges*
For Determining Levels of Service

Level of Service	Maximum Sum of Critical Volumes (VPH) Two Phase	Three Phase	Four or More Phases
A	900	855	825
B	1,050	1,000	965
C	1,200	1,140	1,100
D	1,350	1,275	1,225
E	1,500	1,425	1,375
F	----------Not Applicable----------		

* For planning applications only, i.e., not appropriate for operations and design applications.

"Capacity" represents the maximum total hourly vehicle volume movement in the critical lanes which has a reasonable expectation of passing through an intersection under prevailing roadway and traffic conditions. For planning purposes, capacity equates to the maximum value of Level of Service E, as indicated in Table 1. The Critical

Movement Analysis (CMA) indices used in this study were calculated by dividing the sum of critical movement volumes by the appropriate capacity value for the type of signal control present or proposed at the study intersections. Thus, the Level of Service corresponding to a range of CMA values is shown in Table 2.

Table 2
Level of Service
As a Function of CMA Values

Level of Service	Description of Operating Characteristics	Range of CMA Values
A	Uncongested operations; all vehicles clear in a single cycle.	≤ 0.60
B	Same as above.	>0.60, ≤ 0.70
C	Light congestion; occasional backups on critical approaches.	>0.70, ≤ 0.80
D	Congestion on critical approaches, but intersection functional. Vehicles required to wait through more than one cycle during short peaks. No long-standing lines formed.	>0.80, ≤ 0.90
E	Severe congestion with some long-standing lines on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements.	>0.90, ≤ 1.00
F	Forced flow with stoppages of long duration.	> 1.00

By applying this analysis procedure to the study intersections, the Critical Movement Analysis (CMA) value and the corresponding Levels of Service (LOS) for existing traffic conditions were calculated. Those values, for existing (2005) AM and PM peak hour conditions, are summarized in Table 3. As shown in Table 3, most intersections in the study area are operating at acceptable levels of service, although several key locations, particularly along Lincoln Boulevard and at Washington Boulevard and Mindanao Way, exhibit conditions at or near capacity, creating "bottlenecks" to smooth traffic flow along these important transportation corridors.

Table 3
Critical Movement Analysis Summary
Existing (2005) Conditions

No.	Intersection	AM Peak Hour CMA	AM Peak Hour LOS	PM Peak Hour CMA	PM Peak Hour LOS
1.	Washington Blvd. & Dell Ave./Via Dolce	0.391	A	0.368	A
2.	Via Marina & Tahiti Wy.	0.256	A	0.172	A
3.	Via Marina & Marquesas Wy.	0.247	A	0.201	A
4.	Via Marina & Panay Wy.	0.378	A	0.245	A
5.	Admiralty Wy. & Via Marina	0.544	A	0.715	C
6.	Washington Blvd. & Ocean Ave./Via Marina	0.604	A	0.727	C
7.	Admiralty Wy. & Palawan Wy.	0.463	A	0.605	B
8.	Washington Blvd. & Palawan Wy.	0.647	B	0.615	B
9.	Lincoln Blvd. & Washington Blvd.	1.044	F	1.011	F
10.	Lincoln Blvd. & Marina Expwy. (SR-90)	0.788	C	0.821	D
11.	Lincoln Blvd. & Bali Wy.	0.471	A	0.625	B
12.	Lincoln Blvd. & Mindanao Wy.	0.899	D	0.923	E
13.	Lincoln Blvd. & Fiji Wy.	0.579	A	0.720	C
14.	Admiralty Wy. & Bali Wy.	0.405	A	0.531	A
15.	Admiralty Wy. & Mindanao Wy.	0.599	A	0.693	B
16.	Admiralty Wy. & Fiji Wy.	0.250	A	0.371	A
17.	Marina Expwy. (SR 90) WB & Mindanao Wy.	0.438	A	0.601	B
18.	Marina Expwy. (SR 90) EB & Mindanao Wy.	0.734	C	0.854	D

PROJECT TRAFFIC

The following section describes the methodology used and results of the calculations for traffic generation, distribution and assignment for the project.

Traffic Generation

Vehicle trip generation rates for various types of developments within the Marina are specified in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program which is in effect for the project site. This document provides the PM peak hour trip rates for the proposed project's residential (apartment) and boat slip components. The TIP does not specify daily or AM peak hour trip generation rates for any of the proposed uses. However, the traffic study upon which the TIP PM peak hour rates were derived does identify AM peak hour rates[2]. As these rates are consistent with the trip generation methodology utilized for the PM peak hour, the AM rates from the traffic study were also used. Daily trip rates were derived from the current edition of Trip Generation, published by the Institute of Transportation Engineers (ITE)[3]. This document is the current industry standard for trip generation data. Daily trip generation factors for the proposed project uses were calculated based on the ratio of peak hour-to-daily rates for the ITE data, applied to the peak hour TIP rates. The trip rates used in the traffic analysis for the proposed project are listed in Table 4.

Applying the trip generation rates shown in Table 4, the traffic expected to be generated by the project was calculated, and is summarized in Table 5. As shown in Table 5, the project is expected to generate approximately 1,354 net new trips per day, with about

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[2] Table 2-11, Marina del Rey Traffic Study Final Report, DKS Associates in Association with Gruen Associates, January 17, 1991.

[3] Trip Generation, 6th Edition, Institute of Transportation Engineers, Washington, D.C., 1997.

Table 4
Project Trip Generation Rates

Apartments - per dwelling unit

Daily:	T = 3.960(U)
AM Peak Hour:	T = 0.349(U); I/B = 18%, O/B = 82%
PM Peak Hour:	T = 0.326(U); I/B = 68%, O/B = 32%

Where:

T = Trip Ends	I/B = Inbound Trip Percent
U = Dwelling Unit	O/B = Outbound Trip Percent

Table 5
Project Trip Generation

		AM Peak Hour		PM Peak Hour	
Proposed Parcels 100 and 101 Land Uses	**Daily**	**In**	**Out**	**In**	**Out**
544 Apartment Units	2,154	34	156	120	57
Existing Land Uses To Be Removed					
202 Apartment Units	(800)	(13)	(57)	(45)	(21)
Net New Trips (Parcel 100 & 101)	***1,354***	***21***	***99***	***75***	***36***
		120		***111***	

120 trips occurring during the morning peak hour, and 111 trips occurring during the evening peak hour. This amount of new trips will be added to the project area roadway network once the existing development on the site is demolished and the proposed project is completed and fully occupied.

Trip Distribution

Determination of the geographic distribution of generated trips was the next step in the process. A primary factor affecting trip distribution is the relative distribution of employment, educational, and retail centers which would be used by the residents of the project. Another key factor is the availability of roadway access to and from the site. Data from the Los Angeles Regional Transportation Study (LARTS) forecasts, as well

as information presented in the current Los Angeles County Congestion Management Plan (CMP), were analyzed in order to estimate regional traffic distribution. Lastly, actual vehicle turning movements in and around the project vicinity were observed, and general geographic trip distribution characteristics were developed. The percentage split of trips, by direction, is shown in Table 6.

Table 6
Directional Trip Distribution

Direction	Percentage of Trips
North	25%
East	35%
South	35%
West	5%
Total:	100%

Traffic Assignment

The general geographic trip distribution percentages shown in Table 6 were then assigned to specific travel routes in the study area. The assignment percentages at the 18 study intersections are shown in Figure 5. These distribution percentages are assumed to be the same during both the AM and PM peak hours. Using the directional distribution percentages shown in Figure 5, the number of net project trips along each roadway was calculated. These "roadway" trips were then assigned to specific routes serving the project. The results of this traffic assignment provide the necessary level of detail to conduct the traffic analysis. The traffic assignments for the AM and PM peak hour project traffic on the nearby street system are shown in Figures 6(a) and 6(b), Net Project Traffic.

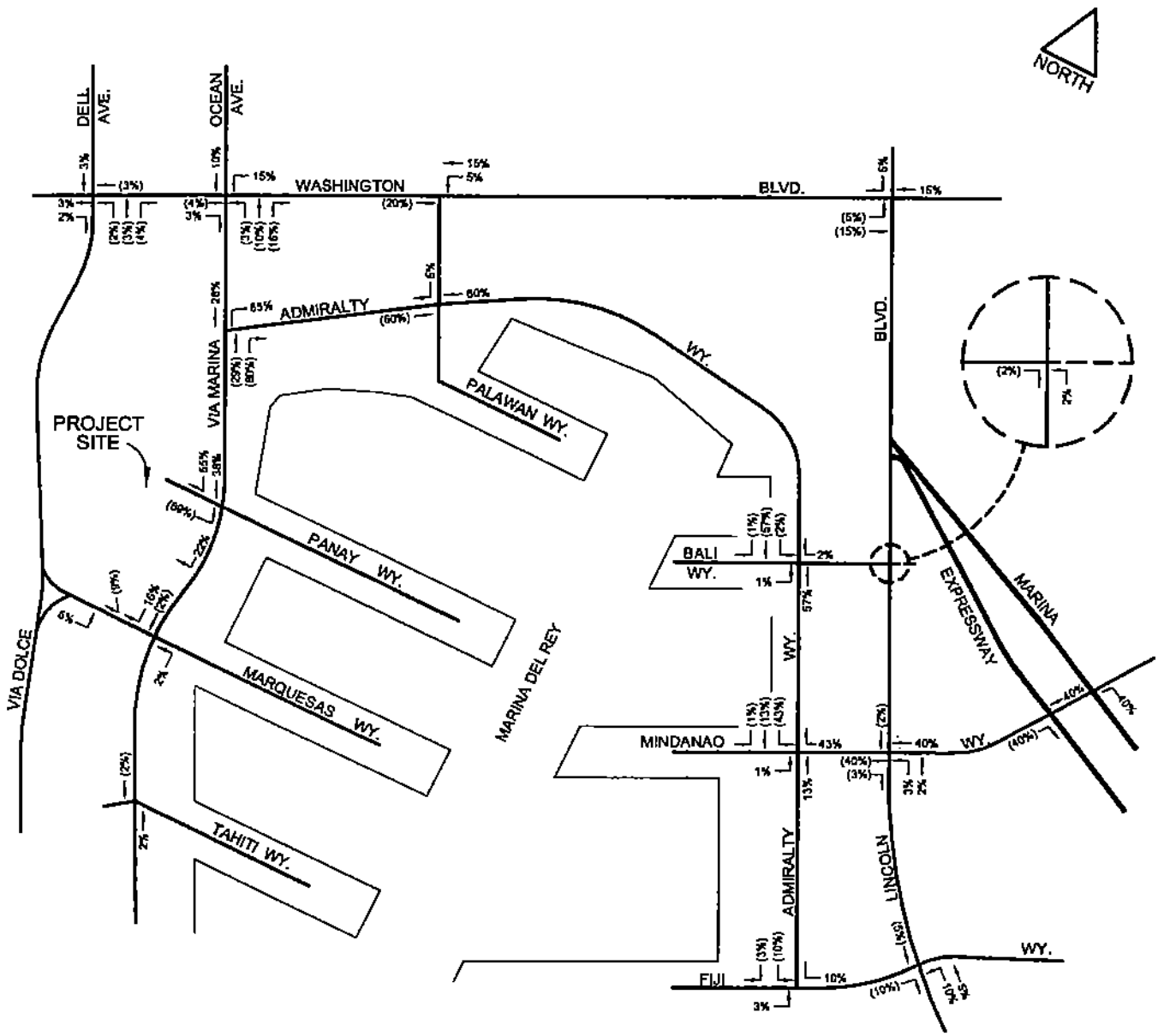

FIGURE 5

DEL REY SHORES MDR/PROJ-DIST

PROJECT PERCENT DISTRIBUTION

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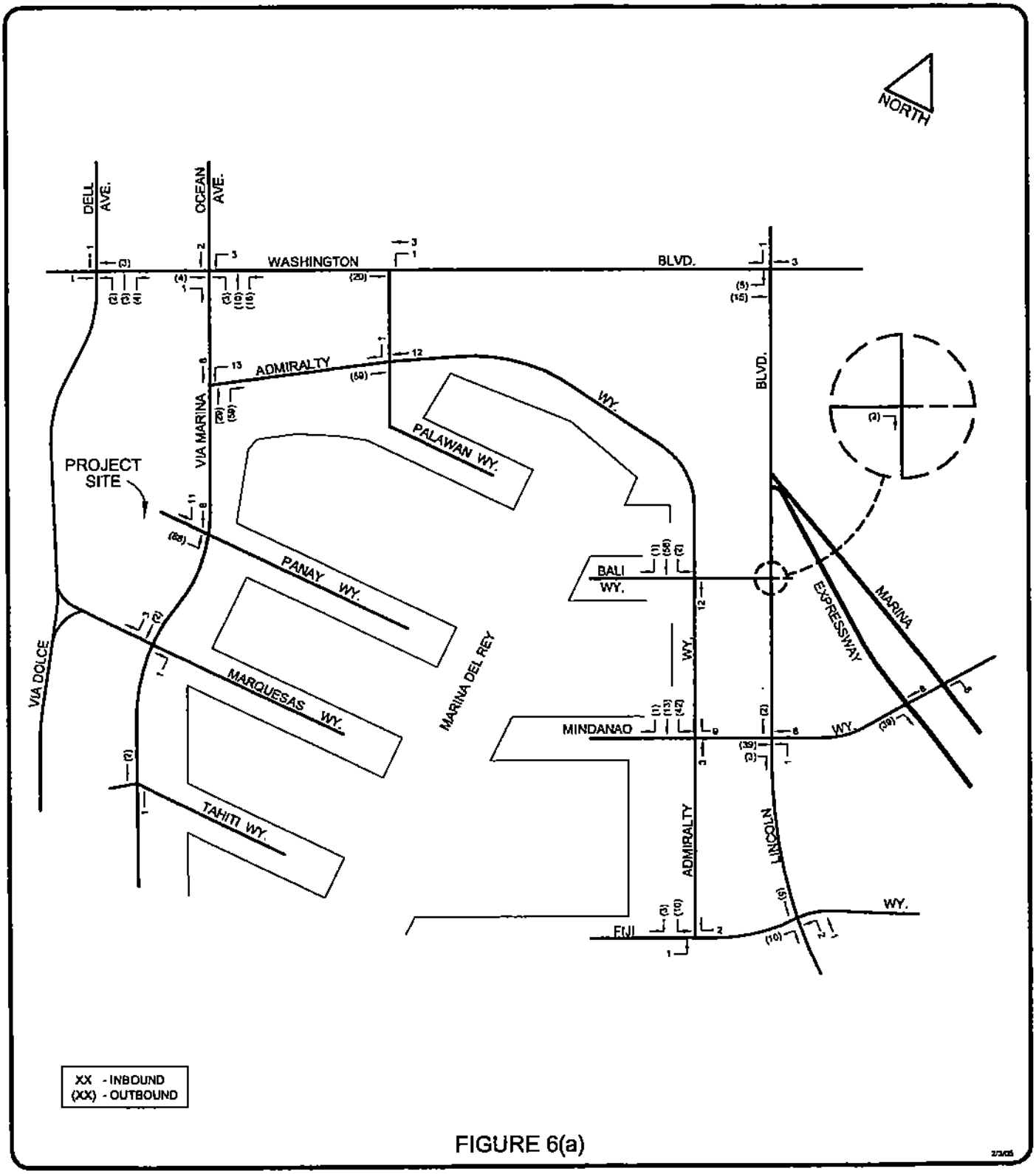

FIGURE 6(a)

FN: DEL REY 6\HDR\6 MDRAMNETPRJ

NET PROJECT TRAFFIC VOLUMES
AM PEAK HOUR

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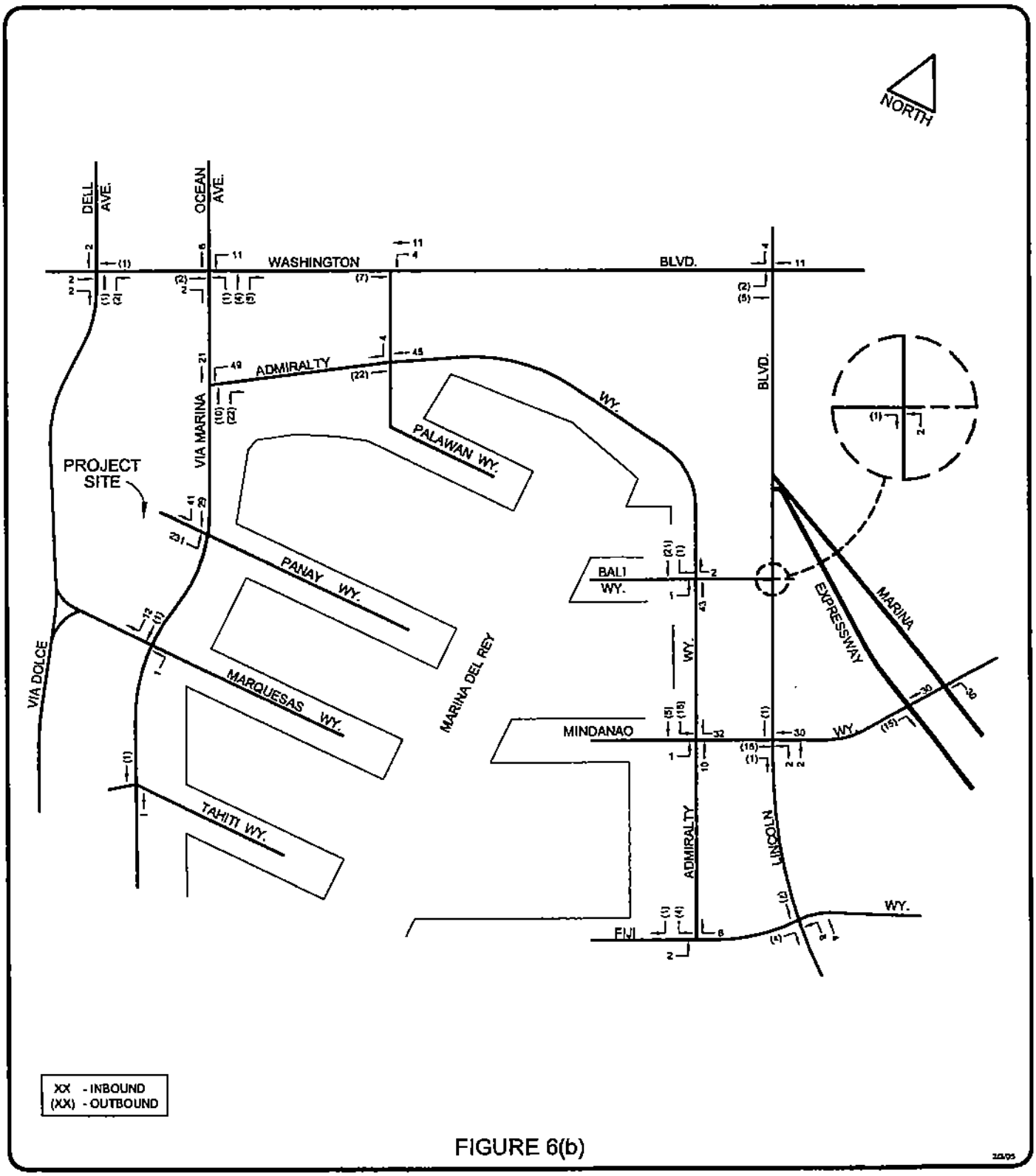

FIGURE 6(b)

NET PROJECT TRAFFIC VOLUMES
PM PEAK HOUR

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Project Access

Access to the parking facilities will be provided from a single driveway along Via Marina just south of Marqueses Way, from Marquesas Way via multiple driveways along Admiralty Loop (the westerly private road extension of Marquesas Way across Via Marina), and from Dell Avenue. The driveway on Via Marina will provide right-turn-only ingress and egress access; all other driveways will provide full left and right-turn access.

Project Parking

As described in the previous section, the project will provide a total of approximately 1,114 on-site parking spaces. The amount of parking required for the project site is summarized in Table 7. As shown in Table 7, the proposed residential development will require a total of 1,087 parking spaces for the residents and guests of the 544 apartments. The project will provide a minimum of 1,114 spaces on site, or a surplus of 27 spaces above the number of parking spaces required. Since the project meets its parking requirements, no parking spillover onto area streets or into the nearby neighborhoods is anticipated, and no parking-related impacts are expected as a result of this project.

Table 7
Parking Requirement Summary for
Del Rey Shores Residential Project

Site	Type of Unit	Number/Size of Units	Spaces Per Unit	Total
Parcels 100 and 101	1 BR	273	1.50	409
	2 BR	271	2.00	542
				951
	Guests	544	0.25	136
			Total Residential Parking Required	1,087
			Total Residential Parking Provided	1,114

FUTURE TRAFFIC CONDITIONS

Other developments in the study vicinity could add traffic to the project area. For this reason, the analysis of future traffic conditions has been expanded to include potential traffic from yet undeveloped or unoccupied projects. Briefly, the methodology for estimating future traffic volumes was as follows: First, current traffic volumes were determined by traffic counts (as described in a preceding section). Next, a traffic growth factor of 0.6 percent, compounded annually, was applied to the existing traffic volumes to produce "ambient growth" traffic estimates for the future study year of 2009. The annual growth rate of 0.6 percent was assumed to be the growth rate for the study area and was recommended by the County of Los Angeles. The year 2009 was chosen as the study year, assuming the development will be constructed and fully occupied within this five-year time frame. Traffic expected to be generated by the proposed project, as calculated earlier in this report, was then added to the baseline traffic volumes to form the year 2009 "With Project" conditions, to determine any traffic effects directly attributable to the project's development. Finally, trips resulting from nearby "related projects" reasonably expected to be developed within the study timeline were analyzed as an incremental addition to the 2009 "Without Project" scenario, to estimate the future cumulative traffic conditions.

Traffic Growth

Based on an analysis of the trends in traffic growth in this portion of the Los Angeles basin over the last several years, an annual traffic growth factor of 0.6 percent was determined to be applicable by the County of Los Angeles DPW. The growth factor was used to account for increases in traffic resulting from projects not yet proposed or outside of the study area. This growth factor, compounded annually, was applied to the 2005 traffic volumes to develop an estimate of 2009 baseline volumes.

Related Projects

In addition to the use of the 0.6 percent annual growth rate, listings of potential related projects located in the study area were obtained from the Los Angeles Regional Planning Department, the City of Los Angeles Department of Transportation, and from the Cities of Santa Monica and Culver City. From a review of these lists, it was determined that traffic from 24 projects near the study site could produce additional traffic at the study intersections. The locations of the related projects are shown in Figure 7.

These related projects are listed and described in Table 8. Estimates of the daily and peak hour traffic expected to be generated by these related projects are summarized in Table 9. The trip-making estimates for the related projects are based on Coastal Transportation Corridor Specific Plan (CTCSP) PM trip rates, supplemented by data obtained from the 6th Edition ITE rates and equations, or from previously prepared traffic studies or other environmental documentation. Related project traffic was assigned to the area roadway system using a procedure identical to the methodology described previously for determining the proposed project's traffic assignments.

Highway System Improvements

No significant highway improvements in the project area were identified by either the County or City of Los Angeles as on-going or likely to be completed within the year 2009 project development timeline. Therefore, for purposes of analysis of the future traffic conditions, as discussed in the following section, no improvements to the existing roadway system in the study area were assumed. This assumption results in a "worst case" analysis, and more readily identifies locations where improvements should be made in order to provide sufficient roadway capacity to accommodate project traffic.

FIGURE 7

1/11/2005

JN DEL REY SHORES MDR.REL.PROJS

RELATED PROJECTS LOCATION MAP

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Table 8
Related Projects Descriptions

No.	Location	Size/Use		
1.	115 Lincoln Bl.	8,800	sf	Shopping center addition
2.	1430 Lincoln Bl.	197,000	sf	Retail
		280	du	Apartment
3.	2005 Lincoln Bl.	6	p	Service station w/ 720 sf conv. store
4.	3826 Grand View Bl. [1]	25,656	sf	Mar Vista postal station
5.	12700 Braddock Dr.	134,557	sf	Warehouse
		1,357	sf	Office
		(58,323	sf	University of CA laundry building)
6.	12011 Venice Bl.	1,623	sf	Fast-food restaurant with drive-thru
7.	11611 Washington Pl.	20	du	Senior day care facility (9,970 sf)
		(9,970	sf	Furniture manufacturing/warehouse)
8.	4061 Grand View Bl.	70	du	Assisted living/Alzheimer's care facility
9.	4055 Redwood Av.	22,000	sf	Office
		20,000	sf	Mini-warehouse
		(42,000	sf	Mini-warehouse)
10.	4141 Lincoln Bl. [2]	42,270	sf	Retail/motorcycle/office
		1,000	sf	Café
		8,200	sf	Restaurant
11.	4500 Via Marina	120	du	Apartment expansion
12.	N/w corner Princeton Dr./Carter Av. [3]	298	du	Apartment
		(24,000	sf	Light Manufacturing)
		(21,600	sf	Office)
		(40,000	sf	Auto Service/Repair)
13.	2100 Abbot Kinney Bl.	15,180	sf	Office
14.	514-586 Washington Bl. [4] bet. Via Marina/Palawan Wy. (Parcel 97)	6,236	sf	Retail
		(5,750	sf	Retail)
15.	S/s Washington Bl. [5] bet. Via Marina/Via Dolce (Parcel 95)	15,250	sf	Retail
		405	st	Restaurant
		4,250	sf	Drive-in Bank
		7,888	sf	Office
		(9,180	sf	Office)
		(165	st	Restaurant)
		(7,500	sf	Drive-in Bank)
16.	4175 Admiralty Wy.	133	rm	Motel expansion

Table 8 (continued)
Related Projects Descriptions

No.	Location	Size/Use
17.	4333 Admiralty Wy.	600 du Condominium
18.	E/s Via Marina (Parcels FF and 10R) [6]	526 unit Apartment 161 slip Boat Dock (136 unit Apartment) (184 slip Boat Dock)
19.	E/s Via Marina bet. Panay Wy./Marquesas Wy. [7] (Parcels 12, 15)	940 du Apartment 82 du Very low income Senior apartment 4,000 sf Retail 6,000 sf Commercial 439 sl Boat
20.	N/s Panay Wy. [8] (Parcel 20)	100 du Apartment 6,885 sf Commercial
21.	13900 Panay Wy. [9] (Parcel 18)	65 du Apartment 75 du Congregate care facility
22.	N/w corner Admiralty Wy./Palawan Wy. [10] (Parcels 140)	179 du Apartment (64 du Apartment)
23.	South of the intersection of Jefferson Bl./ Westlawn Av. [11]	175,000 sf Office 2,600 du Apartment 150,000 sf Retail 40,000 sf Community Serving Uses
24.	NEC Tahiti Wy./Via Marina [12]	288 rm Hotel 2 ac Public Park

Note: Description of uses in parentheses are uses to be removed.

Sources:

[1] Traffic Analysis for Apartment Development at 10001 Venice Boulevard, Crain & Associates, May 2000.
[2] Bartels Harley Davidson Expansion Traffic Study, Kaku Associates, August 2001.
[3] Traffic Analysis for a Proposed 298-Unit Residential Development on Princeton Drive in the Oxford Triangle Neighborhood of the City of Los Angeles, Crain & Associates, Revised January 2004.
[4] Traffic Analysis for 6,236 sf Retail Development at 514-586 Washington Boulevard, between Via Marina and Palawan Way, in Marina del Rey, Crain & Associates, November 2002.
[5] Traffic Study for Proposed sf Retail/Commercial expansion on Washington Boulevard (Parcel 95), between Via Marina and Via Dolce in Marina del Rey, Crain & Associates, December 2002.
[6] Traffic Study for Proposed 526-Unit Residential Development on Parcels FF and 10R in Marina del Rey, Crain & Associates, September 2004.
[7] Traffic Analysis for 1,201-Unit Residential Development on Panay Way, Via Marina, and Marquesas Way in Marina del Rey, Crain & Associates, Revised March 2000, revised per approved development.
[8] Traffic Analysis for 100-Unit Residential Development and Associated Commercial Uses on Parcel 20 on Panay Way in Marina del Rey, Crain & Associates, August 1999.
[9] Traffic Analysis for Dolphin Marina Project, Crain & Associates, March 1996.
[10] Traffic Analysis for a Proposed 179-unit Residential Development at 4160 Admiralty Way (Parcels 140) in Marina del Rey, Crain & Associates, September 2003.
[11] Traffic Analysis for The Village at Playa Vista Project, Kaku Associates, July 2003.
[12] Traffic Study for Proposed 288-room Hotel and 2-Acre Park on Parcel 9U in Marina del Rey, Crain & Associates, September 2004.

Table 9
Related Projects Descriptions and Trip Generation

Map No.	Size/Use		Daily	AM Peak Hour I/B	AM Peak Hour O/B	PM Peak Hour I/B	PM Peak Hour O/B
1.	8,800 sf	Shopping center addition	378	5	4	61	67
2.	197,000 sf	Retail	10,542	146	93	505	548
	280 du	Apartment	1,856	23	120	131	65
			12,398	**169**	**213**	**636**	**613**
3.	6 p	Service station w/ 720 sf conv. store	977	30	30	40	40
4.	25,656 sf	Mar Vista postal station	1,412	20	8	79	86
5.	134,557 sf	Warehouse	667	50	11	52	163
	1,357 sf	Office	49	5	1	1	3
	(58,323 sf	University of CA laundry bldg.)	(223)	(33)	(10)	(17)	(30)
			493	**22**	**2**	**36**	**136**
6.	1,623 sf	Fast-food rest. w/drive-thru	805	41	40	27	24
7.	20 du	Senior care facility (9,970 sf)	43	1	0	2	1
	(9,970 sf	Furniture manu./warehouse)	0	(5)	(2)	(3)	(5)
			43	**(4)**	**(2)**	**(1)**	**(4)**
8.	70 du	Assisted living/Alzheimer's care facility	151	2	2	7	5
9.	22,000 sf	Office	415	49	7	11	51
	20,000 sf	Mini-warehouse	50	2	1	3	3
	(42,000 sf	Mini-warehouse)	(105)	(4)	(2)	(7)	(6)
			360	**47**	**6**	**7**	**48**
10.	42,270 sf	Retail/motorcycle/office	975	0	0	49	33
	1,000 sf	Café					
	8,200 sf	Restaurant					
11.	120 du	Apartment expansion	796	10	51	9	12
12.	298 du	Apartment	860	(70)	103	47	(79)
	(24,000 sf	Light Manufacturing)					
	(21,600 sf	Office)					
	(40,000 sf	Auto Service/Repair)					
13.	15,180 sf	Office	312	37	5	7	36

Table 9 (continued)
Related Projects Descriptions and Trip Generation

No.	Size/Use			Daily	AM Peak Hour I/B	AM Peak Hour O/B	PM Peak Hour I/B	PM Peak Hour O/B
14.	6,236	sf	Retail	18	1	0	1	1
	(5,750	sf	Retail)					
15.	15,250	sf	Retail	367	(4)	3	(19)	(34)
	405	st	Restaurant					
	4,250	sf	Drive-in Bank					
	7,888	sf	Office					
	(9,180	sf	Office)					
	(165	st	Restaurant)					
	(7,500	sf	Drive-in Bank)					
16.	133	rm	Motel expansion	749	22	38	34	29
17.	600	du	Condominium	3,516	45	219	44	62
18.	526	unit	Apartment	1,478	24	110	85	39
	161	slip	Boat Dock					
	(136	unit	Apartment)					
	(184	slip	Boat Dock)					
19.	940	du	Apartment	1,785	31	140	106	46
	82	du	Senior apartment					
	4,000	sf	Retail					
	6,000	sf	Commercial					
	439	sl	Boat					
20.	100	du	Apartment	614	14	37	35	27
	6,885	sf	Commercial					
21.	65	du	Apartment	425	7	22	22	13
	75	du	Congregate care facility					
22.	179	du	Apartment	650	11	51	34	24
	(64	rm	Apartment)	(233)	(4)	(18)	(12)	(9)
				417	**7**	**33**	**22**	**15**
23.	175,000	sf	Office	24,220	577	1,049	1,275	1,027
	2,600	du	Apartment					
	150,000	sf	Retail					
	40,000	sf	Community Serving Uses					
24.	288	rm	Hotel	2,420	63	54	46	56
	2	ac	Public Park					

Analysis of Future Traffic Conditions (With and Without Project)

The analysis of future conditions in the project area was performed using the same critical movement analysis procedures described previously. For future year conditions, the roadway system was considered to have no improvements beyond existing conditions.

Traffic volumes used in the analysis of future year conditions were developed as follows:

- As described earlier in the report, future-year traffic volumes for the project vicinity were determined by applying a 0.6 percent per year ambient growth factor to the existing 2005 traffic volumes, to estimate area traffic growth.
- Traffic volumes generated by the project were combined with these benchmark "Without Project" volumes to form the "With Project" traffic conditions, and to determine traffic impacts directly attributable to the proposed development.
- Finally, traffic generated by the 24 identified related projects was added to the "With Project" condition traffic volumes described above, to produce an estimate of the potential future cumulative traffic conditions within the study area.

The 2009 baseline "Without Project" AM and PM peak hour traffic volumes are shown in Figures 8(a) and 8(b), respectively. Future year 2009 "With Project" traffic volumes are shown in Figures 9(a) and 9(b) for the AM and PM peak hours.

The results of the Critical Movement Analysis for future traffic conditions at the study intersections are summarized in Tables 10(a) and 10(b). The table shows that both the "Without Project" and "With Project" intersection traffic conditions will primarily range between Level of Service A and Level of Service D at most of the locations, although two of the congested study intersections, Lincoln Boulevard/Washington Boulevard; and Lincoln Boulevard/Mindanao Way are forecast to operate at LOS E or worst during both the AM and PM peak hours. However, as shown in Tables 10(a) and 10(b), the incremental project traffic will not affect the level of service forecasts at any of the study intersections.

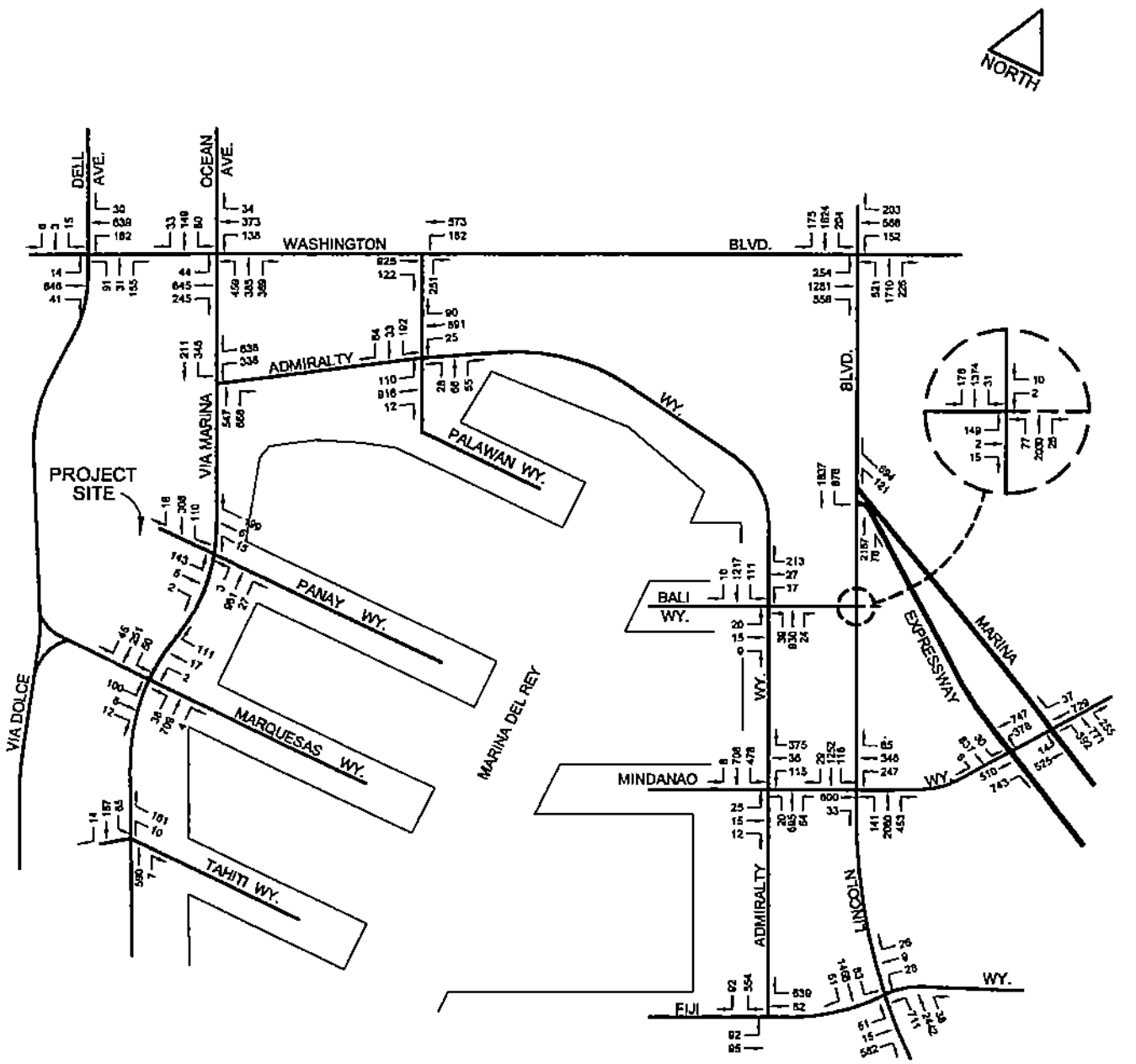

FIGURE 8(a)

FUTURE (2009) TRAFFIC VOLUMES
WITHOUT PROJECT (AMBIENT GROWTH ONLY)
AM PEAK HOUR

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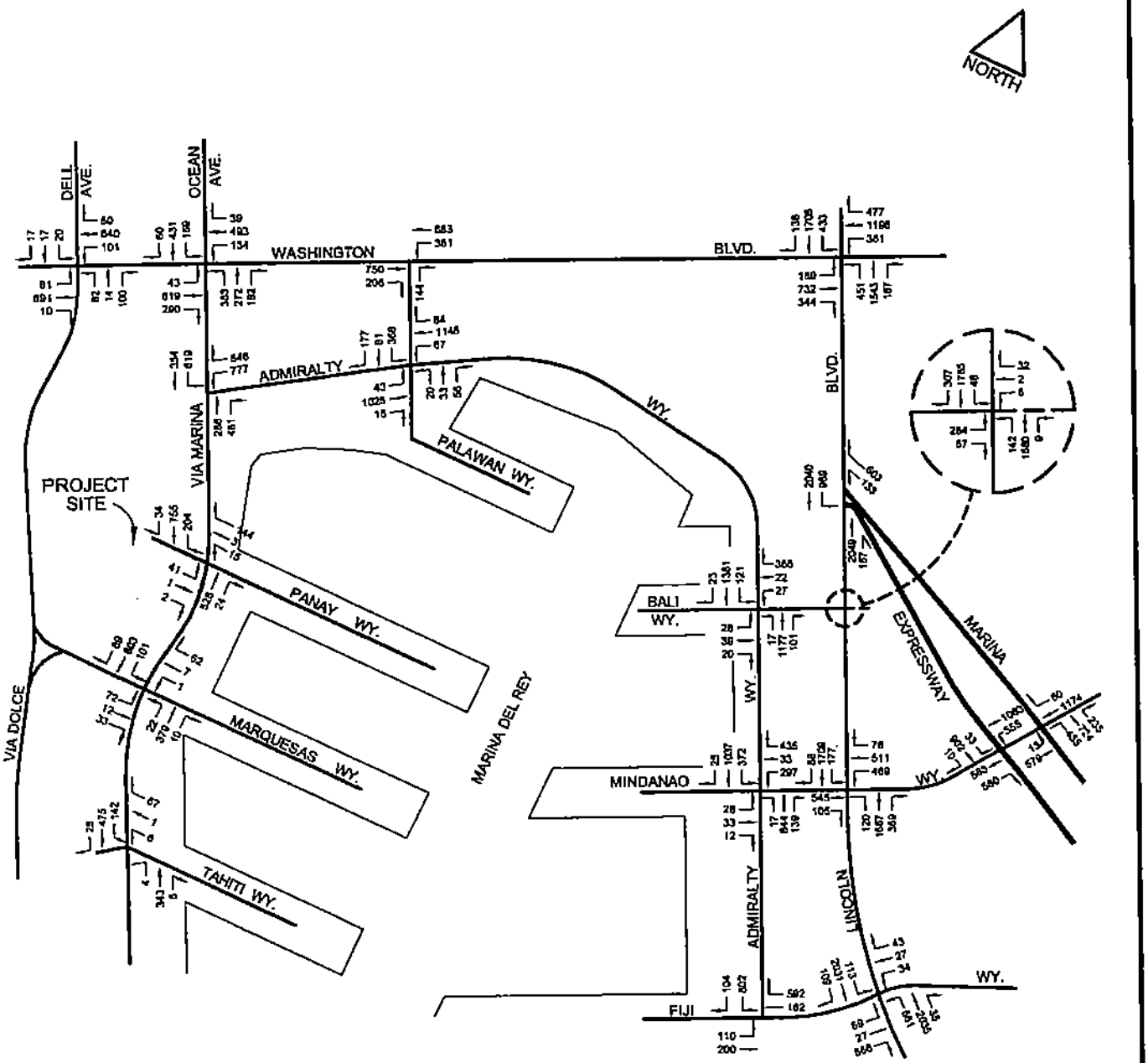

FIGURE 8(b)

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FUTURE (2009) TRAFFIC VOLUMES
WITHOUT PROJECT (AMBIENT GROWTH ONLY)
PM PEAK HOUR

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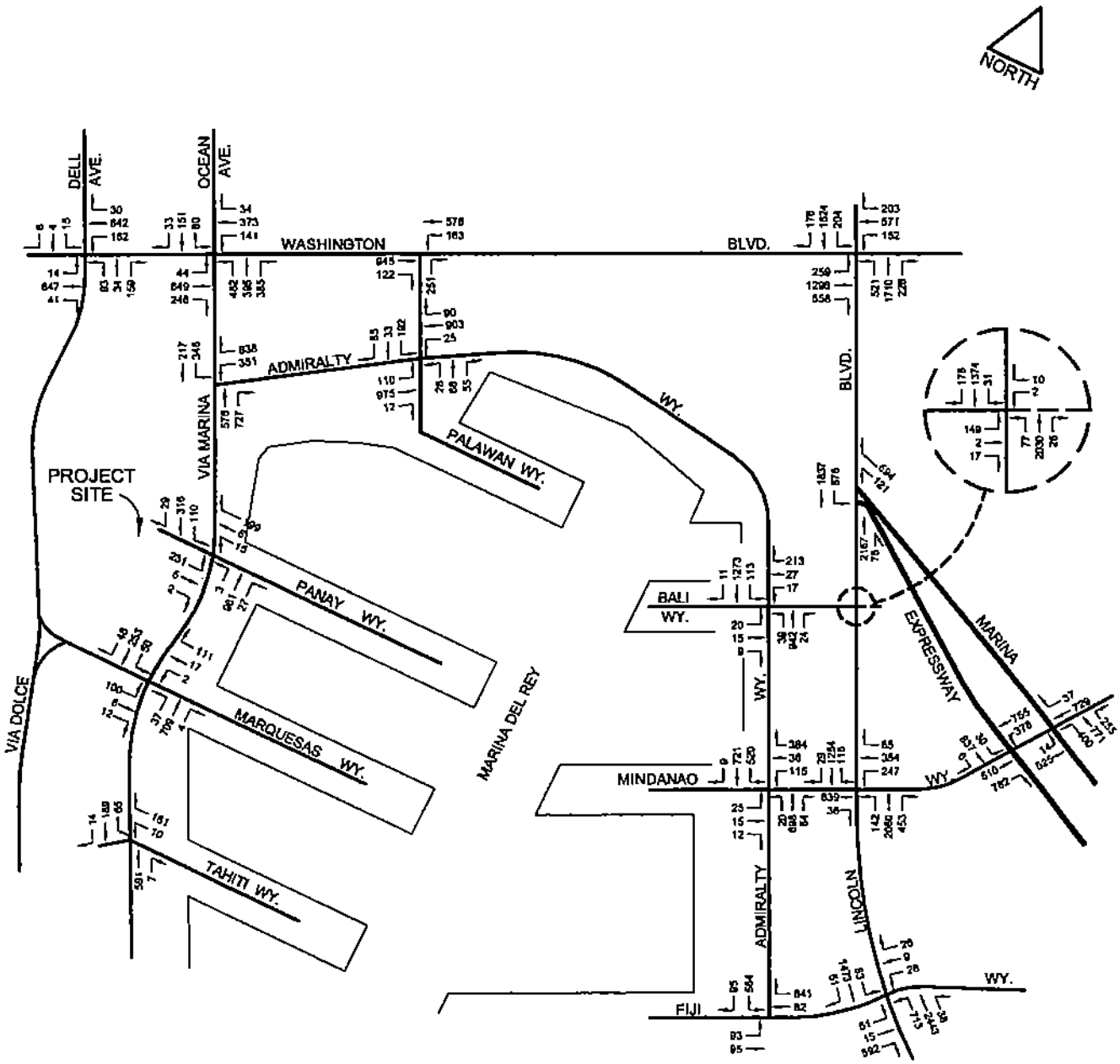

FIGURE 9(a)

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FUTURE (2009) TRAFFIC VOLUMES
WITH PROJECT
AM PEAK HOUR

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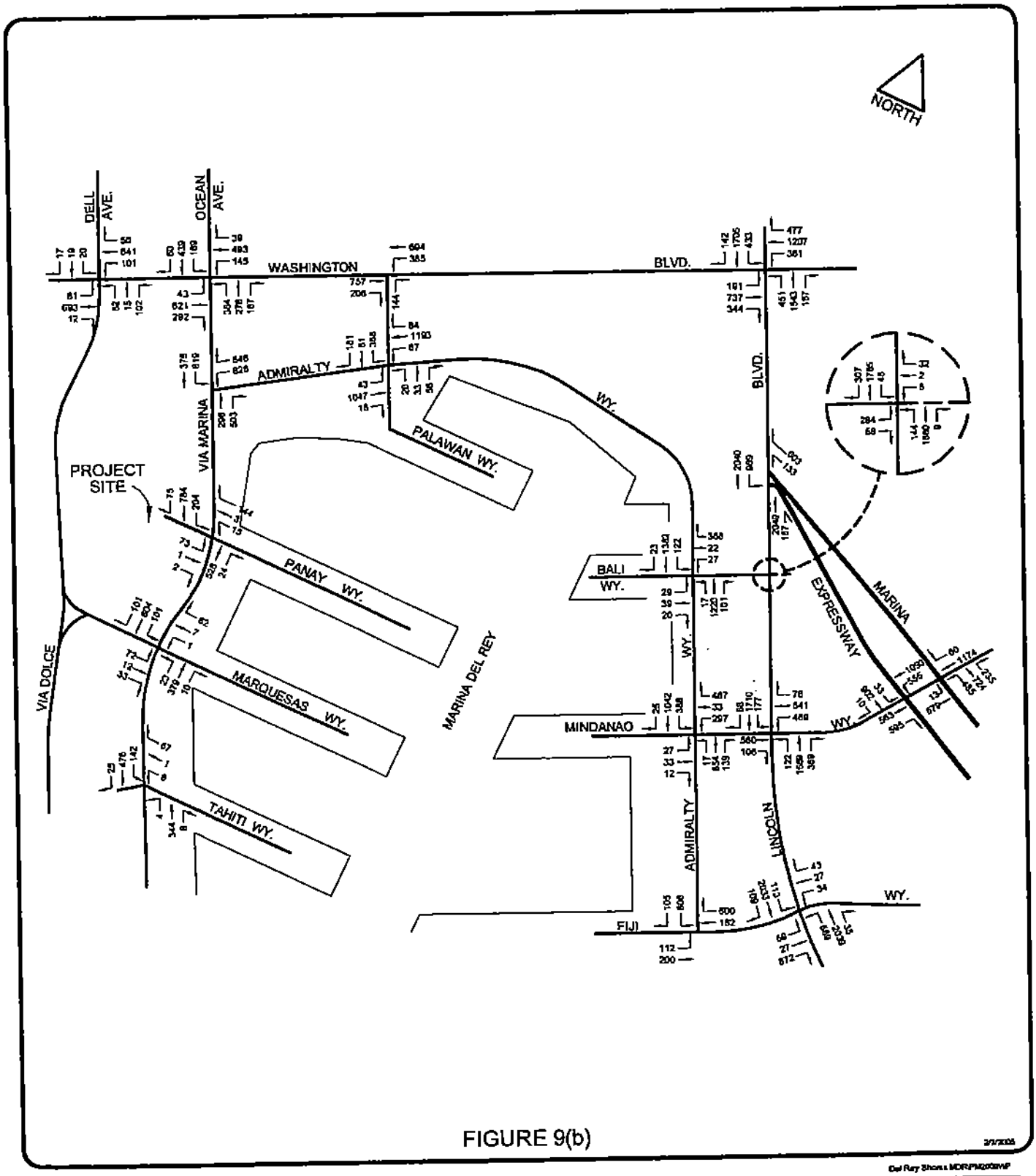

FIGURE 9(b)

Del Rey Shores MDRPM2009.vsp

FUTURE (2009) TRAFFIC VOLUMES
WITH PROJECT
PM PEAK HOUR

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Table 10(a)
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions - Without and With Project

		AM Peak Hour				
		Without Project		With Project		
No.	Intersection	CMA	LOS	CMA	LOS	Impact
1.	Via Dolce/Dell Ave./Washington Blvd.	0.400	A	0.403	A	+0.003
2.	Via Marina/Tahiti Wy.	0.262	A	0.263	A	+0.001
3.	Via Marina/Marquesas Wy.	0.253	A	0.253	A	+0.000
4.	Via Marina/Panay Wy.	0.387	A	0.443	A	+0.056
5.	Admiralty Wy./Via Marina	0.559	A	0.569	A	+0.010
6.	Washington Blvd./Ocean Ave./Via Marina	0.621	B	0.632	B	+0.011
7.	Admiralty Wy./Palawan Wy.	0.477	A	0.481	A	+0.004
8.	Washington Blvd../Palawan Wy.	0.662	B	0.670	B	+0.008
9.	Lincoln Blvd./Washington Blvd.	1.072	F	1.077	F	+0.005
10.	Lincoln Blvd./Marina Expwy. (SR-90)	0.810	D	0.810	D	+0.000
11.	Lincoln Blvd./Bali Wy.	0.485	A	0.485	A	+0.000
12.	Lincoln Blvd./Mindanao Wy.	0.923	E	0.939	E	+0.016*
13.	Lincoln Blvd./Fiji Wy.	0.597	A	0.597	A	+0.000
14.	Admiralty Wy./Bali Wy.	0.417	A	0.437	A	+0.020
15.	Admiralty Wy./Mindanao Wy.	0.616	B	0.638	B	+0.022
16.	Admiralty Wy./Fiji Wy.	0.255	A	0.259	A	+0.004
17.	Marina Expwy. (SR 90) WB/ Mindanao Wy.	0.451	A	0.452	A	+0.001
18.	Marina Expwy. (SR 90) EB/ Mindanao Wy.	0.755	C	0.764	C	+0.009

* Denotes significant project impact, prior to mitigation.

Table 10(b)
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions - Without and With Project

		PM Peak Hour				
		Without Project		With Project		
No.	Intersection	CMA	LOS	CMA	LOS	Impact
1.	Via Dolce/Dell Ave./Washington Blvd.	0.375	A	0.377	A	+0.002
2.	Via Marina/Tahiti Wy.	0.175	A	0.176	A	+0.001
3.	Via Marina/Marquesas Wy.	0.206	A	0.209	A	+0.003
4.	Via Marina/Panay Wy.	0.251	A	0.268	A	+0.017
5.	Admiralty Wy./Via Marina	0.734	C	0.757	C	+0.023
6.	Washington Blvd./Ocean Ave./Via Marina	0.747	C	0.762	C	+0.015
7.	Admiralty Wy./Palawan Wy.	0.622	B	0.637	B	+0.015
8.	Washington Blvd../Palawan Wy.	0.630	B	0.636	B	+0.006
9.	Lincoln Blvd./Washington Blvd.	1.037	F	1.044	F	+0.007
10.	Lincoln Blvd./Marina Expwy. (SR-90)	0.844	D	0.844	D	+0.000
11.	Lincoln Blvd./Bali Wy.	0.643	B	0.644	B	+0.001
12.	Lincoln Blvd./Mindanao Wy.	0.947	E	0.952	E	+0.005
13.	Lincoln Blvd./Fiji Wy.	0.741	C	0.744	C	+0.003
14.	Admiralty Wy./Bali Wy.	0.547	A	0.563	A	+0.016
15.	Admiralty Wy./Mindanao Wy.	0.713	C	0.744	C	+0.031
16.	Admiralty Wy./Fiji Wy.	0.380	A	0.382	A	+0.002
17.	Marina Expwy. (SR 90) WB/ Mindanao Wy.	0.618	B	0.625	B	+0.007
18.	Marina Expwy. (SR 90) EB/ Mindanao Wy.	0.877	D	0.880	D	+0.003

* Denotes significant project impact, prior to mitigation.

The County of Los Angeles defines a significant traffic impact based on a "stepped scale" as defined in the "Traffic Impact Analysis Report Guidelines" prepared by the Department of Public Works.[4] The impact definition recognizes that intersections at high volume-to-capacity ratios are more sensitive to additional traffic than those operating with available surplus capacity. A significant impact is identified as an increase in the CMA value of 0.010 or more, when the final ("With Project") Level of Service is E or F (CMA > 0.900); a CMA increase of 0.020 or more at LOS D (CMA > 0.800 to 0.900), or an increase of 0.040 or more at LOS C (CMA > 0.700 to 0.800).

As shown in Tables 10(a) and 10(b), the project is expected to result in one significant traffic impact, at Lincoln Boulevard and Mindanao Way, during the AM peak hour, prior to mitigation. Measures to address this impact are described later in this report.

Cumulative Impacts

Traffic resulting from the previously identified 24 related projects would also contribute to impacts at the study intersections. In order to gauge the effects of this additional traffic, an additional level of analysis was conducted. Although the 0.6 percent annual growth factor is expected to fully represent all area traffic increases, for the purposes of conservative analysis, traffic generated from nearby "related projects" was added to these future baseline traffic volumes, to form the basis for the "Without Project" conditions. Further, in order to present a conservative analysis of future conditions, most of the 24 related projects were assumed to be completed and fully occupied by the study year (2009), although in reality, many of the related projects are still speculative, have not yet been approved, or are sufficiently large or complicated that they will not be constructed within the assumed study timeframe.

[4] Traffic Impact Analysis Report Guidelines, County of Los Angeles Department of Public Works, January 1, 1997.

Figures 10(a) and 10(b) show the anticipated AM and PM peak hour traffic at the study intersections resulting from the expected cumulative development in the study area. The related project traffic volumes were added to the "With Project" traffic conditions shown previously in Figures 9(a) and 9(b) to obtain projections of the ultimate expected future year 2009 traffic. These cumulative traffic volumes are shown in Figures 11(a) and 11(b) for the AM and PM peak hours, respectively. The analysis of the cumulative traffic conditions was performed using the same CMA methodology described earlier.

The results of the cumulative development analysis are summarized in Table 11, and show that the potential additional traffic resulting from area-wide development would significantly impact 10 of the 18 study intersections, resulting in several locations nearing or exceeding capacity. The proposed project will also contribute incrementally to these cumulative impacts, although as shown in Table 11, project contributions are six percent or less of the intersection capacity at all locations.

Impacts on the Regional Transportation System

To address the increasing public concern that traffic congestion was impacting the quality of life and economic vitality of the State of California, the Congestion Management Program (CMP) was enacted by Proposition 111. The intent of the CMP is to provide the analytical basis for transportation decisions through the State Transportation Improvement Program (STIP) process. A Countywide approach has been established by the Metropolitan Transportation Authority, the Local CMP agency, to implement the statutory requirements of the CMP. The Countywide approach includes designating a highway network that includes all state highways and arterials with the County and monitoring the network's level of service standards. This monitoring of the CMP network is one of the responsibilities of local jurisdictions. If level of service standards deteriorate, then local jurisdictions must prepare a deficiency plan to be in conformance with the Countywide plan.

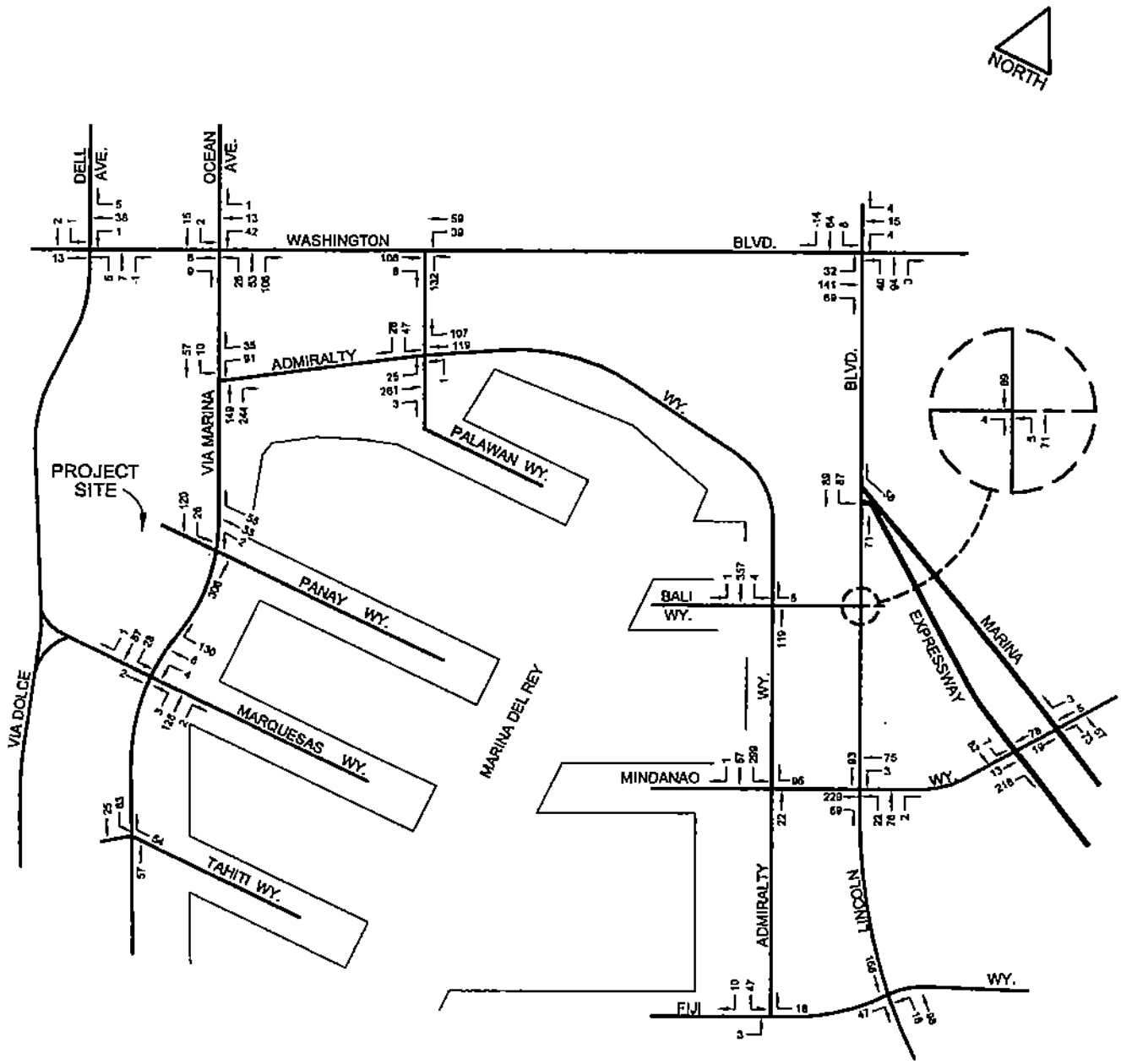

FIGURE 10(a)

1/14/2005

Del Rey Shores MDR/AM/EL/PRJ

RELATED PROJECT TRAFFIC VOLUMES
AM PEAK HOUR

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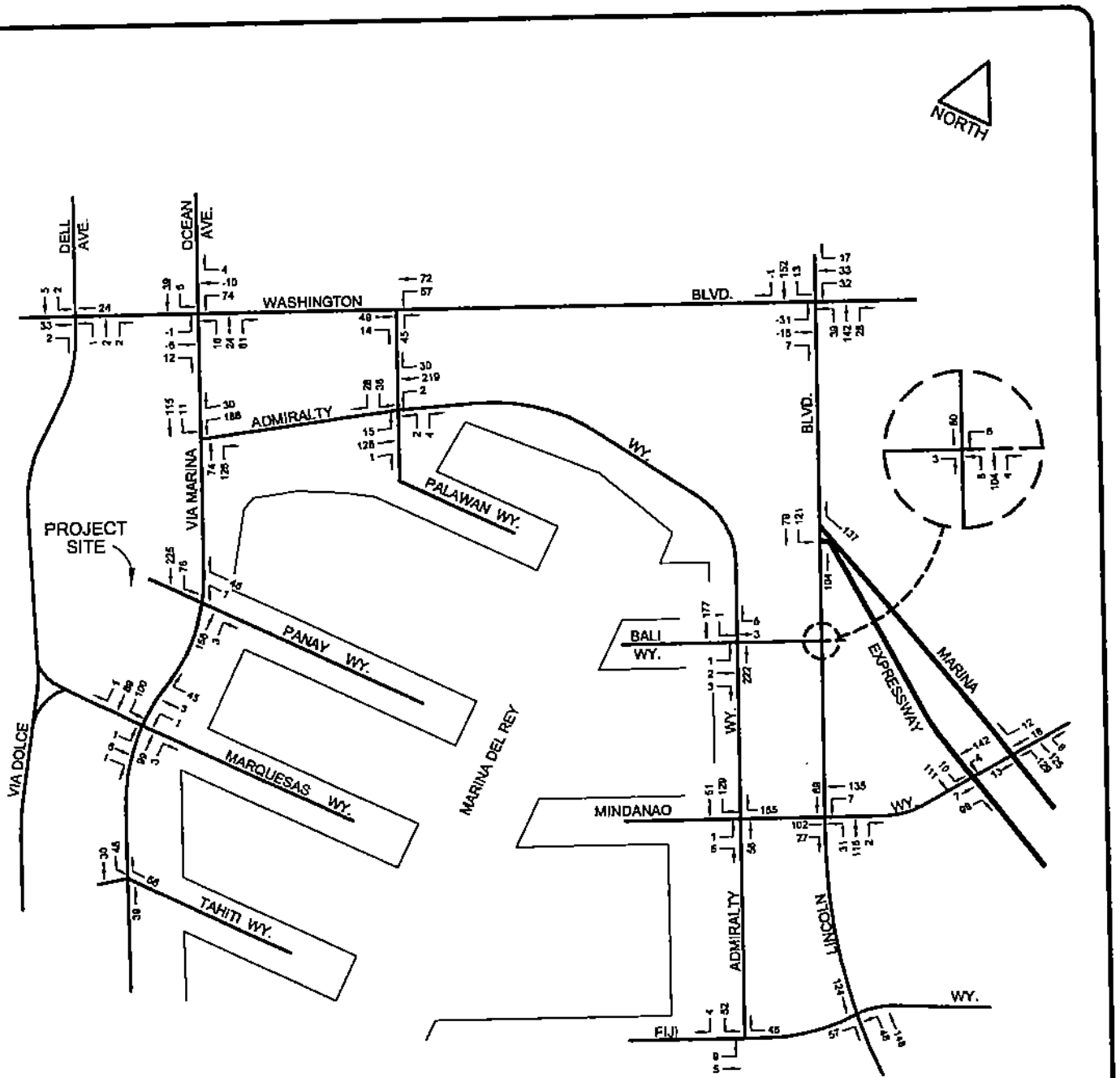

FIGURE 10(b)

Del Rey Shores MDR\PMRELPRJ

RELATED PROJECT TRAFFIC VOLUMES
PM PEAK HOUR

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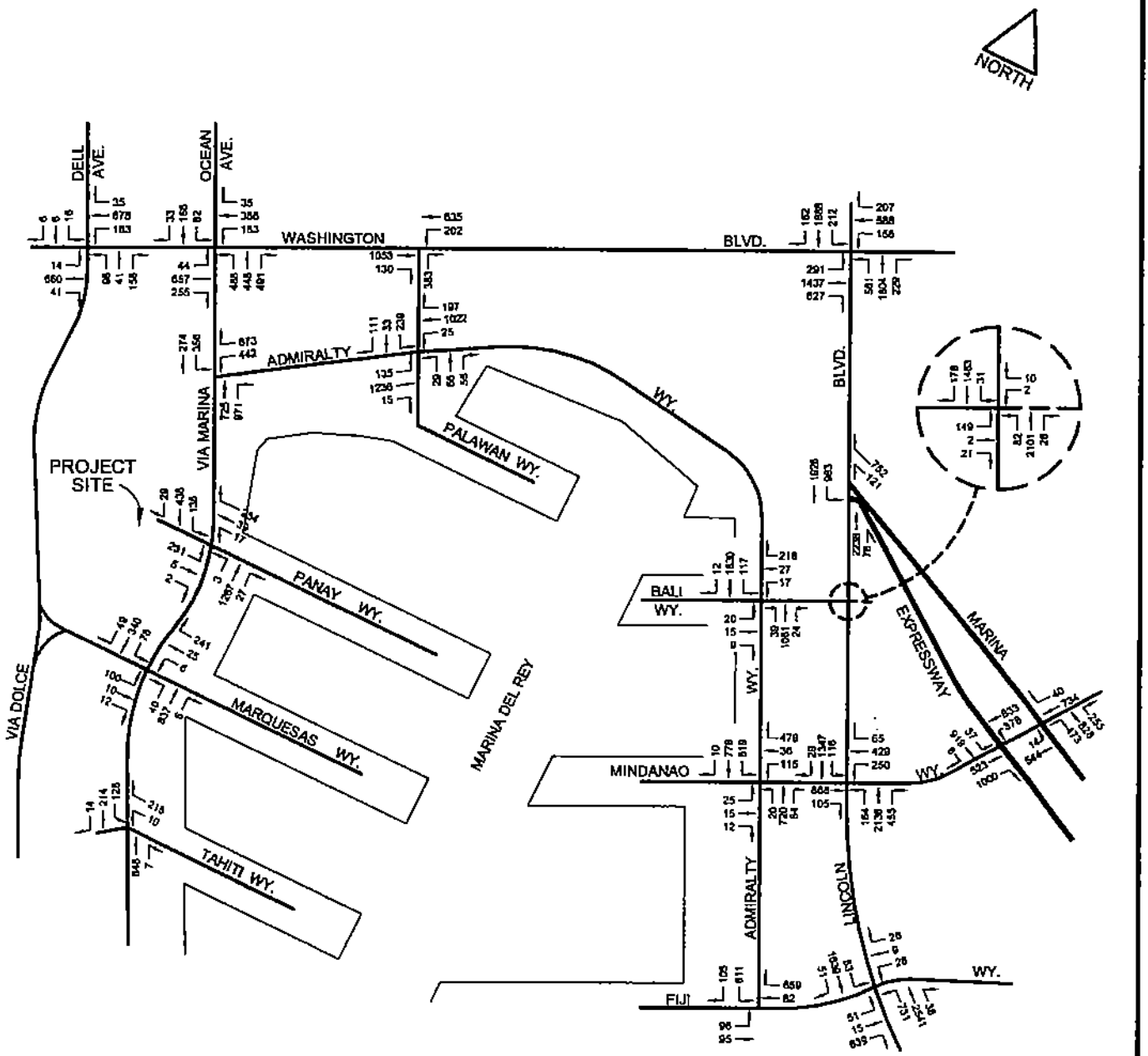

FIGURE 11(a)

Del Rey Shores MDRAMFELPRJ3

FUTURE (2009) TRAFFIC VOLUMES
WITH PROJECT PLUS RELATED PROJECTS
AM PEAK HOUR

C&A
CRAIN & ASSOCIATES
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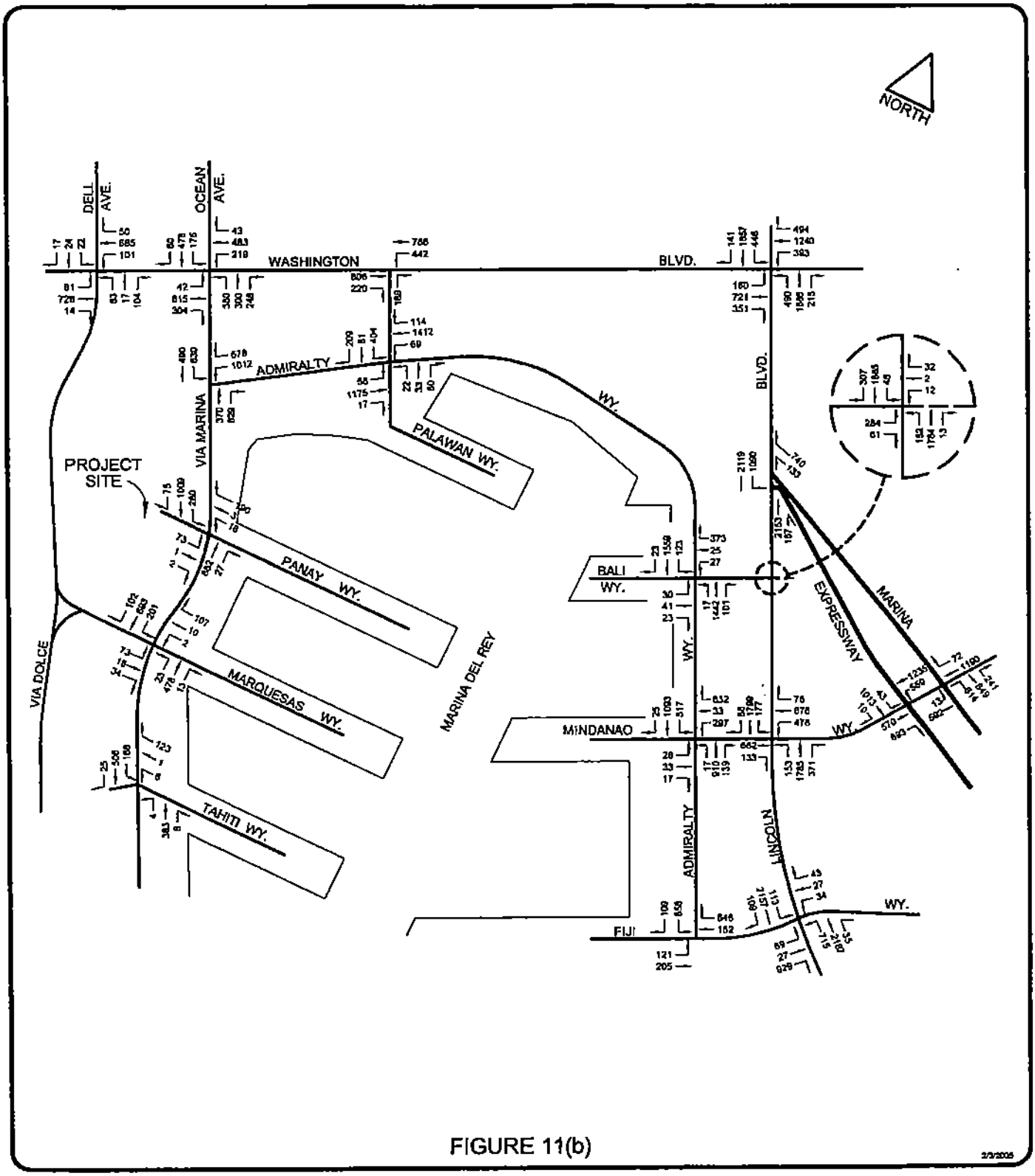

FIGURE 11(b)

2/3/2005

Del Rey Shores MDR/PMRD.PRJS

FUTURE (2009) TRAFFIC VOLUMES
WITH PROJECT PLUS RELATED PROJECTS
PM PEAK HOUR

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Table 11(a)
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions - With Cumulative Development
AM Peak Hour

No.	Intersection	Without Project CMA	LOS	With Project CMA	LOS	Impact	With Project Plus Cumulative Development CMA	LOS	Impact	Project % of Total Impact
1.	Via Dolce/Dell Ave. & Tahiti Wy.	0.400	A	0.403	A	+0.003	0.413	A	+0.013	23.1%
2.	Via Marina & Tahiti Wy.	0.262	A	0.263	A	+0.001	0.324	A	+0.062	1.6%
3.	Via Marina & Marquesas Wy.	0.253	A	0.253	A	+0.000	0.353	A	+0.100	0.0%
4.	Via Marina & Panay Wy.	0.387	A	0.443	A	+0.056	0.556	A	+0.169	33.1%
5.	Admiralty Wy. & Via Marina	0.559	A	0.569	A	+0.010	0.640	B	+0.081	12.3%
6.	Washington Blvd. & Ocean Ave./ Via Marina	0.621	B	0.632	B	+0.011	0.712	C	+0.091*	12.1%
7.	Admiralty Wy. & Palawan Wy.	0.477	A	0.481	A	+0.004	0.606	B	+0.129	3.1%
8.	Washington Blvd. & Palawan Wy.	0.662	B	0.670	B	+0.008	0.842	D	+0.180*	4.4%
9.	Lincoln Blvd. & Washington Blvd.	1.072	F	1.077	F	+0.005	1.158	F	+0.086*	5.8%
10.	Lincoln Blvd. & Marina Expwy. (SR-90)	0.810	D	0.810	D	+0.000	0.860	D	+0.050*	0.0%
11.	Lincoln Blvd. & Bali Wy.	0.485	A	0.485	A	+0.000	0.502	A	+0.017	0.0%
12.	Lincoln Blvd. & Mindanao Wy.	0.923	E	0.939	E	+0.016*	1.066	F	+0.143*	11.2%
13.	Lincoln Blvd. & Fiji Wy.	0.597	A	0.597	A	+0.000	0.635	B	+0.038	0.0%
14.	Admiralty Wy. & Bali Wy.	0.417	A	0.437	A	+0.020	0.562	A	+0.145	13.8%
15.	Admiralty Wy. & Mindanao Wy.	0.616	B	0.638	B	+0.022	0.822	D	+0.206*	10.7%
16.	Admiralty Wy. & Fiji Wy.	0.255	A	0.259	A	+0.004	0.274	A	+0.019	21.1%
17.	Marina Expwy. (SR 90) WB/ Mindanao Wy.	0.451	A	0.452	A	+0.001	0.486	A	+0.035	2.9%
18.	Marina Expwy. (SR 90) EB/ Mindanao Wy.	0.755	C	0.764	C	+0.009	0.846	D	+0.091*	9.9%

* Denotes significant impact, prior to mitigation.

Table 11(b)
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions - With Cumulative Development
PM Peak Hour

No.	Intersection	Without Project CMA	LOS	With Project CMA	LOS	Impact	With Project Plus Cumulative Development CMA	LOS	Impact	Project % of Total Impact
1.	Via Dolce/Dell Ave. & Tahiti Wy.	0.375	A	0.377	A	+0.002	0.393	A	+0.018	11.1%
2.	Via Marina & Tahiti Wy.	0.175	A	0.176	A	+0.001	0.223	A	+0.048	2.1%
3.	Via Marina & Marquesas Wy.	0.206	A	0.209	A	+0.003	0.291	A	+0.085	3.5%
4.	Via Marina & Panay Wy.	0.251	A	0.268	A	+0.017	0.341	A	+0.090	18.9%
5.	Admiralty Wy. & Via Marina	0.734	C	0.757	C	+0.023	0.863	D	+0.129*	17.8%
6.	Washington Blvd. & Ocean Ave./ Via Marina	0.747	C	0.762	C	+0.015	0.857	D	+0.110*	13.6%
7.	Admiralty Wy. & Palawan Wy.	0.622	B	0.637	B	+0.015	0.757	C	+0.135*	11.1%
8.	Washington Blvd. & Palawan Wy.	0.630	B	0.636	B	+0.006	0.704	C	+0.074*	8.1%
9.	Lincoln Blvd. & Washington Blvd.	1.037	F	1.044	F	+0.007	1.096	F	+0.059*	11.9%
10.	Lincoln Blvd. & Marina Expwy. (SR-90)	0.844	D	0.844	D	+0.000	0.915	E	+0.071*	0.0%
11.	Lincoln Blvd. & Bali Wy.	0.643	B	0.644	B	+0.001	0.674	B	+0.031	3.2%
12.	Lincoln Blvd. & Mindanao Wy.	0.947	E	0.952	E	+0.005	1.032	F	+0.085*	5.9%
13.	Lincoln Blvd. & Fiji Wy.	0.741	C	0.744	C	+0.003	0.791	C	+0.050*	6.0%
14.	Admiralty Wy. & Bali Wy.	0.547	A	0.563	A	+0.016	0.646	B	+0.099	16.2%
15.	Admiralty Wy. & Mindanao Wy.	0.713	C	0.744	C	+0.031	0.928	E	+0.215*	14.4%
16.	Admiralty Wy. & Fiji Wy.	0.380	A	0.382	A	+0.002	0.403	A	+0.023	8.7%
17.	Marina Expwy. (SR 90) WB/ Mindanao Wy.	0.618	B	0.625	B	+0.007	0.694	B	+0.076	9.2%
18.	Marina Expwy. (SR 90) EB/ Mindanao Wy.	0.877	D	0.880	D	+0.003	0.947	E	+0.070*	4.3%

* Denotes significant impact, prior to mitigation.

Thus, the potential impacts of project traffic on the regional freeway system were also examined. According to the CMP, a traffic analysis is required at all arterial monitoring intersections where the proposed project will add 50 or more trips during either the AM or PM weekday peak hours. One CMP intersection located at Lincoln Boulevard and Marina Expressway, was identified in the project area. The proposed project is not expected to add 50 or more trips to this intersection during either the AM or PM weekday peak hours. However, this intersection was analyzed due to its close proximity to the project site. In addition, a traffic analysis is also required at all mainline freeway monitoring locations where the project will add 150 or more trips, in either direction, during either the AM or PM weekday peak hours. A review of the project's net trip generation assignments, as shown previously in Figures 6(a) and 6(b), "Project Traffic", indicates that the project is not expected to add substantial traffic volumes to the regional transportation system. The maximum amount of project traffic added to any particular freeway segment would occur along the eastbound Marina Expressway/Freeway east of Mindanao Way during the AM peak hour. During this time, the project would add approximately 39 trips, which is significantly less than the Los Angeles County Congestion Management Program (CMP) threshold of 150 peak hour trips added to any segment of any freeway in a single direction. Based on this information, the impact criteria will not be exceeded, and no significant regional impacts on mainline freeway locations will occur. Therefore, no further analysis was conducted.

Consistency With Marina Land Use Plan

New development within the Marina is controlled by the Marina del Rey Land Use Plan (LUP), which is a component of the Los Angeles County Local Coastal Program[5].

[5] Marina del Rey Land Use Plan, County of Los Angeles Development of Regional Planning, Certified February 8, 1996.

This document specifies the amount of allowable new development within the Marina, based on the amount of additional traffic generated and mitigation measures to be installed incrementally with the new development. The new development is divided into two phases, Phase I and Phase II. Phase I has been completed, and is the amount of development considered to be "existing" at the present time. The allowable Phase II development (Second Generation) intensities are above and beyond the amount of existing Marina del Rey development. The Phase II "Buildout" development is allocated to 15 "development zones" within the Marina, with the development potential within each development zone based upon each zone's capacity to accommodate traffic. This determination is, in turn, based upon a traffic study conducted to assess development potential within the Marina, and to identify traffic and circulation improvements ("mitigation measures") necessary to accommodate the increased traffic levels.[6] The allowable Phase II development potential within each of the Marina's 14 development zone is identified in Table 12.

However, since the adoption of the Marina LUP in 1996, approval for or actual construction of various projects throughout the Marina has occurred, "using up" some of the originally allowable Phase II development potential. Some of this approved development has occurred within Development Zone 12 (DZ 12), site of the proposed project. As shown in Table 12, the original Phase II development allowances for DZ 12 included a total of 530 dwelling units, a total of 30,000 square feet of visitor-serving retail, and 340 restaurant seats.

In late 2002, the County approved a retail/commercial development on Parcel 95 within DZ 12. This retail/commercial project was approved to develop a total of 15,250 square feet of retail, 405 seats of restaurant use, a 4,250 square foot drive-in

[6] Marina del Rey Traffic Study, Final Report, Prepared for Los Angeles County Department of Regional Planning, DKS Associates in Association with Gruen Associates, January 12, 1991.

Table 12
Phase II Development Potential Allocated by Development Zone

1. **Bora Bora Development Zone**
   610 Dwelling Units

2. **Tahiti Development Zone**
   275 Dwelling Units
   288 Hotel Rooms
   76 Boat Slips

3. **Marquesas Development Zone**
   320 Dwelling Units
   15,000 sq. ft. Visitor-serving Commercial
   76 Boat Slips

4. **Panay Development Zone**
   250 Dwelling Units
   75 Congregate Care units
   10,000 sq. ft. Visitor-serving Commercial
   76 Boat Slips

5. **Palawan/Beach Development Zone**
   180 Dwelling Units
   200 Hotel Rooms
   42,000 sq. ft. Visitor-serving Commercial
   410 Restaurant Seats

6. **Oxford Development Zone**
   Fire Station Expansion

7. **Admiralty Development Zone**
   200 Hotel Rooms
   275 Restaurant Seats
   32,000 sq. ft. Office
   3,000 sq. ft. Library Expansion

8. **Bali Development Zone**
   382 Hotel Rooms
   40,000 sq. ft Conference Center
   75,000 sq. ft. Visitor-serving Commercial
   3,000 sq. ft. Marine Science Center
   500 Restaurant Seats
   Ferry Terminal Site
   86 Boat Slips

9. **Mindanao Development Zone**
   14,500 sq. ft. Visitor-serving Commercial
   26,000 sq. ft. Office

10. **Fisherman's Village Development Zone**
    20,000 sq. ft. Visitor-serving Commercial
    350 Restaurant Seats
    Ferry Terminal Site

11. **Harbor Gateway Development Zone**
    255 Dwelling Units
    34 Boat Slips

12. **Via Marina Development Zone**
    530 Dwelling Units
    30,000 sq. ft. Visitor-serving Commercial
    340 Restaurant Seats

13. **North Shore Development Zone**
    Open space, road frontage buffer

14. **Fiji Way Development Zone**
    2,000 sq. ft. Visitor-serving Commercial

Notes: Non-coastal development may be converted to Hotel, Visitor-Serving Commercial or Marina Commercial uses consistent with the conversion provisions of subsection C5 of Section 22.46.1090.

bank, and 7,888 square feet of office on Parcel 95, replacing the total of 9,180 square feet of office, 165 seats of restaurant use, and 7,500 square feet of drive-in bank use on the site.

The net effect of the approved retail/commercial project on the DZ 12 allowable development is a net reduction of 10,708 square feet of commercial use and 240 restaurant seats, resulting in a remaining allowable development potential for DZ 12 of 19,292 square feet of commercial use and 100 seat of restaurant use. However, no change in the allowable development potential for the number of dwelling units has occurred due to the retail/commercial project, since no dwelling units were proposed.

In order to receive approval for new development, all projects within the Marina must demonstrate compliance and compatibility with the Marina del Rey Land Use Plan. As described previously in this report, the proposed Del Rey Shores project will construct a total of 540 new residential dwelling units on Parcels 100 and 101. A total of 202 existing dwelling units will be removed to accommodate the project, resulting in a net increase of 338 dwelling units, well within the allowable increase of 530 dwelling units in DZ12. Thus, the requested increase of 338 net dwelling units proposed by the project is consistent with the development potentials identified in the current Marina del Rey Land Use Plan.

The Marina del Rey Land Use Plan also requires that proposed projects demonstrate compatibility with the Circulation Element of the Plan, based upon a comparison of the amount of trips generated by the allowable development and the trips generated by the proposed project. As noted previously, the Phase II development potential for each zone is based upon the Marina's ultimate capacity to accommodate traffic. To determine the compatibility of the proposed development with the Circulation Element, the PM peak hour trip generation potentials for both the proposed and allowable land

28.17 PM peak hour trips, slightly more than one percent of the total allowable Phase II trips. However, several development proposals, including the subject project, have been approved, are under construction, or are currently proceeding through the approval process. These projects will also contribute toward the overall Marina trip cap. As shown in Table 13, the proposed project will generate approximately 111.49 net PM peak hour trips (about four percent of the total allowable). The other currently approved, proposed, or potential projects within the Marina include the Marina Two project (150.92 total trips on both Parcels 12 and 15), the ongoing lease extension proposals for Parcels 18 and 20 in Development Zone 4 (30.97 trips) and for Parcel 112 in Development Zone 1 (39.12 trips), the approved redevelopments of Parcel 95 (-53.16 trips) and Parcel 97 (2.16 trips), the Parcel 140 residential project (37.49 trips), the Marina Harbor expansion project (107.91 trips), the proposed Parcel 9U Hotel and Public Park (101.66 trips), and the proposed residential development on Parcels FF and 10R (124.25 trips). These developments could potentially add a total of approximately 569.49 net new trips to the Marina, and including the subject project, would result in a net total addition of about 680.98 PM trips, or less than 25 percent of the total of 2,750 PM peak hour trips allowed under the development and mitigation scenarios approved for Marina del Rey.

This level of overall trip generation from the approved/proposed Marina projects does not significantly affect the operations of the Marina del Rey traffic infrastructure, and is less than one-half of the 50 percent development level at which Category 1 System-Wide Improvements (as described in the LCP), such as the Admiralty Way improvement to five lanes, are warranted before any additional development can occur. It should also be noted that the proposed project has identified several Category 1 improvements as mitigation measures for its project-specific traffic impacts, described in detail earlier in this report. Thus, if approved, the proposed project will contribute to the implementation of the Category 1 traffic mitigation measures far in advance of their anticipated need.

MITIGATION MEASURES

As described in the preceding report, the development of the proposed project will result in one significant project impact, at Lincoln Boulevard and Mindanao Way during the PM peak hour, prior to mitigation. However, this single project-specific impact can be mitigated to less than significant levels through the implementation of area traffic improvement measures recommended in the adopted Marina del Rey Specific Plan Transportation Improvement Program (TIP). The project is also consistent with the Phase II Marina del Rey Land Use Plan (LUP) development allowances for Marina del Rey Development Zone 12, which it occupies. Further, the project does not significantly affect the overall Phase II trip cap limits, and will not trigger the need for any system-wide Category 1 (local Marina del Rey) roadway improvements prior to its construction.

The specific transportation and circulation improvements identified in the Marina del Rey Specific Plan Transportation Improvement Program (TIP) are designed to fully mitigate the traffic generation of the Phase II development in Marina del Rey. In order to fund the recommended TIP roadway improvements, all projects within the Marina, including the proposed development, are required to pay a traffic mitigation fee imposed by the County of Los Angeles pursuant to the TIP. This fee is intended to fund the Category 1 (local Marina) and Category 3 (regional) roadway improvements described in the TIP, by providing "fair share" contributions toward the improvements, based on the amount of project PM peak hour trips. These improvements address local traffic generated in and confined to the Marina, as well as trips which leave or pass through the Marina (regional trips). The County's traffic mitigation fee structure is currently $5,690 per PM peak hour trip. Based on the expected project trip generation of 111 net new PM peak hour trips, the project would be required to pay $631,590 in trip mitigation fees.

The County Department of Public Works has expressed that it prefers to implement the Marina del Rey TIP-recommended roadway improvements as a single major project in order to minimize traffic disruptions and construction time. Therefore, payment of the traffic impact mitigation fee is the recommended mitigation over the partial construction by this project of portions of the relevant TIP roadway improvements. However, should the County decide that roadway improvement measures are necessary to address the immediate impacts of project traffic, the following measure is recommended to reduce the potential project traffic impact identified in this study to less than significant levels.

- Lincoln Boulevard and Mindanao Way – Widen Lincoln Boulevard, and relocate and narrow the existing median island to provide a northbound right-turn only or through lane at Mindanao Way. This measure is identical to the improvement described in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program.

Implementation of the improvement measure described above will reduce the project traffic impact at Lincoln Boulevard and Mindanao Way to less than significant levels, and no additional project-specific traffic improvements are necessary.

To determine the quantitative effect of this mitigation measure on the project-specific significant impact, a supplemental analysis was performed. This analysis utilized the same analysis procedures and techniques as were used in the preceding analysis of intersection conditions, with the exception that the proposed mitigation measure was assumed to be "in place". The results of the supplemental "With Mitigation" analysis are presented in Table 14 and show that, once installed, this mitigation measure will reduce the traffic impact of the proposed project to less than significant levels, and no additional project-specific traffic improvements are necessary..

Table 14
Summary of Critical Movement Analysis
Future (2009) Traffic Conditions - With Project Plus Mitigation

	Without Project		With Project			With Mitigation		
	CMA	LOS	CMA	LOS	Impact	CMA	LOS	Impact
AM Peak Hour								
12. Lincoln Boulevard & Mindanao Way	0.923	E	0.939	E	+0.016*	0.829	D	-0.094
PM Peak Hour								
12. Lincoln Boulevard & Mindanao Way	0.947	E	0.952	E	+0.005	0.863	D	-0.084

* Denotes significant impact, prior to mitigation.

However, although the project itself would potentially significantly impact only one of the area intersections, an analysis of cumulative traffic impacts at the study intersections indicates that traffic resulting from total development throughout the project vicinity, including the proposed project, could produce significant impacts at 10 of the 17 locations analyzed. As with the project-specific improvement measure for Lincoln Boulevard and Mindanao Way, the TIP improvements are designed to address traffic growth due to cumulative development within and surrounding the Marina, and therefore, payment of the traffic impact mitigation fee described earlier is intended to mitigate the proposed project's incremental contributions toward cumulative traffic growth and the resulting impacts in the study area. However, the County acknowledges that traffic growth within the project vicinity has outpaced the projections upon which the TIP trip fees were based, and therefore, an analysis of cumulative impacts with respect to the effectiveness of the proposed TIP improvements was requested.

The intersection improvement measures recommended in the TIP to address cumulative traffic impacts in the project vicinity are described below.

- Admiralty Way and Via Marina – Participate in the reconstruction of the intersection to provide for a realignment of Admiralty Way as a "through roadway", with Via Marina intersecting into Admiralty Way in a "T" configuration. All turning movements at the intersection will be constructed as dual or right-turning movements. This improvement is identified in the Marina del Rey TIP, and will enhance flow within the Marina.

- Washington Boulevard and Via Marina/Ocean Avenue – No feasible physical improvements are identified in the TIP that remain available to mitigate this potential cumulative impact. However, the Los Angeles County Department of Public Works has identified an improvement at the nearby intersection of Washington Boulevard and Palawan Way which would provide additional egress from the Marina, reducing traffic volumes at this intersection, and providing mitigation for the cumulative impacts. The proposed improvement would reconstruct the intersection of Washington Boulevard and Palawan Way to allow for dual northbound left-turns onto westbound Washington Boulevard, and install a new traffic signal at that intersection. The new northbound left-turn capability will provide an additional means of accessing westbound Washington Boulevard from westbound Admiralty Way, reducing the existing high northbound left-turn volumes at Washington Boulevard and Via Marina/Ocean Avenue. However, this proposed improvement is not included in the TIP improvement program, and the proposed Del Rey Shores project would be requested to contribute "fair share" funding to this improvement above and beyond the previously-identified traffic mitigation fees. Current estimates for this improvement indicate a total cost of approximately $120,000. The Del Rey Shores project's equitable share cost of the improvement is estimated at approximately 12.85 percent (average of the peak hours), or an

approximately $15,420 contribution beyond the $631,590 in TIP trip mitigation fees already identified for the project.

- Admiralty Way and Palawan Way – Restripe the southbound approach to convert the through lane into a left/through shared lane. Restripe the northbound approach to provide an exclusive right-turn only lane, in addition to a shared left-turn/through lane. This improvement is currently being investigated by the County for implementation as a new TIP- type measure, funded by fair share contributions by projects within Marina del Rey. Also, add a third westbound through lane to Admiralty Way within the existing right-of-way by moving the median and restriping Admiralty Way, as identified in the TIP.

- Washington Boulevard and Palawan Way – Install the new traffic signal at this intersection (as described above as "in lieu" mitigation for the cumulative impact at Washington Boulevard and Via Marina/Ocean Avenue). The northbound approach should be realigned to reduce the angle of the right-turn only lane, and provide a more perpendicular approach, plus provide dual left-turn lanes.

- Lincoln Boulevard and Washington Boulevard – No feasible physical improvements are currently available to mitigate this potential cumulative impact. However, payment of the Marina del Rey trip fees, as described earlier, is designed to fund major regional transportation improvements to address impacts at locations such as this one. Among the regional transportation improvements being considered is the future extension of the Marina Freeway (SR 90) westward to connect with Admiralty Way. The extension, slated for the year 2011, will help alleviate traffic congestion in the

area, including at the key intersection of Lincoln Boulevard and Washington Boulevard. This measure is identified in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program and must have approval by the Board of Supervisors, the City of Los Angeles and Caltrans.

However, should the extension of the SR-90 not be implemented, the traffic impact fees assessed to the project (and all projects within the Marina) could also be used to fund alternative improvements to address cumulative traffic growth that cannot be developed within the existing right-of-way, such as widening Lincoln Boulevard at Washington Boulevard to provide an additional through lane in the northbound and southbound directions.

- Lincoln Boulevard and Marina Expressway (SR 90) – Extend Route 90 to connect to Admiralty Way via a fly-over across Lincoln Boulevard. The extension would eliminate the at-grade intersection, thereby mitigating the cumulative impacts at this location. As described above, this improvement is currently included in the TIP improvements funded by the trip fee.

- Lincoln Boulevard and Mindanao Way – The TIP improvement for this location is identified previously as a project-impact mitigation feature. However, that improvement (installation of a northbound right-turn only lane on Lincoln Boulevard) will not fully mitigate the anticipated cumulative impacts at this intersection, and no further feasible physical improvements are currently available to mitigate this potential cumulative impact. However, payment of the Marina del Rey trip fees, as described earlier, is designed to fund major regional transportation improvements to address impacts at locations such as this one. Among the regional transportation improvements being considered is

the future extension of the Marina Freeway (SR 90) westward to connect with Admiralty Way. The extension, slated for the year 2011, will help alleviate traffic congestion in the area, including at the intersection of Lincoln Boulevard and Mindanao Way, which currently provides direct access from the SR-90 to Admiralty Way in the Marina, by providing a direct access alternative route. The SR-90 extension is identified in Appendix G (Transportation Improvement Program) of the Marina del Rey Local Implementation Program and must have approval by the Board of Supervisors, the City of Los Angeles and Caltrans.

However, should the extension of the SR-90 not be implemented, the traffic impact fees assessed to the project (and all projects within the Marina) could also be used to fund alternative improvements to address cumulative traffic growth, such as widening Lincoln Boulevard at Mindanao Way to provide for dual left-turn lanes in the southbound direction. This improvement may require acquisition of additional rights-of-way, which could also be funded through payment of the traffic impact fees described earlier.

- Lincoln Boulevard and Fiji Way – Widen the eastbound Fiji Way approach to Lincoln Boulevard to provide an additional left-turn lane at Lincoln Boulevard.

- Admiralty Way and Mindanao Way – Widen northbound Admiralty Way to provide a right-turn lane at Mindanao Way. Install dual left-turn lanes on Admiralty Way for southbound travel at the approach to Mindanao Way. In addition, modify the traffic signal to provide a westbound right-turn phase concurrent with the southbound left-turn movement. The dual left-turn lanes on Admiralty Way will enhance egress from the Marina at Mindanao Way, and has already been approved as part of a previous project (Marina Two).

- o Marina Expressway (SR 90) Eastbound and Mindanao Way – Restripe the westbound approach of Mindanao Way at the eastbound Marina Expressway to provide dual left-turn lanes.

The effectiveness of these recommended cumulative mitigation measures were evaluated in a supplemental analysis. This "With Cumulative Development Plus Mitigation" analysis utilized the same methodologies and assumptions as described previously, again with the exception that the recommended cumulative improvement measures described above were assumed to be "in place". This assumption also included the redistribution of traffic at several intersections (Washington Boulevard and Via Marina/Ocean Avenue, Admiralty Way and Via Marina, Admiralty Way and Palawan Way, and Washington Boulevard and Palawan Way) as a result of anticipated travel pattern changes resulting from the installation of the proposed northbound right-turn lanes at Washington Boulevard and Palawan Way. The results of the supplemental "With Cumulative Mitigation" analysis are summarized in Table 15.

As shown in this table, the implementation of the cumulative mitigation measures will result in reduction of all cumulative impacts to less than significant levels. These cumulative mitigation measures include measures specifically identified in the TIP, including funding for long-term improvements, such as widening the Lincoln Boulevard Corridor and the planned Marina Expressway (SR-90) extension to Admiralty Way, that will increase area-wide traffic capacity and help alleviate existing and future congestion in the study area. However, Table 15 indicates that, since the design of the proposed SR-90 extension has not been determined, calculation of the exact benefits to specific intersections for which the extension is identified in the Marina del Rey Land Use Plan (LUP) as mitigation cannot occur. The County is currently preparing an Environmental Impact Report for this roadway improvement which will identify the anticipated benefits to the Lincoln Boulevard corridor as a result of the SR-90 extension to Admiralty Way.

Table 15
Summary of Critical Movement Analysis
Future (2009) With Cumulative Development Traffic Conditions

No.	Intersection	Peak Hour	Without Project		With Cumulative Development			With Cumulative Dev. Plus Mitigation		
			CMA	LOS	CMA	LOS	Impact	CMA	LOS	Impact
5.	Admiralty Way and	AM	0.559	A	0.640	B	0.081	0.421	A	-0.138
	Via Marina	PM	0.734	C	0.863	D	0.129 *	0.522	A	-0.212
6.	Washington Boulevard and	AM	0.621	B	0.712	C	0.091 *	0.678	B	0.057
	Via Marina/Ocean Avenue	PM	0.747	C	0.857	D	0.110 *	0.769	C	0.022
7.	Admiralty Way and	AM	0.477	A	0.606	B	0.129	0.518	A	0.041
	Palawan Way	PM	0.622	B	0.757	C	0.135 *	0.574	A	-0.048
8.	Washington Boulevard and	AM	0.662	B	0.842	D	0.180 *	0.573	A	-0.089
	Palawan Way	PM	0.630	B	0.704	C	0.074 *	0.612	B	-0.018
9.	Washington Boulevard and	AM	1.072	F	1.158	F	0.086 *	N/A	N/A	N/A
	Lincoln Boulevard	PM	1.037	F	1.096	F	0.059 *	N/A	N/A	N/A
10.	Lincoln Boulevard and	AM	0.810	D	0.860	D	0.050 *	N/A	N/A	N/A
	Marina Expressway (SR-90)	PM	0.844	D	0.915	E	0.071 *	N/A	N/A	N/A
12.	Lincoln Boulevard and	AM	0.923	E	1.066	F	0.143 *	N/A	N/A	N/A
	Mindanao Way	PM	0.947	E	1.032	F	0.085 *	N/A	N/A	N/A
13.	Lincoln Boulevard and	AM	0.597	A	0.635	B	0.038	0.619	B	0.022
	Fiji Way	PM	0.741	C	0.791	C	0.050 *	0.769	C	0.028
15.	Admiralty Way and	AM	0.616	B	0.822	D	0.206 *	0.564	A	-0.052
	Mindanao Way	PM	0.713	C	0.928	E	0.215 *	0.727	C	0.014
18.	Marina Expressway (SR-90) EB and	AM	0.755	C	0.846	D	0.091 *	0.727	C	-0.028
	Mindanao Way	PM	0.877	D	0.947	E	0.070 *	0.770	C	-0.107

* Indicates significant impact, prior to mitigation (per Los Angeles County Department of Public Works criteria).

N/A Design of future extension of Marina Expressway to Admiralty Way not finalized. CMA value could not be calculated.

The improvements described above, with the exception of the new traffic signal at Washington Boulevard and Palawan Way, are identical to or consistent with roadway improvements identified in the TIP, and funded through payment of the traffic impact

fees. Installation of the recommended measures will fully mitigate the effects of cumulative traffic growth, including project traffic, in the study area. The project will contribute its "fair share" toward implementation of these cumulative improvements through payment of the $631,590 trip fee, plus the pro-rata share for the new traffic signal and roadway improvement at Washington Boulevard and Palawan Way.

APPENDIX A

TRAFFIC COUNTS

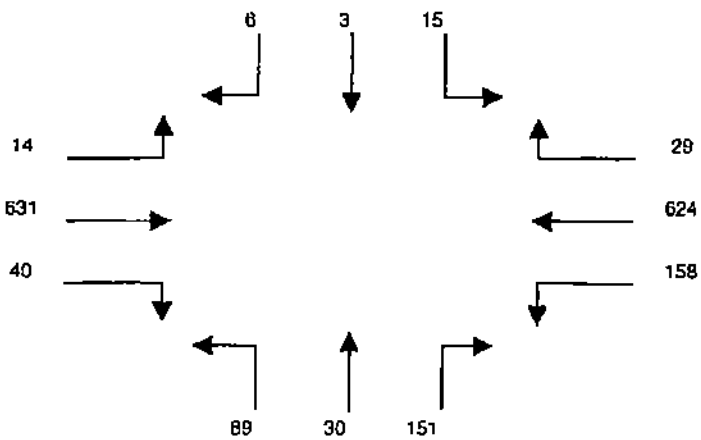
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN & ASSOCIATES
PROJECT: DEL REY SHORES PROJECT
DATE: THURSDAY, JANUARY 13, 2005
PERIOD: 07:00 AM TO 10:00 AM
INTERSECTION: N/S VIA DOLCE / DELL AVENUE
E/W WASHINGTON BOULEVARD
FILE NUMBER: 1-AM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
700-715	0	0	2	4	90	14	27	1	16	5	79	1
715-730	0	0	0	2	157	23	36	2	18	7	106	1
730 745	1	0	2	5	140	16	30	3	29	5	143	3
745-800	0	2	2	9	166	26	33	4	18	7	131	6
800-815	0	0	4	9	145	28	51	8	23	8	133	3
815-830	1	1	4	4	170	31	37	7	27	13	188	3
830-845	3	1	4	8	161	48	29	7	22	12	163	4
845-900	2	1	3	8	148	51	34	8	17	7	149	4
900-915	1	0	2	7	128	42	34	8	15	8	151	2
915-930	3	1	3	8	141	30	27	7	12	10	137	3
930-945	1	1	2	6	136	27	21	6	12	6	142	4
945-1000	2	0	1	6	127	33	22	5	11	7	139	2

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-800	1	2	6	20	573	79	126	10	81	24	459	11	1392
715-815	1	2	8	25	628	93	150	17	88	27	513	13	1565
730-830	2	3	12	27	641	101	151	22	97	33	593	15	1697
745-845	4	4	14	30	662	133	150	26	90	40	613	16	1782
800-900	6	3	15	29	624	158	151	30	89	40	631	14	1790
815 915	7	3	13	27	608	172	134	30	81	40	649	13	1777
830-930	9	3	12	31	579	171	120	30	66	37	600	13	1675
845-945	7	3	10	29	554	150	110	29	56	31	579	13	1577
900-1000	7	2	8	27	533	132	104	26	50	31	569	11	1500

A.M. PEAK HOUR
0800-0900



THE TRAFFIC SOLUTION
320 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

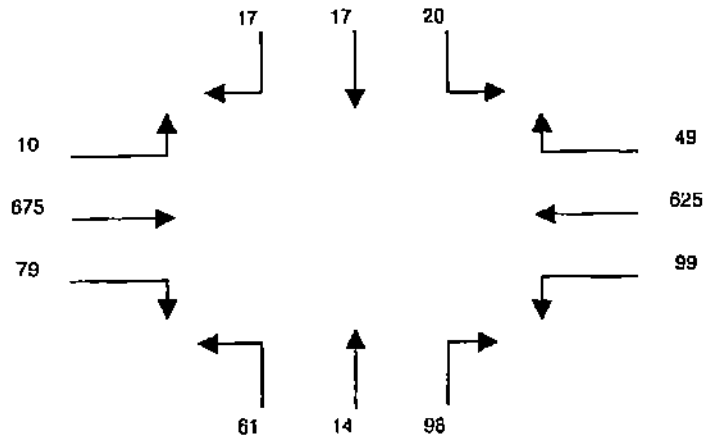
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN & ASSOCIATES
PROJECT: DEL REY SHORES PROJECT
DATE: THURSDAY, JANUARY 13, 2005
PERIOD: 03:00 PM TO 06:00 PM
INTERSECTION: N/S VIA DOLCE / DELL AVENUE
E/W WASHINGTON BOULEVARD
FILE NUMBER: 1-PM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
300-315	0	2	3	7	120	17	19	1	8	11	127	2
315-330	2	1	3	6	137	20	23	3	10	14	150	1
330-345	3	3	5	8	129	15	22	2	9	15	144	3
345-400	1	4	2	7	123	19	17	4	12	14	156	1
400-415	1	5	4	9	146	24	28	3	10	13	161	2
415-430	2	8	3	9	144	17	31	7	11	12	159	2
430-445	7	2	9	14	157	27	25	4	14	20	154	3
445-500	2	7	3	12	162	30	29	3	10	16	165	3
500-515	4	5	4	12	142	24	24	4	20	19	166	2
515-530	4	3	4	11	164	18	20	3	17	24	170	2
530-545	2	5	5	9	157	30	15	3	29	15	155	3
545-600	5	4	8	6	140	21	18	7	16	15	141	2

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
300-400	6	10	13	28	509	71	81	10	39	54	577	7	1405
315-415	7	13	14	30	535	76	90	12	41	56	611	7	1494
330-430	7	20	14	33	542	75	98	16	42	54	620	8	1529
345-445	11	19	18	39	570	87	101	18	47	59	630	8	1607
400-500	12	22	19	44	609	98	113	17	45	61	659	10	1709
415-515	15	22	19	47	605	98	109	18	55	67	664	10	1729
430-530	17	17	20	49	625	99	98	14	61	79	675	10	1764
445-545	12	20	16	44	625	102	88	13	76	74	676	10	1756
500-600	15	17	21	38	603	93	77	17	82	73	632	9	1677

P.M. PEAK HOUR
0430-0530



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446 7978

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S VIA MARINA
E/W TAHITI WAY

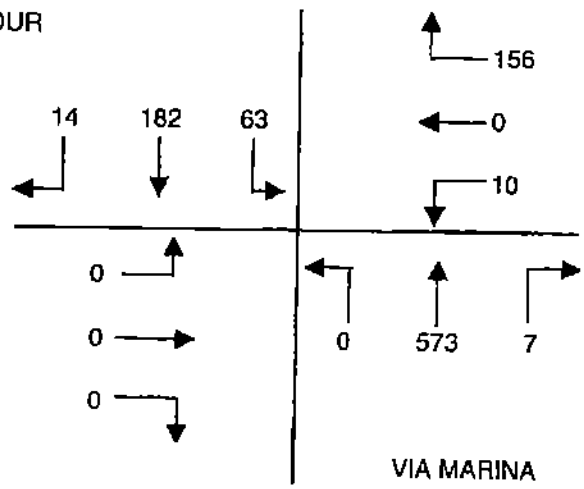
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	27	15	28	0	3	1	81	2	0	0	0	157
715-790	1	27	14	27	0	3	1	95	0	0	0	0	168
730-745	0	32	10	32	0	4	0	117	0	0	0	0	195
745-800	1	37	19	30	0	2	3	150	0	0	0	0	242
800-815	2	38	16	44	0	6	2	139	0	0	0	0	247
815-830	2	40	13	40	0	2	1	149	0	0	0	0	247
830-845	5	51	16	33	0	1	2	145	0	0	0	0	253
845-900	5	53	18	39	0	1	2	140	0	0	0	0	258
900-915	3	68	20	37	0	0	1	101	0	0	0	0	230
915-930	1	40	12	34	0	3	1	96	0	0	0	0	187
930-945	1	41	21	32	0	2	2	93	0	0	0	0	192
945-1000	0	39	21	33	0	0	2	105	0	0	0	0	200

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	2	123	58	117	0	12	5	443	2	0	0	0	762
715-815	4	134	59	133	0	15	6	501	0	0	0	0	852
730-830	5	147	58	146	0	14	6	555	0	0	0	0	931
745-845	10	166	64	147	0	11	8	583	0	0	0	0	989
800-900	14	182	63	156	0	10	7	573	0	0	0	0	1005
815-815	15	212	67	149	0	4	6	535	0	0	0	0	988
830-930	14	212	66	143	0	5	6	482	0	0	0	0	928
845-945	10	202	71	142	0	6	6	430	0	0	0	0	867
900-1000	5	188	74	136	0	5	6	395	0	0	0	0	809

A.M. PEAK HOUR
800-900



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S VIA MARINA
E/W TAHITI WAY

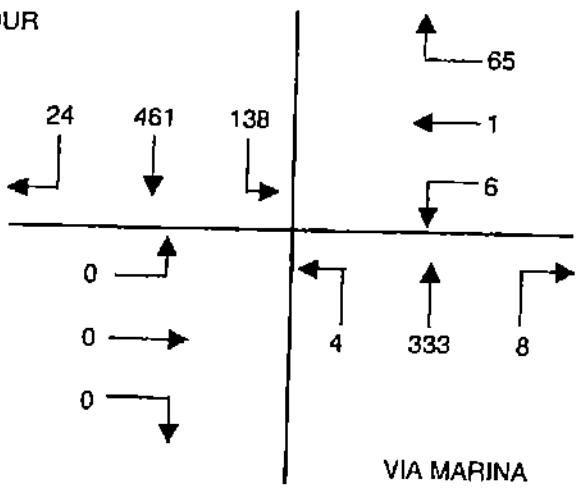
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	6	69	23	28	1	3	2	62	0	0	0	0	194
315-330	8	80	24	22	0	2	4	67	0	0	0	0	207
330-345	6	74	17	15	1	2	1	54	1	0	0	0	171
345-400	6	85	23	12	0	1	7	79	0	0	0	0	213
400-415	6	85	17	10	0	0	2	66	0	0	0	0	186
415-430	3	99	20	13	0	3	0	64	1	0	0	0	203
430-445	2	95	26	18	0	2	2	85	0	0	0	0	230
445-500	2	77	31	13	0	1	0	73	0	0	0	0	197
500-515	4	110	37	19	0	3	3	92	2	0	0	0	270
515-530	9	120	29	22	1	1	2	80	1	0	0	0	265
530-545	6	123	40	17	0	1	1	78	0	0	0	0	266
545-600	5	108	32	7	0	1	2	83	1	0	0	0	239

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	26	308	87	77	2	8	14	262	1	0	0	0	785
315-415	26	324	81	59	1	5	14	266	1	0	0	0	777
330-430	21	343	77	50	1	6	10	263	2	0	0	0	773
345-445	17	364	86	53	0	6	11	294	1	0	0	0	832
400-500	13	356	94	54	0	6	4	288	1	0	0	0	816
415-515	11	381	114	63	0	9	5	314	3	0	0	0	900
430-530	17	402	123	72	1	7	7	330	3	0	0	0	962
445-545	21	430	137	71	1	6	6	323	3	0	0	0	998
500-600	24	461	138	65	1	6	8	333	4	0	0	0	1040

P.M. PEAK HOUR
500-600



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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

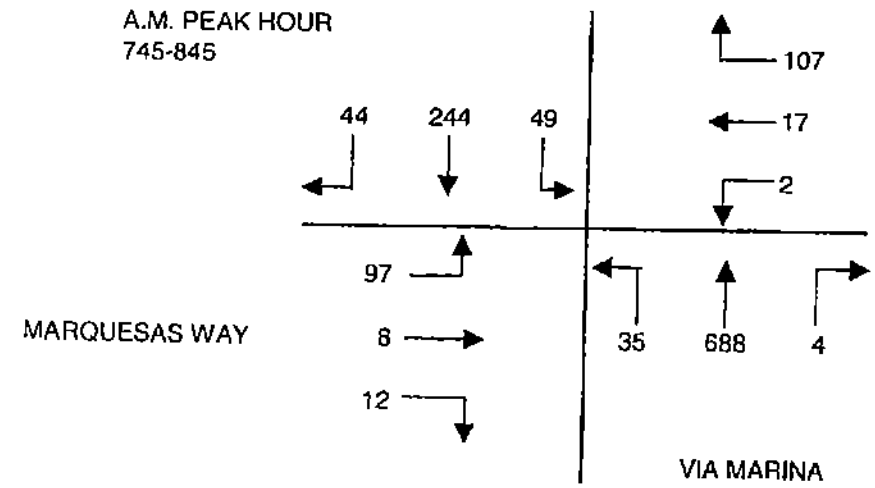
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S VIA MARINA
E/W MARQUESAS WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	5	33	6	24	1	3	2	75	5	1	0	14	169
715-730	4	36	9	20	1	0	1	128	8	1	0	20	228
730-745	10	42	3	24	3	0	0	141	7	0	0	37	267
745-800	14	68	11	33	4	0	2	167	6	2	1	23	331
800-815	8	48	13	26	4	1	2	175	7	5	2	26	317
815-830	8	58	13	28	4	0	0	171	14	1	2	20	319
830-845	14	70	12	20	5	1	0	175	8	4	3	28	340
845-900	6	61	8	19	1	2	2	131	6	1	2	27	266
900-915	13	96	13	17	4	0	1	145	8	6	1	32	336
915-930	4	66	12	15	2	0	2	123	9	1	3	23	260
930-945	11	56	14	14	3	0	2	134	9	2	2	28	275
945-1000	9	65	9	15	2	0	0	144	4	2	1	20	271

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	33	179	29	101	9	3	5	511	26	4	1	94	995
715-815	36	194	36	103	12	1	5	611	28	8	3	106	1143
730-830	40	216	40	111	15	1	4	654	34	9	5	106	1234
745-845	44	244	49	107	17	2	4	688	35	12	8	97	1307
800-900	36	237	46	93	14	4	4	652	35	11	9	101	1242
815-815	41	285	46	84	14	3	3	622	36	12	8	107	1261
830-930	37	293	45	71	12	3	5	574	31	12	9	110	1202
845-945	34	279	47	65	10	2	7	533	32	10	8	110	1137
900-1000	37	283	48	61	11	0	5	546	30	11	7	103	1142



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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S VIA MARINA
E/W MARQUESAS WAY

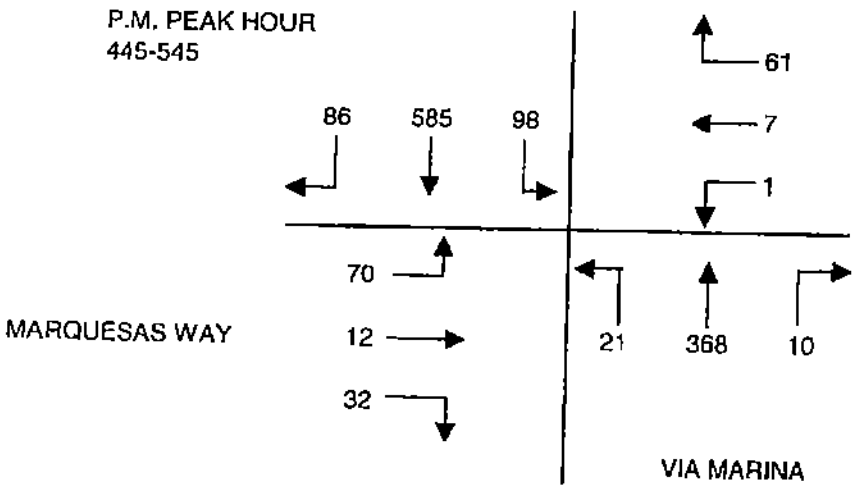
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	16	91	11	14	2	1	3	85	4	6	2	17	252
315-330	13	106	15	12	2	0	0	89	5	3	0	11	256
330-345	19	96	18	16	0	1	1	78	8	9	3	18	267
345-400	18	119	17	15	2	0	2	80	5	6	2	22	288
400-415	14	108	27	12	2	0	1	96	7	5	4	17	293
415-430	18	94	25	20	1	1	2	77	4	4	5	15	266
430-445	15	120	25	16	1	0	3	90	3	11	3	20	307
445-500	19	120	20	13	2	0	2	89	4	6	5	16	296
500-515	14	156	26	19	1	0	1	109	1	8	4	15	354
515-530	34	137	26	16	1	0	4	81	8	8	1	16	332
530-545	19	172	26	13	3	1	3	89	8	10	2	23	369
545-600	14	127	28	6	2	0	4	68	5	7	5	20	286

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	66	412	61	57	6	2	6	332	22	24	7	68	1063
315-415	64	429	77	55	6	1	4	343	25	23	9	68	1104
330-430	69	417	87	63	5	2	6	331	24	24	14	72	1114
345-445	65	441	94	63	6	1	8	343	19	26	14	74	1154
400-500	66	442	97	61	6	1	8	352	18	26	17	68	1162
415-515	66	490	96	68	5	1	8	365	12	29	17	66	1223
430-530	82	533	97	64	5	0	10	369	16	33	13	67	1289
445-545	86	585	98	61	7	1	10	368	21	32	12	70	1351
500-600	81	592	106	54	7	1	12	347	22	33	12	74	1341

P.M. PEAK HOUR
445-545



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

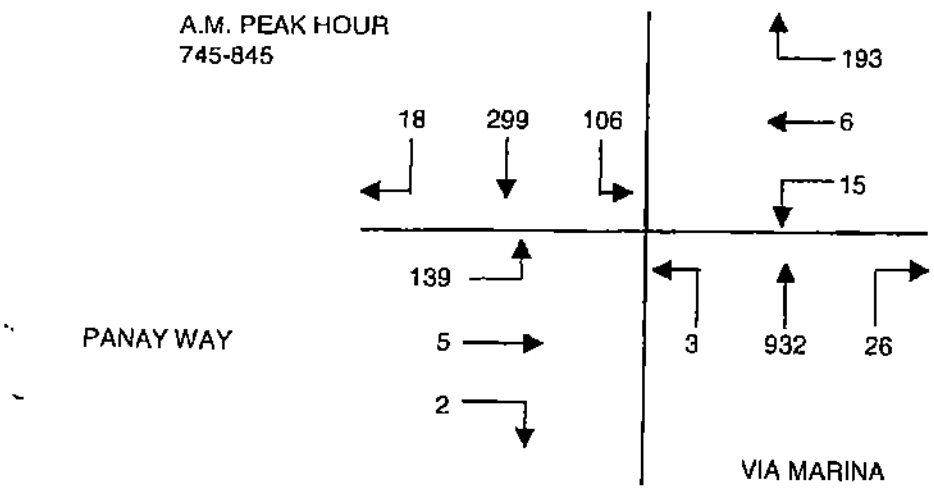
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S VIA MARINA
E/W PANAY WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	47	15	33	1	2	3	160	0	0	0	20	281
715-730	0	41	23	32	0	0	2	157	0	1	1	22	279
730-745	5	55	18	50	0	1	3	207	1	2	0	39	381
745-800	6	83	28	43	3	1	5	232	0	0	3	37	441
800-815	6	59	20	54	3	4	8	248	1	1	1	41	446
815-830	3	70	27	42	0	3	6	221	1	1	1	30	405
830-845	3	87	31	54	0	7	7	231	1	0	0	31	452
845-900	6	78	26	40	0	4	3	214	0	0	0	25	396
900-915	2	100	26	52	1	10	9	200	0	0	0	29	429
915-930	4	74	25	48	0	7	3	186	0	1	1	22	371
930-945	3	76	32	43	0	9	11	167	0	0	0	23	364
945-1000	2	78	24	42	1	2	3	181	0	0	1	10	344

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	11	226	84	158	4	4	13	756	1	3	4	118	1382
715-815	17	238	89	179	6	6	18	844	2	4	5	139	1547
730-830	20	267	93	189	6	9	22	908	3	4	5	147	1673
745-845	18	299	106	193	6	15	26	932	3	2	5	139	1744
800-900	18	294	104	190	3	18	24	914	3	2	2	127	1699
815-815	14	335	110	188	1	24	25	866	2	1	1	115	1682
830-930	15	339	108	194	1	28	22	831	1	1	1	107	1648
845-945	15	328	109	183	1	30	26	767	0	1	1	99	1560
900-1000	11	328	107	185	2	28	26	734	0	1	2	84	1508



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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S VIA MARINA
E/W PANAY WAY

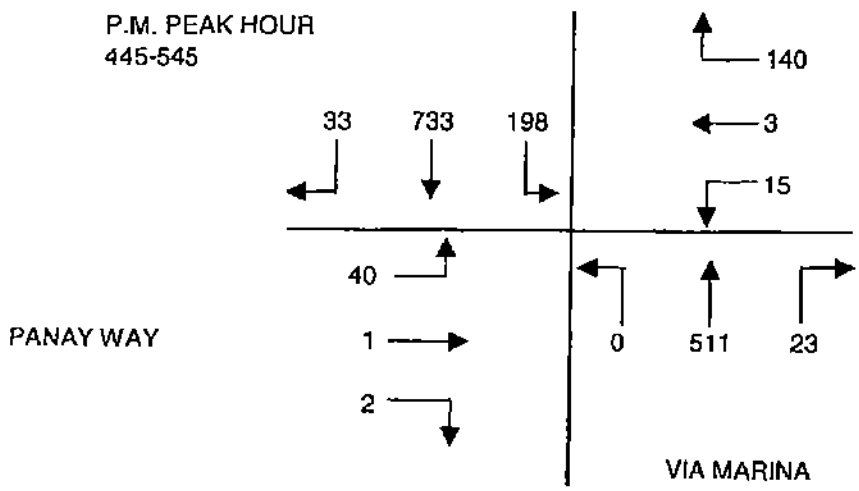
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	4	130	31	48	1	4	11	124	2	1	1	8	365
315-330	4	116	27	40	0	4	3	108	0	0	0	9	311
330-345	7	125	38	38	0	7	6	104	2	0	0	11	338
345-400	13	152	39	22	0	3	9	131	2	0	0	8	379
400-415	9	141	41	21	0	4	4	140	1	1	0	7	369
415-430	8	139	35	40	0	4	2	121	2	3	0	12	366
430-445	3	144	45	34	0	2	5	134	0	2	0	10	379
445-500	7	174	52	36	2	3	7	112	0	1	0	12	406
500-515	8	173	38	41	1	7	10	139	0	1	0	5	423
515-530	10	197	53	36	0	3	5	124	0	0	1	10	439
530-545	8	189	55	27	0	2	1	136	0	0	0	13	431
545-600	5	178	51	26	2	3	6	121	0	1	0	9	402

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	28	523	135	148	1	18	29	467	6	1	1	36	1393
315-415	33	534	145	121	0	18	22	483	5	1	0	35	1397
330-430	37	557	153	121	0	18	21	496	7	4	0	38	1452
345-445	33	576	160	117	0	13	20	526	5	6	0	37	1493
400-500	27	598	173	131	2	13	18	507	3	7	0	41	1520
415-515	26	630	170	151	3	16	24	506	2	7	0	39	1574
430-530	28	688	188	147	3	15	27	509	0	4	1	37	1647
445-545	33	733	198	140	3	15	23	511	0	2	1	40	1699
500-600	31	737	197	130	3	15	22	520	0	2	1	37	1695

P.M. PEAK HOUR
445-545



<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6199 FAX: (909) 595-6022 >

File Name : 349201
Site Code : 00349201
Start Date : 12/15/2004
Page No : 1

Groups Printed- Turning Movement

Start Time	VIA MARINA Southbound Right	Thru	Left	App. Total	ADMIRALTY WAY Westbound Right	Thru	Left	App. Total	VIA MARINA Northbound Right	Thru	Left	App. Total	Eastbound Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	0	25	35	60	79	0	53	132	102	92	0	194	0	0	0	0	386
07:15 AM	0	38	72	110	145	0	41	186	135	93	0	228	0	0	0	0	524
07:30 AM	0	44	66	110	174	0	54	228	167	118	0	285	0	0	0	0	623
07:45 AM	0	47	70	117	172	0	73	245	178	117	0	295	0	0	0	0	657
Total	0	154	243	397	570	0	221	791	582	420	0	1002	0	0	0	0	2190
08:00 AM	0	43	92	135	164	0	79	243	176	139	0	315	0	0	0	0	693
08:15 AM	0	67	85	152	131	0	91	222	139	143	0	282	0	0	0	0	656
08:30 AM	0	48	89	137	152	0	85	237	155	132	0	287	0	0	0	0	661
08:45 AM	0	50	97	147	125	0	76	201	168	131	0	299	0	0	0	0	647
Total	0	208	363	571	572	0	331	903	638	545	0	1183	0	0	0	0	2657
09:00 AM	0	43	78	121	129	0	81	210	156	101	0	257	0	0	0	0	588
09:15 AM	0	45	80	125	121	0	74	195	147	108	0	255	0	0	0	0	575
09:30 AM	0	52	69	121	92	0	66	158	135	104	0	239	0	0	0	0	518
09:45 AM	0	48	67	115	101	0	84	185	118	71	0	189	0	0	0	0	489
Total	0	188	294	482	443	0	305	748	556	384	0	940	0	0	0	0	2170
*** BREAK ***																	
03:00 PM	0	68	94	162	91	0	151	242	118	87	0	205	0	0	0	0	609
03:15 PM	0	77	105	182	90	0	135	225	121	90	0	211	0	0	0	0	618
03:30 PM	0	73	120	193	98	0	132	230	117	91	0	208	0	0	0	0	631
03:45 PM	0	68	121	189	116	0	134	250	116	64	0	180	0	0	0	0	619
Total	0	286	440	726	395	0	552	947	472	332	0	804	0	0	0	0	2477
04:00 PM	0	74	129	203	114	0	140	254	128	62	0	190	0	0	0	0	647
04:15 PM	0	57	133	190	109	0	189	298	121	51	0	172	0	0	0	0	660
04:30 PM	0	75	130	205	130	0	177	307	107	85	0	192	0	0	0	0	704
04:45 PM	0	78	137	215	107	0	182	289	91	64	0	155	0	0	0	0	659
Total	0	284	529	813	460	0	688	1148	447	262	0	709	0	0	0	0	2670
05:00 PM	0	82	135	217	121	0	184	305	142	69	0	211	0	0	0	0	733
05:15 PM	0	87	166	253	135	0	175	310	129	74	0	203	0	0	0	0	766
05:30 PM	0	84	142	226	143	0	197	340	99	71	0	170	0	0	0	0	736
05:45 PM	0	91	157	248	131	0	198	329	97	63	0	160	0	0	0	0	737
Total	0	344	600	944	530	0	754	1284	467	277	0	744	0	0	0	0	2972
Grand Total	0	1464	2469	3933	2970	0	2851	5821	3162	2220	0	5382	0	0	0	0	15136
Apprch %	0.0	37.2	62.8		51.0	0.0	49.0		58.8	41.2	0.0		0.0	0.0	0.0		
Total %	0.0	9.7	16.3	26.0	19.6	0.0	18.8	38.5	20.9	14.7	0.0	35.6	0.0	0.0	0.0	0.0	

Start Time	VIA MARINA Southbound Right	Thru	Left	App. Total	ADMIRALTY WAY Westbound Right	Thru	Left	App. Total	VIA MARINA Northbound Right	Thru	Left	App. Total	Eastbound Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Intersection 07:45 AM																	
Volume	0	205	336	541	619	0	328	947	648	531	0	1179	0	0	0	0	2667
Percent	0.0	37.9	62.1		65.4	0.0	34.6		55.0	45.0	0.0		0.0	0.0	0.0		
08:00 Volume	0	43	92	135	164	0	79	243	176	139	0	315	0	0	0	0	693
Peak Factor																	0.962
High Int.	08:15 AM				07:45 AM				08:00 AM				6:45:00 AM				
Volume	0	67	85	152	172	0	73	245	176	139	0	315					
Peak Factor				0.890				0.966				0.936					

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<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-8198 FAX: (909) 595-6022 >

File Name : 349201
Site Code : 00349201
Start Date : 12/15/2004
Page No : 2

	VIA MARINA Southbound				ADMIRALTY WAY Westbound				VIA MARINA Northbound				Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 05:00 PM																	
Volume	0	344	600	944	530	0	754	1284	467	277	0	744	0	0	0	0	2972
Percent	0.0	36.4	63.6		41.3	0.0	58.7		62.8	37.2	0.0		0.0	0.0	0.0		
05:15 Volume	0	87	166	253	135	0	175	310	129	74	0	203	0	0	0	0	766
Peak Factor																	0.970
High Int.	05:15 PM				05:30 PM				05:00 PM								
Volume	0	87	166	253	143	0	197	340	142	69	0	211					
Peak Factor				0.933				0.944				0.882					

<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6199 FAX: (909) 595-6022 >

File Name : 349202
Site Code : 00349202
Start Date : 12/16/2004
Page No : 1

Groups Printed- Turning Movement

Start Time	OCEAN AVE. Southbound				WASHINGTON BLVD. Westbound				VIA MARINA Northbound				WASHINGTON BLVD. Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	5	14	8	27	5	65	19	89	49	64	60	173	31	112	10	153	442
07:15 AM	3	23	17	43	10	64	25	99	57	76	101	234	49	104	7	160	536
07:30 AM	7	19	9	35	12	85	24	121	76	94	114	284	50	119	15	184	624
07:45 AM	10	26	10	46	7	89	26	122	81	87	115	283	53	138	11	202	653
Total	25	82	44	151	34	303	94	431	263	321	390	974	183	473	43	699	2255
08:00 AM	9	23	12	44	8	70	35	113	92	104	120	316	64	171	16	251	724
08:15 AM	9	40	23	72	6	106	34	146	84	90	104	278	57	163	10	230	726
08:30 AM	6	38	24	68	9	95	38	142	80	89	113	282	55	155	8	218	710
08:45 AM	8	43	19	70	10	91	27	128	102	91	108	301	62	137	9	208	707
Total	32	144	78	254	33	362	134	529	358	374	445	1177	238	626	43	907	2867
09:00 AM	6	28	18	52	15	120	32	167	64	89	103	256	53	139	10	202	677
09:15 AM	11	29	18	58	9	84	31	124	62	67	95	224	61	140	7	208	614
09:30 AM	10	40	17	67	5	87	35	127	68	66	60	194	44	135	15	194	582
09:45 AM	9	51	10	70	7	79	37	123	95	79	91	265	19	151	10	180	638
Total	36	148	63	247	36	370	135	541	289	301	349	939	177	565	42	784	2511
*** BREAK ***																	
03:00 PM	6	53	26	85	10	122	39	171	54	43	77	174	57	131	16	204	634
03:15 PM	12	61	30	103	13	117	30	160	55	49	70	174	68	155	11	234	671
03:30 PM	11	59	32	102	9	123	37	169	65	54	85	204	61	118	18	197	672
03:45 PM	14	78	43	135	15	112	29	156	44	56	78	178	45	144	10	199	668
Total	43	251	131	425	47	474	135	656	218	202	310	730	231	548	55	834	2645
04:00 PM	8	85	40	133	10	113	25	148	46	53	74	173	64	134	19	217	671
04:15 PM	7	75	32	114	11	108	26	145	50	45	75	170	70	150	6	226	655
04:30 PM	13	96	36	145	6	106	31	143	53	60	100	213	55	122	14	191	692
04:45 PM	14	87	31	132	8	113	38	159	46	58	79	183	66	157	11	234	708
Total	42	343	139	524	35	440	120	595	195	216	328	739	255	563	50	868	2726
05:00 PM	16	119	52	187	7	124	32	163	47	59	90	196	60	140	13	213	759
05:15 PM	15	114	44	173	11	119	26	156	41	70	91	202	77	168	10	252	783
05:30 PM	14	98	37	149	12	122	34	168	43	77	92	212	78	138	8	224	753
05:45 PM	5	114	29	148	11	110	41	162	37	76	89	202	69	85	14	168	680
Total	50	445	162	657	41	475	133	649	168	282	362	812	284	528	45	857	2975
Grand Total	227	1383	622	2232	223	2441	751	3415	1448	1675	2154	5277	1389	3276	284	4949	15873
Apprch %	10.2	62.0	27.9		6.5	71.5	22.0		27.4	31.7	40.8		28.1	66.2	5.7		
Total %	1.4	8.7	3.9	14.1	1.4	15.4	4.7	21.5	9.1	10.6	13.6	33.2	8.8	20.6	1.8	31.2	

Start Time	OCEAN AVE. Southbound				WASHINGTON BLVD. Westbound				VIA MARINA Northbound				WASHINGTON BLVD. Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Intersection 08:00 AM																	
Volume	32	144	78	254	33	362	134	529	358	374	445	1177	238	626	43	907	2867
Percent	12.6	56.7	30.7		6.2	68.4	25.3		30.4	31.8	37.8		26.2	69.0	4.7		
08:15 Volume	9	40	23	72	6	106	34	146	84	90	104	278	57	163	10	230	726
Peak Factor																	0.987
High Int.	08:15 AM				08:15 AM				08:00 AM				08:00 AM				
Volume	9	40	23	72	6	106	34	146	92	104	120	316	64	171	16	251	
Peak Factor				0.882				0.906				0.931				0.903	

<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6188 FAX: (909) 595-6022 >

File Name : 349202
Site Code : 00349202
Start Date : 12/15/2004
Page No : 2

	OCEAN AVE. Southbound				WASHINGTON BLVD. Westbound				VIA MARINA Northbound				WASHINGTON BLVD. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 02:45 PM to 05:45 PM - Peak 1 of 1																	
Intersection 04:45 PM																	
Volume	59	418	164	641	38	478	130	646	177	264	352	793	281	600	42	923	3003
Percent	9.2	65.2	25.6		5.9	74.0	20.1		22.3	33.3	44.4		30.4	65.0	4.6		
05:15 Volume	15	114	44	173	11	119	26	156	41	70	91	202	77	165	10	252	783
Peak Factor																	0.959
High Int.	05:00 PM				05:30 PM				05:30 PM				05:15 PM				
Volume	16	119	52	187	12	122	34	168	43	77	92	212	77	165	10	252	
Peak Factor				0.857				0.961				0.935				0.916	

<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6169 FAX: (909) 595-6022 >

File Name : 349203
Site Code : 00349203
Start Date : 12/15/2004
Page No : 1

Groups Printed- Turning Movement

Start Time	PALAWAN WAY Southbound Right	Thru	Left	App. Total	ADMIRALTY WAY Westbound Right	Thru	Left	App. Total	PALAWAN WAY Northbound Right	Thru	Left	App. Total	ADMIRALTY WAY Eastbound Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	2	5	20	27	7	118	6	131	4	6	2	12	0	128	11	139	309
07:15 AM	4	8	31	43	14	172	4	190	7	10	5	22	1	187	14	202	457
07:30 AM	7	3	29	39	16	230	8	254	8	13	4	25	1	204	19	224	542
07:45 AM	18	11	51	80	17	221	7	245	16	14	8	38	3	225	20	248	611
Total	31	27	131	189	54	741	25	820	35	43	19	97	5	744	64	813	1919
08:00 AM	18	4	48	70	25	233	8	266	14	16	4	34	3	232	41	276	646
08:15 AM	20	12	47	79	18	199	3	220	10	22	10	42	2	206	23	231	572
08:30 AM	26	5	40	71	27	212	6	245	14	12	5	31	4	226	22	252	599
08:45 AM	14	7	48	69	27	209	14	250	8	11	6	25	3	231	22	256	600
Total	78	28	183	289	97	853	31	981	46	61	25	132	12	895	108	1015	2417
09:00 AM	18	6	52	76	24	188	8	220	6	16	10	32	3	229	18	250	578
09:15 AM	16	5	37	58	16	184	8	208	13	14	6	33	5	214	19	238	537
09:30 AM	19	6	40	65	15	129	15	159	17	10	10	37	5	191	17	213	474
09:45 AM	13	6	28	47	14	167	14	195	6	15	8	29	1	179	11	191	462
Total	66	23	157	246	69	668	45	782	42	55	34	131	14	813	65	892	2051
*** BREAK ***																	
03:00 PM	25	14	53	92	21	200	21	242	10	6	13	29	7	186	14	207	570
03:15 PM	28	10	68	106	23	196	19	238	17	11	11	39	7	209	7	223	606
03:30 PM	20	16	66	102	18	208	15	241	18	13	5	36	4	211	11	226	605
03:45 PM	22	12	67	101	26	217	18	261	17	12	13	42	5	221	11	237	641
Total	95	52	254	401	88	821	73	982	62	42	42	146	23	827	43	893	2422
04:00 PM	29	13	71	113	19	216	20	255	19	21	7	47	4	226	23	253	668
04:15 PM	30	10	78	118	27	230	15	272	12	13	3	28	4	228	9	241	659
04:30 PM	33	15	63	111	22	263	19	304	10	3	9	22	3	221	15	239	676
04:45 PM	44	14	84	142	24	266	10	300	12	7	4	23	7	211	10	228	693
Total	136	52	296	484	92	975	64	1131	53	44	23	120	18	886	57	961	2696
05:00 PM	45	13	92	150	25	261	15	301	18	10	6	34	4	258	10	272	757
05:15 PM	34	22	89	145	19	286	16	321	12	10	5	27	6	272	14	292	785
05:30 PM	52	20	94	166	17	274	15	306	11	5	5	21	3	220	9	232	725
05:45 PM	41	24	82	147	21	293	19	333	14	7	4	25	3	245	9	257	762
Total	172	79	357	608	82	1114	65	1261	55	32	20	107	16	995	42	1053	3029
Grand Total	578	261	1378	2217	482	5172	303	5957	293	277	163	733	88	5160	379	5627	14534
Apprch %	26.1	11.8	62.2		8.1	86.8	5.1		40.0	37.8	22.2		1.6	91.7	6.7		
Total %	4.0	1.8	9.5	15.3	3.3	35.6	2.1	41.0	2.0	1.9	1.1	5.0	0.6	35.5	2.6	38.7	

Start Time	PALAWAN WAY Southbound Right	Thru	Left	App. Total	ADMIRALTY WAY Westbound Right	Thru	Left	App. Total	PALAWAN WAY Northbound Right	Thru	Left	App. Total	ADMIRALTY WAY Eastbound Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Intersection	07:45 AM																
Volume	82	32	186	300	87	865	24	976	54	64	27	145	12	889	105	1007	2428
Percent	27.3	10.7	62.0		8.9	88.6	2.5		37.2	44.1	18.6		1.2	88.3	10.5		
08:00 Volume	18	4	48	70	25	233	8	266	14	16	4	34	3	232	41	276	646
Peak Factor																	
- High Int.	07:45 AM				08:00 AM				08:15 AM				08:00 AM				0.940
Volume	18	11	51	80	25	233	8	266	10	22	10	42	3	232	41	276	
Peak Factor				0.938				0.917				0.863				0.912	

<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6199 FAX: (909) 595-6022 >

File Name : 349203
Site Code : 00349203
Start Date : 12/16/2004
Page No : 2

	PALAWAN WAY Southbound				ADMIRALTY WAY Westbound				PALAWAN WAY Northbound				ADMIRALTY WAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 05:00 PM																	
Volume	172	79	357	608	82	1114	65	1261	55	32	20	107	16	995	42	1053	3029
Percent	28.3	13.0	58.7		6.5	88.3	5.2		51.4	29.9	18.7		1.5	94.5	4.0		
05:15 Volume	34	22	89	145	19	286	16	321	12	10	5	27	6	272	14	292	785
Peak Factor																	0.965
High Int. 05:30 PM					05:45 PM				05:00 PM				05:15 PM				
Volume	52	20	94	166	21	293	19	333	18	10	6	34	6	272	14	292	
Peak Factor				0.916				0.947				0.787				0.902	

<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6198 FAX: (909) 595-6022 >

File Name : 349204
Site Code : 00349204
Start Date : 12/16/2004
Page No : 1

Groups Printed- Turning Movement

Start Time	Southbound Right	Thru	Left	App. Total	PALAWAN WAY Westbound Right	Thru	Left	App. Total	WASHINGTON BLVD. Northbound Right	Thru	Left	App. Total	PALAWAN WAY Eastbound Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	0	0	0	0	0	94	16	110	23	0	0	23	11	156	0	167	300
07:15 AM	0	0	0	0	0	97	27	124	38	0	0	38	16	150	0	166	328
07:30 AM	0	0	0	0	0	128	17	145	39	0	0	39	13	199	0	212	396
07:45 AM	0	0	0	0	0	132	45	177	45	0	0	45	27	203	0	230	452
Total	0	0	0	0	0	451	105	556	145	0	0	145	67	708	0	775	1476
08:00 AM	0	0	0	0	0	121	43	164	76	0	0	76	29	229	0	258	498
08:15 AM	0	0	0	0	0	149	46	195	59	0	0	59	29	235	0	264	518
08:30 AM	0	0	0	0	0	145	35	180	58	0	0	58	29	222	0	251	489
08:45 AM	0	0	0	0	0	141	33	174	51	0	0	51	31	212	0	243	468
Total	0	0	0	0	0	556	157	713	244	0	0	244	118	898	0	1016	1973
09:00 AM	0	0	0	0	0	167	40	207	55	0	0	55	29	182	0	211	473
09:15 AM	0	0	0	0	0	136	27	163	43	0	0	43	27	199	0	226	432
09:30 AM	0	0	0	0	0	142	31	173	36	0	0	36	22	215	0	237	446
09:45 AM	0	0	0	0	0	148	29	177	34	0	0	34	23	171	0	194	405
Total	0	0	0	0	0	593	127	720	168	0	0	168	101	767	0	868	1756
*** BREAK ***																	
03:00 PM	0	0	0	0	0	163	66	229	42	0	0	42	34	188	0	222	493
03:15 PM	0	0	0	0	0	164	59	223	33	0	0	33	40	202	0	242	498
03:30 PM	0	0	0	0	0	189	55	244	41	0	0	41	44	154	0	198	483
03:45 PM	0	0	0	0	0	164	64	228	46	0	0	46	37	201	0	238	512
Total	0	0	0	0	0	680	244	924	162	0	0	162	155	745	0	900	1986
04:00 PM	0	0	0	0	0	160	60	220	61	0	0	61	45	180	0	225	506
04:15 PM	0	0	0	0	0	151	75	226	44	0	0	44	48	196	0	244	514
04:30 PM	0	0	0	0	0	157	81	238	36	0	0	36	35	180	0	215	489
04:45 PM	0	0	0	0	0	156	81	237	34	0	0	34	50	170	0	220	491
Total	0	0	0	0	0	624	297	921	175	0	0	175	178	726	0	904	2000
05:00 PM	0	0	0	0	0	179	92	271	48	0	0	48	51	191	0	242	561
05:15 PM	0	0	0	0	0	157	92	249	32	0	0	32	52	207	0	259	540
05:30 PM	0	0	0	0	0	171	105	276	26	0	0	26	47	160	0	207	509
05:45 PM	0	0	0	0	0	162	105	267	38	0	0	38	40	138	0	178	483
Total	0	0	0	0	0	669	394	1063	144	0	0	144	190	696	0	886	2093
Grand Total	0	0	0	0	0	3573	1324	4897	1038	0	0	1038	809	4540	0	5349	11284
Apprch %	0.0	0.0	0.0		0.0	73.0	27.0		100.0	0.0	0.0		15.1	84.9	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	31.7	11.7	43.4	9.2	0.0	0.0	9.2	7.2	40.2	0.0	47.4	

Start Time	Southbound Right	Thru	Left	App. Total	WASHINGTON BLVD. PALAWAN WAY Westbound Right	Thru	Left	App. Total	PALAWAN WAY WASHINGTON BLVD. Northbound Right	Thru	Left	App. Total	WASHINGTON BLVD. PALAWAN WAY Eastbound Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Intersection 08:00 AM																	
Volume	0	0	0	0	0	556	157	713	244	0	0	244	118	898	0	1016	1973
Percent	0.0	0.0	0.0		0.0	78.0	22.0		100.0	0.0	0.0		11.6	88.4	0.0		
08:15 Volume	0	0	0	0	0	149	46	195	59	0	0	59	29	235	0	264	518
Peak Factor																	0.952
High Int.	6:45:00 AM				08:15 AM				08:00 AM				08:15 AM				
Volume	0	0	0	0	0	149	46	195	76	0	0	76	29	235	0	264	
Peak Factor								0.914				0.803				0.962	

<< ACCUTEK >>
<< 21114 TRIGGER LANE >>
<< DIAMOND BAR, CA 91765 >>
<< (909) 595-6199 FAX: (909) 595-6022 >

File Name : 349204
Site Code : 00349204
Start Date : 12/16/2004
Page No : 2

	Southbound				WASHINGTON BLVD. PALAWAN WAY Westbound				PALAWAN WAY WASHINGTON BLVD. Northbound				WASHINGTON BLVD. PALAWAN WAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 04:45 PM																	
Volume	0	0	0	0	0	663	370	1033	140	0	0	140	200	728	0	928	2101
Percent	0.0	0.0	0.0		0.0	64.2	35.8		100.0	0.0	0.0		21.6	78.4	0.0		
05:00 Volume	0	0	0	0	0	179	92	271	48	0	0	48	51	191	0	242	561
Peak Factor																	0.936
High Int.					05:30 PM				05:00 PM				05:15 PM				
Volume	0	0	0	0	0	171	105	276	48	0	0	48	52	207	0	259	
Peak Factor								0.936				0.729				0.896	

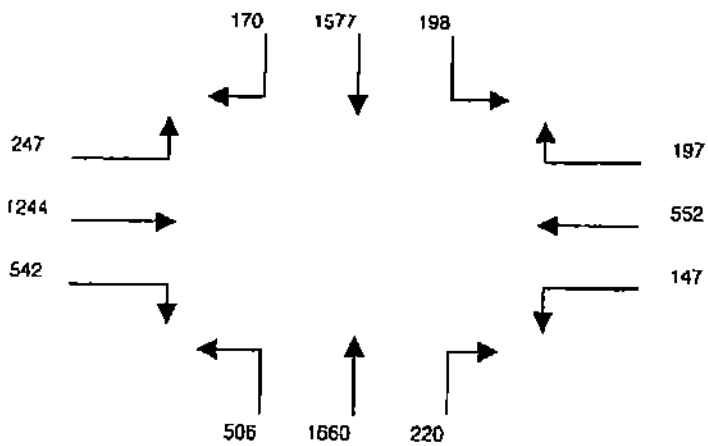
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN & ASSOCIATES
PROJECT: MARINA DEL REY LEGACY.
DATE: THURSDAY, MAY 20, 2004
PERIOD: 07:00 AM TO 010:00 AM
INTERSECTION: N/S LINCOLN BLVD.
E/W WASHINGTON BLVD.
FILE NUMBER: 1-AM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
700-715	31	366	51	45	129	26	39	396	123	110	218	57
715-730	40	376	58	51	135	26	60	403	134	145	270	47
730-745	37	360	46	67	178	33	76	397	120	143	295	43
745-800	32	375	46	39	137	29	55	396	113	122	248	44
800-815	40	405	59	35	126	28	42	410	132	141	299	60
815-830	45	400	54	53	154	42	60	427	123	130	275	56
830-845	50	415	39	52	146	27	57	431	134	150	329	71
845-900	35	357	46	57	126	50	61	392	117	121	341	60
900 915	28	335	51	42	127	37	65	389	119	137	262	49
915 930	40	319	61	51	137	53	72	371	115	132	243	53
930-945	33	311	48	55	139	39	62	367	117	132	252	41
945-1000	26	303	40	42	122	37	62	352	123	128	217	41

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-800	140	1477	201	202	574	114	230	1592	480	520	1031	191	6782
715-815	149	1516	209	192	571	116	233	1606	498	551	1112	194	6948
730-830	154	1540	205	194	590	132	233	1630	488	536	1117	203	7022
745-845	167	1595	198	179	563	126	214	1664	502	543	1151	231	7133
800-900	170	1577	198	197	552	147	220	1660	506	542	1244	247	7260
815-915	158	1507	190	204	553	156	243	1639	493	538	1207	236	7124
830-930	153	1428	197	202	536	167	255	1583	485	540	1175	233	6852
845 945	136	1322	206	205	529	179	260	1519	488	522	1098	203	6047
900-1000	127	1268	200	190	525	166	261	1479	474	529	974	184	6377

A.M. PEAK HOUR
800-900



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

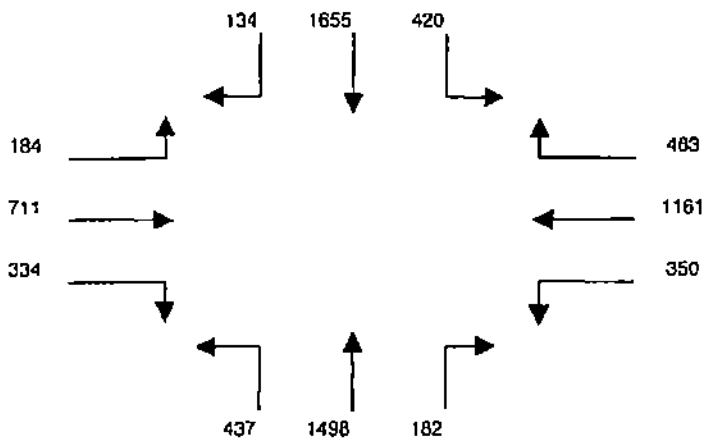
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN & ASSOCIATES
PROJECT: MARINA DEL REY LEGACY.
DATE: THURSDAY, MAY 20, 2004
PERIOD: 03:00 PM TO 06:00 PM
INTERSECTION: N/S LINCOLN BLVD.
E/W WASHINGTON BLVD.
FILE NUMBER: 1-PM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
300-315	39	436	125	74	226	70	56	293	98	91	165	34
315-330	36	404	117	96	211	62	43	323	93	88	169	37
330-345	55	394	93	107	208	34	48	373	111	106	203	29
345-400	23	391	75	94	237	60	44	354	139	107	226	54
400-415	23	435	85	82	236	75	42	399	107	154	208	46
415-430	41	440	94	81	241	85	41	362	109	76	216	34
430-445	54	437	119	85	243	61	43	370	100	65	176	44
445-500	25	416	85	132	255	82	52	371	106	99	191	43
500-515	38	414	108	114	291	95	47	374	110	80	180	39
515-530	43	407	114	109	303	91	41	387	115	73	169	55
530-545	28	418	113	108	312	82	42	366	106	82	171	47
545-600	27	392	98	92	282	86	35	321	101	77	158	45

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
300-400	153	1625	410	371	882	226	191	1343	441	392	763	154	6951
315-415	137	1624	370	359	892	231	177	1449	450	455	804	166	7114
330-430	142	1680	347	344	922	254	175	1488	466	443	851	163	7255
345-445	141	1703	373	322	957	281	170	1485	455	402	824	178	7291
400-500	143	1728	383	360	975	303	178	1502	422	394	789	167	7344
415-515	158	1707	406	412	1030	323	183	1477	425	320	763	160	7364
430-530	160	1674	426	440	1092	329	183	1502	431	317	716	181	7451
445-545	134	1655	420	463	1161	350	182	1488	437	334	711	184	7529
500-600	136	1631	433	423	1188	354	165	1448	432	312	678	186	7388

P.M. PEAK HOUR
445-545



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

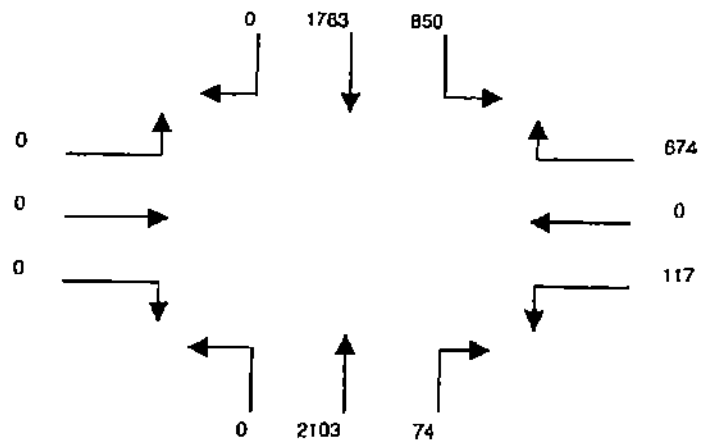
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN & ASSOCIATES
PROJECT. MARINA DEL REY LEGACY.
DATE: THURSDAY, MAY 20, 2004
PERIOD: 07:00 AM TO 010:00 AM
INTERSECTION: N/S LINCOLN BLVD.
E/W MARINA DEL REY EXPRESSWAY (SR 90).
FILE NUMBER: 2-AM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
700-715	0	350	224	176	0	18	28	456	0	0	0	0
715-730	0	378	183	211	0	18	16	494	0	0	0	0
730-745	0	405	234	203	0	31	19	503	0	0	0	0
745-800	0	417	179	137	0	23	14	520	0	0	0	0
800-815	0	440	210	163	0	30	15	533	0	0	0	0
815-830	0	456	230	153	0	36	26	542	0	0	0	0
830-845	0	461	210	186	0	22	10	525	0	0	0	0
845-900	0	426	200	172	0	29	23	503	0	0	0	0
900-915	0	412	150	126	0	39	18	484	0	0	0	0
915-930	0	376	129	122	0	26	23	469	0	0	0	0
930-945	0	359	123	105	0	28	19	463	0	0	0	0
945-1000	0	362	108	90	0	25	22	486	0	0	0	0

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-800	0	1550	820	727	0	90	77	1873	0	0	0	0	5237
715-815	0	1640	806	714	0	102	84	2050	0	0	0	0	5376
730-830	0	1718	853	656	0	120	74	2098	0	0	0	0	5519
745-845	0	1774	829	639	0	111	85	2120	0	0	0	0	5538
800-900	0	1783	850	674	0	117	74	2103	0	0	0	0	5601
815-915	0	1755	790	637	0	126	77	2054	0	0	0	0	5439
830-930	0	1675	689	606	0	116	74	1981	0	0	0	0	5141
845-945	0	1573	602	525	0	122	83	1919	0	0	0	0	4824
900-1000	0	1509	510	443	0	118	82	1902	0	0	0	0	4564

A.M. PEAK HOUR
800-900



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

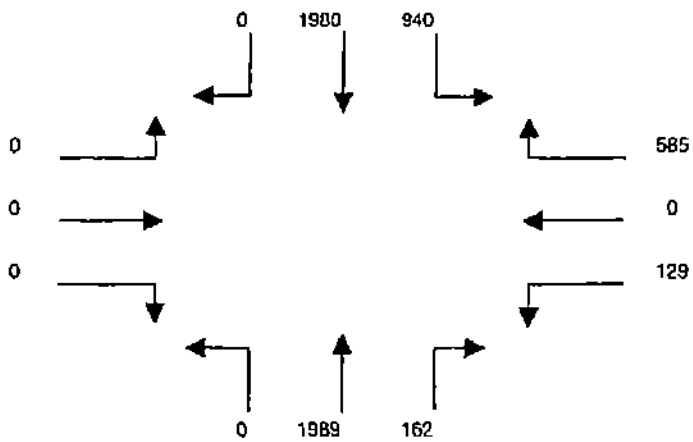
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN & ASSOCIATES
PROJECT: MARINA DEL REY LEGACY.
DATE: THURSDAY, MAY 20, 2004
PERIOD: 03:00 PM TO 06:00 PM
INTERSECTION: N/S LINCOLN BLVD.
E/W MARINA DEL REY EXPRESSWAY (SR 90).
FILE NUMBER: 2-PM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
300-315	0	425	217	169	0	36	37	462	0	0	0	0
315-330	0	459	194	163	0	34	41	482	0	0	0	0
330-345	0	474	237	131	0	26	35	491	0	0	0	0
345-400	0	485	203	146	0	27	39	471	0	0	0	0
400-415	0	482	229	149	0	32	38	485	0	0	0	0
415-430	0	492	237	139	0	29	31	509	0	0	0	0
430-445	0	504	225	138	0	37	47	498	0	0	0	0
445-500	0	502	249	159	0	31	46	497	0	0	0	0
500-515	0	466	189	128	0	48	42	502	0	0	0	0
515-530	0	492	199	136	0	36	40	495	0	0	0	0
530-545	0	475	211	151	0	36	53	529	0	0	0	0
545-600	0	482	181	144	0	22	40	467	0	0	0	0

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
300-400	0	1843	851	611	0	123	152	1906	0	0	0	0	5486
315-415	0	1900	863	591	0	119	153	1929	0	0	0	0	5555
330-430	0	1933	906	567	0	114	143	1956	0	0	0	0	5619
345-445	0	1963	894	574	0	125	155	1963	0	0	0	0	5674
400-500	0	1980	940	585	0	129	162	1989	0	0	0	0	5785
415-515	0	1964	900	564	0	145	166	2006	0	0	0	0	5745
430-530	0	1864	852	561	0	152	175	1992	0	0	0	0	5706
445-545	0	1935	848	574	0	151	181	2023	0	0	0	0	5712
500-600	0	1915	780	559	0	142	175	1993	0	0	0	0	5564

P.M. PEAK HOUR
400-500



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W BALI WAY

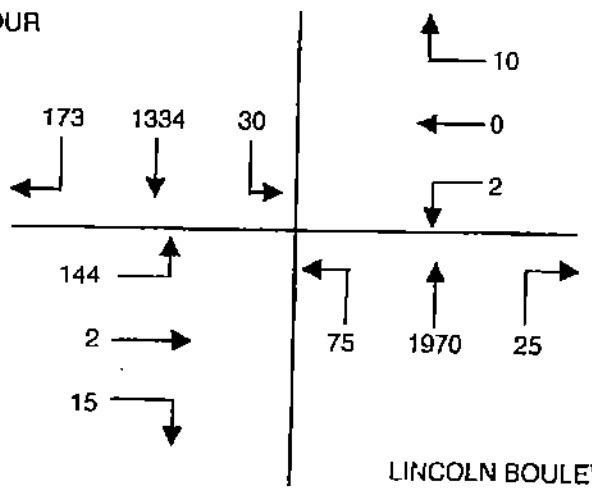
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	22	176	3	0	0	1	4	432	6	4	1	16	665
715-730	29	230	6	3	0	0	5	515	6	5	1	32	832
730-745	32	316	8	0	0	0	4	495	14	4	0	28	901
745-800	39	337	8	1	0	0	6	507	10	4	0	27	939
800-815	44	312	7	2	0	0	5	524	16	5	0	37	952
815-830	36	335	7	3	0	0	7	480	18	2	1	31	920
830-845	41	349	4	1	0	1	5	499	21	4	0	41	966
845-900	52	338	12	4	0	1	8	467	20	4	1	35	942
900-915	48	323	11	4	1	2	9	463	25	1	1	41	929
915-930	36	236	7	5	0	1	2	355	20	5	0	41	708
930-945	37	246	6	2	0	0	2	388	20	2	0	54	757
945-1000	48	273	18	8	0	1	8	374	23	6	1	48	808

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	122	1059	25	4	0	1	19	1949	36	17	2	103	3337
715-815	144	1195	29	6	0	0	20	2041	46	18	1	124	3624
730-830	151	1300	30	6	0	0	22	2006	58	15	1	123	3712
745-845	160	1333	26	7	0	1	23	2010	65	15	1	136	3777
800-900	173	1334	30	10	0	2	25	1970	75	15	2	144	3780
815-815	177	1345	34	12	1	4	29	1909	84	11	3	148	3757
830-930	177	1246	34	14	1	5	24	1784	86	14	2	158	3545
845-945	173	1143	36	15	1	4	21	1673	85	12	2	171	3336
900-1000	169	1078	42	19	1	4	21	1580	88	14	2	184	3202

A.M. PEAK HOUR
800-900



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W BALI WAY

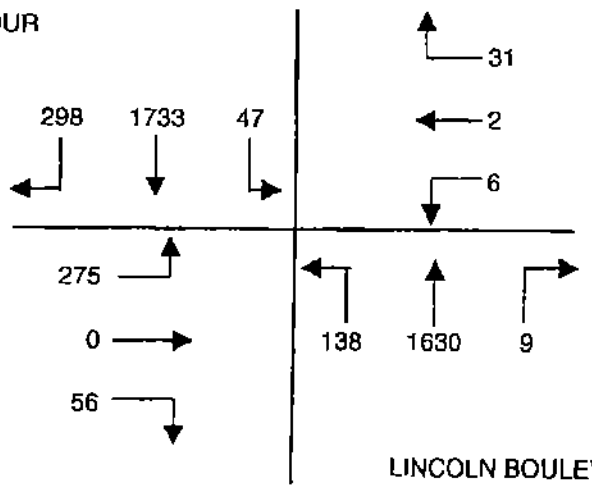
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	67	349	10	5	1	1	5	355	29	13	1	78	914
315-330	75	370	12	4	0	1	6	379	29	11	0	68	955
330-345	79	407	12	5	0	0	2	402	33	6	1	82	1029
345-400	70	405	9	4	0	0	1	347	21	12	1	58	928
400-415	76	404	10	3	0	2	0	351	42	14	0	82	984
415-430	76	401	13	7	2	0	2	404	23	7	0	77	1012
430-445	69	418	10	5	1	2	5	397	38	19	2	66	1032
445-500	79	425	17	8	1	1	4	352	29	10	0	65	991
500-515	60	458	9	11	0	2	4	384	30	14	0	75	1047
515-530	76	439	16	9	0	3	2	403	40	12	0	57	1057
530-545	84	447	9	5	1	0	0	402	36	18	0	70	1072
545-600	78	389	13	6	1	1	3	441	32	12	0	73	1049

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	291	1531	43	18	1	2	14	1483	112	42	3	286	3826
315-415	300	1586	43	16	0	3	9	1479	125	43	2	290	3896
330-430	301	1617	44	19	2	2	5	1504	119	39	2	299	3953
345-445	291	1628	42	19	3	4	8	1499	124	52	3	283	3956
400-500	300	1648	50	23	4	5	11	1504	132	50	2	290	4019
415-515	284	1702	49	31	4	5	15	1537	120	50	2	283	4082
430-530	284	1740	52	33	2	8	15	1536	137	55	2	263	4127
445-545	299	1769	51	33	2	6	10	1541	135	54	0	267	4167
500-600	298	1733	47	31	2	6	9	1630	138	56	0	275	4225

P.M. PEAK HOUR
500-600



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

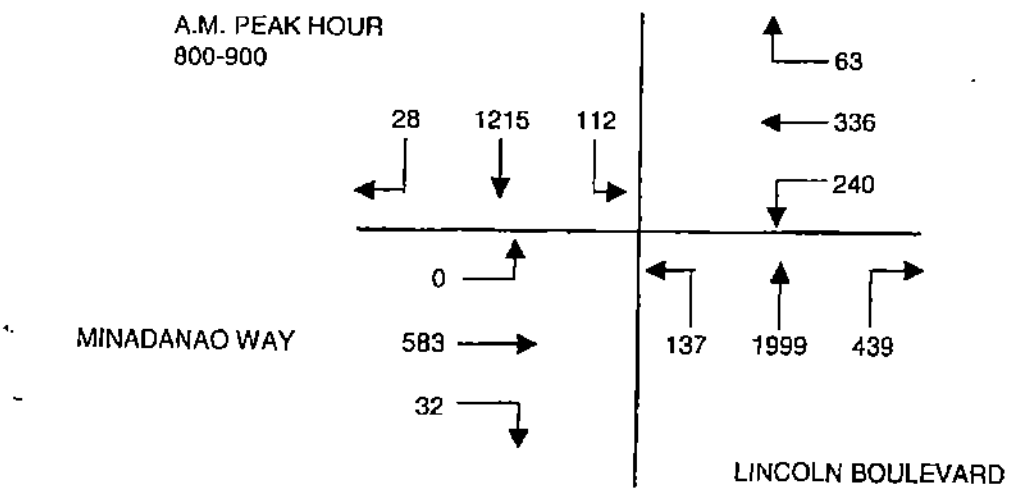
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W MINADANAO WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	4	151	13	8	53	35	68	432	27	10	116	0	917
715-730	5	218	6	6	65	38	72	505	33	6	143	0	1097
730-745	6	277	15	9	72	71	94	551	38	13	129	0	1275
745-800	9	286	19	12	84	70	110	517	47	9	138	0	1301
800-815	8	300	18	10	84	55	107	513	37	6	143	0	1281
815-830	5	321	25	15	87	57	105	482	35	9	153	0	1294
830-845	7	292	30	10	83	63	108	501	36	11	142	0	1283
845-900	8	302	39	28	82	65	119	503	29	6	145	0	1326
900-915	10	279	27	14	91	52	100	449	35	11	121	0	1189
915-930	11	238	22	16	91	58	83	373	32	13	128	0	1065
930-945	21	228	33	13	73	62	83	385	24	10	143	0	1075
945-1000	14	237	17	21	96	68	66	359	38	18	126	0	1060

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	24	932	53	35	274	214	344	2005	145	38	526	0	4590
715-815	28	1081	58	37	305	234	383	2086	155	34	553	0	4954
730-830	28	1184	77	46	327	253	416	2063	157	37	563	0	5151
745-845	29	1199	92	47	338	245	430	2013	155	35	576	0	5159
800-900	28	1215	112	63	336	240	439	1999	137	32	583	0	5184
815-815	30	1194	121	67	343	237	432	1935	135	37	561	0	5092
830-930	36	1111	118	68	347	238	410	1826	132	41	536	0	4863
845-945	50	1047	121	71	337	237	385	1710	120	40	537	0	4655
900-1000	56	982	99	64	351	240	332	1566	129	52	518	0	4389



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

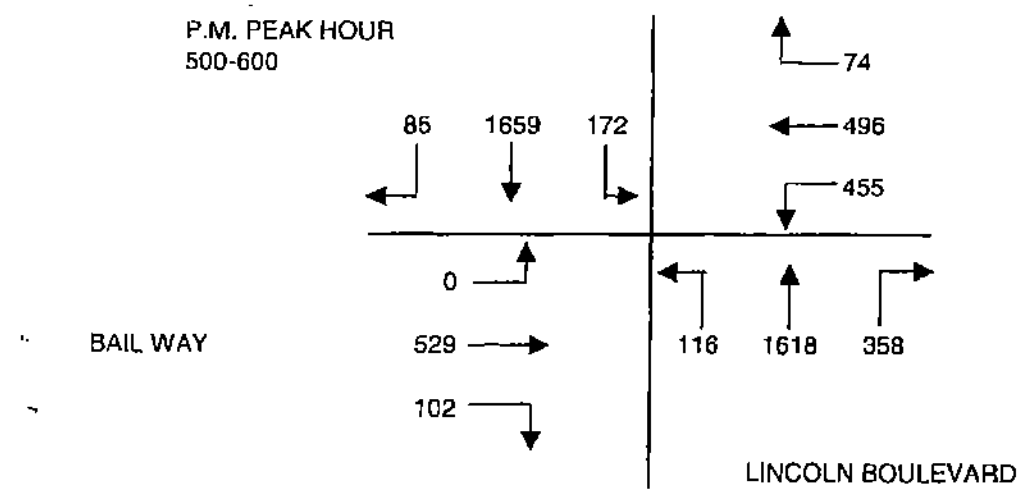
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W MINDANAO WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	20	328	34	29	106	71	75	347	27	24	133	0	1194
315-330	24	361	41	26	101	94	76	361	32	26	133	0	1275
330-345	17	349	32	31	90	100	67	383	28	25	147	0	1269
345-400	27	363	38	17	110	91	66	335	29	29	134	0	1239
400-415	26	424	30	15	97	81	86	360	33	18	122	0	1292
415-430	17	398	36	22	112	87	84	404	35	20	117	0	1332
430-445	16	371	49	19	143	92	99	361	31	34	119	1	1335
445-500	26	440	42	22	120	96	87	396	30	30	124	0	1413
500-515	23	419	38	26	134	132	81	393	23	23	148	0	1440
515-530	16	411	48	22	107	85	99	400	32	24	122	0	1366
530-545	20	411	49	11	119	100	91	380	26	34	130	0	1371
545-600	26	418	37	15	136	138	87	445	35	21	129	0	1487

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	88	1401	145	103	407	356	284	1426	116	104	547	0	4977
315-415	94	1497	141	89	398	366	295	1439	122	98	536	0	5075
330-430	87	1534	136	85	409	359	303	1482	125	92	520	0	5132
345-445	86	1556	153	73	462	351	335	1460	128	101	492	1	5198
400-500	85	1633	157	78	472	356	356	1521	129	102	482	1	5372
415-515	82	1628	165	89	509	407	351	1554	119	107	508	1	5520
430-530	81	1641	177	89	504	405	366	1550	116	111	513	1	5554
445-545	85	1681	177	81	480	413	358	1569	111	111	524	0	5590
500-600	85	1659	172	74	496	455	358	1618	116	102	529	0	5664



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W FIJI WAY

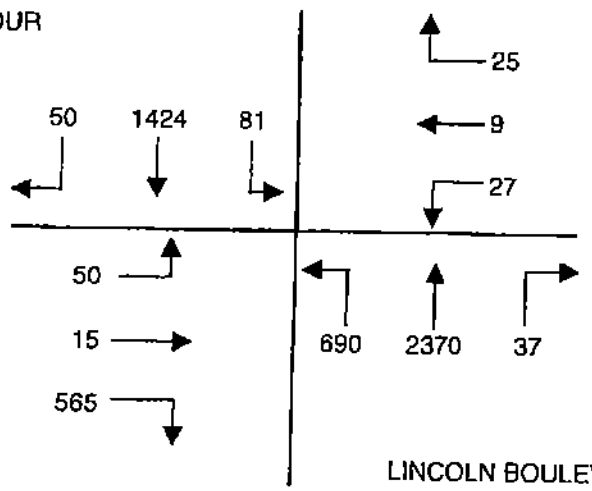
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	14	202	7	5	3	2	5	477	102	68	2	10	897
715-730	19	234	11	4	3	4	5	566	137	75	3	8	1069
730-745	17	323	10	4	7	6	8	603	164	107	2	8	1259
745-800	12	353	19	3	3	9	13	596	181	137	5	12	1343
800-815	11	358	21	10	3	7	9	604	191	144	5	14	1377
815-830	13	370	16	5	3	6	6	595	156	151	1	10	1332
830-845	14	343	25	7	0	5	9	575	162	133	4	14	1291
845-900	15	345	21	5	5	10	12	575	169	144	3	12	1316
900-915	11	334	20	11	4	6	9	549	147	138	7	15	1251
915-930	20	289	34	14	2	6	12	452	102	116	7	11	1065
930-945	20	269	22	9	2	5	6	421	96	61	3	9	923
945-1000	21	271	29	6	3	7	6	426	104	78	5	13	969

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	62	1112	47	16	16	21	31	2242	584	387	12	38	4568
715-815	59	1268	61	21	16	26	35	2369	673	463	15	42	5048
730-830	53	1404	66	22	16	28	36	2398	692	539	13	44	5311
745-845	50	1424	81	25	9	27	37	2370	690	565	15	50	5343
800-900	53	1416	83	27	11	28	36	2349	678	572	13	50	5316
815-815	53	1392	82	28	12	27	36	2294	634	566	15	51	5190
830-930	60	1311	100	37	11	27	42	2151	580	531	21	52	4923
845-945	66	1237	97	39	13	27	39	1997	514	459	20	47	4555
900-1000	72	1163	105	40	11	24	33	1848	449	393	22	48	4208

A.M. PEAK HOUR
745-845



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W FIJI WAY

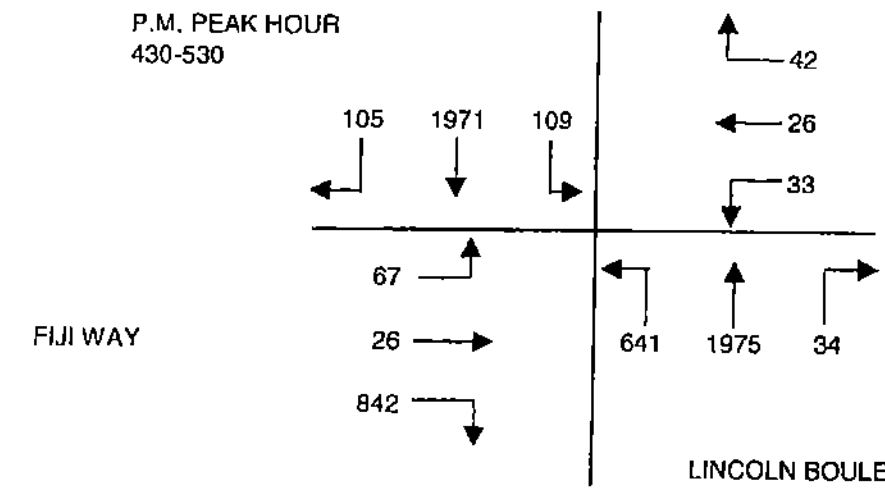
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	23	382	31	18	3	8	8	417	98	122	7	25	1142
315-330	34	430	21	14	7	10	10	390	103	142	2	29	1192
330-345	31	410	20	8	10	8	7	383	101	162	6	38	1184
345-400	38	424	33	9	5	8	13	443	132	175	2	30	1312
400-415	24	469	28	8	7	6	6	416	126	178	3	17	1288
415-430	29	473	20	9	4	10	4	441	139	167	8	18	1322
430-445	26	443	33	12	8	10	13	540	169	193	16	20	1483
445-500	28	512	28	4	9	6	7	506	137	210	0	17	1464
500-515	32	506	26	9	4	8	6	511	197	214	7	16	1536
515-530	19	510	22	17	5	9	8	418	138	225	3	14	1388
530-545	27	507	20	2	5	10	4	413	139	215	4	27	1373
545-600	24	513	24	7	4	7	4	452	161	210	9	29	1444

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	126	1646	105	49	25	34	38	1633	434	601	17	122	4830
315-415	127	1733	102	39	29	32	36	1632	462	657	13	114	4976
330-430	122	1776	101	34	26	32	30	1683	498	682	19	103	5106
345-445	117	1809	114	38	24	34	36	1840	566	713	29	85	5405
400-500	107	1897	109	33	28	32	30	1903	571	748	27	72	5557
415-515	115	1934	107	34	25	34	30	1998	642	784	31	71	5805
430-530	105	1971	109	42	26	33	34	1975	641	842	26	67	5871
445-545	106	2035	96	32	23	33	25	1848	611	864	14	74	5761
500-600	102	2036	92	35	18	34	22	1794	635	864	23	86	5741

P.M. PEAK HOUR
430-530



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S ADMIRALTY WAY
E/W BALI WAY

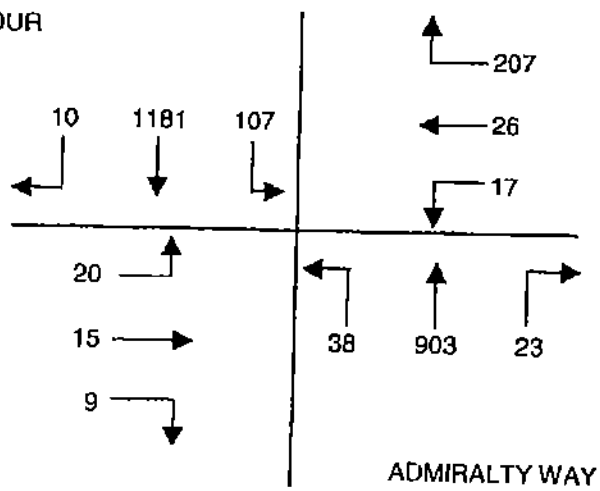
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	194	10	21	5	1	8	137	8	1	2	2	389
715-730	1	251	27	29	1	4	6	187	3	1	4	2	516
730-745	4	260	27	31	9	2	1	243	5	5	3	2	592
745-800	2	318	30	36	9	2	3	243	9	1	1	2	656
800-815	3	289	23	55	9	3	12	226	10	4	5	7	646
815-830	2	270	24	44	6	4	4	249	8	1	2	2	616
830-845	2	294	29	50	4	4	5	219	13	4	3	6	633
845-900	3	328	31	58	7	6	2	209	7	0	5	5	661
900-915	4	248	27	56	9	3	9	204	11	3	4	6	584
915-930	9	250	28	44	4	10	5	166	15	6	6	8	551
930-945	5	207	32	41	6	10	5	160	22	4	7	6	505
945-1000	4	216	37	53	8	8	2	174	18	2	3	3	528

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	7	1023	94	117	24	9	18	810	25	8	10	8	2153
715-815	10	1118	107	151	28	11	22	899	27	11	13	13	2410
730-830	11	1137	104	166	33	11	20	961	32	11	11	13	2510
745-845	9	1171	106	185	28	13	24	937	40	10	11	17	2551
800-900	10	1181	107	207	26	17	23	903	38	9	15	20	2556
815-815	11	1140	111	208	26	17	20	881	39	8	14	19	2494
830-930	18	1120	115	208	24	23	21	798	46	13	18	25	2429
845-945	21	1033	118	199	26	29	21	739	55	13	22	25	2301
900-1000	22	921	124	194	27	31	21	704	66	15	20	23	2168

A.M. PEAK HOUR
800-900



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S ADMIRALTY WAY
E/W BALI WAY

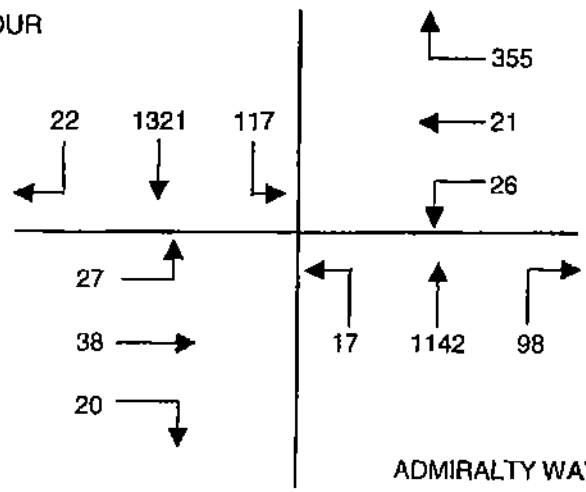
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	4	304	57	70	7	16	32	197	9	5	5	6	712
315-330	4	268	50	96	10	12	40	180	8	6	10	3	687
330-345	1	321	36	77	8	8	33	220	7	6	6	3	726
345-400	3	281	28	78	4	8	35	216	4	1	3	3	664
400-415	8	301	41	97	11	6	30	209	8	5	11	5	732
415-430	1	295	43	99	7	10	26	253	14	5	2	6	761
430-445	1	333	41	82	3	6	27	285	7	5	5	4	799
445-500	2	302	40	102	7	6	27	287	7	3	3	3	789
500-515	4	344	27	81	2	5	26	266	6	5	11	6	783
515-530	4	323	34	93	7	8	25	289	3	3	5	8	802
530-545	8	346	27	91	6	7	27	276	4	8	12	7	819
545-600	6	308	29	90	6	6	20	311	4	4	10	6	800

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	12	1174	171	321	29	44	140	813	28	18	24	15	2789
315-415	16	1171	155	348	33	34	138	825	27	18	30	14	2809
330-430	13	1198	148	351	30	32	124	898	33	17	22	17	2883
345-445	13	1210	153	356	25	30	118	963	33	16	21	18	2956
400-500	12	1231	165	380	28	28	110	1034	36	18	21	18	3081
415-515	8	1274	151	364	19	27	106	1091	34	18	21	19	3132
430-530	11	1302	142	358	19	25	105	1127	23	16	24	21	3173
445-545	18	1315	128	367	22	26	105	1118	20	19	31	24	3193
500-600	22	1321	117	355	21	26	98	1142	17	20	38	27	3204

P.M. PEAK HOUR
500-600



WILTEC

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S ADMIRALTY WAY
E/W MINDANAO WAY

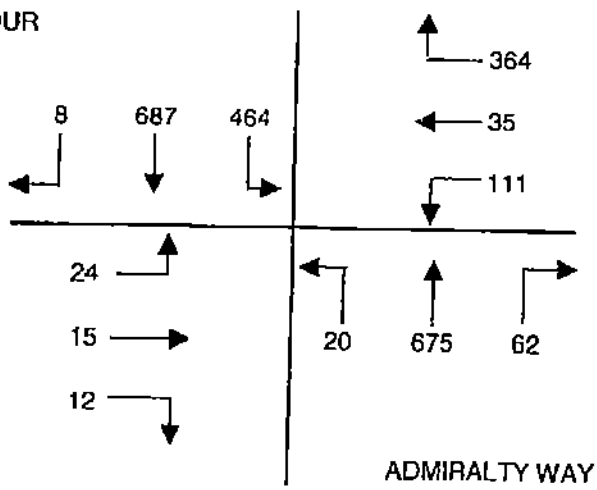
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	2	87	106	60	4	24	11	101	3	5	4	2	409
715-730	1	129	120	71	4	21	11	129	1	4	2	2	495
730-745	1	138	104	80	5	23	13	160	2	3	4	4	537
745-800	3	164	122	113	7	25	10	174	5	2	7	6	638
800-815	4	172	118	106	3	17	14	154	2	5	4	1	600
815-830	1	163	134	91	9	27	15	197	9	4	5	3	658
830-845	3	156	104	76	5	23	13	185	1	4	5	5	580
845-900	1	204	112	91	9	29	17	150	3	2	1	3	622
900-915	3	164	114	106	12	32	17	143	7	2	4	13	617
915-930	4	154	96	83	5	40	24	147	1	6	2	-5	557
930-945	3	129	102	90	8	35	18	108	7	6	7	5	518
945-1000	3	110	103	89	3	51	13	133	5	8	5	4	527

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	7	518	452	324	20	93	45	564	11	14	17	14	2079
715-815	9	603	464	370	19	86	48	617	10	14	17	13	2270
730-830	9	637	478	390	24	92	52	685	18	14	20	14	2433
745-845	11	655	478	386	24	92	52	710	17	15	21	15	2476
800-900	9	695	468	364	26	96	59	686	15	15	15	12	2460
815-815	8	687	464	364	35	111	62	675	20	12	15	24	2477
830-930	11	678	426	356	31	124	71	625	12	14	12	16	2376
845-945	11	651	424	370	34	136	76	548	18	16	14	16	2314
900-1000	13	557	415	368	28	158	72	531	20	22	18	17	2219

A.M. PEAK HOUR
815-815



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

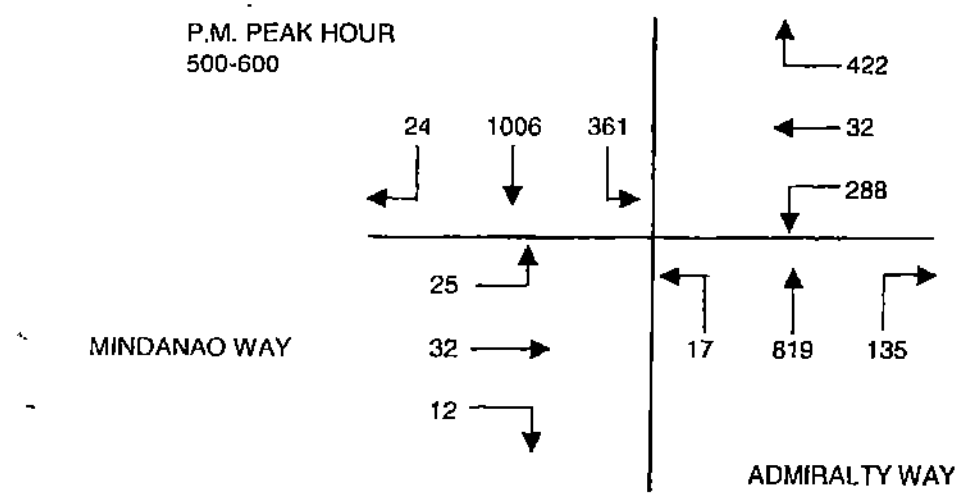
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: WEDNESDAY, JANUARY 28TH, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S ADMIRALTY WAY
E/W MINDANAO WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	7	180	90	98	8	69	28	122	7	7	5	6	627
315-330	8	178	86	83	3	54	26	157	9	2	8	5	619
330-345	3	220	97	93	3	57	37	159	2	9	6	6	692
345-400	2	191	83	114	12	59	32	148	1	2	8	1	653
400-415	2	212	82	112	6	59	29	160	2	6	2	5	677
415-430	3	203	75	101	6	54	28	197	2	6	7	5	687
430-445	5	231	87	137	7	63	25	198	7	2	1	2	765
445-500	7	203	73	117	15	58	40	176	5	8	7	10	719
500-515	8	246	113	95	13	77	29	193	4	4	12	8	802
515-530	8	259	82	96	4	53	29	209	3	1	7	8	759
530-545	5	227	82	101	11	74	47	226	5	2	6	4	790
545-600	3	274	84	130	4	84	30	191	5	5	7	5	822

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	20	769	356	388	26	239	123	586	19	20	27	18	2591
315-415	15	801	348	402	24	229	124	624	14	19	24	17	2641
330-430	10	826	337	420	27	229	126	664	7	23	23	17	2709
345-445	12	837	327	464	31	235	114	703	12	16	18	13	2782
400-500	17	849	317	467	34	234	122	731	16	22	17	22	2848
415-515	23	883	348	450	41	252	122	764	18	20	27	25	2973
430-530	28	939	355	445	39	251	123	776	19	15	27	28	3045
445-545	28	935	350	409	43	262	145	804	17	15	32	30	3070
500-600	24	1006	361	422	32	288	135	819	17	12	32	25	3173



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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S ADMIRALTY WAY
E/W FIJI WAY

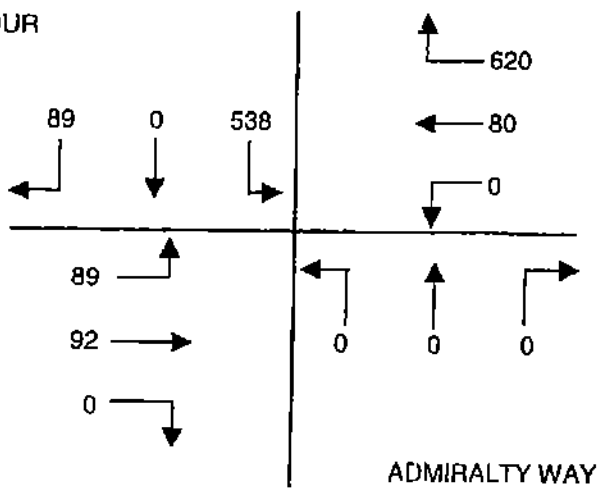
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	20	0	53	68	33	0	0	0	0	0	15	20	209
715-730	15	0	85	136	33	0	0	0	0	0	13	17	299
730-745	13	0	132	156	22	0	0	0	0	0	10	10	343
745-800	23	0	119	169	20	0	0	0	0	0	20	20	371
800-815	11	0	126	162	23	0	0	0	0	0	22	19	363
815-830	23	0	144	145	14	0	0	0	0	0	26	25	377
830-845	32	0	149	144	23	0	0	0	0	0	24	25	397
845-900	21	0	138	153	20	0	0	0	0	0	19	20	371
900-915	18	0	123	125	19	0	0	0	0	0	25	21	331
915-930	28	0	118	94	24	0	0	0	0	0	14	20	298
930-945	17	0	64	73	20	0	0	0	0	0	14	26	214
945-1000	18	0	87	88	27	0	0	0	0	0	20	22	262

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	71	0	389	529	108	0	0	0	0	0	58	67	1222
715-815	62	0	462	623	98	0	0	0	0	0	65	66	1376
730-830	70	0	521	632	79	0	0	0	0	0	78	74	1454
745-845	89	0	538	620	80	0	0	0	0	0	92	89	1508
800-900	87	0	557	604	80	0	0	0	0	0	91	89	1508
815-815	94	0	554	567	76	0	0	0	0	0	94	91	1476
830-930	99	0	528	516	86	0	0	0	0	0	82	86	1397
845-945	84	0	443	445	83	0	0	0	0	0	72	87	1214
900-1000	81	0	392	380	90	0	0	0	0	0	73	89	1105

A.M. PEAK HOUR
745-845



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S ADMIRALTY WAY
E/W FIJI WAY

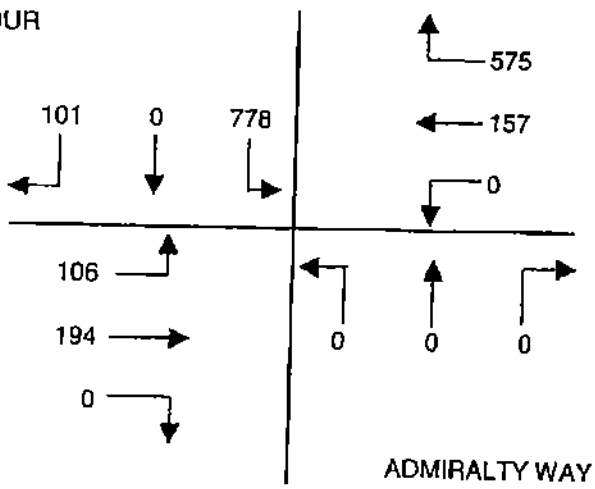
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	34	0	146	78	28	0	0	0	0	0	38	18	342
315-330	21	0	125	83	35	0	0	0	0	0	41	24	329
330-345	40	0	148	92	29	0	0	0	0	0	46	29	384
345-400	43	0	158	108	39	0	0	0	0	0	41	24	413
400-415	41	0	160	115	38	0	0	0	0	0	56	25	435
415-430	20	0	145	101	31	0	0	0	0	0	39	25	361
430-445	17	0	177	122	29	0	0	0	0	0	35	20	400
445-500	28	0	190	128	37	0	0	0	0	0	45	29	457
500-515	32	0	192	133	39	0	0	0	0	0	53	26	475
515-530	21	0	195	133	39	0	0	0	0	0	48	31	467
530-545	22	0	183	155	36	0	0	0	0	0	56	28	480
545-600	26	0	208	154	43	0	0	0	0	0	37	21	489

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	138	0	577	361	131	0	0	0	0	0	166	95	1468
315-415	145	0	591	398	141	0	0	0	0	0	184	102	1561
330-430	144	0	611	416	137	0	0	0	0	0	182	103	1593
345-445	121	0	640	446	137	0	0	0	0	0	171	94	1609
400-500	106	0	672	466	135	0	0	0	0	0	175	99	1653
415-515	97	0	704	484	136	0	0	0	0	0	172	100	1693
430-530	98	0	754	516	144	0	0	0	0	0	181	106	1799
445-545	103	0	760	549	151	0	0	0	0	0	202	114	1879
500-600	101	0	778	575	157	0	0	0	0	0	194	106	1911

P.M. PEAK HOUR
500-600



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

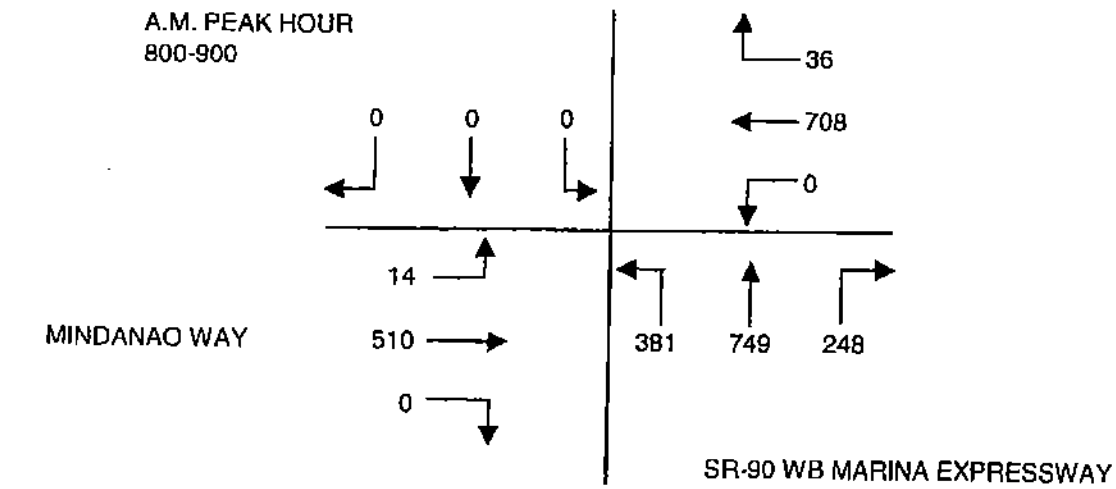
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S SR-90 WB MARINA EXPRESSWAY
E/W MINDANAO WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	0	0	4	116	0	54	145	84	0	53	0	456
715-730	0	0	0	3	110	0	52	172	79	0	95	1	512
730-745	0	0	0	4	135	0	59	195	77	0	110	4	584
745-800	0	0	0	5	141	0	74	189	78	0	111	4	602
800-815	0	0	0	6	181	0	61	187	79	0	136	3	653
815-830	0	0	0	10	178	0	67	182	94	0	120	4	655
830-845	0	0	0	8	173	0	57	177	92	0	116	4	627
845-900	0	0	0	12	176	0	63	203	116	0	138	3	711
900-915	0	0	0	14	143	0	85	183	96	0	125	3	649
915-930	0	0	0	9	151	0	70	197	81	0	114	6	628
930-945	0	0	0	7	147	0	61	159	92	0	115	6	587
945-1000	0	0	0	7	134	0	81	158	109	0	98	3	590

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	0	0	0	16	502	0	239	701	318	0	369	9	2154
715-815	0	0	0	18	567	0	246	743	313	0	452	12	2351
730-830	0	0	0	25	635	0	261	753	328	0	477	15	2494
745-845	0	0	0	29	673	0	259	735	343	0	483	15	2537
800-900	0	0	0	36	708	0	248	749	381	0	510	14	2646
815-815	0	0	0	44	670	0	272	745	398	0	499	14	2642
830-930	0	0	0	43	643	0	275	760	385	0	493	16	2615
845-945	0	0	0	42	617	0	279	742	385	0	492	18	2575
900-1000	0	0	0	37	575	0	297	697	378	0	452	18	2454



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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S SR-90 WB MARINA EXPRESSWAY
E/W MINDANAO WAY

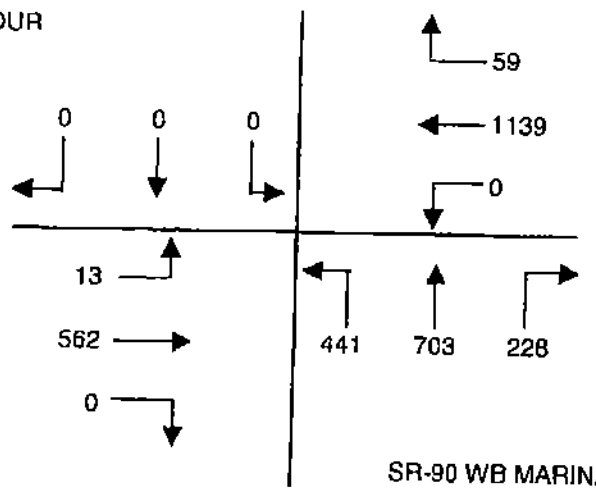
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	0	0	0	9	209	0	54	162	90	0	117	8	649
315-330	0	0	0	18	233	0	67	161	88	0	104	3	674
330-345	0	0	0	15	238	0	60	156	111	0	133	4	717
345-400	0	0	0	13	255	0	66	186	120	0	115	4	759
400-415	0	0	0	15	223	0	62	201	109	0	103	7	720
415-430	0	0	0	5	240	0	50	157	80	0	122	2	656
430-445	0	0	0	12	260	0	67	183	118	0	137	6	783
445-500	0	0	0	14	244	0	60	186	100	0	147	2	753
500-515	0	0	0	15	284	0	56	153	109	0	134	3	754
515-530	0	0	0	14	278	0	52	192	113	0	139	2	790
530-545	0	0	0	14	280	0	53	186	104	0	147	5	789
545-600	0	0	0	16	297	0	67	172	115	0	142	3	812

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	0	0	0	55	935	0	247	665	409	0	469	19	2799
315-415	0	0	0	61	949	0	255	704	428	0	455	18	2870
330-430	0	0	0	48	956	0	238	700	420	0	473	17	2852
345-445	0	0	0	45	978	0	245	727	427	0	477	19	2918
400-500	0	0	0	46	967	0	239	727	407	0	509	17	2912
415-515	0	0	0	46	1028	0	233	679	407	0	540	13	2946
430-530	0	0	0	55	1066	0	235	714	440	0	557	13	3080
445-545	0	0	0	57	1086	0	221	717	426	0	567	12	3086
500-600	0	0	0	59	1139	0	228	703	441	0	562	13	3145

P.M. PEAK HOUR
500-600



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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 7:00 AM TO 10:00 AM
INTERSECTION: N/S SR-90 EB MARINA EXPRESSWAY
E/W MINDANAO WAY

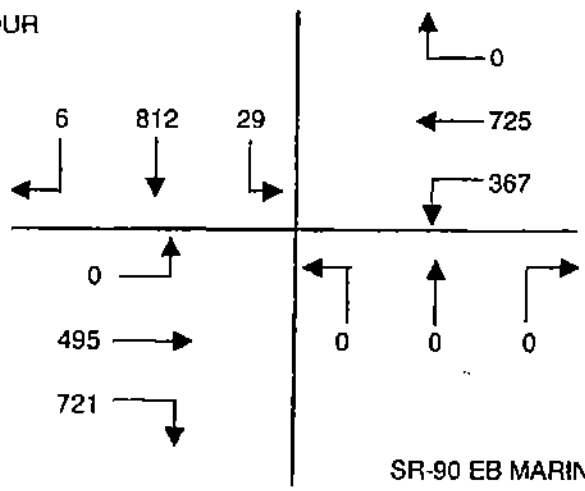
15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	156	6	0	129	67	0	0	0	151	62	0	571
715-730	0	157	5	0	139	52	0	0	0	140	77	0	570
730-745	0	185	3	0	122	76	0	0	0	157	106	0	649
745-800	1	213	4	0	150	88	0	0	0	182	115	0	753
800-815	2	204	6	0	150	103	0	0	0	180	150	0	795
815-830	0	205	6	0	182	94	0	0	0	196	105	0	788
830-845	2	191	8	0	169	79	0	0	0	168	107	0	724
845-900	2	212	9	0	224	91	0	0	0	177	133	0	848
900-915	1	208	5	0	174	61	0	0	0	183	137	0	769
915-930	3	173	5	0	162	72	0	0	0	150	101	0	666
930-945	1	167	6	0	152	61	0	0	0	139	114	0	640
945-1000	0	163	4	0	189	83	0	0	0	150	97	0	686

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	1	711	18	0	540	283	0	0	0	630	360	0	2543
715-815	3	759	18	0	561	319	0	0	0	659	448	0	2767
730-830	3	807	19	0	604	361	0	0	0	715	476	0	2985
745-845	5	813	24	0	651	364	0	0	0	726	477	0	3060
800-900	6	812	29	0	725	367	0	0	0	721	495	0	3155
815-815	5	816	28	0	749	325	0	0	0	724	482	0	3129
830-930	8	784	27	0	729	303	0	0	0	678	478	0	3007
845-945	7	760	25	0	712	285	0	0	0	649	485	0	2923
900-1000	5	711	20	0	677	277	0	0	0	622	449	0	2761

A.M. PEAK HOUR
800-900



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

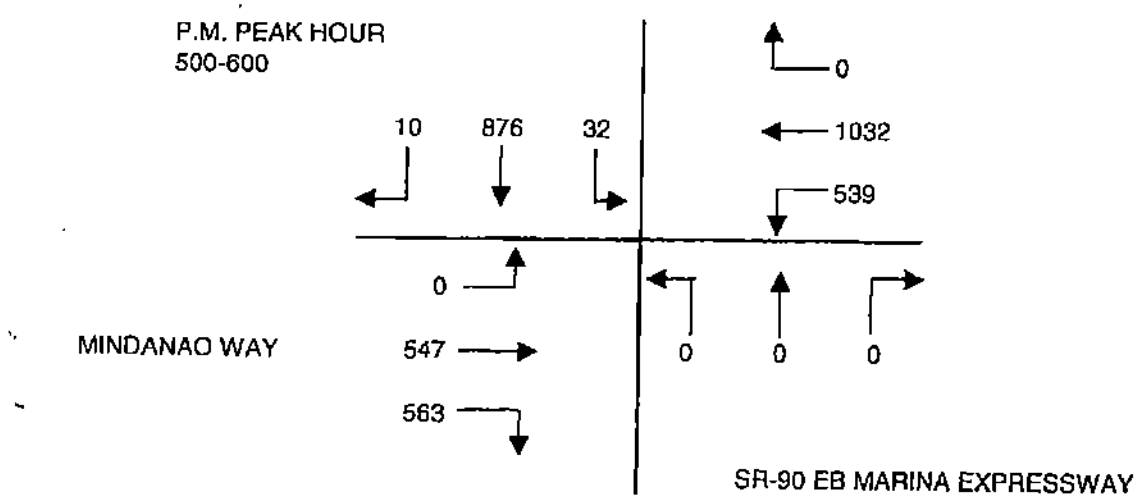
CLIENT: CRAIN AND ASSOCIATES
PROJECT: MARINA DEL REY LEGACY COUNTS
DATE: THURSDAY, JANUARY 22ND, 2004
PERIOD: 3:00 PM TO 6:00 PM
INTERSECTION: N/S SR-90 EB MARINA EXPRESSWAY
E/W MINDANAO WAY

15 MIN COUNTS

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-315	2	232	10	0	195	116	0	0	0	151	123	0	829
315-330	1	218	7	0	228	121	0	0	0	124	105	0	804
330-345	5	197	8	0	216	102	0	0	0	125	127	0	780
345-400	1	176	5	0	261	117	0	0	0	128	104	0	792
400-415	1	202	6	0	216	114	0	0	0	122	111	0	772
415-430	2	225	7	0	217	114	0	0	0	113	115	0	793
430-445	3	174	7	0	252	118	0	0	0	128	139	0	821
445-500	2	181	5	0	236	104	0	0	0	131	139	0	798
500-515	2	222	8	0	257	133	0	0	0	140	135	0	897
515-530	2	240	9	0	251	138	0	0	0	131	125	0	896
530-545	2	192	7	0	264	132	0	0	0	150	154	0	901
545-600	4	222	8	0	260	136	0	0	0	142	133	0	905

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
300-400	9	823	30	0	900	456	0	0	0	528	459	0	3205
315-415	8	793	26	0	921	454	0	0	0	499	447	0	3148
330-430	9	800	26	0	910	447	0	0	0	488	457	0	3137
345-445	7	777	25	0	946	463	0	0	0	491	469	0	3178
400-500	8	782	25	0	921	450	0	0	0	494	504	0	3184
415-515	9	802	27	0	962	469	0	0	0	512	528	0	3309
430-530	9	817	29	0	996	493	0	0	0	530	538	0	3412
445-545	8	835	29	0	1008	507	0	0	0	552	553	0	3492
500-600	10	876	32	0	1032	539	0	0	0	563	547	0	3599



APPENDIX B

CMA CALCULATION WORKSHEETS

Existing (2004)

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	158	624	9	20
EASTBOUND	14	631	0	40
NORTHBOUND	89	30	72	79
SOUTHBOUND	15	3	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	158	N/A	312	N/A	9	N/A
EASTBOUND	14	N/A	316	N/A	0	N/A
NORTHBOUND	89	N/A	30	N/A	72	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	24

EAST-WEST CRITICAL VOLUMES	474
NORTH-SOUTH CRITICAL VOLUMES	113
THE SUM OF CRITICAL VOLUMES	587
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.391
LEVEL OF SERVICE	A

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:2, TAHITI WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	10	0	125	32
EASTBOUND	0	0	0	0
NORTHBOUND	0	576	7	0
SOUTHBOUND	63	183	14	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	10	N/A	N/A	125	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	292	N/A	292	N/A	N/A
SOUTHBOUND	63	N/A	98	98	N/A	N/A

EAST-WEST CRITICAL VOLUMES	125
NORTH-SOUTH CRITICAL VOLUMES	355
THE SUM OF CRITICAL VOLUMES	480
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.256
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:3, MARQUESAS WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	2	17	84	24
EASTBOUND	98	8	0	12
NORTHBOUND	35	692	4	0
SOUTHBOUND	49	245	44	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	19	N/A	N/A	84	N/A
EASTBOUND	98	N/A	8	N/A	0	N/A
NORTHBOUND	35	N/A	232	232	N/A	N/A
SOUTHBOUND	49	N/A	96	96	N/A	N/A

EAST-WEST CRITICAL VOLUMES	182
NORTH-SOUTH CRITICAL VOLUMES	281
THE SUM OF CRITICAL VOLUMES	463
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.247
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:4, PANAY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	15	6	140	54
EASTBOUND	140	5	2	0
NORTHBOUND	3	938	26	0
SOUTHBOUND	107	301	18	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	1	1
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	21	N/A	N/A	140	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	147
NORTHBOUND	3	N/A	321	321	N/A	N/A
SOUTHBOUND	107	N/A	106	106	N/A	N/A

EAST-WEST CRITICAL VOLUMES	280
NORTH-SOUTH CRITICAL VOLUMES	428
THE SUM OF CRITICAL VOLUMES	708
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.378
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:5, ADMIRALTY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	330	0	623	0
EASTBOUND	0	0	0	0
NORTHBOUND	0	534	0	652
SOUTHBOUND	338	206	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	0	1	0	3
SOUTHBOUND	1	0	3	0	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	182	N/A	N/A	N/A	312	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	267	N/A	0	N/A
SOUTHBOUND	338	N/A	69	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	312
NORTH-SOUTH CRITICAL VOLUMES	605
THE SUM OF CRITICAL VOLUMES	917
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.544
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:6, WASHINGTON BOULEVARD AND VIA MARINA/OCEAN AVENUE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	135	364	0	33
EASTBOUND	43	630	51	188
NORTHBOUND	448	376	292	68
SOUTHBOUND	78	145	32	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	2	0	1	0	1	0	4
SOUTHBOUND	1	0	0	1	0	0	2

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	135	N/A	182	N/A	0	N/A
EASTBOUND	43	N/A	315	N/A	51	N/A
NORTHBOUND	246	N/A	376	N/A	292	N/A
SOUTHBOUND	78	N/A	N/A	177	N/A	N/A

EAST-WEST CRITICAL VOLUMES	450
NORTH-SOUTH CRITICAL VOLUMES	553
THE SUM OF CRITICAL VOLUMES	1003
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.604
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Northbound and Southbound approaches have opposed signal phases.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:7, ADMIRALTY WAY AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	24	870	88	0
EASTBOUND	107	894	12	0
NORTHBOUND	27	64	54	0
SOUTHBOUND	187	32	28	54

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	1	1	0	0	3
EASTBOUND	1	0	1	1	0	0	3
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	24	N/A	479	479	N/A	N/A
EASTBOUND	107	N/A	453	453	N/A	N/A
NORTHBOUND	N/A	72	N/A	72	N/A	N/A
SOUTHBOUND	187	N/A	32	N/A	28	N/A

EAST-WEST CRITICAL VOLUMES	586
NORTH-SOUTH CRITICAL VOLUMES	259
THE SUM OF CRITICAL VOLUMES	845
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.463
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:8, WASHINGTON BOULEVARD AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	158	559	0	0
EASTBOUND	0	903	36	83
NORTHBOUND	0	0	166	79
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	2	0	1	0	3
NORTHBOUND	0	0	0	0	1	0	1
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	158	N/A	280	N/A	N/A	N/A
EASTBOUND	N/A	N/A	452	N/A	36	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	166	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	610
NORTH-SOUTH CRITICAL VOLUMES	166
THE SUM OF CRITICAL VOLUMES	776
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.647
LEVEL OF SERVICE	B

Capacity assumed = 1200.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:9, WASHINGTON BOULEVARD AND LINCOLN BOULEVARD
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	148	555	89	109
EASTBOUND	248	1251	265	280
NORTHBOUND	509	1670	221	0
SOUTHBOUND	199	1586	171	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	2	0	1	0	5
EASTBOUND	2	0	2	0	1	0	5
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	2	0	2	1	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	81	N/A	278	N/A	89	N/A
EASTBOUND	136	N/A	626	N/A	265	N/A
NORTHBOUND	280	N/A	630	630	N/A	N/A
SOUTHBOUND	109	N/A	586	586	N/A	N/A

EAST-WEST CRITICAL VOLUMES	707
NORTH-SOUTH CRITICAL VOLUMES	866
THE SUM OF CRITICAL VOLUMES	1573
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	1.044
LEVEL OF SERVICE	F

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:10, LINCOLN BOULEVARD AND MARINA EXPRESSWAY (SR 90)
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	118	0	0	678
EASTBOUND	0	0	0	0
NORTHBOUND	0	2116	74	0
SOUTHBOUND	855	1794	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	1	0	0	3
SOUTHBOUND	2	0	3	0	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	65	N/A	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	730	730	N/A	N/A
SOUTHBOUND	470	N/A	598	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	65
NORTH-SOUTH CRITICAL VOLUMES	1200
THE SUM OF CRITICAL VOLUMES	1265
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.788
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:11, LINCOLN BOULEVARD AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	2	0	10	0
EASTBOUND	145	2	0	15
NORTHBOUND	75	1982	25	0
SOUTHBOUND	30	1342	174	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	0	0	0	1	1
EASTBOUND	1	1	0	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	N/A	N/A	N/A	12
EASTBOUND	74	74	N/A	N/A	0	N/A
NORTHBOUND	75	N/A	669	669	N/A	N/A
SOUTHBOUND	30	N/A	505	505	N/A	N/A

EAST-WEST CRITICAL VOLUMES	86
NORTH-SOUTH CRITICAL VOLUMES	699
THE SUM OF CRITICAL VOLUMES	785
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.471
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:41 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	241	338	63	0
EASTBOUND	0	586	32	0
NORTHBOUND	138	2011	442	0
SOUTHBOUND	113	1222	28	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	133	N/A	200	200	N/A	N/A
EASTBOUND	N/A	N/A	309	309	N/A	N/A
NORTHBOUND	138	N/A	818	818	N/A	N/A
SOUTHBOUND	113	N/A	417	417	N/A	N/A

EAST-WEST CRITICAL VOLUMES 442
NORTH-SOUTH CRITICAL VOLUMES 931

THE SUM OF CRITICAL VOLUMES 1373

NUMBER OF CRITICAL CLEARANCE INTERVALS 4*

CMA VALUE 0.899

LEVEL OF SERVICE ..... D

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:42 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:13, LINCOLN BOULEVARD AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	27	9	25	0
EASTBOUND	50	15	0	568
NORTHBOUND	694	2384	37	0
SOUTHBOUND	81	1433	50	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	30	N/A	30	N/A	N/A
EASTBOUND	50	N/A	15	N/A	0	N/A
NORTHBOUND	382	N/A	807	807	N/A	N/A
SOUTHBOUND	81	N/A	494	494	N/A	N/A

EAST-WEST CRITICAL VOLUMES	80
NORTH-SOUTH CRITICAL VOLUMES	888
THE SUM OF CRITICAL VOLUMES	968
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.579
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:42 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:14, ADMIRALTY WAY AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	17	26	100	108
EASTBOUND	20	15	9	0
NORTHBOUND	38	908	23	0
SOUTHBOUND	108	1188	10	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	0	1	1	0	3
EASTBOUND	0	1	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	17	N/A	N/A	63	63	N/A
EASTBOUND	N/A	22	N/A	22	N/A	N/A
NORTHBOUND	38	N/A	466	466	N/A	N/A
SOUTHBOUND	108	N/A	599	599	N/A	N/A

EAST-WEST CRITICAL VOLUMES 83
NORTH-SOUTH CRITICAL VOLUMES 637

THE SUM OF CRITICAL VOLUMES 720

NUMBER OF CRITICAL CLEARANCE INTERVALS 3*

CMA VALUE 0.405

LEVEL OF SERVICE ..... A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:42 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:15, ADMIRALTY WAY AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	112	35	132	234
EASTBOUND	24	15	12	0
NORTHBOUND	20	679	62	0
SOUTHBOUND	467	691	8	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	1	0	0	1	0	3
EASTBOUND	1	0	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	74	74	N/A	N/A	132	N/A
EASTBOUND	24	N/A	N/A	27	N/A	N/A
NORTHBOUND	20	N/A	370	370	N/A	N/A
SOUTHBOUND	467	N/A	350	350	N/A	N/A

EAST-WEST CRITICAL VOLUMES	159
NORTH-SOUTH CRITICAL VOLUMES	837
THE SUM OF CRITICAL VOLUMES	996
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.599
LEVEL OF SERVICE	A

* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:16, ADMIRALTY WAY AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	0	80	0	624
EASTBOUND	90	93	0	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	541	0	0	90

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	0	1	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	2	0	0	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	80	N/A	0	N/A
EASTBOUND	90	N/A	46	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	298	N/A	N/A	N/A	0	N/A

EAST-WEST CRITICAL VOLUMES 170
NORTH-SOUTH CRITICAL VOLUMES 298

THE SUM OF CRITICAL VOLUMES 468

NUMBER OF CRITICAL CLEARANCE INTERVALS 2*

CMA VALUE 0.250

LEVEL OF SERVICE ..... A

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* Includes CMA value decreased due to ATCS Implementation.

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:17, MARINA EXPRESSWAY (SR 90) WESTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX. ON RED **
WESTBOUND	0	712	36	0
EASTBOUND	14	513	0	0
NORTHBOUND	383	753	183	66
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	1	0	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	1	1	1	0	1	0	4
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	374	374	N/A	N/A
EASTBOUND	14	N/A	256	N/A	N/A	N/A
NORTHBOUND	379	379	379	N/A	183	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	388
NORTH-SOUTH CRITICAL VOLUMES	379
THE SUM OF CRITICAL VOLUMES	767
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.438
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:18, MARINA EXPRESSWAY (SR 90) EASTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	369	729	0	0
EASTBOUND	0	498	725	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	29	817	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	1	1	1	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	369	N/A	364	N/A	N/A	N/A
EASTBOUND	N/A	N/A	408	408	408	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	29	N/A	412	412	N/A	N/A

EAST-WEST CRITICAL VOLUMES	777
NORTH-SOUTH CRITICAL VOLUMES	412
THE SUM OF CRITICAL VOLUMES	1189
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.734
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	99	625	15	34
EASTBOUND	79	675	0	10
NORTHBOUND	61	14	48	50
SOUTHBOUND	20	17	17	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	99	N/A	312	N/A	15	N/A
EASTBOUND	79	N/A	338	N/A	0	N/A
NORTHBOUND	61	N/A	14	N/A	48	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	54

EAST-WEST CRITICAL VOLUMES	437
NORTH-SOUTH CRITICAL VOLUMES	115
THE SUM OF CRITICAL VOLUMES	552
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.368
LEVEL OF SERVICE	A

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:2, TAHITI WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	6	1	0	65
EASTBOUND	0	0	0	0
NORTHBOUND	4	335	8	0
SOUTHBOUND	139	464	24	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	7	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	171	N/A	176	N/A	N/A
SOUTHBOUND	139	N/A	244	244	N/A	N/A

EAST-WEST CRITICAL VOLUMES	7
NORTH-SOUTH CRITICAL VOLUMES	315
THE SUM OF CRITICAL VOLUMES	322
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.172
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:3, MARQUESAS WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED
WESTBOUND	1	7	61	0
EASTBOUND	70	12	22	10
NORTHBOUND	21	370	10	0
SOUTHBOUND	99	589	87	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	8	N/A	N/A	61	N/A
EASTBOUND	70	N/A	12	N/A	22	N/A
NORTHBOUND	21	N/A	127	127	N/A	N/A
SOUTHBOUND	99	N/A	225	225	N/A	N/A

EAST-WEST CRITICAL VOLUMES 131
NORTH-SOUTH CRITICAL VOLUMES 246

THE SUM OF CRITICAL VOLUMES 377

NUMBER OF CRITICAL CLEARANCE INTERVALS 2*

CMA VALUE 0.201

LEVEL OF SERVICE ..... A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:4, PANAY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	** MAX ON RED
WESTBOUND	15	3	41	100
EASTBOUND	40	1	2	0
NORTHBOUND	0	514	23	0
SOUTHBOUND	199	737	33	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	1	1
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	18	N/A	N/A	41	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	43
NORTHBOUND	0	N/A	179	179	N/A	N/A
SOUTHBOUND	199	N/A	257	257	N/A	N/A

EAST-WEST CRITICAL VOLUMES	81
NORTH-SOUTH CRITICAL VOLUMES	378
THE SUM OF CRITICAL VOLUMES	459
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.245
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:5, ADMIRALTY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	759	0	533	0
EASTBOUND	0	0	0	0
NORTHBOUND	0	279	0	470
SOUTHBOUND	604	346	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	0	1	0	3
SOUTHBOUND	1	0	3	0	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	417	N/A	N/A	N/A	266	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	140	N/A	0	N/A
SOUTHBOUND	604	N/A	115	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	417
NORTH-SOUTH CRITICAL VOLUMES	744
THE SUM OF CRITICAL VOLUMES	1161
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.715
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:6, WASHINGTON BOULEVARD AND VIA MARINA/OCEAN AVENUE
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	131	481	0	38
EASTBOUND	42	604	150	133
NORTHBOUND	354	266	113	65
SOUTHBOUND	165	421	59	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	2	0	1	0	1	0	4
SOUTHBOUND	1	0	0	1	0	0	2

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	131	N/A	240	N/A	0	N/A
EASTBOUND	42	N/A	302	N/A	150	N/A
NORTHBOUND	195	N/A	266	N/A	113	N/A
SOUTHBOUND	165	N/A	N/A	480	N/A	N/A

EAST-WEST CRITICAL VOLUMES	432
NORTH-SOUTH CRITICAL VOLUMES	746
THE SUM OF CRITICAL VOLUMES	1178
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.727
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

Northbound and Southbound approaches have opposed signal phases.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:7, ADMIRALTY WAY AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	65	1121	82	0
EASTBOUND	42	1001	16	0
NORTHBOUND	20	32	55	0
SOUTHBOUND	359	79	152	21

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	1	1	0	0	3
EASTBOUND	1	0	1	1	0	0	3
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	65	N/A	602	602	N/A	N/A
EASTBOUND	42	N/A	508	508	N/A	N/A
NORTHBOUND	N/A	52	N/A	55	N/A	N/A
SOUTHBOUND	359	N/A	79	N/A	152	N/A

EAST-WEST CRITICAL VOLUMES	644
NORTH-SOUTH CRITICAL VOLUMES	414
THE SUM OF CRITICAL VOLUMES	1058
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.605
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:8, WASHINGTON BOULEVARD AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	372	667	0	0
EASTBOUND	0	732	201	0
NORTHBOUND	0	0	0	141
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	2	0	1	0	3
NORTHBOUND	0	0	0	0	1	0	1
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	372	N/A	334	N/A	N/A	N/A
EASTBOUND	N/A	N/A	366	N/A	201	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	0	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	738
NORTH-SOUTH CRITICAL VOLUMES	0
THE SUM OF CRITICAL VOLUMES	738
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.615
LEVEL OF SERVICE	B

Capacity assumed = 1200.

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:9, WASHINGTON BOULEVARD AND LINCOLN BOULEVARD
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED
WESTBOUND	352	1168	233	233
EASTBOUND	185	715	94	242
NORTHBOUND	440	1507	183	0
SOUTHBOUND	423	1665	135	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	2	0	1	0	5
EASTBOUND	2	0	2	0	1	0	5
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	2	0	2	1	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	194	N/A	584	N/A	233	N/A
EASTBOUND	102	N/A	358	N/A	94	N/A
NORTHBOUND	242	N/A	563	563	N/A	N/A
SOUTHBOUND	233	N/A	600	600	N/A	N/A

EAST-WEST CRITICAL VOLUMES	686
NORTH-SOUTH CRITICAL VOLUMES	842
THE SUM OF CRITICAL VOLUMES	1528
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	1.011
LEVEL OF SERVICE	F

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:10, LINCOLN BOULEVARD AND MARINA EXPRESSWAY (SR 90)
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	130	0	0	589
EASTBOUND	0	0	0	0
NORTHBOUND	0	2001	163	0
SOUTHBOUND	946	1992	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	1	0	0	3
SOUTHBOUND	2	0	3	0	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	72	N/A	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	721	721	N/A	N/A
SOUTHBOUND	520	N/A	664	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	72
NORTH-SOUTH CRITICAL VOLUMES	1241
THE SUM OF CRITICAL VOLUMES	1313
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.821
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:11, LINCOLN BOULEVARD AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	6	2	31	0
EASTBOUND	277	0	0	56
NORTHBOUND	139	1640	9	0
SOUTHBOUND	47	1743	300	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	0	0	0	1	1
EASTBOUND	1	1	0	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	N/A	N/A	N/A	39
EASTBOUND	138	138	N/A	N/A	0	N/A
NORTHBOUND	139	N/A	550	550	N/A	N/A
SOUTHBOUND	47	N/A	681	681	N/A	N/A

EAST-WEST CRITICAL VOLUMES	177
NORTH-SOUTH CRITICAL VOLUMES	820
THE SUM OF CRITICAL VOLUMES	997
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.625
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	458	499	74	0
EASTBOUND	0	532	103	0
NORTHBOUND	117	1628	360	0
SOUTHBOUND	173	1669	86	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	252	N/A	286	286	N/A	N/A
EASTBOUND	N/A	N/A	318	318	N/A	N/A
NORTHBOUND	117	N/A	663	663	N/A	N/A
SOUTHBOUND	173	N/A	585	585	N/A	N/A

EAST-WEST CRITICAL VOLUMES 570
NORTH-SOUTH CRITICAL VOLUMES 836

THE SUM OF CRITICAL VOLUMES 1406

NUMBER OF CRITICAL CLEARANCE INTERVALS 4*

CMA VALUE 0.923

LEVEL OF SERVICE ..... E

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:13, LINCOLN BOULEVARD AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	33	26	42	0
EASTBOUND	67	26	0	847
NORTHBOUND	645	1987	34	0
SOUTHBOUND	110	1983	106	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	50	N/A	50	N/A	N/A
EASTBOUND	67	N/A	674	674	N/A	N/A
NORTHBOUND	355	N/A	696	696	N/A	N/A
SOUTHBOUND	110	N/A	696	696	N/A	N/A

EAST-WEST CRITICAL VOLUMES	117
NORTH-SOUTH CRITICAL VOLUMES	1051
THE SUM OF CRITICAL VOLUMES	1168
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.720
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:14, ADMIRALTY WAY AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	26	21	239	118
EASTBOUND	27	38	20	0
NORTHBOUND	17	1149	99	0
SOUTHBOUND	118	1329	22	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	0	1	1	0	3
EASTBOUND	0	1	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	26	N/A	N/A	130	130	N/A
EASTBOUND	N/A	38	N/A	46	N/A	N/A
NORTHBOUND	17	N/A	624	624	N/A	N/A
SOUTHBOUND	118	N/A	676	676	N/A	N/A

EAST-WEST CRITICAL VOLUMES	157
NORTH-SOUTH CRITICAL VOLUMES	742
THE SUM OF CRITICAL VOLUMES	899
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.531
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:15, ADMIRALTY WAY AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	290	32	243	182
EASTBOUND	25	32	12	0
NORTHBOUND	17	824	136	0
SOUTHBOUND	363	1012	24	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	1	0	0	1	0	3
EASTBOUND	1	0	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	161	161	N/A	N/A	243	N/A
EASTBOUND	25	N/A	N/A	44	N/A	N/A
NORTHBOUND	17	N/A	480	480	N/A	N/A
SOUTHBOUND	363	N/A	518	518	N/A	N/A

EAST-WEST CRITICAL VOLUMES	287
NORTH-SOUTH CRITICAL VOLUMES	843
THE SUM OF CRITICAL VOLUMES	1130
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.693
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:16, ADMIRALTY WAY AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	0	158	0	578
EASTBOUND	107	195	0	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	783	0	0	102

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	0	1	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	2	0	0	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	158	N/A	0	N/A
EASTBOUND	107	N/A	98	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	431	N/A	N/A	N/A	0	N/A

EAST-WEST CRITICAL VOLUMES	265
NORTH-SOUTH CRITICAL VOLUMES	431
THE SUM OF CRITICAL VOLUMES	696
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.371
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:17, MARINA EXPRESSWAY (SR 90) WESTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	0	1146	59	0
EASTBOUND	13	565	0	0
NORTHBOUND	444	707	63	166
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	1	0	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	1	1	1	0	1	0	4
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	602	602	N/A	N/A
EASTBOUND	13	N/A	282	N/A	N/A	N/A
NORTHBOUND	384	384	384	N/A	63	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	615
NORTH-SOUTH CRITICAL VOLUMES	384
THE SUM OF CRITICAL VOLUMES	999
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.601
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:18, MARINA EXPRESSWAY (SR 90) EASTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: EXISTING (2005)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	542	1038	0	0
EASTBOUND	0	550	566	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	32	881	10	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	1	1	1	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	542	N/A	519	N/A	N/A	N/A
EASTBOUND	N/A	N/A	372	372	372	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	32	N/A	446	446	N/A	N/A

EAST-WEST CRITICAL VOLUMES	914
NORTH-SOUTH CRITICAL VOLUMES	446
THE SUM OF CRITICAL VOLUMES	1360
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.854
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

Future (2009) Without Project (Ambient Growth Only)

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	162	639	10	20
EASTBOUND	14	646	0	41
NORTHBOUND	91	31	74	81
SOUTHBOUND	15	3	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	162	N/A	320	N/A	10	N/A
EASTBOUND	14	N/A	323	N/A	0	N/A
NORTHBOUND	91	N/A	31	N/A	74	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	24

EAST-WEST CRITICAL VOLUMES	485
NORTH-SOUTH CRITICAL VOLUMES	115
THE SUM OF CRITICAL VOLUMES	600
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.400
LEVEL OF SERVICE	A

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:2, TAHITI WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	10	0	129	32
EASTBOUND	0	0	0	0
NORTHBOUND	0	590	7	0
SOUTHBOUND	65	187	14	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	10	N/A	N/A	129	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	298	N/A	298	N/A	N/A
SOUTHBOUND	65	N/A	100	100	N/A	N/A

EAST-WEST CRITICAL VOLUMES	129
NORTH-SOUTH CRITICAL VOLUMES	363
THE SUM OF CRITICAL VOLUMES	492
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.262
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:3, MARQUESAS WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	2	17	86	25
EASTBOUND	100	8	0	12
NORTHBOUND	36	709	4	0
SOUTHBOUND	50	251	45	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	19	N/A	N/A	86	N/A
EASTBOUND	100	N/A	8	N/A	0	N/A
NORTHBOUND	36	N/A	238	238	N/A	N/A
SOUTHBOUND	50	N/A	99	99	N/A	N/A

EAST-WEST CRITICAL VOLUMES 186
NORTH-SOUTH CRITICAL VOLUMES 288

THE SUM OF CRITICAL VOLUMES 474

NUMBER OF CRITICAL CLEARANCE INTERVALS 2*

CMA VALUE 0.253

LEVEL OF SERVICE ..... A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:4, PANAY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	15	6	144	55
EASTBOUND	143	5	2	0
NORTHBOUND	3	961	27	0
SOUTHBOUND	110	308	18	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	1	1
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	21	N/A	N/A	144	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	150
NORTHBOUND	3	N/A	329	329	N/A	N/A
SOUTHBOUND	110	N/A	109	109	N/A	N/A

EAST-WEST CRITICAL VOLUMES	287
NORTH-SOUTH CRITICAL VOLUMES	439
THE SUM OF CRITICAL VOLUMES	726
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.387
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:5, ADMIRALTY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	338	0	638	0
EASTBOUND	0	0	0	0
NORTHBOUND	0	547	0	668
SOUTHBOUND	346	211	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	0	1	0	3
SOUTHBOUND	1	0	3	0	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	186	N/A	N/A	N/A	319	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	274	N/A	0	N/A
SOUTHBOUND	346	N/A	70	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	319
NORTH-SOUTH CRITICAL VOLUMES	620
THE SUM OF CRITICAL VOLUMES	939
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.559
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:6, WASHINGTON BOULEVARD AND VIA MARINA/OCEAN AVENUE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	138	373	0	34
EASTBOUND	44	645	53	192
NORTHBOUND	459	385	300	69
SOUTHBOUND	80	149	33	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	2	0	1	0	1	0	4
SOUTHBOUND	1	0	0	1	0	0	2

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	138	N/A	186	N/A	0	N/A
EASTBOUND	44	N/A	322	N/A	53	N/A
NORTHBOUND	252	N/A	385	N/A	300	N/A
SOUTHBOUND	80	N/A	N/A	182	N/A	N/A

EAST-WEST CRITICAL VOLUMES	460
NORTH-SOUTH CRITICAL VOLUMES	567
THE SUM OF CRITICAL VOLUMES	1027
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.621
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Northbound and Southbound approaches have opposed signal phases.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:7, ADMIRALTY WAY AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	25	891	90	0
EASTBOUND	110	916	12	0
NORTHBOUND	28	66	55	0
SOUTHBOUND	192	33	29	55

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	1	1	0	0	3
EASTBOUND	1	0	1	1	0	0	3
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	25	N/A	490	490	N/A	N/A
EASTBOUND	110	N/A	464	464	N/A	N/A
NORTHBOUND	N/A	74	N/A	74	N/A	N/A
SOUTHBOUND	192	N/A	33	N/A	29	N/A

EAST-WEST CRITICAL VOLUMES	600
NORTH-SOUTH CRITICAL VOLUMES	266
THE SUM OF CRITICAL VOLUMES	866
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.477
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:8, WASHINGTON BOULEVARD AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	162	573	0	0
EASTBOUND	0	925	37	85
NORTHBOUND	0	0	170	81
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	2	0	1	0	3
NORTHBOUND	0	0	0	0	1	0	1
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	162	N/A	286	N/A	N/A	N/A
EASTBOUND	N/A	N/A	462	N/A	37	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	170	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	624
NORTH-SOUTH CRITICAL VOLUMES	170
THE SUM OF CRITICAL VOLUMES	794
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.662
LEVEL OF SERVICE	B

Capacity assumed = 1200.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:9, WASHINGTON BOULEVARD AND LINCOLN BOULEVARD
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	152	568	91	112
EASTBOUND	254	1281	271	287
NORTHBOUND	521	1710	226	0
SOUTHBOUND	204	1624	175	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	2	0	1	0	5
EASTBOUND	2	0	2	0	1	0	5
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	2	0	2	1	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	84	N/A	284	N/A	91	N/A
EASTBOUND	140	N/A	640	N/A	271	N/A
NORTHBOUND	287	N/A	645	645	N/A	N/A
SOUTHBOUND	112	N/A	600	600	N/A	N/A

EAST-WEST CRITICAL VOLUMES	724
NORTH-SOUTH CRITICAL VOLUMES	887
THE SUM OF CRITICAL VOLUMES	1611
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	1.072
LEVEL OF SERVICE	F

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:10, LINCOLN BOULEVARD AND MARINA EXPRESSWAY (SR 90)
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	121	0	0	694
EASTBOUND	0	0	0	0
NORTHBOUND	0	2167	76	0
SOUTHBOUND	876	1837	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	1	0	0	3
SOUTHBOUND	2	0	3	0	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	67	N/A	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	748	748	N/A	N/A
SOUTHBOUND	482	N/A	612	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	67
NORTH-SOUTH CRITICAL VOLUMES	1230
THE SUM OF CRITICAL VOLUMES	1297
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.810
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:11, LINCOLN BOULEVARD AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	2	0	10	0
EASTBOUND	149	2	0	15
NORTHBOUND	77	2030	26	0
SOUTHBOUND	31	1374	178	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	0	0	0	1	1
EASTBOUND	1	1	0	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	N/A	N/A	N/A	12
EASTBOUND	76	76	N/A	N/A	0	N/A
NORTHBOUND	77	N/A	685	685	N/A	N/A
SOUTHBOUND	31	N/A	517	517	N/A	N/A

EAST-WEST CRITICAL VOLUMES	88
NORTH-SOUTH CRITICAL VOLUMES	716
THE SUM OF CRITICAL VOLUMES	804
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.485
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	247	346	65	0
EASTBOUND	0	600	33	0
NORTHBOUND	141	2060	453	0
SOUTHBOUND	116	1252	29	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	136	N/A	206	206	N/A	N/A
EASTBOUND	N/A	N/A	316	316	N/A	N/A
NORTHBOUND	141	N/A	838	838	N/A	N/A
SOUTHBOUND	116	N/A	427	427	N/A	N/A

EAST-WEST CRITICAL VOLUMES	452
NORTH-SOUTH CRITICAL VOLUMES	954
THE SUM OF CRITICAL VOLUMES	1406
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.923
LEVEL OF SERVICE	E

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* Includes CMA value decreased due to ATCS Implementation.

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:13, LINCOLN BOULEVARD AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	28	9	26	0
EASTBOUND	51	15	0	582
NORTHBOUND	711	2442	38	0
SOUTHBOUND	83	1468	51	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	32	N/A	32	N/A	N/A
EASTBOUND	51	N/A	15	N/A	0	N/A
NORTHBOUND	391	N/A	827	827	N/A	N/A
SOUTHBOUND	83	N/A	506	506	N/A	N/A

EAST-WEST CRITICAL VOLUMES	83
NORTH-SOUTH CRITICAL VOLUMES	910
THE SUM OF CRITICAL VOLUMES	993
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.597
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:14, ADMIRALTY WAY AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	17	27	102	111
EASTBOUND	20	15	9	0
NORTHBOUND	39	930	24	0
SOUTHBOUND	111	1217	10	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	0	1	1	0	3
EASTBOUND	0	1	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	17	N/A	N/A	64	64	N/A
EASTBOUND	N/A	22	N/A	22	N/A	N/A
NORTHBOUND	39	N/A	477	477	N/A	N/A
SOUTHBOUND	111	N/A	614	614	N/A	N/A

EAST-WEST CRITICAL VOLUMES	84
NORTH-SOUTH CRITICAL VOLUMES	653
THE SUM OF CRITICAL VOLUMES	737
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.417
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:15, ADMIRALTY WAY AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	115	36	136	239
EASTBOUND	25	15	12	0
NORTHBOUND	20	695	64	0
SOUTHBOUND	478	708	8	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	1	0	0	1	0	3
EASTBOUND	1	0	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	76	76	N/A	N/A	136	N/A
EASTBOUND	25	N/A	N/A	27	N/A	N/A
NORTHBOUND	20	N/A	380	380	N/A	N/A
SOUTHBOUND	478	N/A	358	358	N/A	N/A

EAST-WEST CRITICAL VOLUMES	163
NORTH-SOUTH CRITICAL VOLUMES	858
THE SUM OF CRITICAL VOLUMES	1021
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.616
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:16, ADMIRALTY WAY AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	0	82	0	639
EASTBOUND	92	95	0	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	554	0	0	92

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	0	1	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	2	0	0	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	82	N/A	0	N/A
EASTBOUND	92	N/A	48	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	305	N/A	N/A	N/A	0	N/A

EAST-WEST CRITICAL VOLUMES	174
NORTH-SOUTH CRITICAL VOLUMES	305
THE SUM OF CRITICAL VOLUMES	479
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.255
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:17, MARINA EXPRESSWAY (SR 90) WESTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	0	729	37	0
EASTBOUND	14	525	0	0
NORTHBOUND	392	771	187	68
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	1	0	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	1	1	1	0	1	0	4
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	383	383	N/A	N/A
EASTBOUND	14	N/A	262	N/A	N/A	N/A
NORTHBOUND	388	388	388	N/A	187	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	397
NORTH-SOUTH CRITICAL VOLUMES	388
THE SUM OF CRITICAL VOLUMES	785
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.451
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:18, MARINA EXPRESSWAY (SR 90) EASTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	378	747	0	0
EASTBOUND	0	510	743	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	30	837	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	1	1	1	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	378	N/A	374	N/A	N/A	N/A
EASTBOUND	N/A	N/A	418	418	418	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	30	N/A	422	422	N/A	N/A

EAST-WEST CRITICAL VOLUMES	796
NORTH-SOUTH CRITICAL VOLUMES	422
THE SUM OF CRITICAL VOLUMES	1218
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.755
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	101	640	17	33
EASTBOUND	81	691	0	10
NORTHBOUND	62	14	50	50
SOUTHBOUND	20	17	17	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	101	N/A	320	N/A	17	N/A
EASTBOUND	81	N/A	346	N/A	0	N/A
NORTHBOUND	62	N/A	14	N/A	50	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	54

EAST-WEST CRITICAL VOLUMES	447
NORTH-SOUTH CRITICAL VOLUMES	116
THE SUM OF CRITICAL VOLUMES	563
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.375
LEVEL OF SERVICE	A

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:2, TAHITI WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	6	1	0	67
EASTBOUND	0	0	0	0
NORTHBOUND	4	343	8	0
SOUTHBOUND	142	475	25	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	7	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	174	N/A	180	N/A	N/A
SOUTHBOUND	142	N/A	250	250	N/A	N/A

EAST-WEST CRITICAL VOLUMES	7
NORTH-SOUTH CRITICAL VOLUMES	322
THE SUM OF CRITICAL VOLUMES	329
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.175
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:45 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:3, MARQUESAS WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	1	7	62	0
EASTBOUND	72	12	22	11
NORTHBOUND	22	379	10	0
SOUTHBOUND	101	603	89	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	8	N/A	N/A	62	N/A
EASTBOUND	72	N/A	12	N/A	22	N/A
NORTHBOUND	22	N/A	130	130	N/A	N/A
SOUTHBOUND	101	N/A	231	231	N/A	N/A

EAST-WEST CRITICAL VOLUMES	134
NORTH-SOUTH CRITICAL VOLUMES	253
THE SUM OF CRITICAL VOLUMES	387
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.206
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:4, PANAY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	15	3	42	102
EASTBOUND	41	1	2	0
NORTHBOUND	0	526	24	0
SOUTHBOUND	204	755	34	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	1	1
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	18	N/A	N/A	42	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	44
NORTHBOUND	0	N/A	183	183	N/A	N/A
SOUTHBOUND	204	N/A	263	263	N/A	N/A

EAST-WEST CRITICAL VOLUMES	83
NORTH-SOUTH CRITICAL VOLUMES	387
THE SUM OF CRITICAL VOLUMES	470
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.251
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:5, ADMIRALTY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	777	0	546	0
EASTBOUND	0	0	0	0
NORTHBOUND	0	286	0	481
SOUTHBOUND	619	354	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	0	1	0	3
SOUTHBOUND	1	0	3	0	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	427	N/A	N/A	N/A	273	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	143	N/A	0	N/A
SOUTHBOUND	619	N/A	118	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	427
NORTH-SOUTH CRITICAL VOLUMES	762
THE SUM OF CRITICAL VOLUMES	1189
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.734
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:6, WASHINGTON BOULEVARD AND VIA MARINA/OCEAN AVENUE
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	134	493	0	39
EASTBOUND	43	619	154	136
NORTHBOUND	363	272	115	67
SOUTHBOUND	169	431	60	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	2	0	1	0	1	0	4
SOUTHBOUND	1	0	0	1	0	0	2

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	134	N/A	246	N/A	0	N/A
EASTBOUND	43	N/A	310	N/A	154	N/A
NORTHBOUND	200	N/A	272	N/A	115	N/A
SOUTHBOUND	169	N/A	N/A	491	N/A	N/A

EAST-WEST CRITICAL VOLUMES	444
NORTH-SOUTH CRITICAL VOLUMES	763
THE SUM OF CRITICAL VOLUMES	1207
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.747
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

Northbound and Southbound approaches have opposed signal phases.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:7, ADMIRALTY WAY AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	67	1148	84	0
EASTBOUND	43	1025	16	0
NORTHBOUND	20	33	56	0
SOUTHBOUND	368	81	155	22

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	1	1	0	0	3
EASTBOUND	1	0	1	1	0	0	3
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	67	N/A	616	616	N/A	N/A
EASTBOUND	43	N/A	520	520	N/A	N/A
NORTHBOUND	N/A	53	N/A	56	N/A	N/A
SOUTHBOUND	368	N/A	81	N/A	155	N/A

EAST-WEST CRITICAL VOLUMES	659
NORTH-SOUTH CRITICAL VOLUMES	424
THE SUM OF CRITICAL VOLUMES	1083
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.622
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:8, WASHINGTON BOULEVARD AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	381	683	0	0
EASTBOUND	0	750	206	0
NORTHBOUND	0	0	0	144
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	2	0	1	0	3
NORTHBOUND	0	0	0	0	1	0	1
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	381	N/A	342	N/A	N/A	N/A
EASTBOUND	N/A	N/A	375	N/A	206	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	0	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	756
NORTH-SOUTH CRITICAL VOLUMES	0
THE SUM OF CRITICAL VOLUMES	756
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.630
LEVEL OF SERVICE	B

Capacity assumed = 1200.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:9, WASHINGTON BOULEVARD AND LINCOLN BOULEVARD
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	361	1196	239	238
EASTBOUND	189	732	96	248
NORTHBOUND	451	1543	187	0
SOUTHBOUND	433	1705	138	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	2	0	1	0	5
EASTBOUND	2	0	2	0	1	0	5
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	2	0	2	1	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	199	N/A	598	N/A	239	N/A
EASTBOUND	104	N/A	366	N/A	96	N/A
NORTHBOUND	248	N/A	577	577	N/A	N/A
SOUTHBOUND	238	N/A	614	614	N/A	N/A

EAST-WEST CRITICAL VOLUMES 702
NORTH-SOUTH CRITICAL VOLUMES 862

THE SUM OF CRITICAL VOLUMES 1564

NUMBER OF CRITICAL CLEARANCE INTERVALS 4*

CMA VALUE 1.037

LEVEL OF SERVICE ..... F

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*. Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:10, LINCOLN BOULEVARD AND MARINA EXPRESSWAY (SR 90)
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	133	0	0	603
EASTBOUND	0	0	0	0
NORTHBOUND	0	2049	167	0
SOUTHBOUND	969	2040	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	1	0	0	3
SOUTHBOUND	2	0	3	0	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	73	N/A	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	739	739	N/A	N/A
SOUTHBOUND	533	N/A	680	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	73
NORTH-SOUTH CRITICAL VOLUMES	1272
THE SUM OF CRITICAL VOLUMES	1345
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.844
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:11, LINCOLN BOULEVARD AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	6	2	32	0
EASTBOUND	284	0	0	57
NORTHBOUND	142	1680	9	0
SOUTHBOUND	48	1785	307	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	0	0	0	1	1
EASTBOUND	1	1	0	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	N/A	N/A	N/A	40
EASTBOUND	142	142	N/A	N/A	0	N/A
NORTHBOUND	142	N/A	563	563	N/A	N/A
SOUTHBOUND	48	N/A	697	697	N/A	N/A

EAST-WEST CRITICAL VOLUMES 182
NORTH-SOUTH CRITICAL VOLUMES 839

THE SUM OF CRITICAL VOLUMES 1021

NUMBER OF CRITICAL CLEARANCE INTERVALS 4*

CMA VALUE 0.643

LEVEL OF SERVICE ..... B

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	469	511	76	0
EASTBOUND	0	545	105	0
NORTHBOUND	120	1667	369	0
SOUTHBOUND	177	1709	88	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	258	N/A	294	294	N/A	N/A
EASTBOUND	N/A	N/A	325	325	N/A	N/A
NORTHBOUND	120	N/A	679	679	N/A	N/A
SOUTHBOUND	177	N/A	599	599	N/A	N/A

EAST-WEST CRITICAL VOLUMES	583
NORTH-SOUTH CRITICAL VOLUMES	856
THE SUM OF CRITICAL VOLUMES	1439
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.947
LEVEL OF SERVICE	E

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:13, LINCOLN BOULEVARD AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	34	27	43	0
EASTBOUND	69	27	0	868
NORTHBOUND	661	2035	35	0
SOUTHBOUND	113	2031	109	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	52	N/A	52	N/A	N/A
EASTBOUND	69	N/A	27	N/A	0	N/A
NORTHBOUND	364	N/A	690	690	N/A	N/A
SOUTHBOUND	113	N/A	713	713	N/A	N/A

EAST-WEST CRITICAL VOLUMES	121
NORTH-SOUTH CRITICAL VOLUMES	1077
THE SUM OF CRITICAL VOLUMES	1198
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.741
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:14, ADMIRALTY WAY AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	27	22	245	121
EASTBOUND	28	39	20	0
NORTHBOUND	17	1177	101	0
SOUTHBOUND	121	1361	23	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	0	1	1	0	3
EASTBOUND	0	1	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	27	N/A	N/A	134	134	N/A
EASTBOUND	N/A	39	N/A	48	N/A	N/A
NORTHBOUND	17	N/A	639	639	N/A	N/A
SOUTHBOUND	121	N/A	692	692	N/A	N/A

EAST-WEST CRITICAL VOLUMES	162
NORTH-SOUTH CRITICAL VOLUMES	760
THE SUM OF CRITICAL VOLUMES	922
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.547
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:15, ADMIRALTY WAY AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	297	33	249	186
EASTBOUND	26	33	12	0
NORTHBOUND	17	844	139	0
SOUTHBOUND	372	1037	25	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	1	0	0	1	0	3
EASTBOUND	1	0	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	165	165	N/A	N/A	249	N/A
EASTBOUND	26	N/A	N/A	45	N/A	N/A
NORTHBOUND	17	N/A	492	492	N/A	N/A
SOUTHBOUND	372	N/A	531	531	N/A	N/A

EAST-WEST CRITICAL VOLUMES	294
NORTH-SOUTH CRITICAL VOLUMES	864
THE SUM OF CRITICAL VOLUMES	1158
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.713
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:16, ADMIRALTY WAY AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	0	162	0	592
EASTBOUND	110	200	0	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	802	0	0	104

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	0	1	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	2	0	0	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	162	N/A	0	N/A
EASTBOUND	110	N/A	100	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	441	N/A	N/A	N/A	0	N/A

EAST-WEST CRITICAL VOLUMES	272
NORTH-SOUTH CRITICAL VOLUMES	441
THE SUM OF CRITICAL VOLUMES	713
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.380
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:17, MARINA EXPRESSWAY (SR 90) WESTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	0	1174	60	0
EASTBOUND	13	579	0	0
NORTHBOUND	455	724	65	170
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	1	0	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	1	1	1	0	1	0	4
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	617	617	N/A	N/A
EASTBOUND	13	N/A	290	N/A	N/A	N/A
NORTHBOUND	393	393	393	N/A	65	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	630
NORTH-SOUTH CRITICAL VOLUMES	393
THE SUM OF CRITICAL VOLUMES	1023
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.618
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:18, MARINA EXPRESSWAY (SR 90) EASTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITHOUT PROJECT (AMBIENT GROWTH ONLY)

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	555	1063	0	0
EASTBOUND	0	563	580	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	33	902	10	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	1	1	1	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	555	N/A	532	N/A	N/A	N/A
EASTBOUND	N/A	N/A	381	381	381	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	33	N/A	456	456	N/A	N/A

EAST-WEST CRITICAL VOLUMES	936
NORTH-SOUTH CRITICAL VOLUMES	456
THE SUM OF CRITICAL VOLUMES	1392
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.877
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

Future (2009) With Project

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	162	642	10	20
EASTBOUND	14	647	0	41
NORTHBOUND	93	34	78	81
SOUTHBOUND	15	4	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	162	N/A	321	N/A	10	N/A
EASTBOUND	14	N/A	324	N/A	0	N/A
NORTHBOUND	93	N/A	34	N/A	78	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	25

EAST-WEST CRITICAL VOLUMES	486
NORTH-SOUTH CRITICAL VOLUMES	118
THE SUM OF CRITICAL VOLUMES	604
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.403
LEVEL OF SERVICE	A

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:2, TAHITI WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	10	0	129	32
EASTBOUND	0	0	0	0
NORTHBOUND	0	591	7	0
SOUTHBOUND	65	189	14	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	10	N/A	N/A	129	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	299	N/A	299	N/A	N/A
SOUTHBOUND	65	N/A	102	102	N/A	N/A

EAST-WEST CRITICAL VOLUMES	129
NORTH-SOUTH CRITICAL VOLUMES	364
THE SUM OF CRITICAL VOLUMES	493
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.263
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:3, MARQUESAS WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	2	17	86	25
EASTBOUND	100	8	0	12
NORTHBOUND	37	709	4	0
SOUTHBOUND	50	253	48	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	19	N/A	N/A	86	N/A
EASTBOUND	100	N/A	8	N/A	0	N/A
NORTHBOUND	37	N/A	238	238	N/A	N/A
SOUTHBOUND	50	N/A	100	100	N/A	N/A

EAST-WEST CRITICAL VOLUMES	186
NORTH-SOUTH CRITICAL VOLUMES	288
THE SUM OF CRITICAL VOLUMES	474
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.253
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:4, PANAY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	15	6	144	55
EASTBOUND	231	5	2	0
NORTHBOUND	3	961	27	0
SOUTHBOUND	110	316	29	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	1	1
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	21	N/A	N/A	144	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	238
NORTHBOUND	3	N/A	329	329	N/A	N/A
SOUTHBOUND	110	N/A	115	115	N/A	N/A

EAST-WEST CRITICAL VOLUMES	375
NORTH-SOUTH CRITICAL VOLUMES	439
THE SUM OF CRITICAL VOLUMES	814
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.443
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:48 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:5, ADMIRALTY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	351	0	638	0
EASTBOUND	0	0	0	0
NORTHBOUND	0	576	0	727
SOUTHBOUND	346	217	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	0	1	0	3
SOUTHBOUND	1	0	3	0	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	193	N/A	N/A	N/A	319	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	288	N/A	0	N/A
SOUTHBOUND	346	N/A	72	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	319
NORTH-SOUTH CRITICAL VOLUMES	634
THE SUM OF CRITICAL VOLUMES	953
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.569
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:6, WASHINGTON BOULEVARD AND VIA MARINA/OCEAN AVENUE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	141	373	0	34
EASTBOUND	44	649	48	198
NORTHBOUND	462	395	315	70
SOUTHBOUND	80	151	33	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	2	0	1	0	1	0	4
SOUTHBOUND	1	0	0	1	0	0	2

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	141	N/A	186	N/A	0	N/A
EASTBOUND	44	N/A	324	N/A	48	N/A
NORTHBOUND	254	N/A	395	N/A	315	N/A
SOUTHBOUND	80	N/A	N/A	184	N/A	N/A

EAST-WEST CRITICAL VOLUMES	464
NORTH-SOUTH CRITICAL VOLUMES	579
THE SUM OF CRITICAL VOLUMES	1043
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.632
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Northbound and Southbound approaches have opposed signal phases.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:7, ADMIRALTY WAY AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS **	
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	25	903	90	0
EASTBOUND	110	975	12	0
NORTHBOUND	28	66	55	0
SOUTHBOUND	192	33	30	55

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	1	1	0	0	3
EASTBOUND	1	0	1	1	0	0	3
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	25	N/A	496	496	N/A	N/A
EASTBOUND	110	N/A	494	494	N/A	N/A
NORTHBOUND	N/A	74	N/A	74	N/A	N/A
SOUTHBOUND	192	N/A	33	N/A	30	N/A

EAST-WEST CRITICAL VOLUMES	606
NORTH-SOUTH CRITICAL VOLUMES	266
THE SUM OF CRITICAL VOLUMES	872
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.481
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:8, WASHINGTON BOULEVARD AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	163	576	0	0
EASTBOUND	0	945	38	84
NORTHBOUND	0	0	169	82
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	2	0	1	0	3
NORTHBOUND	0	0	0	0	1	0	1
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	163	N/A	288	N/A	N/A	N/A
EASTBOUND	N/A	N/A	472	N/A	38	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	169	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	635
NORTH-SOUTH CRITICAL VOLUMES	169
THE SUM OF CRITICAL VOLUMES	804
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.670
LEVEL OF SERVICE	B

Capacity assumed = 1200.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:9, WASHINGTON BOULEVARD AND LINCOLN BOULEVARD
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	152	571	91	112
EASTBOUND	259	1296	271	287
NORTHBOUND	521	1710	226	0
SOUTHBOUND	204	1624	176	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	2	0	1	0	5
EASTBOUND	2	0	2	0	1	0	5
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	2	0	2	1	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	84	N/A	286	N/A	91	N/A
EASTBOUND	142	N/A	648	N/A	271	N/A
NORTHBOUND	287	N/A	645	645	N/A	N/A
SOUTHBOUND	112	N/A	600	600	N/A	N/A

EAST-WEST CRITICAL VOLUMES	732
NORTH-SOUTH CRITICAL VOLUMES	887
THE SUM OF CRITICAL VOLUMES	1619
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	1.077
LEVEL OF SERVICE	F

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:10, LINCOLN BOULEVARD AND MARINA EXPRESSWAY (SR 90)
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	121	0	0	694
EASTBOUND	0	0	0	0
NORTHBOUND	0	2167	76	0
SOUTHBOUND	876	1837	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	1	0	0	3
SOUTHBOUND	2	0	3	0	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	67	N/A	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	748	748	N/A	N/A
SOUTHBOUND	482	N/A	612	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	67
NORTH-SOUTH CRITICAL VOLUMES	1230
THE SUM OF CRITICAL VOLUMES	1297
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.810
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:11, LINCOLN BOULEVARD AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	2	0	10	0
EASTBOUND	149	2	0	17
NORTHBOUND	77	2030	26	0
SOUTHBOUND	31	1374	178	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	0	0	0	1	1
EASTBOUND	1	1	0	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	N/A	N/A	N/A	12
EASTBOUND	76	76	N/A	N/A	0	N/A
NORTHBOUND	77	N/A	685	685	N/A	N/A
SOUTHBOUND	31	N/A	517	517	N/A	N/A

EAST-WEST CRITICAL VOLUMES 88
NORTH-SOUTH CRITICAL VOLUMES 716

THE SUM OF CRITICAL VOLUMES 804

NUMBER OF CRITICAL CLEARANCE INTERVALS 4*

CMA VALUE 0.485

LEVEL OF SERVICE ..... A

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	247	354	65	0
EASTBOUND	0	639	36	0
NORTHBOUND	142	2060	453	0
SOUTHBOUND	116	1254	29	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	136	N/A	210	210	N/A	N/A
EASTBOUND	N/A	N/A	338	338	N/A	N/A
NORTHBOUND	142	N/A	838	838	N/A	N/A
SOUTHBOUND	116	N/A	428	428	N/A	N/A

EAST-WEST CRITICAL VOLUMES	474
NORTH-SOUTH CRITICAL VOLUMES	954
THE SUM OF CRITICAL VOLUMES	1428
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.939
LEVEL OF SERVICE	E

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:13, LINCOLN BOULEVARD AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	28	9	26	0
EASTBOUND	51	15	0	592
NORTHBOUND	713	2443	38	0
SOUTHBOUND	83	1473	51	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	32	N/A	32	N/A	N/A
EASTBOUND	51	N/A	15	N/A	0	N/A
NORTHBOUND	392	N/A	827	827	N/A	N/A
SOUTHBOUND	83	N/A	508	508	N/A	N/A

EAST-WEST CRITICAL VOLUMES	83
NORTH-SOUTH CRITICAL VOLUMES	910
THE SUM OF CRITICAL VOLUMES	993
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.597
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:14, ADMIRALTY WAY AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	17	27	100	113
EASTBOUND	20	15	9	0
NORTHBOUND	39	942	24	0
SOUTHBOUND	113	1273	11	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	0	1	1	0	3
EASTBOUND	0	1	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	17	N/A	N/A	64	64	N/A
EASTBOUND	N/A	22	N/A	22	N/A	N/A
NORTHBOUND	39	N/A	483	483	N/A	N/A
SOUTHBOUND	113	N/A	642	642	N/A	N/A

EAST-WEST CRITICAL VOLUMES	84
NORTH-SOUTH CRITICAL VOLUMES	681
THE SUM OF CRITICAL VOLUMES	765
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.437
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:15, ADMIRALTY WAY AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	115	36	124	260
EASTBOUND	25	15	12	0
NORTHBOUND	20	698	64	0
SOUTHBOUND	520	721	9	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	1	0	0	1	0	3
EASTBOUND	1	0	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	76	76	N/A	N/A	124	N/A
EASTBOUND	25	N/A	N/A	27	N/A	N/A
NORTHBOUND	20	N/A	381	381	N/A	N/A
SOUTHBOUND	520	N/A	365	365	N/A	N/A

EAST-WEST CRITICAL VOLUMES	151
NORTH-SOUTH CRITICAL VOLUMES	901
THE SUM OF CRITICAL VOLUMES	1052
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.638
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:16, ADMIRALTY WAY AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	0	82	0	641
EASTBOUND	93	95	0	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	564	0	2	93

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	0	1	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	2	0	0	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	82	N/A	0	N/A
EASTBOUND	93	N/A	48	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	310	N/A	N/A	N/A	2	N/A

EAST-WEST CRITICAL VOLUMES	175
NORTH-SOUTH CRITICAL VOLUMES	310
THE SUM OF CRITICAL VOLUMES	485
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.259
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:17, MARINA EXPRESSWAY (SR 90) WESTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	0	729	37	0
EASTBOUND	14	525	0	0
NORTHBOUND	400	771	187	68
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	1	0	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	1	1	1	0	1	0	4
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	383	383	N/A	N/A
EASTBOUND	14	N/A	262	N/A	N/A	N/A
NORTHBOUND	390	390	390	N/A	187	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	397
NORTH-SOUTH CRITICAL VOLUMES	390
THE SUM OF CRITICAL VOLUMES	787
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.452
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:18, MARINA EXPRESSWAY (SR 90) EASTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	378	755	0	0
EASTBOUND	0	510	782	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	30	837	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	1	1	1	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	378	N/A	378	N/A	N/A	N/A
EASTBOUND	N/A	N/A	431	431	431	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	30	N/A	422	422	N/A	N/A

EAST-WEST CRITICAL VOLUMES	809
NORTH-SOUTH CRITICAL VOLUMES	422
THE SUM OF CRITICAL VOLUMES	1231
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.764
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	101	641	17	33
EASTBOUND	81	693	0	12
NORTHBOUND	62	15	52	50
SOUTHBOUND	20	19	17	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	101	N/A	320	N/A	17	N/A
EASTBOUND	81	N/A	346	N/A	0	N/A
NORTHBOUND	62	N/A	15	N/A	52	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	56

EAST-WEST CRITICAL VOLUMES	447
NORTH-SOUTH CRITICAL VOLUMES	118
THE SUM OF CRITICAL VOLUMES	565
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.377
LEVEL OF SERVICE	A

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:2, TAHITI WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	6	1	0	67
EASTBOUND	0	0	0	0
NORTHBOUND	4	344	8	0
SOUTHBOUND	142	476	25	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	7	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	175	N/A	181	N/A	N/A
SOUTHBOUND	142	N/A	250	250	N/A	N/A

EAST-WEST CRITICAL VOLUMES	7
NORTH-SOUTH CRITICAL VOLUMES	323
THE SUM OF CRITICAL VOLUMES	330
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.176
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:49 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:3, MARQUESAS WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	1	7	62	0
EASTBOUND	72	12	21	12
NORTHBOUND	23	379	10	0
SOUTHBOUND	101	604	101	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	8	N/A	N/A	62	N/A
EASTBOUND	72	N/A	12	N/A	21	N/A
NORTHBOUND	23	N/A	130	130	N/A	N/A
SOUTHBOUND	101	N/A	235	235	N/A	N/A

EAST-WEST CRITICAL VOLUMES	134
NORTH-SOUTH CRITICAL VOLUMES	258
THE SUM OF CRITICAL VOLUMES	392
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.209
LEVEL OF SERVICE	A

* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:51 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:4, PANAY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	15	3	42	102
EASTBOUND	73	1	2	0
NORTHBOUND	0	526	24	0
SOUTHBOUND	204	784	75	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	0	1	0	2
EASTBOUND	0	0	0	0	0	1	1
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	18	N/A	N/A	42	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	76
NORTHBOUND	0	N/A	183	183	N/A	N/A
SOUTHBOUND	204	N/A	286	286	N/A	N/A

EAST-WEST CRITICAL VOLUMES	115
NORTH-SOUTH CRITICAL VOLUMES	387
THE SUM OF CRITICAL VOLUMES	502
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.268
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:5, ADMIRALTY WAY AND VIA MARINA
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	826	0	546	0
EASTBOUND	0	0	0	0
NORTHBOUND	0	296	0	503
SOUTHBOUND	619	375	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	0	1	0	3
SOUTHBOUND	1	0	3	0	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	454	N/A	N/A	N/A	273	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	148	N/A	0	N/A
SOUTHBOUND	619	N/A	125	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	454
NORTH-SOUTH CRITICAL VOLUMES	767
THE SUM OF CRITICAL VOLUMES	1221
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.757
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

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6/15/2005 2:20:51 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:6, WASHINGTON BOULEVARD AND VIA MARINA/OCEAN AVENUE
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	145	493	0	39
EASTBOUND	43	621	154	138
NORTHBOUND	364	276	115	72
SOUTHBOUND	169	439	60	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	2	0	1	0	1	0	4
SOUTHBOUND	1	0	0	1	0	0	2

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	145	N/A	246	N/A	0	N/A
EASTBOUND	43	N/A	310	N/A	154	N/A
NORTHBOUND	200	N/A	276	N/A	115	N/A
SOUTHBOUND	169	N/A	N/A	499	N/A	N/A

EAST-WEST CRITICAL VOLUMES	454
NORTH-SOUTH CRITICAL VOLUMES	775
THE SUM OF CRITICAL VOLUMES	1229
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.762
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

Northbound and Southbound approaches have opposed signal phases.

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6/15/2005 2:20:51 PM

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:7, ADMIRALTY WAY AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	67	1193	84	0
EASTBOUND	43	1047	16	0
NORTHBOUND	20	33	56	0
SOUTHBOUND	368	81	159	22

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	1	1	0	0	3
EASTBOUND	1	0	1	1	0	0	3
NORTHBOUND	0	1	0	1	0	0	2
SOUTHBOUND	1	0	1	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	67	N/A	638	638	N/A	N/A
EASTBOUND	43	N/A	532	532	N/A	N/A
NORTHBOUND	N/A	52	N/A	56	N/A	N/A
SOUTHBOUND	368	N/A	81	N/A	159	N/A

EAST-WEST CRITICAL VOLUMES	681
NORTH-SOUTH CRITICAL VOLUMES	424
THE SUM OF CRITICAL VOLUMES	1105
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.637
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:8, WASHINGTON BOULEVARD AND PALAWAN WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	385	694	0	0
EASTBOUND	0	757	206	0
NORTHBOUND	0	0	0	144
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	2	0	1	0	3
NORTHBOUND	0	0	0	0	1	0	1
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	385	N/A	347	N/A	N/A	N/A
EASTBOUND	N/A	N/A	378	N/A	206	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	0	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	763
NORTH-SOUTH CRITICAL VOLUMES	0
THE SUM OF CRITICAL VOLUMES	763
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.636
LEVEL OF SERVICE	B

Capacity assumed = 1200.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:9, WASHINGTON BOULEVARD AND LINCOLN BOULEVARD
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	361	1207	239	238
EASTBOUND	191	737	96	248
NORTHBOUND	451	1543	187	0
SOUTHBOUND	433	1705	142	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	2	0	1	0	5
EASTBOUND	2	0	2	0	1	0	5
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	2	0	2	1	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	199	N/A	604	N/A	239	N/A
EASTBOUND	105	N/A	368	N/A	96	N/A
NORTHBOUND	248	N/A	577	577	N/A	N/A
SOUTHBOUND	238	N/A	616	616	N/A	N/A

EAST-WEST CRITICAL VOLUMES	709
NORTH-SOUTH CRITICAL VOLUMES	864
THE SUM OF CRITICAL VOLUMES	1573
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	1.044
LEVEL OF SERVICE	F

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:10, LINCOLN BOULEVARD AND MARINA EXPRESSWAY (SR 90)
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	133	0	0	603
EASTBOUND	0	0	0	0
NORTHBOUND	0	2049	167	0
SOUTHBOUND	969	2040	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	0	0	2	0	4
EASTBOUND	0	0	0	0	0	0	0
NORTHBOUND	0	0	2	1	0	0	3
SOUTHBOUND	2	0	3	0	0	0	5

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	73	N/A	N/A	N/A	0	N/A
EASTBOUND	N/A	N/A	N/A	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	739	739	N/A	N/A
SOUTHBOUND	533	N/A	680	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	73
NORTH-SOUTH CRITICAL VOLUMES	1272
THE SUM OF CRITICAL VOLUMES	1345
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.844
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:11, LINCOLN BOULEVARD AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	6	2	32	0
EASTBOUND	284	0	0	58
NORTHBOUND	144	1680	9	0
SOUTHBOUND	48	1785	307	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	0	0	0	1	1
EASTBOUND	1	1	0	0	1	0	3
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	N/A	N/A	N/A	40
EASTBOUND	142	142	N/A	N/A	0	N/A
NORTHBOUND	144	N/A	563	563	N/A	N/A
SOUTHBOUND	48	N/A	697	697	N/A	N/A

EAST-WEST CRITICAL VOLUMES	182
NORTH-SOUTH CRITICAL VOLUMES	841
THE SUM OF CRITICAL VOLUMES	1023
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.644
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	469	541	76	0
EASTBOUND	0	560	106	0
NORTHBOUND	122	1669	369	0
SOUTHBOUND	177	1710	88	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	2	1	0	0	4
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	258	N/A	308	308	N/A	N/A
EASTBOUND	N/A	N/A	333	333	N/A	N/A
NORTHBOUND	122	N/A	679	679	N/A	N/A
SOUTHBOUND	177	N/A	599	599	N/A	N/A

EAST-WEST CRITICAL VOLUMES	591
NORTH-SOUTH CRITICAL VOLUMES	856
THE SUM OF CRITICAL VOLUMES	1447
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.952
LEVEL OF SERVICE	E

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:13, LINCOLN BOULEVARD AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	34	27	43	0
EASTBOUND	69	27	0	872
NORTHBOUND	669	2039	35	0
SOUTHBOUND	113	2033	109	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	1	0	1	0	0	2
EASTBOUND	1	0	1	0	1	0	3
NORTHBOUND	2	0	2	1	0	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	52	N/A	52	N/A	N/A
EASTBOUND	69	N/A	27	N/A	0	N/A
NORTHBOUND	368	N/A	691	691	N/A	N/A
SOUTHBOUND	113	N/A	714	714	N/A	N/A

EAST-WEST CRITICAL VOLUMES	121
NORTH-SOUTH CRITICAL VOLUMES	1082
THE SUM OF CRITICAL VOLUMES	1203
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.744
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:14, ADMIRALTY WAY AND BALI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	27	22	246	122
EASTBOUND	29	39	20	0
NORTHBOUND	17	1220	101	0
SOUTHBOUND	122	1382	23	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	0	1	1	0	3
EASTBOUND	0	1	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	27	N/A	N/A	134	134	N/A
EASTBOUND	N/A	39	N/A	49	N/A	N/A
NORTHBOUND	17	N/A	660	660	N/A	N/A
SOUTHBOUND	122	N/A	702	702	N/A	N/A

EAST-WEST CRITICAL VOLUMES	163
NORTH-SOUTH CRITICAL VOLUMES	782
THE SUM OF CRITICAL VOLUMES	945
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.563
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:15, ADMIRALTY WAY AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	297	33	273	194
EASTBOUND	27	33	12	0
NORTHBOUND	17	854	139	0
SOUTHBOUND	388	1042	25	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	1	0	0	1	0	3
EASTBOUND	1	0	0	1	0	0	2
NORTHBOUND	1	0	1	1	0	0	3
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	165	165	N/A	N/A	273	N/A
EASTBOUND	27	N/A	N/A	45	N/A	N/A
NORTHBOUND	17	N/A	496	496	N/A	N/A
SOUTHBOUND	388	N/A	534	534	N/A	N/A

EAST-WEST CRITICAL VOLUMES	318
NORTH-SOUTH CRITICAL VOLUMES	884
THE SUM OF CRITICAL VOLUMES	1202
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.744
LEVEL OF SERVICE	C

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* Includes CMA value decreased due to ATCS Implementation.

Eastbound and Westbound approaches have opposed signal phases.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:16, ADMIRALTY WAY AND FIJI WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	0	162	0	600
EASTBOUND	112	200	0	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	806	0	0	105

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	0	1	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	2	0	0	0	1	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	162	N/A	0	N/A
EASTBOUND	112	N/A	100	N/A	N/A	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	443	N/A	N/A	N/A	0	N/A

EAST-WEST CRITICAL VOLUMES	274
NORTH-SOUTH CRITICAL VOLUMES	443
THE SUM OF CRITICAL VOLUMES	717
NUMBER OF CRITICAL CLEARANCE INTERVALS	2*
CMA VALUE	0.382
LEVEL OF SERVICE	A

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:17, MARINA EXPRESSWAY (SR 90) WESTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	0	1174	60	0
EASTBOUND	13	579	0	0
NORTHBOUND	485	724	65	170
SOUTHBOUND	0	0	0	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	0	0	1	1	0	0	2
EASTBOUND	1	0	2	0	0	0	3
NORTHBOUND	1	1	1	0	1	0	4
SOUTHBOUND	0	0	0	0	0	0	0

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	N/A	N/A	617	617	N/A	N/A
EASTBOUND	13	N/A	290	N/A	N/A	N/A
NORTHBOUND	403	403	403	N/A	65	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A

EAST-WEST CRITICAL VOLUMES	630
NORTH-SOUTH CRITICAL VOLUMES	403
THE SUM OF CRITICAL VOLUMES	1033
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.625
LEVEL OF SERVICE	B

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:18, MARINA EXPRESSWAY (SR 90) EASTBOUND AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	555	1093	0	0
EASTBOUND	0	563	595	0
NORTHBOUND	0	0	0	0
SOUTHBOUND	33	902	10	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	0	0	3
EASTBOUND	0	0	1	1	1	0	3
NORTHBOUND	0	0	0	0	0	0	0
SOUTHBOUND	1	0	1	1	0	0	3

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	555	N/A	546	N/A	N/A	N/A
EASTBOUND	N/A	N/A	386	386	386	N/A
NORTHBOUND	N/A	N/A	N/A	N/A	N/A	N/A
SOUTHBOUND	33	N/A	456	456	N/A	N/A

EAST-WEST CRITICAL VOLUMES	941
NORTH-SOUTH CRITICAL VOLUMES	456
THE SUM OF CRITICAL VOLUMES	1397
NUMBER OF CRITICAL CLEARANCE INTERVALS	3*
CMA VALUE	0.880
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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Future (2009) With Project Plus Project-Only Mitigation

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT PLUS PROJECT-ONLY MITIGATION

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS MIN ON GREEN	MAX ON RED **
WESTBOUND	247	354	65	0
EASTBOUND	0	639	36	0
NORTHBOUND	142	2060	385	68
SOUTHBOUND	116	1254	29	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	3	0	1	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	136	N/A	210	210	N/A	N/A
EASTBOUND	N/A	N/A	338	338	N/A	N/A
NORTHBOUND	142	N/A	687	N/A	385	N/A
SOUTHBOUND	116	N/A	428	428	N/A	N/A

EAST-WEST CRITICAL VOLUMES	474
NORTH-SOUTH CRITICAL VOLUMES	803
THE SUM OF CRITICAL VOLUMES	1277
NUMBER OF CRITICAL CLEARANCE INTERVALS	4*
CMA VALUE	0.829
LEVEL OF SERVICE	D

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* Includes CMA value decreased due to ATCS Implementation.

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CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:12, LINCOLN BOULEVARD AND MINDANAO WAY
DATE: 6/15/2005 INITIALS: JL PERIOD: PM PEAK HOUR
CASE: FUTURE (2009) WITH PROJECT PLUS PROJECT-ONLY MITIGATION

** INPUT VOLUMES **

APPROACH	LEFT	THROUGH	** RIGHT TURNS ** MIN ON GREEN	MAX ON RED
WESTBOUND	469	541	76	0
EASTBOUND	0	560	106	0
NORTHBOUND	122	1669	240	129
SOUTHBOUND	177	1710	88	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	2	0	1	1	0	0	4
EASTBOUND	0	0	1	1	0	0	2
NORTHBOUND	1	0	3	0	1	0	5
SOUTHBOUND	1	0	2	1	0	0	4

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	258	N/A	308	308	N/A	N/A
EASTBOUND	N/A	N/A	333	333	N/A	N/A
NORTHBOUND	122	N/A	556	N/A	240	N/A
SOUTHBOUND	177	N/A	599	599	N/A	N/A

EAST-WEST CRITICAL VOLUMES 591
NORTH-SOUTH CRITICAL VOLUMES 733

THE SUM OF CRITICAL VOLUMES 1324

NUMBER OF CRITICAL CLEARANCE INTERVALS 4*

CMA VALUE 0.863

LEVEL OF SERVICE ..... D

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* Includes CMA value decreased due to ATCS Implementation.

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Future (2009) With Cumulative Development

CRAIN & ASSOCIATES
CMA CALCULATIONS

INTERSECTION:1, WASHINGTON BOULEVARD AND DELL AVENUE/VIA DOLCE
DATE: 6/15/2005 INITIALS: JL PERIOD: AM PEAK HOUR
CASE: FUTURE (2009) WITH CUMULATIVE DEVELOPMENT

** INPUT VOLUMES **

APPROACH			** RIGHT TURNS	**
	LEFT	THROUGH	MIN ON GREEN	MAX ON RED
WESTBOUND	163	678	10	25
EASTBOUND	14	660	0	41
NORTHBOUND	98	41	76	82
SOUTHBOUND	16	6	6	0

** NUMBER OF LANES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED	TOTAL LANES
WESTBOUND	1	0	2	0	1	0	4
EASTBOUND	1	0	2	0	1	0	4
NORTHBOUND	1	0	1	0	1	0	3
SOUTHBOUND	0	0	0	0	0	1	1

** ASSIGNED LANE VOLUMES **

APPROACH	LEFT ONLY	LEFT SHARED	THROUGH ONLY	RIGHT SHARED	RIGHT ONLY	L/T/R SHARED
WESTBOUND	163	N/A	339	N/A	10	N/A
EASTBOUND	14	N/A	330	N/A	0	N/A
NORTHBOUND	98	N/A	41	N/A	76	N/A
SOUTHBOUND	N/A	N/A	N/A	N/A	N/A	28

EAST-WEST CRITICAL VOLUMES	493
NORTH-SOUTH CRITICAL VOLUMES	126
THE SUM OF CRITICAL VOLUMES	619
NUMBER OF CRITICAL CLEARANCE INTERVALS	2
CMA VALUE	0.413
LEVEL OF SERVICE	A

APPENDIX 5.7
Solid Waste Data

Del Rey Shores Apartments
Cumulative Plus Project Solid Waste Generation - No Recycling

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Del Rey Shores						
Aparments (net)	342	du	1.1700	6.41	400	2,193
Proposed Projects						
Residential Units:						
Single Family Detached	0	du	2.0400	11.18	0	0
Multi-Family or Attached (2)	4,122	du	1.1700	6.41	4,823	26,426
HotelMotel (3)	421	room	0.3650	2.00	154	842
Commercial	146,068	sq. ft.	0.0024	0.01	351	1,921
Restaurant	11,063	sq. ft.	0.0108	0.06	119	655
Office	197,058	sq. ft.	0.0014	0.01	276	1,512
Boat Slips	439	slips				
Subtotal					5,722	31,355
				Totals	**6,122**	**33,548**

Note: Numbers may not total exactly due to rounding.
du = dwelling unit; sq.ft. - square feet; tpy = tons per year; lbs. = pounds
(1) The solid waste daily generation rates in tons per year are derived from the Los Angeles County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts, unless otherwise noted. These figures do not reflect any recycling activities on the part of the generator.
(2) Includes senior care facilities.
(3) California Integrated Waste Management Website, November 2002, which cites SWANA Technical Bulletin 85-6, Recovery Sciences 1987 and Matrix Management Group "Best Management Practices Analysis for Solid Waste."
(2) Includes senior care facilities.

APPENDIX 5.8
Water Service Availability Letter

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

DON WOLFE, Interim Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

DATE: May 31, 2005

TO: Psomas
11444 W. Olympic Blvd, Suite 750
Los Angeles, CA 90064-3777

FROM: Los Angeles County Waterworks Districts
Marina Del Rey Water System c/o
LOS ANGELES COUNTY WATERWORKS DISTRICT NO.
WATER SERVICE PREMISES: 4201 S. Via Marina, Marina Del Rey

MATERIALS AND CHARGES THAT MUST BE SUBMITTED OR PAID IN ORDER FOR THE DISTRICT TO PROCEED WITH REVIEW OF THE CONSTRUCTION PLANS

INQUIRY NO. 135756-80 ; SPECIFICATION NO. WWD 80-122 PC.

As of this date, the checked items have not been submitted to the District. Your plans will not be accepted for placement on the Plan Review Status List until all of the requested items have been submitted.

- ☒ Supporting plans;
  - ☐ Existing topography and grading plan.
  - ☐ Proposed street plans.
  - ☐ Proposed sanitary sewer plans.
  - ☐ Proposed storm drain plans.
  - ☒ Existing and/or proposed plans for other underground utilities (gasoline, oil, natural gas, telephone, electrical, etc.).

As Available

- ☐ Phasing plan.
- ☒ Plan review and specifications preparation charge - M.B. no. 200580 0010 (including easement processing charge, as applicable).
- ☐ Properly dimensioned map showing proposed easement(s) in relation to all parcels affected.
- ☒ Signed District Agreement Statement (form WW184).
- ☒ Other Complete Fire Department requirements & Public's Private On-site Fire flow requirements. Water pressure needed at the water meter for the fire Sprinkler and domestic service

5-31-05

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 5

To Andy Duong	From Tom Eng
Co. Psomas	Co. LA County Waterworks
Dept.	Phone # 626 300 3355
Fax # (310) 954-3777	Fax #

The following items pertaining to Right-of-Way are required to be submitted before the water system improvement plans will be approved by the District:

☐ Easement documents signed by the owner of record of the property or his authorized agent. Proof of agent authorization must be provided.

☐ Other _____

_____.

The following items are required before construction may commence on the project:

☐ The owner/developer will be required to enter into a joint participation agreement with the developer(s) that installed the existing water main(s) fronting this project and/or off-site water system improvements pertaining to this project. Waterworks form WW380 may be used for this purpose (original signatures must appear on this submittal).

☒ Payment of inspection fees.

☐ Other _____

_____.

The following fees must be paid before water service will be provided to the project:

☐ Proof of participation in an existing Developer agreement that has constructed the off-site water system improvements.

☐ Proof of payment of Antelope Valley-East Kern Water Agency (AVEK) charges or exemption therefrom.

☐ Proof of payment of Castaic Lake Water Agency charges or exemption therefrom.

☒ Charges for water service, as determined by the Rules and Regulations of the Los Angeles County Waterworks Districts.

☐ Other _____

_____

_____.

MEMO BILLING

F MARINA DEL REY WATER SYSTEM C/O
R LOS ANGELES COUNTY WATERWORKS DISTRICT

O P. O. Box 1460
M ALHAMBRA, CA. 91802-1460

MB NUMBER: 2005800010

DATE: May 26, 2005

F ENGINEERING CHARGES
O FOR WATER SERVICE TO:
R

4201 S. Via Marina,
between Panay Way & Via Marina
with Del Avenue,
Marina Del Rey

T Psomas
O 11444 W. Olympic Blvd., Suite 750
Los Angeles, CA 90064-3777

Make check or money order payable to and mail payment and copy of Memo billing to:

LOS ANGELES COUNTY WATERWORKS DISTRICTS

Payment may also be made at one of the following District Offices:

LANCASTER - 260 East Avenue K-8 (661) 942-1157

MALIBU - 23533 West Civic Center Way (310) 456-6821

For the District to review water plans prepared by the developer's engineer and to issue specifications for the installation of approximately 1,050 feet of 12-inch diameter water main, two(2) – 6x4x2½ - inch fire hydrant assemblies, complete, two (2) – 10-inch Reduced Pressure Principle Detector Assemblies, complete, connection of existing fire hydrants in DellAvenue to the new 12-inch water main, two interconnections to the existing water system (one at each end of the new 12-inch water main), and all other necessary appurtenances..... $ 4,000.00

(Rev. Code: 9988, Fund: N 58, Org: 54690)

TOTAL: $ 4,000.00

Spec. No. WWD 80-122 (PC) Job No. Y580243 Inquiry No. I 35756-80

NOTES:

1. This billing is for engineering plan check and specification preparation only. Additional charges for inspection, water service application and water supply fees will be billed separately at a later time.
2. All quotations are for thirty (30) days and if not paid within that time are subject to change thereafter.

Quoted By: Tom Eng

Approved By: George Papik

AMOUNT DUE $ 4,000.00

REV. 3/00

STATEMENT BY APPLICANT FOR INSTALL CERTAIN WATER FACILITIES BEFORE SERVICE IS PROVIDED

Spec. No: WWD 80 - 122 (PC)
Inquiry No. I 35756-80
Date May 26, 2005

Premises Address: **4201 S. Via Marina, Marina Del Rey ("Del Rey Shores Apartments", Parcels 100 & 101)**

I (We) the undersigned, being the applicant/owner, agree that as a condition of District service to said premises, to install or to have installed, at no expense to the District, the following water system facilities:

Installation of approximately 1,050 feet of 12-inch diameter water main in Dell Avenue starting from an interconnection to the existing water system at Via Marina thence northerly to the north property line ending in an interconnection to the existing 10-inch water main, two (2)-6x4x2½-inch fire hydrant assemblies, complete, two 10-inch Reduced Pressure Principle Detector Assemblies for the private fire protection system, complete, connection of the existing fire hydrants on Dell Avenue to the new 12-inch water main, two interconnections to the existing water system (one at each end of the new 12-inch water main), and all other necessary appurtenances.

I (We) agree that should additional water system facilities be necessary, as a result of: (a) local fire protection agency; (b) building permit; (c) land subdivision; or (d) local zoning agency requirements; to install or to have installed said facilities.

I (We) agree that these facilities must be installed to the satisfaction of the District before permanent water service will be provided. Within one year of District's approval, should construction of said facilities not be started, I (We) understand that the District may revise the requirements for water service.

I (We) agree that said facilities must be installed by a contractor possessing a valid "A", "C-34", or "SC-34" license in California using plans prepared by an engineer licensed to practice in California and approved by the District, and specifications prepared by the District.

I (We) agree that all fees for water service must be paid, in full, to the appropriate water agencies prior to water service being provided by the District.

OWNER(S) (Print or Type Name) SIGNATURE DATE

_____

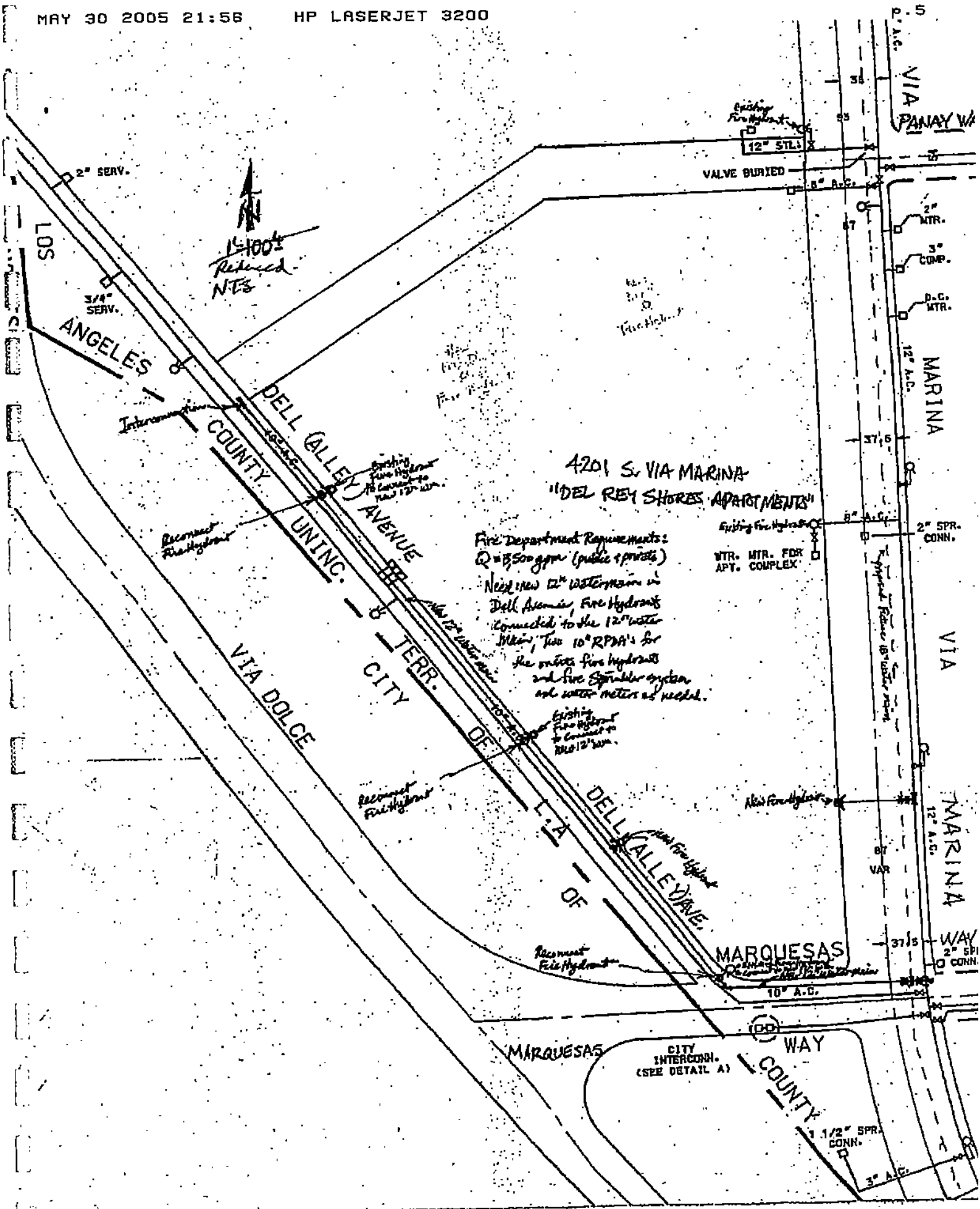
_____

_____

Owner's Representative Name: _____

Address: _____

Telephone No.: _____



VIA PANAY WA
12" STL.
VALVE BURIED
8" A.C.
2" MTR.
3" COMP.
D.C. MTR.
12" A.C.
MARINA
2" SERV.
3/4" SERV.
LOS ANGELES COUNTY
1"=100'± Reduced NTS
DELL (ALLEY) AVENUE
Interconnection
Existing Fire Hydrant to connect to new 12" wm.
Reconnect Fire Hydrant
UNINC. TERR. OF L.A. COUNTY
VIA DOLCE
4201 S. VIA MARINA
"DEL REY SHORES APARTMENTS"
Fire Department Requirements:
Q=3,500 gpm (public & private)
Need new 12" watermain in Dell Avenue, Fire Hydrants connected to the 12" water Main, Two 10" RPDA's for the onsite fire hydrants and fire Sprinkler system and water meters as needed.
Existing Fire Hydrant
8" A.C.
2" SPR. CONN.
WTR. MTR. FOR APT. COMPLEX
VIA
New Fire Hydrant
12" A.C.
MARINA
87 VAR
MARQUESAS WAY
2" SPR. CONN.
10" A.C.
MARQUESAS
CITY INTERCONN. (SEE DETAIL A)
1 1/2" SPR. CONN.
3" A.C.

APPENDIX 5.9

Sewer Capacity Verification Letter

SEWER AREA STUDY

P.C. 11853 AS

DEL REY SHORES
4201 VIA MARINA
MARINA DEL REY, CALIFORNIA 90292

COUNTY OF LOS ANGELES
CALIFORNIA

Prepared for:

DEL REY SHORES JOINT VENTURE AND
DEL REY SHORES NORTH JOINT VENTURE
C/O PACIFIC DEVELOPMENT SERVICES
21515 Vanowen Street, Suite 101
Canoga Park, California 91303

Prepared by:

PSOMAS
11444 West Olympic Boulevard, Suite 750
West Los Angeles, California 90064
(310) 954-3700

August 2, 2005

SEWER AREA STUDY
APPROVED
APPROVED BY: [signature] RCE NO. C 59595 DATE 8/9/2005
CHECKED BY: [signature] DATE 8/9/05
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

REGISTERED PROFESSIONAL ENGINEER
ANDREW A. NICKERSON
NO. C 056808
EXP. 6/30/07
CIVIL
STATE OF CALIFORNIA

[signature]

* This approval is based on Fig 5 City signed capacity approval. If City rescinds capacity approval, this sewer area study approval is void. Otherwise this approval expires 2 years from date approved. 8/9/05

OUTLET APPROVAL

At the request of the County of Los Angeles, Psomas has submitted this study to the City of Los Angeles Bureau of Sanitation for review and agreement. By signing below, the City acknowledges to have reviewed and to have agreed with the findings of this report.

Belal Tamimi Date: 8/25/05

Belal Tamimi
Bureau of Sanitation
City of Los Angeles

DEPARTMENT OF PUBLIC WORKS
BUREAU OF SANITATION
WASTEWATER ENGINEERING SERVICES DIVISION

BELAL TAMIMI
SANITARY ENGINEERING ASSOCIATE II

2714 MEDIA CENTER DRIVE
LOS ANGELES, CA 90065
MAIL STOP 544

(323) 342-6254
FAX: (323) 342-6210
E-MAIL: bbtamimi@san.lacity.org