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Chief Executive Officer

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Fifth District

March 15, 2019

To: Supervisor Janice Hahn, Chair
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Kathryn Barger

From: Sachi A. Hamai
Chief Executive Officer

PROGRESS REPORT BACK NO. 1 - ANALYSIS OF THE WOOLSEY FIRE (ITEM NO. 18, AGENDA OF DECEMBER 18, 2018)

On December 18, 2018, the Board of Supervisors (Board) instructed the Chief Executive Office (CEO) to convene a Task Force to review the response to and recovery from the Woolsey Fire. The Board directed the CEO to hire a consultant to coordinate and collect information from Task Force meetings and Community Listening Sessions, assess data from an array of documents from the Woolsey Fire, and develop an After-Action Report (AAR) that would highlight lessons learned, best practices, and areas of improvement. Below is a summary of actions the CEO has undertaken to date to comply with this Board Motion.

Onboarding a Consultant

On January 22, 2019, Los Angeles County (County) hired Citygate Associates, LLC (Citygate) as the consultant to assist the County and Task Force to develop the AAR. Citygate is comprised of senior public-sector executives and has an extensive background in developing AARs and improvement plans for wildfire response and recovery in California.

The lead consultant from Citygate is Stewart Gary. Mr. Gary is a former Fire Chief of the Livermore-Pleasanton Fire Department in Alameda County, California. To this project, Mr. Gary brings 30 years of progressive fire service leadership, and 14 years as a public safety consultant. He has performed over 200 organizational, staffing, and deployment studies and has worked with a variety of communities on staffing, master plan, and deployment studies. Mr. Gary will be supported by other seasoned personnel like Retired Fire Chief Samuel Mazza from Monterey, California who has over 40 years of experience in public safety; Chief James Davis of El Cajon Police Department who has over 44 years of experience in public safety; Janet Upton, command staff from Cal Fire who has 31 years of experience in public safety communications.

Developing a Project Plan

Citygate conducted several meetings with County partners to develop a project plan to complete the AAR. At these meetings, Citygate shared a data request worksheet with partners that set parameters on what data Citygate needs to develop an AAR that complies with the Board Motion. To date, Citygate met with Supervisorial Third District, the Chief Executive Office - Office of Emergency Management (OEM), County Fire Department, the Sheriff's Department, the Department of Public Works, the Department of Animal Care and Control, and the Department of Agricultural Commissioner/Weights and Measures. Upon review of the data collected and if necessary, Citygate will meet with other County departments. Citygate will also conduct one-on-one interviews and review data from the Unified Command Post and the County Emergency Operations Center. Citygate will conduct an analysis on all the data collected and develop an AAR. Finally, Citygate will present the AAR to Task Force members at a public meeting for approval.

Convening the Task Force

Supervisorial Third District staff developed a list of Task Force members and shared it with Citygate. Supervisor Kuehl is the Chair of the Task Force which is comprised of elected officials from Los Angeles County and impacted cities, County department directors, the Los Angeles County Operational Area partners, federal and State partners, representatives from Ventura County, and members of the impacted communities.

Community Listening Sessions

Supervisorial Third District, in coordination with CEO and County Counsel, hosted the first two listening sessions of the Task Force. The sessions' sole focus was to invite the impacted communities to share their experiences by providing testimony in writing and orally. The first session was held on February 26, 2019, from 10 a.m. to 3 p.m. in the City of Malibu at Pepperdine University. The second session was held on March 3, 2019, from 10 a.m. to 2:30 p.m. in the City of Calabasas at King Gillette Ranch. Prior to the Community Listening Sessions, the County provided impacted community members with access to an online form to provide written testimony, photos, and video to the Task Force and Citygate for the preparation of the AAR. Both Community Listening Sessions were live streamed on YouTube. Citygate was present at both sessions to collect data on community input for the AAR.

Developing the AAR

The CEO and Citygate agreed to use the Federal Department of Homeland Security After-Action Report template to serve as the foundation for the final AAR. This will allow Citygate to determine what occurred during the fire response, identify gaps in resources, and develop an improvement plan. In addition, this AAR would guide the development of future policies, plans and procedures, and trainings and exercises. Supervisorial Third District staff will regularly be engaged throughout the process by Citygate to provide updates.

Next Steps

Citygate is in the data collection and interview phase for developing this AAR. Given that the first two Task Force meetings (Community Listening Sessions) have been completed, Citygate will synthesize the data to build a comprehensive timeline of events from the community perspective. Citygate plans to conduct one-on-one interviews and group interviews with key partners through March and April 2019, and also continue to collect information from department perspectives. Citygate plans to finish the initial collection and assessment of critical facts and prepare a timeline by the end of April 2019. Citygate will then host the third Task Force meeting and present the project timeline, critical facts, and next steps required to complete the AAR.

Between May and July of 2019, Citygate will convene five working groups: 1) Fire Response; 2) Communications; 3) Evacuation and Response; 4) Transition to Recovery; and 5) Impacted Cities Leadership. The Fire Response Working Group will focus on the successes and areas of improvement for deployment, distribution, and adequacy of firefighting resources and availability of mutual aid during the Woolsey Fire. The Communications Working Group will focus on the success and areas of improvement on communication between the County and the general public, communication between the County and impacted cities, and communication between first responders. The Evacuation and Response Working Group will focus on success and areas of improvement for evacuation and repopulation notifications and procedures utilized during the Woolsey Fire. The Transition to Recovery Working Group will focus on success and areas of improvement on the efficiency of transition from response to short-term recovery. Finally, the Impacted Cities Leadership Working Group will focus on fire response, communications, evacuation and repopulation, and transition to recovery from the cities' perspectives. Supervisorial Third District will work closely with County Counsel, OEM, and Citygate to determine attendees from the Task Force who will attend each of the working group meetings.

Citygate will assess all data and information collected to develop a draft AAR and improvement plan by August 2019. Citygate will convene a fourth Task Force meeting in October 2019, to present the first draft of the AAR and improvement plan.

If you have questions or need additional information, please contact Jeff L. Reeb of the OEM at (323) 980-2261 or via email at jreeb@ceooem.lacounty.gov.

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c: Executive Office, Board of Supervisors
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June 19, 2019

To: Supervisor Janice Hahn, Chair
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Kathryn Barger

From: Sachi A. Hamai
Chief Executive Officer

PROGRESS REPORT BACK NO. 2 - ANALYSIS OF THE WOOLSEY FIRE (ITEM NO. 18, AGENDA OF DECEMBER 18, 2018)

On December 18, 2018, the Board of Supervisors (Board) instructed the County of Los Angeles (County) Chief Executive Office (CEO) to convene a Task Force to review the response to and recovery from the Woolsey Fire. The Board directed the CEO to hire a consultant to coordinate and collect information from Task Force meetings and Community Listening Sessions, assess data from an array of documents from the Woolsey Fire, and develop an After-Action Report (AAR) that would highlight lessons learned, best practices, and areas of improvement. Below is a summary of actions the CEO has undertaken since the first update to the Board in complying with this Board Motion, which was submitted on March 15, 2019.

Working Group Meetings

Citygate Associates, LLC (Citygate) convened five Woolsey Task Force Working Group meetings on April 24, 2019, and April 25, 2019, at the Supervisorial Third District field office located at 26600 Agoura Road, Calabasas, CA 91302. Members of the community and the Task Force, Chaired by Supervisor Sheila Kuehl, were asked to serve on at least one working group based on their personal experience, knowledge or expertise. The meetings were facilitated by Citygate's Project Director. These working groups as moderated by Citygate provided a safe space for Task Force members to share their thoughts on very detailed issues that the AAR study needed to address. These working groups were:

A. Fire Response: The Fire Response Working Group members focused on their views and those of their agencies or neighborhoods as to successes

and areas of improvement for deployment, distribution, and adequacy of firefighting resources and availability of mutual aid during the Woolsey Fire.

B. Communications: The Communications Working Group focused on their observations as to the success and areas of improvement regarding communications of all types between the County and the general public; between the County and the impacted cities and special districts; and between first responders.

C. Evacuation and Repopulation: The Evacuation and Repopulation Working Group reinforced public hearing testimony and described to Citygate how the evacuation commenced and identified areas of improvement for both evacuation and repopulation. This discussion provided critical input to Citygate from both the community's and first responders' perspectives.

D. Transition to Recovery: The Transition to Recovery Working Group focused on the multiple layers of the recovery process, especially focusing on transition from response to short-term recovery. Based on the areas of improvement identified, a one-size-fits-all approach does not work.

E. Impacted Cities Leadership: The Impacted Cities Leadership Working Group focused on each of the above areas A-D (Fire Response, Communications, Evacuation and Repopulation, and Transition to Recovery) from the cities' overall policy and staff perspectives. Mayors from several impacted cities attended this Working Group meeting. All members shared what they believed worked well and what areas needed improvement.

The stakeholders at each meeting provided great clarity and details as to how they were impacted during the Woolsey incident and the lessons they learned from the incident. These sessions significantly helped Citygate to fill in the information gaps between the various accounts of the incident and pointed to areas needed further account and study.

Public Testimony Follow-Up

Citygate attended the two Woolsey Task Force public input meetings on February 23, 2019, and March 3, 2019. At these meetings individuals provided very specific testimony of their observations of public safety response. Some of these individuals agreed to be further interviewed by Citygate. The County also set up a portal to collect public testimony and input. The input collected from the website was shared with Citygate for assessment. These community interactions, assisted Citygate in tying the community's experiences to factual agency records and then to

specific field commanders. Citygate also met with the leadership at Pepperdine University in the City of Malibu to understand their preparations and experience during the Woolsey Fire.

Incident Data Collection and Review

In order to build a credible timeline of events Citygate requested agency records from several County departments. These included the County Sheriff's Department (LASD), County Fire (LACoFD), CEO-Office of Emergency Management (OEM), Public Works (DPW), Department of Animal Care and Control (ACC), and the Department of Agricultural Commissioner/Weights & Measures (ACWM). In addition, Citygate reached out to external partners at CAL FIRE, the City of Los Angeles, County of Ventura, and the California Office of Emergency Services. To date, all agencies have fully complied with Citygate's data request. Citygate received hundreds of records totaling thousands of pages detailing pre-event mitigation, pre-deployment of fire resources based on weather forecasts, initial fire suppression response, and firefighting conditions encountered (wind, fuel, topography, temperature and relative humidity) for November 8, 2018.

In addition, Citygate is reviewing the total fire suppression efforts, evacuation and repopulation process, mutual aid process and the actions of all County agencies, and operational area partners. Citygate is building a specific timeline of all key events beginning before the fire and extending into repopulation and initial recovery. This effort will provide data driven findings and recommendations for the AAR.

Interviewing Agency Command Staff

Citygate built a preliminary timeline and factored in key points from the Working Group and public comments. Citygate, in coordination with County Counsel and OEM, conducted over 250 hours of interviews with Command staff from LASD, Ventura County Sheriff, California Highway Patrol, LACoFD, Ventura County Fire, City of Los Angeles Fire, DPW, Las Viernes Water District, ACC, and ACWM. The purpose of these interviews was to provide the Citygate team with an opportunity to fill in gaps in information from the documents produced, prepare the timeline for presentation to the Task Force, and to gather additional facts for the ultimate AAR.

Law Enforcement

Citygate was invited by LASD Chief James Hellmold to attend a Sheriff's Emergency Operations Bureau training session on lessons learned from the Woolsey Fire. This session was attended by LASD's leadership and 200 officers. In addition, Citygate has conducted interviews with the LASD's Executive Staff,

Headquarters staff, and the Lost Hills Station. Citygate also interviewed the West Valley California Highway Patrol headquarter staff to fill any additional gaps in the law enforcement timeline.

Fire

Citygate conducted interviews with fire personnel, from various agencies, including Los Angeles County Fire Department (LACoFD), Los Angeles City Fire Department (LAFD), Ventura County Fire Department (VCoFD) and California Department of Forestry and Fire (Cal Fire) that played an active role in response to the Woolsey Fire. These included: Executives, Incident Commanders during the Woolsey Fire, Field Operations Command staff, Initial Attack Teams, Prevention and Forestry staff, Occupant Support staff, Evacuations staff, Branches/Division Commanders, Department Dispatch/Operations Center Lead, and Department Public Information Unit.

Public Works and Water Districts

Citygate also conducted interviews with key staff from the following key divisions and functions which led services during the Woolsey incident: Executive Team members, Building & Safety Division, Business Relations & Contracts Division, Information Technology Division, Design Division, Disaster Services Group, Environmental Programs Division, Fiscal Division, Fleet Management Division, Geotechnical & Materials Engineering Division, Unified Command Post Agency Representatives, Land Development Division, Operational Services Division, Risk Management/Employee Health & Safety, Road Maintenance Division, Stormwater Engineering Division, Stormwater Maintenance Division, Transportation Planning & Programs Division, Waterworks Division, and Workforce Support Division.

Following interviews with DPW, Citygate will meet with key staff from the Las Virgenes Water District to understand the circumstances of the District's actions, challenges, and unique solutions in meeting the system needs associated with the Woolsey Fire.

Next Steps

Upon completing the incident command staff interviews, and the factual timeline of key events, Citygate will assemble their draft observations, findings and recommendations. They will use supporting exhibits to brief, and obtain feedback, on their draft work from each of the above-mentioned Task Force Working Groups.

After the Working Group sessions, Citygate will prepare a full draft AAR (with exhibits)

for County staff fact checking. Citygate will work with Supervisorial Third District staff to schedule a full Task Force meeting. At this Task Force meeting, Citygate will present the facts gathered, the incident timeline and areas for improvement. Following the presentation to the Task Force, Citygate will prepare the final AAR, and prepare a briefing to be delivered to the Board in October 2019.

If you have any questions or need additional information, please contact Jeff L. Reeb at (323)980-2261 or via e-mail at jreeb@ceooem.lacounty.gov.

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KATHRYN BARGER
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September 25, 2019

To: Supervisor Janice Hahn, Chair
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Kathryn Barger

From: Sachi A. Hamai
Chief Executive Officer

PROGRESS REPORT BACK NO. 3 - ANALYSIS OF THE WOOLSEY FIRE (ITEM NO. 18, AGENDA OF DECEMBER 18, 2018)

On December 18, 2018, the Board of Supervisors (Board) instructed the Chief Executive Office (CEO) to convene a Task Force to review the response to and recovery from the Woolsey Fire. The Board directed the CEO to hire a consultant to coordinate and collect information from Task Force meetings and Community Listening Sessions, assess data from an array of documents from the Woolsey Fire, and develop a report that would highlight lessons learned, best practices, and areas of improvement. Below is a summary of actions the CEO has undertaken since the last Woolsey Fire Report update to the Board on June 19, 2019.

WORKING GROUP MEETINGS

August 21-22, 2019, Citygate, the consultant, convened second meetings for each of the four Woolsey Task Force Working Groups at the Supervisorial Third District field office located in the City of Calabasas.

A. **Fire Response:** The Fire Response Working Group members focused on their views and those of their agencies or neighborhoods as to successes and areas of improvement for deployment, distribution, and adequacy of firefighting resources, and availability of mutual aid during the Woolsey Fire.

B. **Communications:** The Communications Working Group focused on their observations as to the success and areas of improvement regarding communications of all types between the County and the general public; between the County and the impacted cities and special districts; and between first responders.

C. **Evacuation and Response:** The Evacuation and Response Working Group reinforced public hearing testimony and described to Citygate how the evacuation commenced and identified areas of improvement for both evacuation and repopulation.

D. **Transition to Recovery:** The Transition to Recovery Working Group focused on the multiple layers of the recovery process, especially focusing on transition from response to short-term recovery.

The Working Group meetings were used as an opportunity to collect input, comments, and corrections from the participants on the Citygate's draft high-level findings and recommendations and summary of the Woolsey Fire timeline for inclusion into the final Woolsey Fire Analysis Report.

ANALYSIS REPORT PROJECT STATUS UPDATES

During this reporting period, Citygate worked actively to deconflict events and address any gaps in the narrative by reaching out to relevant partners for input and completing the review of hundreds of County and non-County records.

NEXT STEPS

The CEO, the Office of Emergency Management (OEM), and Citygate will complete the tasks listed below to meet the mandates of the Board Motion.

- **Development of the Woolsey Fire Analysis Report**

  Based on the data, the timeline, and the input from the Working Groups, Citygate is currently finalizing the Woolsey Fire Analysis Report draft.

- **Task Force Meeting**

  Supervisor Sheila Kuehl, as the Chair of the Task Force, plans to convene two Task Force meetings. The first meeting has been scheduled for October 6, 2019, 10:00 a.m. to 2:00 p.m., at The Performing Arts Education Center located at 22855 Mulholland Highway, Calabasas, CA 91302. At this public

forum meeting, Citygate will present the draft Woolsey Fire Analysis Report to the Task Force members for their review. The second meeting will be scheduled towards the end of October 2019 on a date and time to be determined.

- **Presentation to the Board of Supervisors**

  Once the final Woolsey Fire Analysis Report is approved by the Task Force, the CEO will submit it to the Board. The completion of this report is a major milestone, but it is only the first step. CEO will work with this Board to incorporate the report's findings and recommendations into the planning for, response to, and recovery from emergencies and natural disasters, thereby improving the quality of life for all County residents.

If you have any questions or need additional information, please contact Jeff L. Reeb at (323) 980-2366 or via e-mail at jreeb@ceooem.lacounty.gov.

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November 19, 2019

To: Supervisor Janice Hahn, Chair
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Kathryn Barger

From: Sachi A. Hamai
Chief Executive Officer

FINAL REPORT - ANALYSIS OF THE WOOLSEY FIRE (ITEM NO. 18, AGENDA OF DECEMBER 18, 2018)

On December 18, 2018, the Board of Supervisors (Board) instructed the Chief Executive Office (CEO) to convene a Task Force to review the response to and recovery from the Woolsey Fire. The Board directed the CEO to hire a consultant to coordinate and collect information from Task Force meetings and Community Listening Sessions, assess data from an array of documents from the Woolsey Fire, and develop a report that would highlight lessons learned, best practices, and areas of improvement. Below is a summary of actions the CEO has undertaken since the last Woolsey Fire Analysis update to the Board on September 19, 2019.

Development of the Woolsey Fire Timeline

On January 22, 2019, the County hired Citygate Associates, LLC (Citygate). Based on data collected over the past nine months from various stakeholders and the community, Citygate completed the development of a specific timeline of all key events. This timeline begins with fire conditions before the fire and extends into repopulation and initial recovery. The data included hundreds of records, totaling thousands of pages, detailing pre-event mitigation, pre-deployment of fire resources based on weather forecasts, initial fire suppression response, and firefighting conditions encountered (wind, fuel, topography, temperature, and relative humidity) beginning on November 8, 2018. In addition, Citygate completed a review of the total fire suppression efforts, evacuation and repopulation process, mutual aid process, and the actions of all County agencies and the Los Angeles County Operational Area partners. After the timeline was developed, Citygate began to deconflict events and address any gaps in the narrative by reaching out to relevant partners for input.

Working Group Meetings

On August 21 and 22, 2019, Citygate convened second meetings for each of the four Woolsey Task Force Working Groups at the Supervisorial Third District field office located in the City of Calabasas. At the first convening of the Working Groups on April 24, 2019, there was a fifth group dedicated to Cities' leadership (Impacted Cities Leadership), which was later folded into the four remaining Working Groups described below.

A. Fire Response: The Fire Response Working Group members focused on their views and those of their agencies or neighborhoods as to successes and areas of improvement for deployment, distribution, and adequacy of firefighting resources, and availability of mutual aid during the Woolsey Fire.

B. Communications: The Communications Working Group focused on their observations as to the success and areas of improvement regarding communications of all types between the County and the general public; between the County and the impacted cities and special districts; and between first responders.

C. Evacuation and Response: The Evacuation and Response Working Group reinforced public hearing testimony and described to Citygate how the evacuation commenced and identified areas of improvement for both evacuation and repopulation. This discussion provided critical input to Citygate from both the community's and first responder's perspectives.

D. Transition to Recovery: The Transition to Recovery Working Group focused on the multiple layers of the recovery process, especially focusing on transition from response to short-term recovery. Based on the areas of improvement identified, a one-size-fits-all approach does not work.

At these Working Group meetings Citygate presented the timeline of all major events occurring during the Woolsey Fire and the major findings that would be included in the Report. In addition, Citygate collected input from the Working Groups on the information presented to either update the timeline based on the new information presented or collect additional input to be included into the final Woolsey Fire Report.

Final Report Status Updates

During this reporting period, Citygate provided numerous updates on the project to Supervisorial Third District during October and November 2019. In addition, timely project updates were provided to the CEO, County Counsel, and all Department Heads.

The following tasks listed below were completed to meet the final mandates of the Board Motion.

- **Presentation to Board Offices**

  On October 21, 2019, prior to the completion of the final Report, the CEO and County Counsel, briefed a project update to Board members and their staff.

- **Task Force Meeting**

  Supervisor Sheila Kuehl, as the Chair of the Task Force, convened a Task Force meeting on October 26, 2019, 10:00 a.m. to 2:00 p.m., at the Agoura Hills Performing Arts Education Center located at 28545 W. Driver Ave, Agoura Hills, CA 91301. At this public forum meeting, Citygate presented the draft Woolsey Fire Report to the Task Force members for their review. The draft Woolsey Fire Report was released publicly on October 23, 2019, in conformance with the Brown Act requirements for the Task Force meeting.

  Supervisor Sheila Kuehl, as the Chair of the Task Force, convened a final Task Force meeting on November 17, 2019, 10:00 a.m. to 2:00 p.m., at the Agoura Hills Performing Arts Education Center located at 28545 W. Driver Avenue, Agoura Hills, CA 91301. At this public forum meeting, Citygate presented the final Woolsey Fire Report and the Task Force members approved the Report.

- **Presentation to the Board of Supervisors**

  The attached Final Report was approved by the Task Force on November 17, 2019, and completes the December 18, 2018, Board directed requirements. Although the completion of the report signifies a major milestone in the aftermath of the Woolsey Fire, it represents but another step in a process of continuous improvement for the County. The findings and recommendations contained in the report are being incorporated into an After-Action Plan which will improve the County's ability to plan and prepare for, respond to, recover from, and mitigate against future disaster.

If you have any questions or need additional information, please contact Kevin McGowan at (323) 980-2261 or via e-mail at kmcgowan@ceooem.lacounty.gov.

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Attachment

c: Executive Office, Board of Supervisors
County Counsel
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Animal Care and Control
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Health Agency
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NOVEMBER 17, 2019

COUNTY OF LOS ANGELES

AFTER ACTION REVIEW OF THE WOOLSEY FIRE INCIDENT

AS PRESENTED BY:

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GLOSSARY OF ACRONYMS, INITIALISMS, AND ABBREVIATIONS

Each acronym, initialism, or abbreviation is spelled out for its first usage in each section.

AGENCY ACRONYMS, INITIALISMS, AND ABBREVIATIONS

CAL FIRE	California Department of Forestry & Fire Protection
Cal OES	California Office of Emergency Services
CHP	California Highway Patrol
County Ag. Comm.	Los Angeles County Agricultural Commissioner / Weights and Measures
County Animal Care	Los Angeles County Department of Animal Care and Control
County Emergency Management	Los Angeles County Office of Emergency Management
County Public Works	Los Angeles County Public Works
County Sheriff's Department	Los Angeles County Sheriff's Department
County Waterworks	Los Angeles County Waterworks District No. 29
DPH	Los Angeles County Department of Public Health
DPSS	Los Angeles County Department of Public Social Services
DRP	Los Angeles County Department of Regional Planning
EMC	Emergency Management Council
FEMA	Federal Emergency Management Agency
LA City Fire	City of Los Angeles Fire Department
LA County Fire	Los Angeles County Fire Department
Pepperdine	Pepperdine University
Red Cross	American Red Cross
SCE	Southern California Edison
SCVMA	Southern California Veterinary Medical Association
Ventura County Fire	Ventura County Fire Department

GENERAL ACRONYMS, INITIALISMS, AND ABBREVIATIONS

AAR	After Action Review
CEO	County Chief Executive Officer
Command and Control	P. Michael Freeman Command and Control Center
County EOC	Los Angeles County Emergency Operations Center
CSL	Community Services Liaison
DAC	Disaster Assistance Center
DOC	Department Operations Center
DRC	Disaster Recovery Center
EOB	County Sheriff's Department Emergency Operations Bureau
EOC	Emergency Operations Center
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Management Team
JIC	Joint Information Center
MTZ	Mutual Threat Zone
NIMS	National Incident Management System

PCH	Pacific Coast Highway
PIO	Public Information Officer
PPDR	Private Property Debris Removal
RCC	Recovery Coordinating Center
RH	Relative Humidity
ROSS	Resource Order Status System
SEMS	Standardized Emergency Management System
SIB	County Sheriff's Department Sheriff's Information Bureau
UTF	Unable to Fill

CITYGATE TEAM TRANSMITTAL

It has been a privilege and honor for the Citygate Project Team to be of service to Los Angeles County. Throughout this effort, we have deeply considered lives lost, the personal impacts, the economic disruptions to residential and business communities, and the environment in the Santa Monica Mountains.

While this After Action Review includes critiques, we acknowledge many successful actions and respect the tremendous efforts of all responders in the face of the largest, fastest wildfire disaster in County history. Citygate's recommendations will improve agency response and community resilience in the next large area disaster.

Respectfully submitted,

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EXECUTIVE SUMMARY

The Woolsey Fire occurred in one of the most populous areas of the nation in an area well protected by emergency services. Thursday, November 8, 2018, began with a mass casualty shooting in Ventura County, a wildfire that enveloped and destroyed the town of Paradise in northern California, the fast-moving Ventura County Hill Fire, and, less than an hour after the Hill Fire, the Woolsey Fire started in Ventura County and spread into Los Angeles County.

In Los Angeles County, the responding agencies are large and capable. They are *extremely* experienced with large wildfires, as are many of the affected neighborhoods. While the size and speed of the Woolsey Fire in the first 33 hours challenged the coordinated agencies, the agencies and the public must recognize numerous significant accomplishments despite a *perfect storm* of factors that, when aligned, drove an event never experienced in the Los Angeles region:

- More than 250,000 people were successfully evacuated
- Casualties were limited to three, with no significant injuries to civilians or firefighters
- There were no significant aircraft or fire engine accidents
- Nine victim shelters and six animal shelters were opened
- Disaster Assistance Centers (DACs) were operational as soon as possible
- New private property debris removal practices were effectively implemented
- Significant care was provided for displaced animals of all types
- Significant health care was provided for the displaced populations in the shelters

Despite the numerous significant accomplishments in light of such a wildfire, the public understandably experienced frustration. Residents' prior experience and expectations regarding the agencies' capability to successfully confront a fast-moving wildfire were abruptly reset by the many obstacles present. No single fire had ever occurred in the mountains or the Malibu area that did not receive massive quantities of fire engines in time, but the Woolsey Fire was different.

While the Woolsey Fire disaster presented unprecedented challenges, it was still a single, focused incident; it was not Countywide. Imagine the challenges after a great earthquake or similar wide-ranging event. There are two primary, equally important lessons for the public, which are not new:

- Where wildfire threats are significant, buildings must be hardened against ember ignition and vegetation mitigations must be followed and maintained.
- The public must be prepared to receive information and follow the advice given.

There must also be an ongoing public policy discussion regarding significant development in Very High or High Fire Hazard Severity areas. A review of California's fire history indicates that five of California's *deadliest* (casualties) wildfires have occurred over the past two years, six of the

most *destructive* (structures) wildfires occurred over the past 10 years, and 15 of the *largest* (acreage) wildfires occurred over the past 19 years.

As terrible as the Woolsey Fire was, it was not the largest *megafire* in California. We cannot expect that all population growth in Very High or High Fire Hazard Severity areas can be protected simply by increasing resiliency[1] to wildfire and by adding more fire engines. Even if the current fire weather cycle stops, *it will return.* Governor Gavin Newsom's Strike Force Team, on April 12, 2019, observed that it is critical to "Make communities more resilient by considering updating codes that govern defensible space, encouraging cost-effective hardening of homes, strengthening evacuation, encouraging other emergency planning, *and improving land use practices to reduce the damage to life and property from wildfires*."[2]

These issues create real tension between public expectations and agency abilities which will require a concentrated effort to overcome. The Woolsey Fire clearly demonstrated that, while the agencies and public are prepared for a typical-to-serious emergency, there is room for improvement in catastrophic incident response and in reducing community vulnerability to a calamitous, fast-paced, dynamic event of any type.

WOOLSEY RESPONSE COMPLEXITIES

While the Los Angeles County Fire Department (LA County Fire), the Los Angeles City Fire Department (LA City Fire), and the Ventura County Fire Department (Ventura County Fire) regularly plan for and practice their response to a large fire in the region, they could not have planned for a complete exhaustion of California's limited firefighting resources brought on by a regional wildfire weather threat in conjunction with the Camp Fire, a mass casualty shooting in Ventura County, and the Ventura County Hill Fire, which began just before the Woolsey Fire started.

As is the case in all fires, the responding fire departments' top priority was to protect lives. During the initial stages of the Hill and Woolsey fires, all three departments were engaging in fire perimeter control, structure defense, and life safety actions. However, as the Woolsey Fire developed, the Camp Fire and Hill Fire consumed significant mutual aid resources and dry, northeast winds covered much of California, causing extreme fire behavior. As a result, by 2:30 PM on November 8, the southern California agencies that provided mutual aid resources to the Hill Fire now knew that no central or northern California agencies could send help south, and thus were very cautious about sending more of their resources to yet another local fire, which would leave their local areas vulnerable to the same conditions. Approximately 50 percent of requested resources were provided to the Woolsey Fire. Thus, as the Woolsey Fire grew Thursday evening, the fire services mutual aid system was already exhausted.

[1] Hardening buildings, fuels treatment, and vegetation management
[2] *Wildfires and Climate Change: California's Energy Future*, April 12, 2019

This necessitated the Woolsey Fire command team to strategically shift all resources to prioritize life safety as the fire rapidly grew, fanned by the Santa Ana winds gusting over 50 miles per hour. This strategy, along with a large, two-county sheriff's department evacuation force, successfully evacuated over a quarter of a million people and their animals from harm.

The initial emergency services response to the Woolsey Fire from two counties and the City of Los Angeles was proportionate to the initial fire; the experienced departments were ready and had planned for a severe fire weather day. Yet, the incident still presented unprecedented complexities:

- Multiple agencies (fire services, law enforcement, public works, and animal services) experienced an incident speed that, at times, outpaced their historically strong response efforts.
- Lives, structures, and critical infrastructure were threatened in the initial hours.
- Extensive evacuations across a multiple-jurisdictional area were required.
- Extensive infrastructure damage, at times, affected field operations, detoured evacuations, and delayed repopulation.
- The loss of the electrical system, due to wind and burned-down wooden power poles, created multiple challenges.
- Simultaneous neighboring and northern California fire incidents caused fire command's mutual aid requests to go significantly unfilled. Of those filled, the majority arrived after the fire reached Malibu.
  - Large Unable to Fill (UTF) mutual aid fire engine orders:
    - November 8: 175 engines UTF (58 percent)
    - November 9: 289 engines UTF (50 percent)
    - November 10 Noon: 874 engines UTF (53 percent)
- Relative humidity (RH), which plummeted to five percent, at times worsened the dry tinder fuel beds, many of which had not experienced fire for ten to forty years.
- Winds approaching hurricane force speeds and darkness Thursday evening combined to severely limit fixed-wing and rotor-wing aircraft firefighting drops, except for three LA County Fire Firehawk helicopters and LA City Fire helicopters.
- Although LA County Fire pulled as many resources as possible from its other fire stations to attack the Woolsey Fire, it was still required to maintain the resources necessary to respond to the nearly 1,100 daily 9-1-1 calls throughout the Department's 2,200-square-mile jurisdiction.
- All County personnel had to remain fully engaged without relief on the fire in the initial period.

Despite numerous significant accomplishments in life safety, the severe challenges in the fire response caused an understandable public frustration and desire to know what was preventable, and what was due to unprecedented natural factors.

THE WOOLSEY FIRE NUMBERS AT A GLANCE

- 96,949 acres, or 151.5 square miles, across two counties (appx. 1/3 the area of the City of Los Angeles)
  - 1,643 structures destroyed; 364 structures damaged in both counties
  - Los Angeles County (approximately 36 percent in the City of Malibu)
    - 184 homes and five commercial structures "damaged"
    - 1,075 homes and 46 commercial structures "destroyed"
    - Approximately 57,000 structures were not substantially affected
- The Woolsey Fire incident incurred approximately $52 million in fire suppression costs alone (not the full economic cost to the County or the communities); of this, the aviation cost was $7,717,795
- Insured losses are expected to total between $3 billion and $5 billion

THE FIRE'S DYNAMICS

It is hard to envision the speed of the Woolsey Fire from one map or photograph. LA County Fire, Ventura County Fire, and LA City Fire immediately sent resources to stop the Woolsey Fire from ever reaching Los Angeles County and to protect the residents of Los Angeles County and Ventura County, and the City of Los Angeles. This *standard, planned* multi-jurisdictional response was exponentially larger than that of a normal response from a single jurisdiction; however, the fire presented unprecedented complexities *immediately*. From ignition Thursday afternoon, the Woolsey Fire burned to the Pacific Ocean in Malibu by noon Friday. Most the fire growth occurred after the fire crossed Highway 101, taking about 6.5 hours to reach the ocean. This After Action Review (AAR) will discuss the fire's major dynamics that each presented new challenges:

- The location and topography, which presented severe challenges for initial attack
- The early November sunset, which grounded non-night-flying aircraft
- Early and mid-evening wind shifts when the fire was still outside heavily populated areas
- The fire's crossing of the 12-lane Highway 101 before dawn on Friday
- The defense early Friday of both sides of Highway 101 in the populated areas and in the mountain communities consumed the immediately available fire attack resources as the fire began the run to Malibu Friday after dawn

- Very limited initial resources in Malibu Friday morning due to fire ferocity, unfilled mutual aid requests, and fire- or wind-caused road damage blocking Santa Monica Mountain roads
- Road limitations on Malibu evacuation routes due to fire- or wind-caused impacts

EXPECTATIONS VERSUS REALITY

Even some of the largest, most experienced agencies in the United States were, at times, overwhelmed in the first hours by this incident's *speed and weight of impact*, exposing some limitations between the agencies and systems as they meshed into a single, wide-area regional response team in less than 24 hours. Prior experiences and expectations by community members regarding the agencies' capabilities to successfully confront a fast-moving wildfire were harshly reset by the many challenges presented by the Woolsey Fire:

- The expected fire behavior and rate of spread far exceeded the past experience of emergency responders, policy makers, and the public in the Santa Monica Mountains fire corridor areas.[3]
- The public expected a more robust firefighting army of resources in the Malibu coastal area, but many factors prevented that from happening.
- In large, dynamic wildfires, some life and structure loss are a tragic but expected possibility; however, what occurred in less than 24 hours was not anticipated by any prior plan or preparedness exercise. Three of the four historic Santa Monica fire corridors burning at once was beyond prior experience.
- The California Fire Master Mutual Aid System is a worldwide model; yet, contributing factors over two decades inhibited rapid resource movement to the Hill Fire and Woolsey Fire commensurate with each fire's rapid pace.
- The expectation of round-the-clock electrical power and internet connectivity became a myth, with no quick fallback for the public and emergency responders.
- Social media has led people to expect access to real-time information; yet, the infrastructure and processes could not meet the fire storm's pace demands.
- Throughout California, no single public communication system exists that successfully crosses social, economic, age, and generational abilities to receive emergency information.
- The public has not been educated and trained enough regarding evacuation routes and does not understand the complexities of returning. These unmet expectations, and others regarding the level of firefighting resources, are causing some people to consider ignoring the next evacuation orders.

[3] Canyon or drainage generally running to the ocean

The public has a perception that public agencies can always protect them. As an incident the size of the Woolsey Fire shows, this is not always possible. The public has a shared responsibility for preparedness which requires ongoing education programs by the agencies.

RECOGNITIONS

While the size and speed of the Woolsey Fire, at times, outpaced the early efforts of some of the largest and most experienced and capable agencies in the United States, they all should be recognized for their dedicated work. The following are some examples that deserve recognition:

- In the days leading up to the strong dry wind event, LA County Fire was preparing; placing additional resources on duty the day of the fire and ensuring its most experienced and qualified personnel were available and dispatched to the incident
- LA County Fire's early recognition that an unprecedented evacuation operation would be necessary
- A massive evacuation undertaking by the sheriff's departments of two counties
- Across the agencies, all available personnel reported for work and the initial *ground* crews and command chiefs went 36 to 48 hours without significant sleep
- Individual unit and personal initiative to overcome extraordinary conditions
- Aircrew/mechanic rotations to keep aircraft flying 24 hours per day
- Positive interagency relationships across all disciplines
- Annual joint training and planning efforts before the fire season
- Pre-positioning resources due to extreme fire weather the morning of November 8
- Public education programs such as Ready! Set! Go!
- Defensible space close to structures, where it existed, allowed defense of those properties as resource availability allowed
- By the first anniversary of the fire, the rebuilding effort has yielded nearly 100 reconstruction entitlements and ten building permits for affected structures and homes

THEMES FOR NEEDED IMPROVEMENTS

In many respects, an AAR must be a technical document. In the work to follow, the research yielded 155 findings and 86 actionable recommendations across four themes: The Response, Communication, Evacuation/Repopulation, and Transition to Recovery. At an aggregated level, the Los Angeles County Board of Supervisors and the public can focus discussion on three overarching themes:

Communication: All Los Angeles County agencies need to increase resource commitments to the crisis communication function. Public Information Officers (PIO) need more in-depth training for

their roles, to work together under a multi-agency, common incident communications strategy and have redundant tools with which to reach the public—*at the same quick pace that incidents grow.*

- During the initial phases of evacuations, the City of Malibu, the Los Angeles County Sheriff's Department (County Sheriff's Department), LA County Fire, and all other stakeholders worked on the evacuation of over 250,000 residences. While successful, the effort may not be reproducible as, in the early hours, there was not a clear, single, comprehensive voice speaking to evacuation, and not all notification tools were used or used often enough.
- There was an over-reliance on Twitter; care must also be taken to account for the digital divide in which not everyone is on Twitter or even the internet, creating the need for multiple methods of public emergency communication.
- Entry and repopulation policies were not well briefed to checkpoints or the public.

Collaboration: County leadership should strive for a more collaborative "One Team LA" mindset. This applies to not just the County agencies, but to the cities and special districts for wide-area multiple-county events. Every large area emergency must be framed as a unified command operation where key decision makers come together under an Incident Commander who uses policy direction to determine objectives, achieve unity of effort, and direct a single voice for communications. The public may not always know what agency directly serves them—but in these situations, every Southern Californian expects and deserves seamless collaboration.

- As this fire demonstrated, wildfires do not respect jurisdictional lines of agencies, cities, special districts, or counties. A Los Angeles sub-regional planning, response, and recovery dialogue must occur across county lines via a Multi-Agency Coordination System for large-scale wildfire, terrorism, and earthquake incidents.
- As the incident rapidly expanded, command post locations shifted to account for the Woolsey Fire's growing size and subsequent impact. This resulted in commanders not always being able to communicate face to face, which presents unified command communications challenges.
- The large Los Angeles County agencies are set-up with regional facilities and Department Operations Centers (DOCs) that routinely manage large emergencies without needing to depend on the Los Angeles County Emergency Operations Center (County EOC). As the Woolsey Fire grew, there was a stronger and less practiced need to work on the regional impact between the County EOC Woolsey Incident Command Post (ICP), the DOCs, and each independent city EOC.
- There is a need for greater inter-agency pre-incident evacuation and repopulation planning for the communities in Fire Hazard Severity Zones.
- No pre-prepared traffic evacuation plans/scenarios exist for the areas impacted by the Woolsey Fire.

- Evacuation plans also need corresponding repopulation plans at the earliest moment.

Situational Awareness: *Data-driven* knowledge from which to command *in real time*, at the *incident's tempo*, is crucial in the early hours of an emerging disaster. Most of the Woolsey Fire destruction occurred in the first 30 hours, not unlike what occurred in the communities of Paradise (2018 Camp Fire) and Santa Rosa (2017 Tubbs Fire). An emergency the speed and size of the Woolsey Fire does not wait for intelligence to be gathered slowly or normal incident command decision timeframes. Nighttime, smoke, technology failure, or any other obstacle also cannot be allowed to slow command decisions. As a result, the following are needed:

- Research and investment in emerging technologies to reduce the "fog of war"
- Increased practice, procedures, and technologies in melding the large County agency DOCs and Incident Management Teams (IMTs) into a virtual unified command, as if they were in one physical location, to reduce lag time in fast-tempo, complicated decisions
- Public education regarding alerting and the public's responsibility to understand incident severity and the need for Ready! Set! Go!
- Public education to increase awareness regarding public impact when a devastating fire incident shifts from direct control methods to Fire Front Following and Life Safety First tactics[4]
- Real-time display of fire perimeter, hazards, actions, shelters, and evacuation orders for public consumption

NEAR-TERM AGENCY ACTION RECOMMENDATIONS

Acquiring funding and implementing the technical recommendations across the themes beginning in **Section 5** are largely in the hands of agencies. Key highlights include:

1. Improve coordination of multiple-agency emergency public messages.
2. Increase the speed and use of all alerting tools in wide-area, fast-paced disasters.
3. Create more specific evacuation plans that can adapt to major road closures and a fast-paced disaster.
4. Help the public understand the risks and ramifications of not evacuating to protect their property when Fire Front Following and Life Safety First strategies are being utilized.

[4] Fire Front Following and Life Safety First are firefighting tactics described in Section 2.3.1

5. Address the impact of long-distance fire storm ember spotting through education and an emphasis on using layered buffer zones, including appropriate vegetation mitigations, improving soil moisture, and structure hardening techniques.

LONGER-TERM POLICY ACTION RECOMMENDATIONS

In addition, the Woolsey Fire incident shows the need for policy leadership from Los Angeles County and regional elected officials to enable significant changes for multiple agencies and public participation. Citygate suggests the following recommendations receive *policy leadership focus* from the County of Los Angeles Board of Supervisors:

Premise – Because wildfires and other emergencies do not respect jurisdictional lines, all public jurisdictions should adopt a cross-boundary philosophy that addresses how to prepare, fight, and recover from wildfires without creating silo actions and establish a sub-regional command model to bridge agency/political lines.

1. Utilize an oversight body to institutionalize the Woolsey Fire 2018 lessons learned to ensure that AAR recommendations become reality and will transcend staffing attrition in the future.
2. Advance an initiative with all applicable public agencies and private interest groups that are involved in the Santa Monica Mountains region to develop a unified, comprehensive, and strategic wildfire hazard reduction plan.
3. Encourage the major fire departments in the area to evaluate creating a sub-regional (three county) Multiple-Agency Coordination and Control Center within the State mutual aid system that will utilize technology to enhance situational awareness and create a shared, *real-time* intelligence, information, and command center on an around-the-clock basis. This concept should further existing agreements and enhance the ability of agencies to work collaboratively during the first one to two days of a catastrophic disaster, for the common welfare, at a pace faster than the Statewide mutual aid system can provide.
4. Reset the operation of the County EOC to the Los Angeles County Office of Emergency Management (County Emergency Management) to become the central coordination and support hub for all County agencies and the County Operational Area by activating and managing the County EOC.
5. Work with Federal officials to advocate Federal disaster reimbursement changes as needed. Federal approvals often cover many County costs, but other costs may not be reimbursable, including long-term animal housing costs for the Los Angeles County Department of Animal Care and Control (County Animal Care). As another example, some private property debris removal (PPDR) policies on items such as foundations do not work in California. In addition, the burn scars that result from wildfires are prone to mud and debris flows from winter rains. This subsequent loss

is not viewed as a continuation of the wildfire, but instead as a new stand-alone event which may not qualify for State and Federal disaster cost recovery.

If the desired end is more resilient communities to meet the current wildfire risks, the improvements suggested by the Citygate team, taken as a whole, should deliver an enhanced union of government services, community bonds, and personal involvement. Citygate's Project Team hopes the communities' common bonds to one another, and to their environmental treasures, will propel earnest conversations to deal with the wildfire lessons from the Woolsey Fire disaster.

NEAR-TERM NEXT STEPS

1. Absorb the issues identified in this AAR.
2. Direct staff to return in 90 days with an assignment and tracking plan for all the AAR recommendations by agency, the lead manager, and the completion timeline.
3. After the Los Angeles County Board of Supervisors reviews the assignment and tracking plan, ask the County Chief Executive Office and the finance teams of the agencies to estimate the cost of implementing the recommendations over feasible timelines.

CONCLUSION

This AAR details a firestorm of epic proportions; we do not use the cliché lightly. This document cannot tell all the stories of heroism, sacrifice, and professional, community, and individual leadership displayed by firefighters, law enforcement officers, public servants, volunteers, and community members who serve, work, and live in one of the most populated and arguably best prepared areas of the country. More than one senior public safety leader described the Woolsey Fire as "unimaginable in [their] career understanding to date, with a ferocity and speed over great distances that, at times in the early hours, overwhelmed the institutions."

The Woolsey Fire forever altered thousands of lives and generated enormous personal, business, and economic losses. Returning to normal is slow and, in some cases, never really occurs, but the individuals directly impacted by the Woolsey Fire can know as a result of this AAR, and other follow-up actions, that the agencies involved heard them, care deeply about their protective role, and will take seriously the recommendations in this review.

This review is also a recognition that planning for the unimaginable, in an area prone to wildfires and crossed by more than five major earthquake fault lines, is precisely what must be done.

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SECTION 1—AFTER ACTION REVIEW PROCESS

An After Action Review (AAR) of the Woolsey Fire tragedy allows for education based on fact-finding from what went well, and it provides recommendations for improvement. The elements of this AAR tell a 360-degree story of the event. While immersed in the event, no single person could know more than their own experience. Later, they learn more from others or the news, but even those interactions may not tell the entire story across such a huge disaster. The Citygate AAR team assembled and analyzed data, cross-checked against personal interviews, to detail the account for those who wish to study and learn from this incident. The incident affected thousands of people, and this report cannot tell every story in depth, nor can it cover every participant's experience; however, the Citygate team attempted to understand and learn from the individual experiences to represent the whole.

Figure 1—AAR Story Sources



1.1 Organization of This Report

1.1.1 Organization by Section

This AAR is organized into the following sections:

- Executive Summary
- Section 1—After Action Review Process
- Section 2—The Woolsey Fire Incident
- Section 3—Timeline of Significant Incident Events
- Section 4—Findings Across the Incident by Agency
- Section 5—Recommendations
- Section 6—Policy Leadership Recommendations
- Appendix A—History and Context Prior to the Woolsey Fire
- Appendix B—Background on Primary County Agencies
- Exhibit A—Santa Monica Mountains / Malibu Wildfire History
- Exhibit B—Fire Weather
- Exhibit C—Woolsey Fire Path Progression over the Geography
- Exhibit D—Woolsey Fire Area Fire History Map

1.1.2 How to Use This AAR

Citygate's AAR opens with a narrative description and timeline of the Woolsey Fire incident. However, for a comprehensive understanding of relevant background information, Citygate has provided information regarding involved agencies, fire history, weather patterns, and terrain records. As a result:

- If you are NOT familiar with wildfire history in the region of the Woolsey Fire, please read **Appendix A**.
- If you are NOT familiar with the involved agencies, their capabilities, and their roles in responding to the Woolsey Fire, please read **Appendix B**.
- For a list of wildfires in the Santa Monica Mountains / Malibu area, please read **Exhibit A**. For a map of fire history since 1970 in the Woolsey Fire area, see **Exhibit D**.
- For more information regarding the relevant fire weather at the time and region of the Woolsey Fire, please read **Exhibit B**.
- If you are NOT familiar with how the Woolsey Fire moved through the geography, please review **Exhibit C**.

1.2 STORY OF THE AFTER ACTION REVIEW PROCESS

1.2.1 Value and Purpose of the AAR

As the Federal Emergency Management Agency (FEMA) states in its 2015 document, "Operational Lessons Learned in Disaster Response," "There is a connection between evaluation and learning."[5] Such is the purpose and value of this AAR, including an improvement plan for the 2018 Woolsey Fire that devastated portions of Ventura and Los Angeles Counties.

Focusing on future improvement, an AAR serves many purposes, including:

- The creation of an official report on actions
- A fact-based response to questions and/or concerns expressed by the public, response agencies, and stakeholders
- An opportunity to capture previously unscripted acts of success
- An opportunity to assess perceived or real gaps in service
- An analysis of resources, agreements, and systems

Citygate followed FEMA's AAR principles for major disasters. FEMA identifies seven steps for conducting an AAR:[6]

1. Assign team leaders and members
2. Develop a work plan that includes, at a minimum:
    a. Scope of work
    b. Work schedule with deadlines and milestones
    c. Budget and resource needs
    d. Primary and secondary cooperating agencies/organizations/individuals
3. Initial data gathering
4. Conduct the after action workshop:
    a. Include key representatives of all the involved emergency response agencies
    b. Representatives must be able to address the emergency and incident operations of their respective organizations
    c. Concentrate on fact-finding and discovery of pertinent information related to the emergency response and recovery activities

[5] Federal Emergency Management Agency (FEMA), "Operational Lessons Learned in Disaster Response," June 2015, https://www.usfa.fema.gov/downloads/pdf/publications/operational_lessons_learned_in_disaster_response.pdf, 35.
[6] FEMA, 49.

d. Employ a facilitated process to ensure a fair and balanced inquiry

e. Allow for an atmosphere of openness with a forum to air concerns

f. Seek objective information on what went right and what did not

5. Compile and analyze the workshop data to begin preparation of the after action report:

   a. Compile the results of the survey, interviews, and workshop, and sort the information according to the areas covered in the after action report

   b. Review, analyze, and sort documentation according to the areas covered in the after action report

   c. The main purpose for analyzing the data is to verify and support comments and conclusions reached by participants and team members

6. Prepare after action report drafts and distribute for review and approval to the appropriate parties

7. Prepare the final AAR report and share it with interested parties

While conducting the AAR, Citygate subject matter experts:

- Reviewed over 4,700 documents
- Conducted small group and individual personnel interviews totaling over 111 personnel in over 98 hours of sessions
- Extensively toured the fire area and key neighborhoods by ground travel and helicopter
- Worked substantially with the following Los Angeles County agencies:
  - Los Angeles County Fire Department (LA County Fire)
  - Los Angeles County Sheriff's Department (County Sheriff's Department)
  - Los Angeles County Public Works (County Public Works)
  - Los Angeles County Office of Emergency Management (County Emergency Management)
  - Los Angeles County Department of Public Health (DPH)
  - Los Angeles County Department of Animal Care and Control (County Animal Care)
  - The Los Angeles County Department of Regional Planning (DRP)
  - Los Angeles County Agricultural Commissioner / Weights and Measures (County Ag. Comm.)

- Interviewed and obtained information from the following cooperating agencies:
  - Ventura County Fire Department (Ventura County Fire)
  - Ventura County Sheriff's Office
  - Ventura County Office of Emergency Services
  - California Highway Patrol (CHP)
  - City of Los Angeles Fire Department (LA City Fire)
  - California Department of Forestry & Fire Protection (CAL FIRE)
  - California Office of Emergency Services (Cal OES) Mutual Aid System
- Obtained community input via:
  - Listening at two Woolsey Task Force community input hearings
  - Conducting eight Woolsey Task Force Working Group meetings
  - Reviewing the records from agency-led community meetings during the event
  - Reviewing information from a web-based input survey hosted by LA County Fire
  - Following up on a limited basis with community individuals who testified and/or submitted information
  - Reviewing the media records, including various social media, regarding the Woolsey Fire


EXIT
FIRST
MEDFIRST

SECTION 2—THE WOOLSEY FIRE INCIDENT

2.1 PRE-FIRE AND IGNITION POINT FIRE WEATHER DATA

Recent data indicates that the climate has been changing or cycling, resulting in warmer-than-average temperatures, longer fire seasons, drought-stressed native fuels, and erratic/extreme fire behavior. Globally, 2018 was the fourth hottest year in recorded history, following the three previous years which earned the top three spots: 2017, third hottest; 2015, second hottest; and 2016 the hottest year.[7] In the past, Southern California fire seasons ran from May to November, with August and September as the peak fire activity months. Over the past decade, Southern California's heightened fire activity period has shifted to September through January. The term "fire season" is becoming outdated as wildfires are a real threat year-round. California is now referring to "fire years" and not seasons. California has recently experienced eight years of drought, with regionally intermittent relief. Drought and deteriorating forest health produce dry fuel moisture conditions at critical levels which are susceptible to fire. Experienced firefighters are witnessing fire behavior unlike anything they have witnessed in the past.

Monitoring fire weather is a year-round discipline for the California fire service. Regionally, on November 6, 2018, two days before ignition of the Woolsey Fire, meteorologist and fire technical staff saw evidence of increasing fire weather conditions. On November 7, per existing protocols, fire agencies upstaffed (adding units above the normal daily minimums) predetermined resources and the California Department of Forestry & Fire Protection (CAL FIRE) relocated resources across the State. On November 8, the relative humidity (RH) dropped from 100 percent at 7:00 AM to seven percent at 11:00 AM in the region that would be consumed by the Woolsey Fire. While the weather forecast called for moderate temperatures in the mid-70s, winds became sustained, hot, dry, and came from the east. At 2:30 PM, these Santa Ana winds were sustained at 23 miles per hour (mph) with gusts up to 37 mph. The conditions for a large-scale fire incident were perfect.

Summary fire weather data is provided in **Exhibit B**.

2.1.1 The Timing of the Woolsey Fire

Like the Thomas Fire of 2017, the Woolsey Fire occurred at a time of the year normally known more for rainfall than wildfires. This change in seasonal assumptions has many impacts, including the availability of resources throughout the State and the threat of post-fire rainfall debris flow immediately following the fire.

Historically, two distinct fire seasons exist in California depending on geography. The fire season in Northern California ends with precipitation toward the end of summer and beginning of fall,

[7] NOAA National Centers for Environmental information, Climate at a Glance: Global Time Series, published August 2019, retrieved on September 9, 2019 from https://www.ncdc.noaa.gov/cag.

and the Southern California fire season could extend past Thanksgiving. When the Northern California fire season ends early, Statewide firefighting resources are available to be redeployed to Southern California to stand ready for regional threats, such as extreme fire risks based on Santa Ana wind conditions.

Starting on November 8, the Woolsey Fire erupted late in the traditional fire season of Southern California, and there existed cooler daytime temperatures, but high winds and very low humidity. Compounding that issue, Northern California was still experiencing extreme fire weather conditions. When the Hill Fire and the Woolsey Fire ignited, there were no other new major fire events underway in the Southern California region. Once the major Hill Fire in Ventura County started in extreme fire conditions on the western Highway 101 corridor, the normally available mutual aid was quickly exhausted.

The second significant impact of the timing of the Woolsey Fire is related to flood and debris flow. When heavy rains follow a major fire, debris flows increase in likelihood as vegetation that previously held the soil in place has burned away. The extension of fire season deep into fall significantly shrinks the window for mitigation actions to lessen the impact of catastrophic flood and debris flows characteristic of fire-damaged chaparral lands receiving December rains. The full impact of this condensed catastrophe timeline was realized in Santa Barbara County (Montecito) when heavy rains fell soon after the destructive Thomas Fire in 2017, killing 21 people with two still missing. In the weeks following the Woolsey Fire, Los Angeles County faced the same threat faced by Santa Barbara County in 2017, which required that emergency management personnel continue to operate at heightened levels on two fronts due to heavy rainfall predictions even as firefighting resources were still working to fully extinguish the fire.

2.2 THE FIRE'S STORY AND DEMOGRAPHICS

2.2.1 Camp Fire

November 8, 2018 is a significant day in California wildfire history. Approximately 415 miles northwest of the point of origin for the Woolsey Fire is the community of Paradise, California. Approximately eight hours prior to the ignition of the Woolsey Fire, the deadliest and most destructive fire in California history, the Camp Fire, exploded in Butte County just east of Paradise. Before it was extinguished, the Camp Fire destroyed 153,336 acres of land, the town of Paradise, 18,793 structures, and took 85 lives. Significant to the Woolsey Fire is that over 1,000 fire personnel were assigned to the Camp Fire, pulling from the Statewide pool of firefighting resources; *however, on November 8, none were pulled directly from Los Angeles, Santa Barbara, Orange, or Ventura Counties.*

2.2.2 Hill Fire

The Hill Fire ignited less than one hour before the Woolsey Fire in the Hill Canyon area of Santa Rosa Valley, approximately 3.5 miles east of the City of Camarillo. The point of ignition for the

Hill Fire is approximately 14 miles west of the point of ignition for the Woolsey Fire. Both fires started in Ventura County.

The Ventura County Fire Department (Ventura County Fire) deployed a full brush fire ground and aerial unit response to the Hill Fire with on-duty staffing augmentation in place due to dangerous fire weather conditions (Red Flag Warning). A Ventura County Fire helicopter with a flight crew was first on scene and attacked the first spot fire. Immediately afterwards, it spotted another start across the road and that fire, driven by gusting, hot, dry winds, quickly ran through Hill Canyon toward the Newbury Park area of Thousand Oaks and Highway 101, including the Conejo Grade truck scales. Major infrastructure, including powerline corridors and Highway 101, occupied structures including commercial parks and schools, and suburban populations were in the path of the rapidly expanding Hill Fire.

Initial fire attack resources were outflanked by the fire. With a report of approximately 100 motorists trapped on Highway 101 in both directions, life safety became the primary mission. The strong winds out of the northeast pushed the fire and affected the business and residential areas of Newbury Park. Fire also rapidly grew to the south and west, expanding the fire front toward the City of Camarillo and flanking the Santa Rosa Valley area.

The fire quickly jumped Highway 101 within approximately 15 minutes from time of dispatch, running approximately *three miles in 15 minutes*. Figure 2 shows the fire approaching Highway 101. Crews were quickly overpowered, and direct operations were rendered ineffective by strong winds, steep topography, and flammable, drought-stricken fuels in the path of the fire.

Twenty Type 1 (structure fire) engine strike teams totaling 100 engines (each team comprises five engines plus a command chief) were initially ordered by Ventura County Fire for life threats and structure protection. Initial thoughts by Incident Commanders were that the fire would move quickly through the lighter fuel south of Highway 101 and advance toward California State University, Channel Islands. Based on initial conditions, the Hill Fire was believed to have the potential to reach the coast by nightfall. However, late in the evening, as the dynamic, moving Hill Fire burned into the burn scar of the 2013 Springs Fire, the erratic behavior calmed and the growth of the fire slowed significantly, allowing Incident Commanders to gain the upper hand.

Figure 2—Hill Fire Approaching Highway 101



With the serious potential for major impacts and loss of life, Ventura County Fire was already utilizing tremendous resources battling the Hill Fire when the Woolsey Fire erupted.

2.3 WOOLSEY FIRE: START TO STOP OF SPREAD

The Woolsey Fire's final size was enormous. As a point of reference, the 2003 Old Topanga-Malibu Fire burned 16,516 acres and 350 buildings. The following metrics show, in part, the scale of the Woolsey Fire:

- 96,949 acres, or 151.5 square miles, across two counties (appx. 1/3 the area of the City of Los Angeles)
- More than 250,000 people successfully evacuated
- Three deaths and no significant injuries to civilians and firefighters

- No significant aircraft or fire engine accidents
  - 1,643 structures destroyed; 364 structures damaged in both counties
  - Los Angeles County (approximately 36 percent in the City of Malibu)
    - 184 homes and five commercial structures "damaged"
    - 1,075 homes and 46 commercial structures "destroyed"
    - Approximately 57,000 structures were not substantially affected
- The Woolsey Fire incident incurred approximately $52 million in fire suppression costs alone (not the full economic cost to the County or the communities); of this, the aviation cost was $7,717,795
- Insured losses are expected to total between $3 billion and $5 billion
- Nine victim shelters and six animal sheltering sites opened

2.3.1 Key Firefighting Tactics in Extreme Conditions

Firefighting in the wildland area involves either *perimeter control* (directly attacking and controlling the outline of the fire) or *point protection* (protecting structures). During wind-driven wildfires, firefighters often employ point protection until wind conditions diminish. Point protection can be static at one location or, on dynamic moving fires, firefighters may use a tactic called *Fire Front Following*. When enough fire resources are available, *tactical patrols* will remain behind the fire front, watching for incipient fires igniting structures.

Additionally, when there are not enough resources for firefighting, the units available are directed into Life Safety First, in which all efforts are utilized to protect lives at immediate risk. The two terms regarding these tactics are here defined and used in this After Action Review (AAR):

1. Life Safety First: Units remain mobile to ensure civilians are evacuated out of harm's way and to answer 9-1-1 calls for help, rather than fully engaging in traditional structure defense operations.
2. Fire Front Following: When fire storm conditions are overwhelming, inhibiting firefighters' ability to breathe or even survive, the units find a safe refuge point and let the main fire front pass over/around them. When human activity is again possible, the fire units search for victims, effect perimeter control, extinguish spot fires around structures, control hot spots, and reduce ember production. This action is taken when there is insufficient time to safely set up ahead of the fire, or the intensity of the fire would likely cause injury to personnel located in front of the the fire.

On Friday, November 9, the Los Angeles County Fire Department (LA County Fire) dispatch center received approximately 1,800 *additional* calls for help (above the normal Countywide volume of about 1,100) from neighborhoods within the fire area. Even the engines assigned to

structure defense within Malibu early Friday could not keep up with the volume of 9-1-1 calls and, sometimes, by the time a unit had arrived, the caller was gone or wanted the fire engine to stay even though the situation did not yet warrant it. By informal estimates, in some threatened areas, almost half the 9-1-1 calls were not life threatening or no one was found upon arrival, significantly impacting the ability of very limited fire units to engage in life safety and structure defense operation.

However, there were multiple rescues, and some structures saved through heroic commitments. Dispatchers, firefighters, and field commanders were acting with the best information available, often putting themselves in harm's way.

2.3.2 Ignition and Firefighting Conditions

The cause of the Woolsey Fire is still under investigation, but it started on the old Santa Susana Field Laboratory property (Rocketdyne) in Chatsworth. On the afternoon of November 8, 2018, at approximately 2:24 PM, the Woolsey Fire was first reported at the Ventura County Emergency Communications Center as a request for a "smoke check," resulting in the initial deployment of the Rocketdyne Fire Department and one Ventura County Fire fire engine (#43). Initial ignition occurred in Woolsey Canyon of the Santa Susana Mountain range, which is now owned by The Boeing Company.

At 2:33 PM, before fire engines arrived on scene, the response was upgraded to a full wildland fire unit response, which also triggered LA County Fire and the City of Los Angeles Fire Department (LA City Fire) to respond per the established Santa Susana mutual threat zone (MTZ) agreement. The first two ground units and a helicopter arrived on scene between 2:45 PM and 2:51 PM. All reported a wind-driven fire growing from five to approximately 30 acres in six minutes. The initial wind direction was northeast (38–42 degrees), changing back and forth to east, which made the wind direction in alignment with the geographic canyon features conducive for a rapid fire run toward the Pacific Ocean. The full sequence of events is contained in **Section 3** of this AAR.

Exhibit C of this AAR contains aerial photos showing the topography and resultant challenges as the fire spread from the initial origin to the Pacific Ocean by noon the following day.

The extreme burning conditions on the afternoon of November 8 combined with inaccessible, challenging terrain stymied initial fire control efforts.

2.3.3 Immediate and Follow-On Fire Department Deployment

The Santa Susana MTZ agreement calls for a massive initial joint response from three fire departments: Ventura County Fire, LA County Fire, and LA City Fire. All the MTZ First Alarm resources were sent, except for three Ventura County Fire engine companies and one of its helicopters as their Hill Fire response was well underway. The Woolsey Fire also received four medium helicopters, four heavy helicopters, and two Super Scooper planes in the initial dispatch that coordinated with the ground attack. Unfortunately, due to the two other competing fires in the

State—primarily the Hill Fire before sunset—the Woolsey Fire only received two CAL FIRE fixed-wing retardant drops in addition to the air resources previously cited.

The following table shows the resource types, counts, and approximate time of arrival for the first hour of the fire:

Table 1—Filled / Unable to Fill (UTF) Resources at Early Critical Points

Department	Aircraft		Engines		UTF
Initial Attack (IA) on 11/8	Responded	UTF	IA	3:00 PM	3:00 PM
Ventura County Fire Department	0	1	2	3	3
Los Angeles County Fire Department	9	-	7	12	-
City of Los Angeles Fire Department	3	-	10	12	-
Subtotal	**12**	**1**	**19**	**27**	**3**

"Unable to Fill" (UTF) denotes when the local and eventually region and Statewide mutual aid system cannot fill the incident's resource requests. As seen in Table 2, the fire received 12 aircraft and 27 fire engines by 3:00 PM—only 40 minutes from first smoke check report; however, the combined forces in severe fire weather and rough terrain could not stop the fire.

In interviews with both ground fire commanders and senior fire helicopter pilots, three challenges existed from ignition to sunset on the first day:

- The front of the fire had multiple points and resisted efforts for flanking operations to *shoulder*[8] the forward advance of the fire at the point.
- The west flank was in flatter terrain against some service roads that somewhat assisted with slowing the fire, and the suppression efforts kept the fire from entering a major westward canyon that runs due west through Ventura County.
- The east flank toward the City of Los Angeles was very hilly, rocky, and was not conducive to direct attack by fire engines or hand crews. In one pilot's words, "The fire was spotting so badly in the rocks on the east, and with the multiple points at the front, given aircraft refill times, we could not keep enough water on it and the ground crews could not reach it and hold it while we refilled."

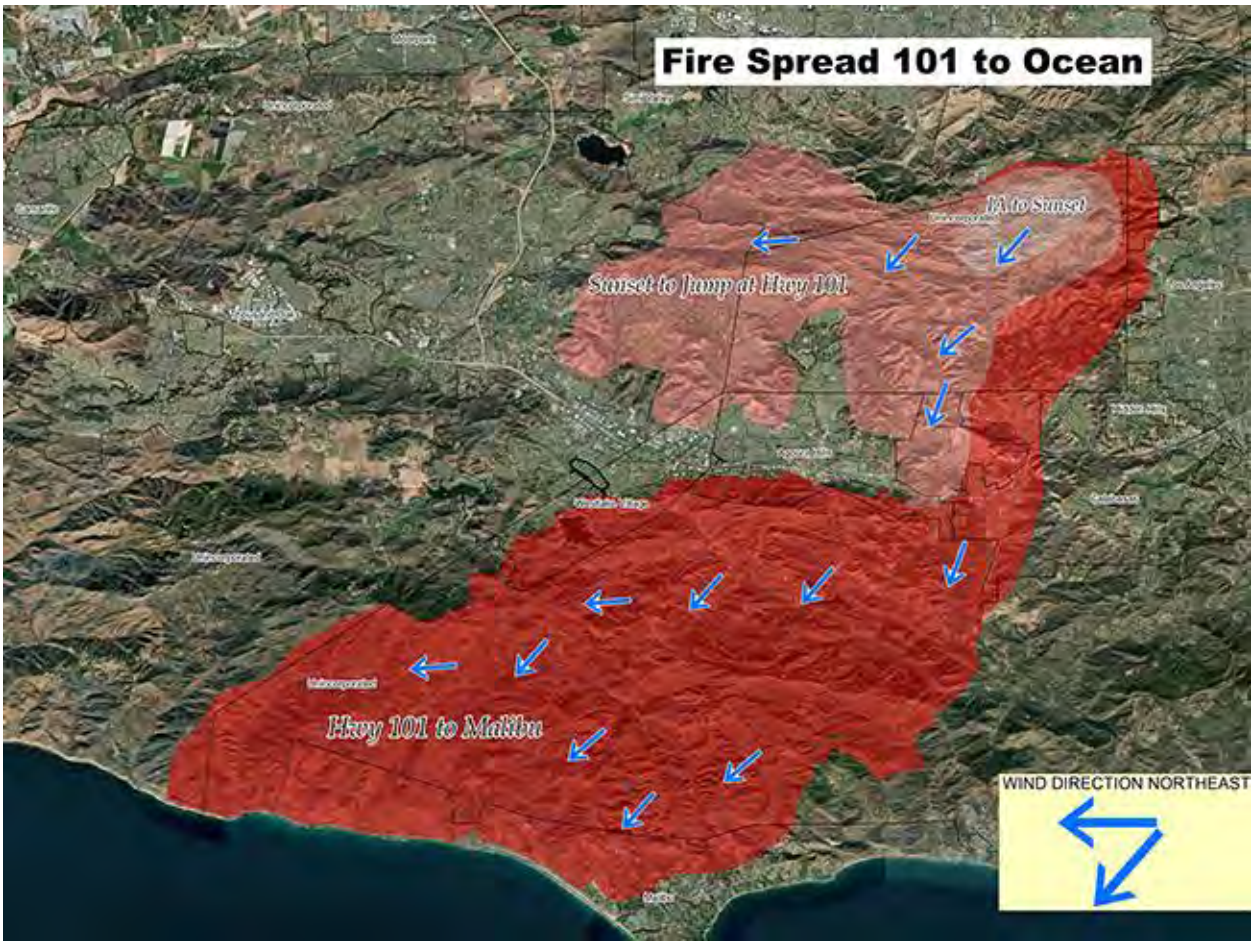
[8] Narrow the point of the fire by turning the flank inward, if possible.

2.3.4 The Fire's Three Main Movements to the Ocean

At sunset on November 8, the heavier, fixed- and rotary-wing aircraft that were not night-vision/drop capable had to stop flying. LA County Fire and LA City Fire helicopters that were night-vision/drop capable continued, Federal Aviation Administration crew standards and fire weather conditions permitting.

During the first 22 hours, the Woolsey Fire has three main movements, shown in the following map:

Figure 3—Three Main Fire Movements



- Movement 1: Thursday, November 8 – Fire origin to sunset (shaded nearly white)
- Movement 2: Thursday and Friday, November 8–9 – Sunset on November 8 to the Highway 101 jump at 5:15 AM on November 9 (shaded light red)
- Movement 3: Friday, November 9 – From the Highway 101 jump at 5:15 AM Friday morning, the fire's final run to the ocean, charring the core of the mountains and devastating Malibu in a little over six hours (shaded dark red)

The winds during the early evening of November 8, while largely out of the northeast, were wandering slightly to the north and more easterly. The fire spread over the evening and early morning hours, widening to the east *and the south.* In the early morning hours on November 9, the winds drove the now wider fire down onto the Highway 101 corridor cities.

As LA County Fire and Ventura County Fire engaged in aggressive structural protection with a substantial number of their engines on the north side of Highway 101, they planned for the fire to spot over the highway due to the strong winds and low RH. The most dangerous point was a set of low hills on both sides of the highway between Liberty Canyon Road on the east and the Palo Comado overcrossing on the west. Both sides of the highway were defended by ground units and night flying helicopters. The fire first spotted just south of the highway between the frontage road and the highway. Fire crews anticipated this fire behavior and extinguished the first spot fire. The dangerous spot over Highway 101 then occurred at approximately 5:13 AM, well up a hillside. This spot fire grew to an acre in less than one minute and several acres in less than five minutes. It was out of reach of the ground units and the water-dropping helicopter, due to refilling time, could not stop it.

Figure 4—Infrastructure Damage – Power Pole



While the fire continued to spot over Highway 101 west of this first major spot all the way to Westlake Village, this significant spot fire that jumped from hill to hill, high over the highway, was the start of the third phase: the run to Malibu.

The area behind the spot fire was also rough and, with even more spotting, the fire advanced into the subdivisions south of Highway 101 and into the mountain communities early in the morning. The fire departments deployed ground and air units into these areas. There were structures and lives saved in these areas.

Figure 5—Infrastructure Damage – Canyon Road



As is typical in severe fire storm conditions that endanger the firefighters when the fire burns over them, the plan was to follow the fire into the mountains and then into Malibu. However, with both a lack of mutual aid and severe wind and fire damage dropping wooden power poles and trees, the canyon roads became impassible. Due to the initial draw of resources for life safety and structure defense at Highway 101 and the inability to take dedicated engines off of the Highway 101 fire fight, the Ventura County Fire and LA County Fire unified command strategy for the Malibu coast early Friday morning was life safety.

Table 2 tells *two stories over time.* First, resources were frequently requested for the Woolsey Fire, and those requests went unfulfilled in the first 21.5 hours of the incident. The mutual aid request system records indicate that responding agencies kept requesting to no avail. Woolsey Fire incident

command chiefs personally called southland area fire chiefs urgently requesting catastrophic mutual assistance from Thursday night into Saturday morning, which is an unprecedented event. Table 2 shows the resources requested and not received up to the time the fire crossed Highway 101.

The second story is that of the firefighting resources in Malibu as the fire entered the coastal plain. Due to the Unable to Fill (UTF) requests and the fire storm's impact on roads through the mountains, units in Malibu consisted only of locally assigned units and a very small quantity of mutual aid. This is why the public observed that the normally heavy fire unit response was not occurring. As Friday progressed, more mutual aid arrived slowly in the Malibu area. Before noon on Friday, the Malibu coast only had between 7–26 engines, not the 100–200 mutual aid engines needed to immediately defend structures in highly developed areas. On Friday morning and early afternoon, the few engines present could not conduct structure defense, but instead were required to address an avalanche of 9-1-1 calls and conduct life safety missions. On Friday evening, there were still nowhere near the units requested. As a result, the public observation was, of course, valid; active structural firefighting in the coastal plain in the early hours of the fire was not possible. Unlike Malibu had ever experienced, nearly all available resources were committed from north of Highway 101 through the mountain communities before the fire began moving quickly to Malibu.

Table 2—Filled / Unable to Fill (UTF) Resources at Critical Points After the Initial Attack

	Tankers / Helicopters Deployed	Tankers / Helicopters UTF	UTF %	Engines Deployed	Engines UTF	UTF %
Midnight on 11/8	5/4	21/9	77%	124	175	58%
5:15 AM on 11/9 Hwy. 101 jump	5/4	21/9	43%	285	289	50%
Malibu area by 9:00 AM on 11/9				7		
Malibu area by 11:00 AM on 11/9				15		
Malibu area by noon on 11/9				26		
Incident total by noon 11/10	35/30	37/12	42%	768	874	53%

LA County Fire helicopters fought the fire through the mountains, helping to prevent the fire from entering Topanga Canyon after the Highway 101 crossing. As the fire approached the City of Malibu, helicopters successfully dropped water near the homes first threatened until the weight of the fire storm pushed them downslope, first to the Pacific Coast Highway (PCH) fire crossings, then finally to the ocean.

The LA County Fire Air Operations Section never gave up. Aircraft operated from the initial Highway 101 crossing until they were literally pushed to the ocean, where the helicopters had to follow the surf line under a very low smoke ceiling east to clear air. They saved several homes Friday morning by tanking from local swimming pools in inland Malibu. They continued Friday

afternoon and, as the fire storm winds abated a little, other air resources were brought in. Much of this was not noted on the ground due to the smoke conditions.

2.3.5 The Mutual Aid Response

Since the early 1970s, the California mutual aid system was designed for agencies to help each other. Before the deadly fires of the past few years, there were typically not multiple fires that would catastrophically empty the mutual aid system. However, due to the growth of fires, the changes to fire weather severity, and economic pressures on local government, the California mutual aid system has seen a decline in mutual aid being available during multiple fire events.

Table 3—Approximate of Total California Fire Engines (Type 1, 2, & 3) by Agency

Agency	Number of Engines
Local Governments	5,928
Cal OES	154
CAL FIRE	343
California Department of Corrections (Prison crews rarely leave site)	74
U.S. Forest Service	277
U.S. Bureau of Land Management	28
Bureau of Indian Affairs/Tribal	24
National Park Service	17
FWS	14
Department of Defense	41
Total	**6,900***

*The 6,900 total number of fire engines in the aid system represents seasonal resources and total inventory of resources. Not all fire engines are available for outside agency and immediate response.

The following table shows the historical count of mutual aid deployed to major fires and fire siege events.

Table 4—Past California Fire and Rescue Mutual Aid System Deployments

Fire or Fire Season	Number of Deployments
1991 East Bay Hills Fire	410 engines
1992 Fire Season	1,800 engines
1993 S. CA Wildfire Siege during October/November	1,525 engines
2003 Fire Siege	1,160 engines
2007 Fire Siege	1,150 engines
2008 Fire Season	4,895 engines
2009 Fire Season	2,125 engines
2010 Fire Season	475 engines
2011 Fire Season	495 engines
2017 Fires from 12/4/17 through 12/6/17 – Thomas (616), Creek (217), Rye (86)	919 engines
2018 Camp Fire (Paradise)	622 engines
2018 Woolsey Fire	619 engines

The following table shows the recent history of the California Mutual Aid system's inability to send large quantities of firefighting units, which has become a serious fire command issue.

Table 5—California OES Unable to Fill (UTF) Statewide Resource Summary

Year	2012	2013	2014	2015	2016	2017	2018
Engines / Water Tenders	134	214	403	958	3,029	6,134	2,724
Overhead/Command, etc.	1,073	1,404	2,315	4,758	4,034	4,867	3,375
Total	**1,207**	**1,618**	**2,718**	**5,716**	**7,063**	**11,001**	**6,099**

As seen in Tables 3, 5, and 6, the system cannot deploy sufficient resources to large incidents. This trend affected the Woolsey Fire response.

The Woolsey Fire unified command team *requested mutual aid early, often, and in high numbers*. Because the Hill Fire was more dangerous at first, it received the "normal, local" mutual aid that all Region 1 departments had pre-authorized to their dispatch centers to send the morning of November 8 as the departments prepared for a severe fire weather day. In fact, the Hill Fire received a five-engine strike team from LA County Fire as first responders. That team was already on the Hill Fire when the Woolsey Fire started. It was released back to the Woolsey Fire later on Thursday evening. From the start of the Woolsey Fire, there was frequent communication between the Incident Commanders of the Hill Fire and Woolsey Fire.

When the Woolsey Fire needed its initial unit request number and hundreds more, many agencies could not fulfill the request. Other jurisdictions may not have been willing to release additional firefighting resources due to their own exposure to fires during the Santa Ana wind conditions and the need to maintain staffing levels for regular life safety needs. As the Hill Fire became less threatening, Hill Fire command shifted units to the Woolsey Fire.

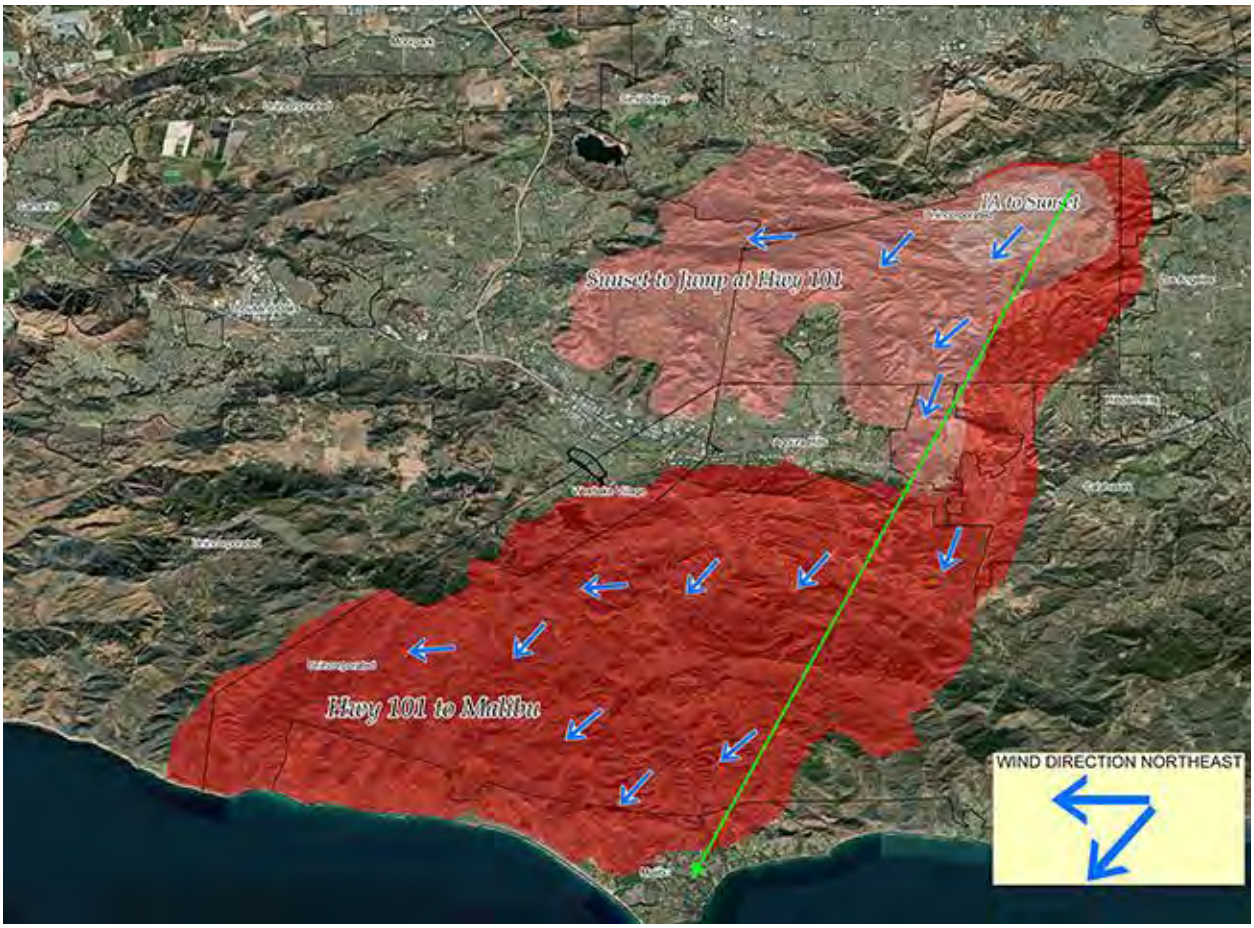
During the first two days of the Woolsey Fire, 53 percent of the fire engine mutual aid requests were unfilled. That totals a staggering 874 units, and the fire burned 96 percent of its final footprint in that time. LA County Fire deployed every unit it could from its own stock, including repairing units in the shop and lowering resources in multiple stations across the County. LA County Fire fielded 100 engines/units to the Woolsey Fire and still maintained coverage of its 2,200 square-mile area for routine 9-1-1 incidents. In addition, LA County Fire double shifted each of its assigned units to forego rest periods to ensure all 100 engines were on the road operating continuously within the impacted communities.

2.3.6 Firefighting Tactics in Woolsey

In the hours from ignition to the late evening on Thursday, November 8, fire command attacked the fire directly with the normal range of tools and procedures, all of which were well pre-planned in the Highway 101 corridor. The winds were variable which seemed to suggest the normal wildfire approach with a northeast wind would work. Three factors broke the plans:

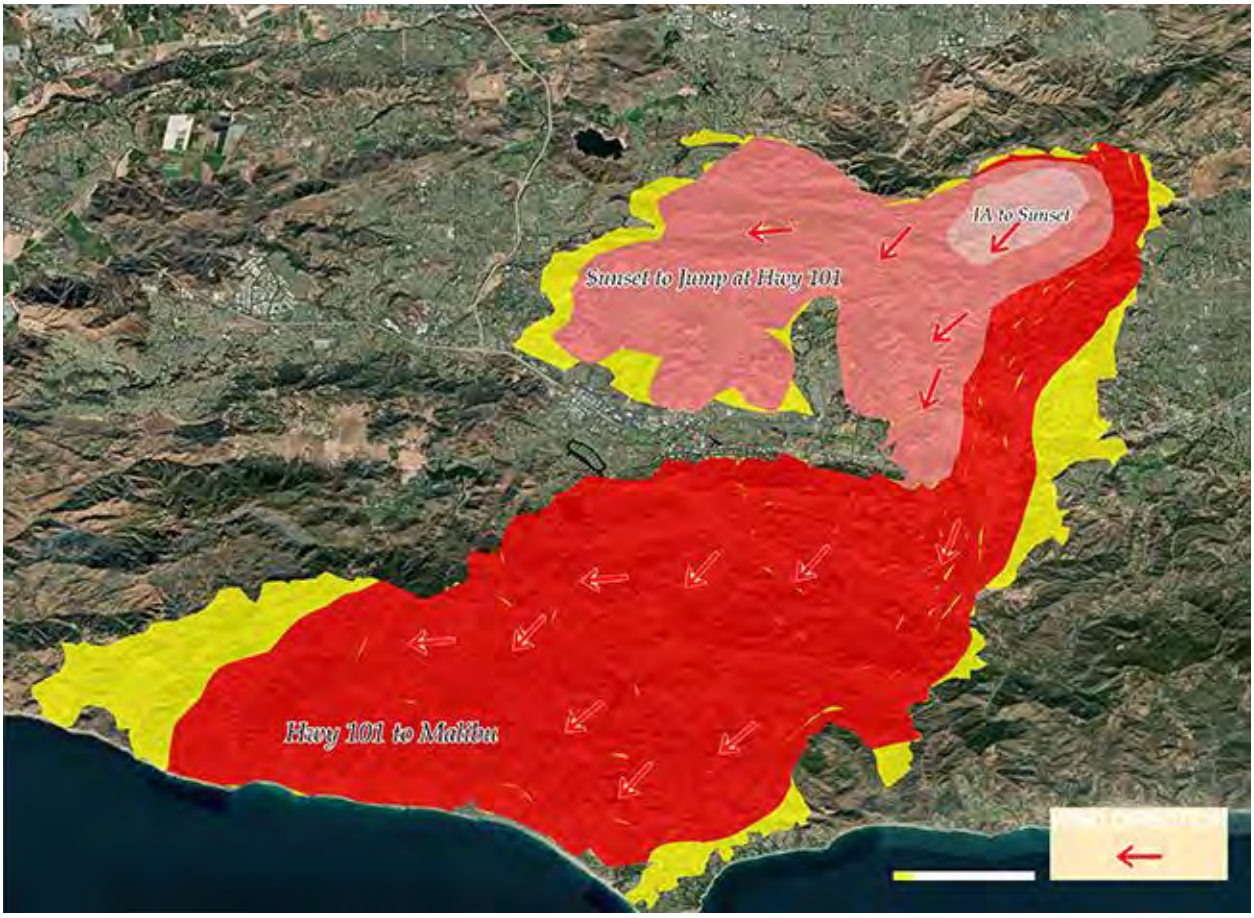
1. Very challenging terrain, especially after dark on Thursday / Friday morning
2. Winds shifting and increasing
3. An uninterrupted, open vegetation fuel bed line from the ignition area straight to Point Dume, as shown in Figure 6

Figure 6—Fuel Line from Ignition to Point Dume



The final Woolsey Fire footprint is shown in the following figure:

Figure 7—Final Woolsey Fire Footprint



After midnight on November 8, when direct control was no longer possible due to the fire entering multiple populated areas, fire command directed all units into Life Safety First and Fire Front Following to ensure evacuations were successful.

As the findings and recommendations in this AAR will show, both were compromised due to lack of resources and the strict application of the tactics even when local conditions warranted small deviations.

2.3.7 The Evacuation Response

During the day on November 8, LA County Fire chief officers were in a regular staff meeting at headquarters. They were monitoring the Camp Fire in northern California and their own fire weather conditions. The Hill Fire in Ventura County began and drew a response from LA County Fire, which was followed by the start of the Woolsey Fire. This prompted an all-command staff response from LA County Fire and the chief officers deployed to the Woolsey Fire Incident Command Post (ICP) in Ventura County. Another group of LA County Fire chief officers familiar

with the Woolsey Fire area in the Highway 101 corridor and Malibu went to LA County Fire Station #89 in Agoura Hills. Here they realized the potential for a devastating fire spread. They assumed the task to prepare their communities in case the Woolsey Fire crossed into Los Angeles County. The local Assistant Chief for the Santa Monica Mountains area made community connections at 3:30 PM on November 8, issuing voluntary evacuations all the way to Malibu.

The three LA County Fire chief officers then developed three evacuation zones based on past fire experience in the area:

- Zone 1 – Highway 101 east to Simi Valley
- Zone 2 – Highway 101 west to Mulholland
- Zone 3 – Mulholland to the PCH

By this point, the Los Angeles County Sheriff's Department (County Sheriff's Department) also had a liaison with the LA County Fire chief officers at Station #89. The evacuation zones were to be used under the general rule that, if the fire crossed a zone border, that would trigger an evacuation of the adjoining zone. This plan was incorporated into the incident action plan. The plan required a major response from the County Sheriff's Department. This plan was good on paper, but the fire spread quickly early Friday morning before dawn, accelerating the trigger points, requiring associated actions for community alerting.

Figure 8—Teamwork by County Personnel



The evacuation planning also triggers the need for mass care operations for humans and animals. As this care for the evacuated populace was being planned, law enforcement was already evacuating Zone 1 areas of Bell Canyon, Oak Park, Thousand Oaks, Agoura Hills, and Calabasas. The biggest challenge was notifying the public and community leaders and moving resources in the smoky conditions with many traffic hazards.

During the Woolsey Fire, law enforcement provided a significant force to notice evacuations, control road closures, conduct lifesaving 9-1-1 responses, and prevent civil disorder. The law enforcement commitment to the Woolsey Fire included:

- Approximately 6,400 law enforcement officers worked on the Woolsey event from start to finish and were assigned from:
  - County Sheriff's Department
  - Ventura County Sheriff's Office
  - CHP
  - City of Los Angeles Police Department
  - Mutual aid departments
- The law enforcement team had to maintain evacuation orders for 12 days

As the fire behavior and winds increased during the late evening of November 8, fire services and law enforcement commanders constantly monitored fire activity in relation to the evacuation decision points. At 1:20 AM, orders were given to evacuate Zone 2, focusing on the Malibou Lake area. At 5:15 AM, when the second spot fire jumped Highway 101, an LA County Fire Assistant Chief requested that mandatory evacuations begin all the way to the PCH. While Citygate cannot fully quantify the results, the evacuation planning and actions by all cooperating agencies fostered an environment in which over 250,000 people were successfully evacuated.

Occupant Support

Over the 2017–2018 fire seasons, there has been an increasing occurrence of residents not reacting to evacuation orders. People are forced back home due to road closures, caring for animals they were unable to evacuate, trying to prevent criminal looting, or just staying to protect their homes. Regardless of why people remain within evacuation areas, their emergency supplies (water, food, fuel, etc.) often deplete and they cannot resupply once evacuation road closures are enforced. CAL FIRE began a program during the 2017 Tubbs Fire in which it provided limited water and fuel to residents caught behind evacuation lines. Ventura County Fire enhanced this program during the 2017 Thomas Fire and LA County Fire took those lessons learned and enhanced the services, now referring to it as the "Occupant Support" program.

Figure 9—County Fire Occupant Support Team after a Successful Retrieval of a Cherished Ring



LA County Fire recognizes the harsh realities that some people are caught behind evacuation lines and may face critical supply needs. This program is not intended to encourage people to stay as LA County Fire still educates the public utilizing the Ready! Set! Go! program's tenets to leave early. Stay-behind survivor actions support humane needs behind the road closure lines and were followed by a parallel animal support program by Los Angeles County Department of Animal Care and Control (County Animal Care). Both programs worked well as small-area tests during this incident. There were not enough resources, due to the lack of mutual aid, to come even close to adequately providing occupant support. This effort should be expanded for future incidents in which the complexity and availability of assisting resources allows. Firefighting still must be substantially concluded as occupant support begins.

The Occupant Support program during the Woolsey incident utilized two task forces splitting the fire area in half. The task forces led by Battalion Chiefs consisted of personnel on fire engines, fire prevention light vehicles, and lifeguard response vehicles. Their mission was simple; logistically support those in the area who may have been running low on critical water, food, and supplies, and help those who may have had devastating losses as a result of the fire. They offered water, energy bars, generator fuel, and information on recovery, emotional support, contact to the outside world if needed, and, occasionally, when safe, assistance with the search for an important personal

item. Overall, the program offered compassion and showed the fire department caring beyond the last ember extinguished.

2.3.8 The Public Notification Response

The County Sheriff's Department Public Information Officer (PIO) program operates a decentralized media policy which dictates that individual stations are responsible for routine public information dissemination. This is accomplished through either a dedicated PIO position, or through the Lieutenant or Watch Commander if a station does not have a dedicated PIO. If a station needs assistance for an incident that grows large or is complex, they contact the 24-hour on-duty County Sheriff's Department Sheriff's Information Bureau (SIB) PIO.

When large incidents occur, the designated LA County Fire PIO on the Department's Type 3 Incident Management Team (IMT) usually takes the lead but, in the Woolsey Fire, the decision was made to keep each agency's lead PIO (six personnel) as a lead PIO team.

During the initial hours of the Woolsey Fire, PIO efforts occurred with Ventura County Fire, the LA County Fire PIO, and LA County Fire Community Services Liaison (CSL) staff who were eventually co-located. Initially, the LA County Fire Community Liaison was with the Fire Station #89 evacuation planning team.

The County Sheriff's Department PIOs assigned to the ICP were trying to communicate face to face with the fire services PIOs about evacuation information, even as they were initially driving out to the ICP.

The fire department PIOs used their dedicated Twitter accounts as their primary method of information dissemination, first via Ventura County Fire's official Twitter account, then via the LA County Fire PIO's Twitter account. The strategy was to use Twitter to reach local area media who would then communicate information to the affected public. The fire department PIOs were also fielding a high volume of media calls on their individual Department-assigned cell phones at what was described as a "relentless pace." At the Malibu Sheriff's Station, the Sheriff's Search and Rescue Unit's Twitter account was being utilized to disseminate fire and evacuation related information.

A Joint Information Center (JIC) was established at the Los Angeles County Emergency Operations Center (County EOC) at approximately noon on the second day of the fire (November 9). The JIC was staffed from 6:00 AM until 9:00 PM, with a JIC manager on site from 6:00 AM until 6:00 PM. The JIC was tasked with writing and disseminating news releases, once it obtained approval, and with keeping the 2-1-1 call center up to date.

On the morning of November 10, the initial attack PIO structure was significantly bolstered by the CAL FIRE Type 1 IMT's PIO section. Twice-daily fact sheets and daily news briefings were established and the routine use of American Sign Language interpreters and Spanish language PIOs were initiated under this structure.

When fire command ordered an evacuation, the PIOs used Twitter, email, texting, and voice calls to the partner cities in the fire area. They relied on the County Sheriff's Department Emergency Operations Bureau (EOB) team to use ALERT LA and other tools to notify residents in the unincorporated area. As time permitted, the PIOs answered or made calls to the local major media news outlets.

During the first two days, even when the PIOs were physically together, they had no unified strategy for notifications nor how to divide the workload. They all came from large organizations and were used to working in their "silo," which is not as effective in a large-scale incident.

2.3.9 The Care and Sheltering of Evacuees

Los Angeles County Code and the County Emergency Operations Plan designate the Emergency Management Council (EMC) as responsible for oversight of the preparedness activities of the various County departments, including preparation and approval of plans, training of County employees for emergency and disaster-related functions, and related emergency preparedness activities to ensure unity of purpose. The Los Angeles County Department of Public Social Services (DPSS) Director is a member of the EMC. The EMC subcommittee, which includes DPSS staff, assists the EMC, EMC Steering Committee, and the Los Angeles County Office of Emergency Management (County Emergency Management) in developing emergency plans.

DPSS is the care and shelter coordinator under the County Emergency Operations Plan and, as such, is responsible for developing any pre-disaster plans relating to caring for and sheltering disaster victims.

The American Red Cross (Red Cross) is the designated mass care service provider in Los Angeles County under the DPSS plan. The Red Cross has a designated seat next to the DPSS to staff the Mass Care and Shelter Branch within the County EOC Operations Section. The Red Cross is a non-profit entity, depends upon donations, receives no government funding, and is the designated shelter service provider during government-managed incidents throughout the United States.

During the Woolsey Fire, DPSS staffed the Mass Care and Shelter Branch within the County EOC to coordinate with the Red Cross and the Los Angeles County Department of Animal Care and Control (County Animal Care). DPSS identified and monitored sheltering needs. Shelter staffing is provided by the Red Cross without on-site assistance from DPSS.

The activated shelter sites did not exceed capacity; thus, additional sites were not developed. The DPSS team also checked on service populations with special needs and provided in-home services, as needed, for evacuees and during power outages in the evacuation area. DPSS provided CalFresh benefits (formerly known as Food Stamps) to service populations without power for more than four hours by obtaining the required documentation from Southern California Edison (SCE).

DPSS was challenged to staff its EOC position full time but provided phone support when not physically present. At times, the Red Cross was also challenged to physically fill all its staffing

assignments but, through phone calls and email, maintained adequate coordination with the County agencies.

At times, there was some confusion regarding where the shelters were located. In the early stages, information regarding where the shelters were located was not disseminated with evacuation notices. At least one shelter site in the City of Los Angeles, a school, was initially used without realizing the ramifications of that choice for a long-duration evacuation.

Figure 10—American Red Cross Shelter and Donations



Often, the donation of supplies to shelters by private centers and some elected official organizations was not well coordinated per existing County Plans. Given the sheer scale of the Woolsey Fire, a more robust control system is needed to manage the deluge of well-meaning donations and spontaneous volunteers. Solutions should be sought to foster enhanced coordination, especially in the early phase of catastrophic, multi-day incidents.

Los Angeles County Department of Public Health Role

Health care for those evacuated is a significant issue and is managed by the Los Angeles County Department of Public Health (DPH) within the County's emergency plans.

Figure 11—Health Shelter Personnel



For the duration of the Woolsey response, DPH participated in unified command with city, county, State, and Federal partners in the field and at the County EOC to coordinate interagency activities, request resources, and exchange response information and situational awareness. Its deployment included more than 100 staff in affected areas to support evacuation and sheltering operations, respond to the myriad of environmental health concerns, and address public health concerns related to repopulation missions. Specific activities included:

- Staffing the County's JIC to issue bilingual public health and safety messages and materials to the public and incident management personnel on fire safety, safe debris cleanup, food safety, boil water notices, hazardous material cleanup, mental health and well-being following a disaster, animal health, and other areas; utilized social media for up-to-the-minute situational updates.
- Providing staffing for four Red Cross shelters for fire evacuees with five round-the-clock public health nursing staff to assure protection against communicable diseases and provide influenza and tetanus vaccinations.
- Monitoring air quality data, issuing smoke and air quality advisories and alerts, consulting with school districts and County workplaces regarding indoor air quality

concerns for returning students and employees, and assessing water quality concerns to advise local water districts regarding boil water notices and orders.

- Developing protocols and coordinating with other County first-responder agencies and the State regarding solid waste removal and hazardous material and debris cleanup protocols; declaring a local public health emergency to ensure cleanup activities proceeded in a safe manner and prohibiting disposal of fire debris from residential properties without clearance from local fire or State agencies.
- Providing information on extremely vulnerable populations to local fire departments to assist with evacuating at-risk fire zones, including Medicare beneficiaries who are dependent on electric-powered medical equipment, dialysis, and other life-saving services.
- Supporting the Los Angeles County healthcare system in evacuating and transferring medically fragile patients from one skilled nursing facility and three congregate living facilities impacted by the fire.
- Conducting field community education outreach to establishments in areas impacted by the fire; talking with residents returning to their community and at entry checkpoints, and distributing health information and personal protective equipment.
- Inspecting nearly 500 restaurants in affected areas to ensure food safety following closures, fire damage, and power outages.
- Assessing and ensuring environmental health and safety at firefighter camp sites and shelters.
- Coordinating with Federal and State partners and performing independent air monitoring and other assessments in proximity to a decommissioned rocket testing, nuclear reactor testing, and liquid metal research facility to identify any potential health threats related to radiation; developing a press release to communicate findings.
- Supporting recovery planning and activities in the impacted areas by participating in community meetings and staffing the interagency Disaster Assistance Centers (DAC) to provide health messaging, distributing fact sheets, provide resource referrals, answering residents' questions, and providing tetanus and flu immunization services.

Overall, the DPH had the ability to support the County's emergency response command organization, to support evacuation and sheltering operations, and to respond to the myriad of environmental and public health concerns during both the response and recovery phases of the incident.

Recovery Phase

During the recovery phase of the incident, environmental health missions included management of debris clean-up, follow-up on odors, food salvage, drinking water concerns, and inquiries regarding septic tanks, contaminated debris management, structural ash, swimming pools, and mosquito breeding.

DPH participated actively in the Long-Term Disaster Recovery Group alongside several community and faith-based organizations and other government and non-government agencies to assess and serve the ongoing needs of the communities affected by the Woolsey Fire.

As the recovery phase continues with rebuilding, DPH provides residents with approved options for potable water and waste disposal when using a recreational vehicle or mobile home as temporary housing. To date, DPH has approved 36 temporary housing applications. In addition to monitoring temporary housing, DPH staff review plans for rebuilding septic systems. DPH anticipates 600 septic system plans to be submitted. To date, DPH has provided nearly 450 consultations to Woolsey Fire victims planning to submit rebuild plans.

Given the magnitude of the rebuilding needed after the Woolsey Fire, DPH has had staffing challenges to support the number of post-incident permit applications at a pace that clients and other County agencies need.

2.3.10 The Mass Care Response for Animals

County Animal Care is responsible for the daily operation of animal care centers as well as other duties in Los Angeles County and contract cities outside of the County, like the City of Thousand Oaks. While responding to the Woolsey Fire, County Animal Care fed and cared for over 2,000 animals in care centers every day, and still maintained its daily operational duties. County Animal Care has a great relationship with many volunteer groups and has expressed that it could not have succeeded without volunteer assistance.

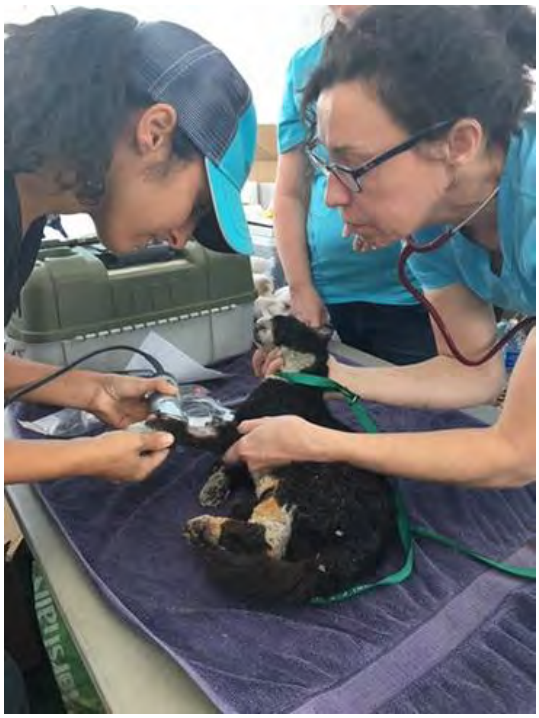
On November 8, at 3:30 PM, County Animal Care staff members concluded a tabletop exercise for the Department's Continuity of Operations Plan at its headquarters in Long Beach. This exercise was designed around the imagined evacuation of an animal care center. Just fifteen minutes later, at approximately 3:45 PM, the animal control manager in charge of the Agoura Animal Care Center observed a plume of smoke heading toward the Newbury Park community. The smoke was later identified as a result of the Hill Fire in the City of Thousand Oaks.

County Animal Care Officers reported to the Lost Hills Sheriff's Station and coordinated rescue responses with the County Sheriff's Department and LA County Fire. Other County Animal Care Officers were assisting owners with livestock rescues in the Cheseboro community of Agoura. Staff were assigned to field duties (assisting with evacuations of horses and other large animals) and to setting up emergency sheltering sites for animals.

County Animal Care worked closely with the County Sheriff's Department and County Emergency Management to coordinate animal mass care support in conjunction with human mass care sites. All attempts were made to keep animal owners connected with their animals so they would evacuate the fire area. Normally, the Red Cross does not allow pets at mass care sites, but creative workarounds were achieved to accomplish the task. Large animals were not limited to horses and there were unique challenges with some exotic species.

County Animal Care sought a sheltering site to support Thousand Oaks community animals that needed to be evacuated. The site provided parking for County Animal Care's emergency sheltering vehicle (AnimalSafe trailer) for household pets from the Thousand Oaks community. AnimalSafe trailers are trailers that County Animal Care uses to co-locate evacuees and their pets at sheltering sites. County Animal Care also had to protect and then evacuate the Agoura Hills Animal Care Center. They successfully completed this task and later found the care center suffered minor damage.

Figure 12—Animal Care Medical Team



Late Thursday evening, as Red Cross shelters opened at Taft High School and Pierce College, County Animal Care staff were activated to set up AnimalSafe trailers at these locations in response to the shelters opening. Into early Friday morning, County Animal Care supported an animal receiving site at Hansen Dam and then opened another at the Thousand Oaks Teen Center. Before dawn Friday, the County Animal Care Director of Volunteer Services issued a mass

notification to Department volunteers for assistance with County Animal Care's responsibilities for animal care and sheltering along with identifying mutual assistance partners for assistance.

Friday morning, County Animal Care received mutual aid support from spcaLA, the Pasadena Humane Society and SPCA, and Los Angeles City Animal Services. These agencies reported to the staging area at Whizin Market Square in Agoura.

A sizable challenge was to provide animal support to animals that could not be evacuated. These animals, especially horses, required food, water, and some improvement to enclosures. County Animal Care requested Los Angeles County Public Works (County Public Works) to deliver water inside the evacuation areas.

County Animal Care also teamed up with Veterinary Angels, a non-profit organization that assisted at the sheltering sites, working with County Animal Care's medical team to bring medical support to pets and owners affected by the fires. The MASH-type unit established with Veterinary Angels' support was so beneficial that the Los Angeles County Animal Care Foundation has committed to funding a mobile clinic for County Animal Care to use in future events. To support this resource, County Animal Care called the Southern California Veterinary Medical Association (SCVMA). Through its network of volunteers, the SCVMA was able to offer voluntary medical staff at its sheltering sites. An average of six SCVMA volunteers assisted County Animal Care each day.

Overall, County Animal Care provided care to 791 animals during the incident. Twelve of these, including several chickens and goats, reported receiving burns of varying degrees. One llama died from burn injuries. County Animal Care's Senior Veterinarian treated 12 animals for burns. In addition, County Animal Care's medical team monitored animals that were sheltered at Pierce and Hansen Dam.

The use of County Animal Care's Animal Care Center volunteers to supplement the Equine Response Team volunteers was also an innovation during this event. Although the Equine Response Team has been activated in many prior emergencies, County Animal Care volunteers have never before been used as additional support. County Animal Care's volunteers assisted at the sheltering sites to clean and care for evacuated animals. They also assisted with donations and greeting the public. Overall, County Animal Care Animal Care Center and Equine Response Team volunteers donated 7,821 hours of service during the fire.

After the fire, County Animal Care participated in the DACs at the Agoura Community Center and Malibu Court House. County Animal Care received 204 requests for assistance (for a total of 351 animals) from owners who were impacted by the fire. These requests were for medical care, temporary housing, and temporary food supply. Financial assistance to provide this medical care was provided by the Los Angeles County Animal Care Foundation. County Animal Care has been made aware of various community members and organizations that lost animals during the fire.

However, not all losses or injuries to animals were reported to County Animal Care during the event.

During the transition phase of the incident, County Animal Care staff formulated costs for expenses during the fire and found that many of the expenses were outside the Federal-Emergency-Management-Agency-eligible parameters. These exclusions were partially covered by volunteer donations, but there seems to be a gap in funding for animal cost recovery expenses.

County Animal Care's review after the incident identified many of the same challenges to its teams and systems as other County agencies during Woolsey Fire. The following key items are improvements that County Animal Care staff is working on or has already completed:

- Developed a process for ongoing training for new staff that do not have experience responding to emergencies. This was completed by July 31, 2019.
- Established a revised process to identify resource needs based on prior natural disasters so that a baseline for the resources needed is established.
- Working with the County Animal Care Information Technology team to expand abilities to track and communicate with County Animal Care officers in the field.
- Developing a process to manage a high volume of spontaneous volunteers.
- Establishing a more robust process to receive donations via phone, internet, email, and in person.
- Improving communications during an incident to all responders, staff, and volunteers.

2.3.11 Disaster Assistance Centers and Recovery

Recovery Coordinating Center (RCC) operations were activated by County Chief Executive Officer (CEO) with the goal of opening the LA County Fire DACs by Saturday, November 17. Staff from other County agencies were specifically assigned to the RCC because of their backgrounds.

The County team understood that at least two local DACs would be needed to serve fire victims: one in the Malibu area and another in the Highway 101 corridor.

This was the earliest in a disaster event the County had opened a DAC; prior philosophy/practice was to have a longer preparation period between the conclusion of the incident and the opening of the DAC. The Federal Emergency Management Agency (FEMA) Area Field Office opened in Westlake Village on December 18.

The DACs were staffed by 60 to 100 or more employees and volunteers representing over 50 local, State, and Federal agencies, cities, and non-governmental organizations.

The Agoura Hills DAC transitioned to a Disaster Recovery Center (DRC) on December 18, and then the DRC closed on January 11, 2019. The Malibu DAC closed on January 9, 2019.

Figure 13—Disaster Assistance Center



The DRC continues to this day. From the beginning, the County team led by the Los Angeles County Department of Regional Planning (DRP) has carried the burden of coordinating the rebuilding process; this effort will continue for approximately five years. In addition to the County planning, building, and fire regulations, the California Coastal Commission has requirements in the area regarding rebuilding. By October 1, the County approved 79 plans for rebuilding, issued 29 rebuilding permits, and is ahead of schedule in many respects.

2.3.12 Damage Assessment and Debris Removal

As the Woolsey Fire was being contained, LA County Fire and County Public Works dispatched several teams of engineers, inspectors, and Public-Works-Safety-Assessment-Program-certified members to survey the sites affected by the Woolsey Fire to confirm the extent of damage for residential, commercial, or County-owned buildings. In a matter of two weeks, over 400 residential and commercial sites were surveyed with a total of 658 structures classified as demolished, moderately damaged, or lightly damaged. Most sites were labeled with either a red tag or yellow tag. A rapid evaluation report accompanied by pictures was produced for every site surveyed. County Public Works also provided substantial assistance to the affected cities, especially the City of Malibu, to assess the damages to private property. Damage assessment continued on or about

November 10 (Day 3 of the Woolsey Fire) by County agencies and a CAL FIRE Damage Inspection Specialist Unit under the Unified Incident Command Planning Section.

Figure 14—County Damage Assessment



During the first week of the Woolsey Fire, County Emergency Management communicated with the California Office of Emergency Services (Cal OES) and FEMA to identify a timeline and critical components of debris removal needs. Considering this was the County's first utilization of a new State and Federal process for Private Property Debris Removal (PPDR), there was an associated learning curve. In partnership with Cal OES and CalRecycle, a unified command PPDR IMT was developed.

The RCC Operations Section subsequently established a Disaster Services Group to, among other responsibilities, coordinate debris removal pursuant to a DPH declaration of a local public health emergency. The Disaster Services Group subsequently tasked County Public Works with private property debris removal around November 19 (Day 11). County Public Works coordinated with other County departments, affected cities, and State and Federal agencies, including the California Environmental Protection Agency, Cal OES, and FEMA.

Figure 15—Hazmat Cleanup



Memorandums of Understanding were executed with affected cities to allow the County to execute a one-stop "Consolidated Debris Removal Program" for all affected property owners, which included right-to-enter and hazard abatement authorization. CalRecycle was awarded a contract for all debris removal under this program. Approximately 900 private parcels had hazardous debris removed. Property owners not opting into the PPDR program had to proceed at their own expense and gain the necessary environmental permits from the RCC.

2.3.13 County Water Supply in the Greater Malibu Area

Los Angeles County Waterworks District No. 29 (County Waterworks) was established in 1959 by the Board of Supervisors through a public election that authorized the formation of the District. The water systems in the Topanga and East Malibu Mesa areas were installed between 1962 to 1967. The water systems in the East Malibu Coastal region and areas west of Las Flores Canyon Road were installed between 1928 to 1970. After the construction of the major transmission line along the PCH that delivers water from the Metropolitan Water District of Southern California to Malibu, Topanga, and Marina del Rey, the District was petitioned to purchase several nearby mutual and privately-owned water companies. The District purchased Hillside Water Company in 1967 and Malibu Water Company in 1971.

The District currently serves approximately 22,300 people through 7,500 metered connections. The District purchases nearly 100 percent of its water supply from the Metropolitan Water District of Southern California through an intermediary wholesaler, the West Basin Municipal Water District. Water is delivered through a 35-mile-long transmission main that conveys purchased water from an interconnection with the Metropolitan Water District of Southern California in Culver City to the west boundary of the City of Malibu. Due to the single source of supply and the mountainous terrain of Topanga Canyon and Malibu, the water system has been laid out as a "tree system" with very few redundant pathways or pipeline loops. This "tree system" is vulnerable since a break in the system will stop water flowing to all service connections downstream of the break.

Public water systems serve two primary purposes: (1) domestic water service for drinking, cooking, bathing, irrigation, and sanitation; and (2) fire protection. To accomplish these purposes, public water systems are designed with storage and pipeline carrying capacities to provide water to simultaneously meet the highest domestic demand and the fire-flow requirements for a *single structure fire* per the version of Los Angeles County Fire Code adopted at the time that the water system *was built*. Water distribution systems are not, and cannot be, practically designed to fight wildfires due to multiple design considerations, including water quality decay if not enough water is used on a day-to-day basis. Many development areas in the mountain communities depend on wells for domestic and firefighting water. Widespread power failures also cripple these systems.

During the Woolsey Fire, County Waterworks was able to maintain storage and pressure—*as the system was designed.* However, due to a very high demand by firefighters, residents, and pipe breaks in burned structures, some neighborhoods had insufficient or no pressure at times.

As the fire front passed, County Waterworks employees turned off broken, leaking service at damaged structures. At no time during the firefighting or the recovery effort did County Waterworks turn off supply to neighborhoods or intact buildings; there was just not enough pressure at times to meet large demands as a result of the incident.

2.4 THE WOOLSEY FIRE INCIDENT RESPONSE SUMMARY

The following, in various forms, all contributed to the Woolsey Fire. Many are no different than past fires. Citygate observed:

1. Fire intensity was extreme, and there were unrealistic expectations of fire department behaviors based upon past experiences in which communities saw large quantities of fire units protect their community.
2. This fire behaved like no previous fire in the Santa Monica Mountains area. The Woolsey Fire burned through three of four historic corridors at once, with a wide fire front with a half-mile to one-mile-or-more ember cast. Previous fires burned as narrow ribbons; this fire fanned out widely and quickly through areas loaded heavily with dense vegetation.

3. The Malibu coastal plain area also has many long, dead-end canyon roads, which makes evacuation and firefighting access very challenging.
4. With the shortage of resources and the extreme fire behavior, the initial fire response in the Malibu PCH corridor could only meet life safety needs.
5. The speed and intensity of the fire overwhelmed the resources on scene.
6. This fire created highly stressful conditions for the public and emergency responders due to the extreme fire behavior and associated losses.
7. In the first 24-hour operating period and slightly beyond, command chiefs and fire services and law enforcement crews operated without adequate sleep and quality information regarding the Woolsey Fire situation.
8. Fire Front Following and Life Safety First fire unit tactics are not fully understood by the public nor policy makers.
9. Historical fires have occurred after the first couple of east wind days, whereas this fire occurred during the first wind day, when the winds are at a higher and unsettled intensity.

Figure 16—Recovery Center



10. The wind was blowing in an optimal direction to drive the fire wide and fast to the coast.
11. Ornamental landscaping is more readily ignited than many native species and thus contributes to structure ignition.
12. Vinyl fencing and weathered / aged wood exposures are more susceptible to ignition.
13. Social media influences create a demand for rapid-tempo updates.
14. Fire and/or wind caused early and wide-area losses of critical infrastructure, such as electric power, bridges, key roads, and cellular communication sites.
15. Ventura County Fire and LA County Fire resource levels have remained static while population growth has placed more people in harm's way while the severity and frequency of wildfires are growing.
16. Constituents and policy makers at Federal levels do not understand nor accept the new normal for California fire behavior and Santa Monica Mountain fire impacts.
17. There is the need to understand that frequent, extreme fire conditions have greatly affected the natural ecosystem of the native chaparral, including the introduction of invasive species and the adverse effects that accompany them.
18. Individuals and organizations are at odds regarding how to address the wildland fuel/fire problem.
19. There is a lack of public participation in the Ready! Set! Go! program to harden their structures against heat and embers, and to create defensible space and perform structure/property maintenance.
20. The lack of adherence to evacuation orders and the resulting 9-1-1 calls impacted the ability of very limited fire responders to defend structures in some locations.


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SECTION 3—TIMELINE OF SIGNIFICANT INCIDENT EVENTS

The following timeline of significant events is numbered for easy reference and, if available, is timestamped. Not all significant events are stamped with a precise time as, sometimes, a batch record exists of several events in a singular AM or PM period. Those events fall between other time stamp events, so such instances have still been placed chronologically.

3.1 WEDNESDAY, NOVEMBER 7, 2018

Weather/Fire Conditions: Forecast and Preparation

Significant Event 1: National Weather Service predicts peak fire-event forecast overnight Thursday and into the predawn hours on Friday. Strongest winds predicted to occur Thursday night through Friday morning.

Significant Event 2: Los Angeles County Fire Department (LA County Fire) Assistant Chief calls the affected western County cities during the evening to advise them of augmented staffing implementation and pending fire weather predictions.

3.2 THURSDAY, NOVEMBER 8, 2018

Weather/Fire Conditions

Significant Event 3: 6:00 AM – Due to the predicted Red Flag Warning, Lost Hills Los Angeles Sheriff's Station was in direct communication with LA County Fire. Lost Hills Station units were directed to begin Red Flag Warning patrol checks.

Additionally, County Departments were on stand-by due to a Southern California Edison (SCE) public safety power shutoff possibility.

Significant Event 4: 6:33 AM – The Camp Fire ignites east of Paradise, California, and expands in size at an unprecedented rate. Statewide firefighting resources shift to address the growing threat of this fire that will evolve to become the deadliest wildfire in California history. Due to local weather/fire conditions, California Office of Emergency Services (Cal OES) Region 1, including Los Angeles County, does not send resources to the Camp Fire on November 8.

Significant Event 5: 8:00 AM – In the area of the impending Woolsey Fire, the relative humidity (RH) is 78 percent.

Significant Event 6: 8:00 AM – Los Angeles County Public Works (County Public Works) opens Department Operations Center (DOC) at Level 3 status due to the SCE public safety power shutoff warning.

Significant Event 7: 10:00 AM – With strong Santa Ana conditions in the region, the local RH drops to five percent or less in Simi Valley. Local agencies are on heightened alert including LA County Fire, Los Angeles County Office of Emergency Management (County Emergency Management), and County Public Works.

Significant Event 8: 2:00 PM – The Hill Fire in Thousand Oaks ignites. The Hill Fire was a wind-driven fire in the Hill Canyon area of Camarillo and quickly consumed the geographical area's augmented fire resources. Other area fire departments are reluctant to deplete their reserve capability due to the potential for fires in other jurisdictions.

Fire Conditions/Response: Fire Start

Significant Event 9: 2:24 PM – Ventura County Fire Department (Ventura County Fire) Emergency Communications Center receives first report of the Woolsey Fire as a smoke check on the Santa Susana Field Laboratory property. The initial response to the smoke check is the Rocketdyne Fire Department and one Ventura County Fire fire engine.

Significant Event 10: 2:33 PM – Before arriving on scene, a responding Ventura County Fire fire officer requests an upgrade to a full brush response, which triggers the Santa Susana mutual threat zone (MTZ) agreement activation. Due to commitments at the fast-moving Hill Fire, Ventura County Fire could only contribute two engines, one dozer, and two command officers for initial attack. Ventura County Fire Deputy Chief advises LA County Fire and City of Los Angeles Fire Department (LA City Fire) that Ventura County Fire cannot fully support MTZ agreement due to the Hill Fire.

Significant Event 11: 2:35 PM – LA County Fire and LA City Fire send full brush responses to the Woolsey Fire in addition to Ventura County Fire's response.

Fire Conditions/Response: Initial Observations

Significant Event 12: 2:51 PM – LA County Fire Copter-14 arrives on scene and reports a five-acre fire with rapid rate of spread and structures threatened. Winds are 25–30 MPH from the southeast.

Significant Event 13: 3:00 PM – Fire Incident Commander reports two 30-acre fire spots traveling in a southwest direction threatening structures in Oak Park and the State Responsibility Area wildlands.

Fire Conditions/Response: Initial Tactics & Actions

Significant Event 14: 3:16 PM – Air Tanker 76 diverted from Hill Fire to Woolsey Fire; four air tankers were requested.

Significant Event 15: 3:26 PM – Experiencing no cell service, the Woolsey Incident Command Post (ICP) is moved from Rocketdyne to Ventura County Fire Station #43.

Evacuations

Significant Event 16: 3:30 PM – Three county fire chief officers deploy to LA County Fire Fire Station #89 in Agoura Hills to build an evacuation contingency plan.

Significant Event 17: 3:30 PM – LA County Fire Assistant Chief calls all the western cities in the LA County Fire service area to inform them to start voluntary evacuations from Calabasas area to the Pacific Coast Highway (PCH). As a result, the Lost Hills Sheriff's Station activated its emergency operations center (EOC), its 12-and-12 staffing model, and called in all search and rescue members. The station begins to initiate voluntary evacuations in Agoura Hills, Calabasas, Hidden Hills, and Westlake Village.

Significant Event 18: All Afternoon – Local emergency communications / 9-1-1 centers are inundated with calls reporting fire-related conditions.

Fire Conditions/Response

Significant Event 19: 3:30 PM (approximate) – The County Emergency Management Director receives initial notification of Woolsey Fire from LA County Fire Deputy Chief with information that the fire could spread into Los Angeles County.

Significant Event 20: 3:32 PM – LA County Fire Incident Management Team 3 (IMT-3) is activated.

Significant Event 21: 3:40 PM – Lost Hills Sheriff's Station EOC communicated with the American Red Cross (Red Cross) and Los Angeles County Department

of Animal Care and Control (County Animal Care) regarding shelter preparedness.

Significant Event 22: 3:47 PM – Lost Hills Station dispatches personnel to strategic positions in the mountainside to provide intelligence on the location of the fire line and its progression.

Significant Event 23: 3:54 PM – Unified command is established with Ventura County Fire, LA County Fire, and LA City Fire at Ventura County Fire Fire Station #43 in Simi Valley.

Significant Event 24: 4:05 PM – The Woolsey Fire is determined to be in the Ventura County State Response Area jurisdiction; therefore, Ventura County retains responsibility as the mutual aid unified ordering point.

Significant Event 25: 4:20 PM – County Sheriff's Department Emergency Operations Bureau (EOB) received a mutual-aid request from Cal OES to send 24 law enforcement personnel to assist the Ventura County Sheriff's Office with evacuations.

Significant Event 26: 4:47 PM – Sunset occurs and only two fixed-wing aircraft drops are accomplished before the sunset curfew discontinues fixed-wing aircraft operations. LA County Fire and LA City Fire helicopters continue to operate to the end of dusk, and their night-capable helicopters continued through the night.

Significant Event 27: 5:20 PM – The 24 law enforcement personnel were redirected by Cal OES to the Woolsey Fire burning in Ventura County.

Evacuations

Significant Event 28: 5:18 PM – Incident command issues the first mandatory evacuation at Saddlebow and Maverick Lane in Bell Canyon, City of Los Angeles.

Fire Conditions/Response

Significant Event 29: 6:00 PM – California Department of Forestry & Fire Protection (CAL FIRE) IMT-5 is activated for Ventura County Fire's Hill Fire, and County Emergency Management is present at the Woolsey Fire ICP to monitor the Woolsey situation.

Significant Event 30: 6:15 PM – Lost Hills Station requested North Division resources to assist in the evacuations and traffic control.

Evacuations

Significant Event 31: 7:09 PM – PUBLIC INFORMATION OFFICER (PIO) TWEET: "LAC closely monitoring fire. At this time, the fire remains in VNC's jurisdiction. Due to potential threat to the community of Hidden Hills, mandatory evacuations are in place north of the Highway 101 from Valley Circle to Lindero Cyn."

Significant Event 32: 7:33 PM – County Animal Care plans the possible evacuation of the Agoura Animal Care Center due to the erratic behavior of the fire.

Fire Conditions/Response: Transition from Initial to Extended Attack

Significant Event 33: Between 7:00 PM and 9:00 PM – LA County Fire Incident Co-commander estimates it is increasingly likely they will not catch the fire now.

Significant Event 34: 8:00 PM (approximate) – Command personnel from LA County Fire and Ventura County Fire conduct a night flight in a helicopter to assess the situation's rapidly evolving fire dynamics.

Significant Event 35: 9:00 PM – Fire reported at 8,000 acres and structures affected in Oak Park community within Ventura County Fire.

Significant Event 36: 9:00 PM – Weather data Cheseboro: Temperature is 65 degrees, RH is six percent, wind is at 29 MPH from the northeast with peak gust of 48 MPH.

Significant Event 37: 9:41 PM – The resource request entered into the California Fire Mutual Aid Resource Order Status System (ROSS) system is for 37 strike teams (185 fire engines) resulting in many "Unable to Fill (UTF)" responses.

Significant Event 38: 10:20 PM – Lost Hills Sheriff's Station lost power and began operating on generator power.

Significant Event 39: 10:33 PM – The Incident Commander places a second master resource order in the Statewide ROSS system for Woolsey Fire resources.

Significant Event 40: National Weather Service synopsis: Strong Santa Ana winds will continue across Ventura and Los Angeles Counties, with the peak winds anticipated for Friday morning starting at sunrise and continuing through the noon hour. These winds are anticipated to diminish but not

disappear in the afternoon. RH is anticipated to remain in single digits while the strongest mountain gusts will be in the 50–60 MPH range on Friday morning. Isolated gusts up to *70 MPH are expected around the Hills of Malibu* and across the Ventura and Los Angeles County mountains.

3.3 FRIDAY, NOVEMBER 9, 2018

Fire Conditions/Response

Significant Event 41: 12:00 AM – Weather for Cheseboro: 64 degrees, RH is six percent, and winds are at 26 MPH from the northeast.

Significant Event 42: 12:18 AM – Incident command establishes enlarged fire containment "box" to limit the extension of the fire to Valley Circle on the east, Highway 118 on the north, Highway 23 on the west, and Highway 101 on the south. There is now major fire activity at Lindero to Thousand Oaks Boulevard from Bell Canyon to Highway 101 with new fire start on Highway 118. Potential for fire to impact backside and outflank first fire. Woolsey Fire rapidly progressing to the west and heading toward Lang Ranch and Highway 23 to the east side of Thousand Oaks. Numerous structures on fire in Oak Park and Los Angeles County corridor needing heavy fire engine response.

Evacuations

Significant Event 43: 12:22 AM – Per Ventura County Fire, evacuations are needed from Kanan Road to Westlake Boulevard and from Highway 101 northbound to Kanan Road.

Significant Event 44: 12:30 AM – The EOB activates the Department's duty DOC, IMT, and the Los Angeles County Emergency Operations Center (County EOC) team.

Significant Event 45: 1:14 AM – PIO TWEET: "Fire has entered LA County, Multiple structures have been impacted in the Oak Park area, Reyes Adobe north of T.O. Blvd."

Significant Event 46: 1:20 AM – Mandatory evacuations are issued by LA County Fire for Malibou Lake south of Highway 101.

Fire Conditions/Response: Strategy Shift

Significant Event 47: 1:25 AM – Fire organization is broken up into four branches with the ability to break into more branches.

Significant Event 48: 1:25 AM – Due to the scope of the fire and the limited resources, **life safety and victim rescue is priority; not enough resources for structure defense.** (This is the moment fire command shifted from direct attack to Life Safety First and Fire Front Following).

Evacuations

Significant Event 49: 1:35 AM – PIO TWEET: "Mandatory Evacuations are now in place south of the Highway 101 to Mulholland Highway, west of Las Virgenes Rd. to Westlake Blvd."

Significant Event 50: 1:46 AM – Alert LA Message: "This is the Los Angeles County Sheriff's Department, the Los Angeles County Fire Department has issued a mandatory evacuation order for the following areas due to a fast moving wild fire. From Westlake Blvd east to Las Virgenes Road and Mulholland Highway north to the Los Angeles County Line. For further information please contact the Los Angeles County information line at 2-1-1."

Significant Event 51: 2:00 AM – The EOB receives an additional law enforcement mutual aid request from Cal OES for 175 law enforcement officers to help with evacuations in Ventura County.

Significant Event 52: 2:01 AM – Alert from Malibu: "Alert mandatory evacuations south of Highway 101, from Mulholland Highway to Las Virgenes to Westlake, and north of Highway 101 from Valley Vista to Reyes Adobe."

Significant Event 53: 2:34 AM – Mandatory evacuation ordered for Westlake Village.

Declarations

Significant Event 54: 2:50 AM – Fire Management Assistance Grant for Woolsey approved.

Fire Conditions/Response

Significant Event 55: 2:51 AM – PIO TWEET: "Fire is approximately 8,000 acres with 0% containment."

Evacuations

Significant Event 56: 3:00 AM (approximate) – Mandatory evacuation orders south of Highway 101 north of Potrero Road between Westlake Boulevard and Wendy Drive. Evacuations in Hidden Hills area of LA County Fire and LA City Fire operational area have been downgraded to voluntary.

Significant Event 57: 3:18 AM – Fire extending down Las Virgenes, north of Highway 101.

Evacuations

Significant Event 58: 3:52 AM – News Flash Malibu: "Mandatory evacs for Woolsey fire in parts of Agoura Hills, Calabasas and Westlake Village."

Fire Conditions/Response

Significant Event 59: 3:57 AM – Email from LA County Fire Community Services Liaison (CSL): "Of note, fire is now at 8,000 acres with no containment, and the City of Hidden Hills and the LA City portion extending east of Hidden Hills to Valley Circle have moved from mandatory evacuations to voluntary. This incident is now in Unified Command with VNC, LAC, LFD, Ventura County Sheriff's Department (VCSO), Los Angeles County Sheriff's Department (LASD), Los Angeles Police Department (LAPD) and Cal Fire."

Significant Event 60: 4:00 AM – The County EOC is activated at level 3.

Significant Event 61: 4:45 AM – Fire is just north of Highway 101 and is threatening to jump south of freeway between Kanan and Palo Comado.

Significant Event 62: 5:00 AM – LA County Fire units report and extinguish a two-acre spot fire south of Highway 101 near Cheseboro and Agoura Roads.

Significant Event 63: **5:13 AM – Fire jumps over Highway 101 between Liberty Canyon Road and Palo Comado Road overpass.**

Communications

Significant Event 64: 5:17 AM – Email from Malibu staff to Mayor and city council of Malibu: "Fire has jumped 101 near Cheseboro. In the process of sending out an Everbridge notice."

Evacuations

Significant Event 65: 5:30 AM – When fire crosses Highway 101, LA County Fire chief officer announces mandatory evacuation for Malibu.

Fire Conditions/Response

Significant Event 66: 5:58 AM – Fire is well established over Highway 101 / Cheseboro canyon at 50 or more acres.

Significant Event 67: 6:00 AM – Weather data Cheseboro: Temperature is 63 degrees, RH is six percent, wind is 30 MPH out of the northeast with peak winds at 52 MPH.

Significant Event 68: 6:00 AM –The primary focus of fire suppression operations transitions from the Highway 101 area to the north, which now includes Malibou Lake and the southern front from Highway 101 to the PCH.

Evacuations

Significant Event 69: 6:13 AM – Mandatory evacuation issued for the region between Liberty Canyon and Decker Canyon all the way to the PCH.

Significant Event 70: 6:57 AM – Malibu Alert notice: "Alert MANDATORY EVACUATION – (6:50 AM) all of City of Malibu, all areas S. of Highway 101, Ventura County to Malibu Canyon."

Communications

Significant Event 71: 6:59 AM – LA County Fire PIO TWEET: "Fire has jumped Highway 101 near Chesebro and is headed to Ocean - Mandatory Evacuations, Highway 101 to the coast between Las Virgenes Cyn/Malibu Cyn Rd. to the LA County line. Imminent threat! Malibou lakes residents must leave area immediately."

Significant Event 72: 7:12 AM – City of Malibu Disaster Notification System: "The Woolsey Fire has jumped the 101 at Liberty Canyon and Chesebro Roads. Prepare to evacuate. Large animals can be taken to Hanson Dam Equestrian Center."

Fatality

Significant Event 73: 7:30 AM – Approximate time of first confirmed human fatality. Victim is found on the porch.

Fire Conditions/Response

Significant Event 74: 7:45 AM – Civilians trapped at Castro Peak, call for rescue. LA City Fire helicopter conducted rescue operations successfully.

Evacuations

Significant Event 75: 8:26 AM – Message from Alert LA: "This is the Los Angeles County Sheriff's Department the Los Angeles County Fire Department has issued a mandatory evacuation order for the following areas due to a fast moving wild fire. From Las Virgenes Road / Malibu Canyon Road to the Ventura County Line. For further information please contact the Los Angeles County information line at 2-1-1."

Significant Event 76: 8:45 AM – Agoura Animal Care Center evacuation is complete.

Significant Event 77: 9:35 AM – Branch 9 requests road closure of Erbes and Avenida de Los Arboles.

Significant Event 78: 9:36 AM – On S. Lakeshore Drive, Malibou, a victim is on the lake, under a bridge in a kayak, trapped, and needs help.

Fatality

Significant Event 79: 10:00 AM – Approximate time two fatalities occur. Both victims are in a van.

Fire Conditions/Response

Significant Event 80: 11:44 AM – At Marvista Ridge Way in Malibu, the fire is reported coming over the hill approaching homes, and there are apparently no fire engines at this location.

Significant Event 81: 11:51 AM – A civilian who previously refused aid is now stuck on Malibou Lake. He states he is now afraid for his life and wants firefighters to rescue him.

Communications

Significant Event 82: 12:00 PM (approximate) – Joint Information Center (JIC) established at the County EOC.

Fire Conditions/Response

Significant Event 83: Los Angeles County Waterworks District No. 29 (County Waterworks) staff relocates equipment to support firefighting needs in the Malibu and Topanga areas.

Fire Conditions/Response

Significant Event 84: 12:05 PM – Request made to expedite response by SCE and County Public Works to Las Virgenes west on Mulholland Kanan to clear a road for rescue operations.

Significant Event 85: **12:11 PM – Fire jumps PCH in Malibu according to California Highway Patrol (CHP)**.

Significant Event 86: 1:26 PM – All air tankers are temporarily grounded due to severe wind conditions.

Significant Event 87: 12:29 PM – Fire is burning out of control and heading through the City of Malibu.

Evacuations

Significant Event 88: **12:41 PM – CHP opens all PCH eastbound lanes in a contraflow configuration for evacuation effort.**

Fire Conditions/Response

Significant Event 89: 1:41 PM – ALERT LA Message *for Topanga Canyon*: "Zone 1-6 evacuate northbound to San Fernando. Zones 7-9 evacuate southbound to PCH."

Significant Event 90: 1:42 PM – The fire crests the ridge above Corral Canyon.

Significant Event 91: 1:50 PM – Air attack recommits all fixed wing aircraft to Woolsey Fire following grounding due to wind.

Significant Event 92: 1:55 PM – Flames reach Broad Beach Road and Trancas Road, Malibu. South of PCH, fire extends to the Pacific Ocean.

Evacuations

Significant Event 93: 1:56 PM – Additional mandatory evacuations ordered for Monte Nido community and north to Mulholland and Topanga Canyon.

Significant Event 94: 1:57 PM – Email from LA County Fire CSL: "We have additional mandatory evacuations, as follows: Monte Nido community and north to Mulholland All of Topanga Canyon. For messaging purposes, please include the following in all your messaging that includes the Topanga Canyon evacuations: Topanga Zones 1 through 6 are to evacuate northbound on Topanga Canyon to the San Fernando Valley. Zones 7, 8, and 9 are to evacuate southbound on Topanga Canyon to PCH, then go east. Fire is at 14,000+ acres, still no containment. There are some areas of Malibu where the fire has now reached PCH."

Fire Conditions/Response

Significant Event 95: **2:24 PM – Fire jumps PCH for the second time at Kanan Dume Road**

Significant Event 96: 3:59 PM – Fire is reported closing in on the area of Broad Beach Road and PCH, and there are reports of no fire engines in the area.

Significant Event 97: 5:00 PM – There is a request to expedite the response of SCE to the Corral structure group due to powerlines and a pole down on a LA County Fire command vehicle.

Significant Event 98: 5:02 PM – Growing, uncontained spot fires reported on Newell Road (Corral Canyon).

Communications

Significant Event 99: 7:35 PM – RETWEET from account @LACoFireAirOps: "Earlier video of @LACoFireAirOps Firehawk helicopter working to save lives and property in Malibu, CA. We are experiencing high winds, extremely dry fuels, and frequent spot fires."

Fire Conditions/Response

Significant Event 100: 8:00 PM – Weather data Cheseboro: Temperature is 66 degrees, RH is four percent, and wind speed at 13 MPH out of the north.

Evacuations

Significant Event 101: 9:01 PM – At Pepperdine University (Pepperdine), students are sheltering in place inside Payson Library per the University's established emergency plan. Some families expressed concern about student safety.

Fire Conditions/Response

Significant Event 102: 9:19 PM – Email from LA County Fire CSL: "Woolsey Fire is 35,000 acres and growing, with still no containment. Added mandatory evacuation area in City of Los Angeles - west of Valley Circle between Roscoe and Vanowen (West Hills area) and in Calabasas."

Significant Event 103: 9:39 PM – Fire reported at Highway 101 at Parkway Calabasas.

Evacuations

Significant Event 104: 10:47 PM – Lost Hills Sheriff's Station received a phone call regarding Pepperdine students not being allowed to evacuate because of the campus shelter in place order. Lost Hills forwarded the contact name and number at Pepperdine to the County Sheriff's Department IMT. The County Sheriff's Department IMT called and spoke with Pepperdine. During that conversation, there was no emergency on the campus and there were less than 1,000 students and staff in the shelter-in-place mode.

The campus and LA County Fire had a very good shelter-in-place plan and agreement for years. Further calls and confusion by outside parties led to a mutual aid law enforcement team arriving on campus with mistaken orders to start an evacuation, which was halted after a clarifying conversation between the campus and Woolsey incident leadership.

Significant Event 105: 11:00 PM – PCH is closed.

Fire Conditions/Response

Significant Event 106: County Public Works reports 10 sewer pump stations are without power and operating on backup generator power. Affected stations include Mulholland, David's Road, Long Valley, Summit Point, View Ridge, Pickney, Ulmus, Jim Bridger, Broad Beach, and Lechuza. No overflows have been detected.

3.4 SATURDAY, NOVEMBER 10, 2018

Fire Conditions/Response

Significant Event 107: Weather conditions for Santa Monica Mountains area: Temperature is 74 degrees, RH is nine percent, and wind is eight MPH out of the north.

Significant Event 108: Weather conditions for the Cheseboro area: Temperature is 70 degrees, RH is six percent, and wind is 12 MPH out of the north.

Significant Event 109: 12:06 AM – A request is made for SCE to respond two miles up Corral Canyon from PCH. Downed lines preventing movement of fire personnel.

Significant Event 110: 5:37 AM – Manager performs a walkthrough at the Agoura Animal Care Center and confirms that the Animal Care Center has sustained minor damage.

Significant Event 111: 7:00 AM – CAL FIRE IMT-5 officially enters unified command with Ventura County Fire, LA County Fire, CAL FIRE, National Park Service, LA City Fire, the County Sheriff's Department, and the Ventura County Sheriff's Office.

Significant Event 112: 11:03 AM – Life Safety Alert issued for two people unaccounted for in the area of Newell Road.

Significant Event 113: 1:23 PM – Third Woolsey Fire mutual aid order (ROSS system) for 30 strike teams (150 fire engines).

Significant Event 114: 3:00 PM – Highway 23 at Carlisle Canyon to PCH is closed.

Significant Event 115: SCE providing seven generators to support County Waterworks infrastructure.

Evacuations

Significant Event 116: County EOC requests a portable water tank and operator to support large animal evacuation centers.

3.5 SUNDAY, NOVEMBER 11, 2018

Repopulation: Initial Actions

Significant Event 117: 7:00 AM – Repopulation begins in the Cities of Simi Valley and Westlake.

Significant Event 118: LA County Fire implements occupant support function to assist residents.

Fire Conditions/Response

Significant Event 119: 8:00 AM – Weather data at Cheseboro: Temperature is 66 degrees, RH is seven percent, fuel moisture is six percent, and wind is 29 MPH out of the northeast.

Significant Event 120: 11:14 AM – Looter suppression activities for region south of Mulholland, west of Topanga, east of Kanan Road, and north of Pacific Ocean.

Significant Event 121: 11:40 AM – Looter suppression activities for region north of Mulholland, west of Kanan Road, east of Ventura County Line, and south of Ventura County Line.

Significant Event 122: County Public Works field crews initiate safe route assessments in coordination with first responders and, at the request of Agoura Hills, County Public Works field crews deploy safe route signage in fire-damaged area.

Significant Event 123: SCE supplies eight generators for County Waterworks infrastructure, and County Public Works supplies an additional four generators.

Significant Event 124: County Public Works crews have a temporary bridge solution for the damaged bridge on Mulholland Highway at Triunfo Creek.

Significant Event 125: 2:20 PM – Mutual aid order cancellation: Any open pending operational overhead resources are cancelled as no longer needed.

Significant Event 126: Five looting suppression missions are operational.

Evacuations

Significant Event 127: 11:00 PM – Mandatory evacuation ordered for Las Posas to the County line on PCH.

3.6 MONDAY, NOVEMBER 12, 2018

Repopulation

Significant Event 128: 8:00 AM – Repopulation meeting is held with all cooperators. Discussed repopulation of Hidden Hills and areas of Calabasas.

Significant Event 129: 9:30 AM – Unified Incident Command meeting: Discussion about miscommunications and need for unified message. Rocketdyne reportedly is not posing a health risk to the public.

Significant Event 130: County Waterworks issues a boil water advisory for western Malibu.

Significant Event 131: The City of Malibu requests road debris removal, fuel, and safety assessment services from County Public Works.

Fire Conditions/Response

Significant Event 132: 12:00 PM – 91,572 acres consumed by fire.

Declarations

Significant Event 133: 11:12 PM – Presidential Disaster Declaration announced by California Governor's Office.

Repopulation

Significant Event 134: County Public Works initiates City of Malibu's request for road debris and fuel services. The request for safety assessments is pending further coordination and dialogue scheduled for November 13, 2018.

Significant Event 135: County Public Works tree crews assessing conditions and clearing debris on Kanan Dume Road.

3.7 TUESDAY, NOVEMBER 13, 2018

Repopulation

Significant Event 136: 8:00 AM – Repopulation meeting is held with discussion regarding the opening of Rambla Pacifico, Big Rock community, and soft closure on northbound PCH at Sunset Boulevard.

Fire Conditions/Response

Significant Event 137: Woolsey Fire is calculated at 96,314 acres, and the Hill Fire is contained.

Declarations

Significant Event 138: Local Emergency Declared by Los Angeles County Board of Supervisors.

Repopulation

Significant Event 139: County Public Works DOC notes: "Public Works is in regular communication with the Cities of Malibu, Agoura Hills, and West Lake Village, as well as, the Los Angeles County Department of Public Health (DPH) and the Los Angeles County Department of Regional Planning (DRP) for recovery coordination."

Significant Event 140: SCE provides an additional 19 generators to support County Waterworks operations, if needed. Four generators are operating at this point.

Communications: Town Hall Meetings

Significant Event 141: 7:00 PM – Malibu Evacuee Update public meeting is held at Santa Monica High School with all partner agencies in attendance.

Communications: Recovery

Significant Event 142: Press Release #14: "Woolsey Fire Recovery Planning Efforts Underway in Los Angeles County" communicates development of disaster recovery and assistance centers, which will include—among many other services—services related to reconstruction.

Repopulation

Significant Event 143: County Public Works field crews begin road clearing operations on Mulholland Highway between Calabasas and Las Virgenes Roads.

3.8 WEDNESDAY, NOVEMBER 14, 2018

Recovery

Significant Event 144: 3:25 AM – Planning team assessing areas of and personnel needed for repopulation during daylight hours.

Significant Event 145: 5:01 AM – Law enforcement coordinate escort for 35 Pepperdine professors at 8:00 AM.

Recovery: VIP Visits/Impacts and Repopulation

Significant Event 146: 9:00 AM – Incident Command meeting is convened with topics including: Fatalities, Ventura County Sheriff's Deputy funeral services, Damage Inspection Specialist process and data, VIP visits.

Repopulation meeting discussed repopulation of the Pepperdine community and Calabasas area.

Recovery

Significant Event 147: 3:00 PM (approximate) – Recovery Coordinating Center (RCC) operations activated by County Chief Executive Officer (CEO) with the goal of opening the LA County Fire Disaster Assistance Centers (DACs) by Saturday, November 17.

Significant Event 148: County Public Works crews assess field conditions and document infrastructure damage.

Communications: Repopulation Meeting, Malibu

Significant Event 149: 2:00 PM – A repopulation meeting is convened in the City of Malibu.

Communications

Significant Event 150: County Waterworks lifts the boil water advisory for western Malibu, including Point Dume, Encinal Canyon, and area north of Malibu High School.

Significant Event 151: Press Release #24: "Public Safety is Paramount in Repopulation Efforts for Areas Affected by Woolsey Fire" communicates coordinated efforts by County, state, and federal agencies, including the responsibility of County Public Works to inspect the condition of all roadways damaged by the Woolsey Fire and related activities.

3.9 THURSDAY, NOVEMBER 15, 2018

Recovery operations continue across all County agencies.

3.10 FRIDAY, NOVEMBER 16, 2018

Recovery

Significant Event 152: 1:00 AM – The County Sheriff's Department staff meeting is held to discuss staging area relocation and repopulation of next areas to open.

Significant Event 153: In collaboration with numerous County departments, state agencies, federal agencies, and local non-profits involved in disaster response, County Emergency Management develops staffing and support plans for two DACs, which will open on November 17. Services provided will address resident and business needs.

3.11 SATURDAY, NOVEMBER 17, 2018

Recovery

Significant Event 154: 10:00 AM – Local Assistance Centers / DACs opened in Malibu and Agoura Hills.

Communications: Recovery

Significant Event 155: 10:00 AM – Town Hall public meeting held at Seminole Springs Mobile Home Park, Agoura Hills.

Significant Event 156: 11:00 AM – Repopulation meetings continue, including discussions about planning for a visit from the President of the United States, the repopulation of Malibu Canyon to the City limits, and opening Latigo Canyon Road to PCH.

3.12 SUNDAY, NOVEMBER 18, 2018

Recovery

Significant Event 157: In collaboration with numerous County departments, state agencies, federal agencies, and local non-profits involved in disaster response, County Emergency Management provides recovery information, programs, and services for residents and business, including environmental, transportation, and buildings-related functions.

Communications

Significant Event 158: Press Release #45 "Woolsey Fire Safety Message" communicates guidance to residents and businesses related to general hazards, electrical hazards, natural gas hazards, water conservation, falling debris, and storm preparation.

3.13 MONDAY, NOVEMBER 19, 2018

Recovery

Significant Event 159: 5:00 PM – Data collection for damage assessment concludes.

3.14 TUESDAY, NOVEMBER 20, 2018

Communications

Significant Event 160: Press Release #47 "Woolsey Fire All Residents in Burned Areas are Urged to Prepare for Flood Safety" communicates the threat of mud

and debris flows in the areas affected by the Woolsey and Hill fires. Guidance is provided regarding evacuation orders, sandbag locations, and how residents should respond if confronted with a flood emergency at home or on the road.

3.15 WEDNESDAY, NOVEMBER 21, 2018

Communications

Significant Event 161: 10:00 AM – Press Release #49 "Reopening Areas of Kanan Dume Road Affected by Woolsey Fire" announces the reopening of Kanan Dume Road from the PCH to Highway 101.

Communications: Rehabilitation and Rain Preparation

Significant Event 162: Press Release #51 "Debris, Mud, Other Hazards Expected in Woolsey Fire Areas" communicates guidance for residents including information regarding evacuation orders, sandbag locations, and how residents should respond if confronted with a flood emergency at home or on the road.

3.16 THURSDAY, NOVEMBER 22, 2018

Fire Conditions

Significant Event 163: Total structures destroyed by Woolsey Fire is 1,643, and another 364 damaged. Experts estimate over 57,000 structures were not substantially affected.

3.17 FRIDAY, NOVEMBER 23, 2018

Recovery

Significant Event 164: 9:00 AM (approximate) – Federal Emergency Management Agency (FEMA) Area Field Office opens in Westlake Village.

Significant Event 165: 9:00 AM – Agoura Hills DAC transitions to a Federal Disaster Recovery Center (DRC).

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SECTION 4—FINDINGS ACROSS THE INCIDENT AND BY AGENCY

Citygate's findings are as a result of the totality of analyses for this After Action Review (AAR) and include a broad range of observations, statements for historical record, and analytical conclusion. As a result of this and other factors, not every finding is coupled with a corresponding recommendation. In addition, while the findings are largely organized by corresponding theme and/or agency, some findings also apply to other agencies.

4.1 INCIDENT-WIDE RESPONSE FINDINGS

Finding 1: At present, the Los Angeles County Office of Emergency Management (County Emergency Management) has limited coordination duties during an emerging major incident, resulting in the operating departments splitting their focus from field operations to wide area public engagement and information.

Finding 2: Each affected city initiated its own Emergency Operations Center (EOC), which, combined with the Los Angeles County Emergency Operations Center (County EOC), required representatives from fire services, law enforcement, and other County agencies to be present or at least establish a communications link stretching finite County and city personnel during such a large incident.

Finding 3: Some residents intent on protecting their homes/animals did not evacuate, which resulted in use of additional resources in a resource-deficient environment and impacted the ability of fire units to engage in structure defense efforts.

Finding 4: Residents who refused to evacuate generated an enormous volume of 9-1-1 calls for help or wellness checks, with many of these turning out not to be life threatening.

Finding 5: Fatigue was recognized as a negative factor for first responders.

Finding 6: Downed power lines made lateral movement of emergency personnel and the public on roads nearly impossible.

Finding 7: The ability to quickly move assets during the fire was most problematic through Kanan Road, Decker Road, Encinal Canyon Road, and Mulholland Drive.

Finding 8: Several critical infrastructure sites were compromised by the fire, such as cellular voice/data affecting public notifications and emergency communications / technology (e.g., web-based maps).

Finding 9: Due to the volume of critical communication needs by first responders across multiple jurisdictions, both safety radio networks and cellular networks were unable to meet demands at times.

Finding 10: Infrequent training and lack of familiarity with the Incident Command System (ICS) by some partner agencies made interfacing with key agencies problematic at times.

Finding 11: During the first 24 hours of the incident, the Incident Command Post (ICP) was relocated three times (Rocketdyne, Ventura County Fire Department #43, Conejo Creek Park), compounding a challenging unified command transition.

Finding 12: County-level coordination between LA County Fire, Los Angeles County Sheriff's Department (County Sheriff's Department), County Emergency Management, and Los Angeles County Public Works (County Public Works) was not robust.

Finding 13: Potential strategic assets, like the California Highway Patrol (CHP) and County Public Works, were not immediately engaged.

Finding 14: Air quality and proper personal protective equipment were concerns during early field operations, including support operations for non-firefighting personnel.

Finding 15: There were access issues, early in the incident, in which key elected officials and agency staff could not reach, as a result of road closures, or enter the ICP command site, including the lead CHP Officer.

Finding 16: LA County Fire educates and trains the public regarding evacuation practices using the Ready! Set! Go! program, but the public lacks similar knowledge of *repopulation* challenges.

Finding 17: Public participation in structural hardening efforts on existing buildings is not uniform. There is a lack of public participation in maintenance of defensible space and structure/property.

Finding 18: Outside agency fire and law enforcement staff lacked sufficient briefings, including regarding specific community area practices which would increase their knowledge of local neighborhoods for best possible community interactions.

Finding 19: There was no single, all-encompassing method to communicate with all residents. Varying social media platforms and critical infrastructure damage created obstacles for public notification/information.

4.2 FIRE FIGHTING RESPONSE

4.2.1 Pre-Incident Local Readiness

Finding 20: LA County Fire has good tactical structure defense maps for the areas south of Highway 101.

Finding 21: LA County Fire had its Incident Management Team 3 (IMT-3) primed and ready prior to the event, with all team members available to respond.

Finding 22: All LA County Fire air resources and support personnel were ready prior to the event.

Finding 23: LA County Fire operates a hazard reduction program for defensible space. LA County Fire refers non-compliant parcels to Los Angeles County Agricultural Commissioner / Weights and Measures (County Ag. Comm.) for defensible space abatement. County Ag. Comm. only needed to forward 17 parcels in 2018 to the County Office of the Assessor for reimbursement.

Finding 24: California Office of Emergency Services (Cal OES) authorized "pre-positioning" funds to staff fire resources before the outbreak of the Hill and Woolsey Fires.

Finding 25: LA County Fire implemented an augmented staffing plan prior to Woolsey, which included an additional Battalion Chief dedicated for the Malibu / Las Virgenes area, two strike teams, staffed water tenders, and patrols, but no safety/communication aids for field command chief officers.

Finding 26: When the Hill Fire and the Woolsey Fire ignited, there were no other new major fire events underway in the Southern California region.

Finding 27: LA County Fire conducted training with its partners in June 2018 on the Santa Susana mutual threat zone (MTZ) and completed a comprehensive chief officers wildland training in the weeks before the Woolsey Fire.

Finding 28: The residents, LA County Fire, the Los Angeles County Board of Supervisors, and California Department of Forestry & Fire Protection (CAL FIRE) adopted the Santa Monica Community Wildfire Protection Plan, a Federally identified process to address wildfire hazards and reduce risk.

Finding 29: Southern California Edison (SCE) did not implement the new California Public Utilities Commission public safety power shutoff provisions prior to the Woolsey Fire.

Finding 30: Weather predictions were accurate prior to the fire, and fuel moisture readings indicated volatile fuels in the region—at or near critical levels from November 5 through November 12.

Finding 31: In the fire perimeter, there were limited fully wildfire-prepared neighborhoods or communities and, given the nature and intensity of this particular fire, even a 200-foot defensible space was often not enough.

4.2.2 Fire Response Command

Finding 32: Ventura County, Los Angeles County, and Los Angeles City Fire and law enforcement resources were heavily committed, beginning with the Borderline shooting in Thousand Oaks during early November 8, and then again with the Hill Fire.

Finding 33: After the Woolsey Fire, later in the afternoon and evening, there were numerous new fires in Ventura County Fire Department (Ventura County Fire) (Briggs, Peak, Lynn), City of Los Angeles Fire Department (LA City Fire) (Rocky Peak, Toyon), and LA County Fire (Copco) jurisdictions being addressed at the same time as the Woolsey and Hill Fires, each consuming vital, scarce resources with the potential for additional escalating incidents.

Finding 34: Some members of the public complained about fire agency resources being held at fire stations or along roads while there was active fire in the Malibu area. Upon further review, Citygate found these resources were used for Life Safety First 9-1-1 response and, in one case, a Malibu-stationed fire engine had a mechanical breakdown within its station in view from the public street.

Finding 35: LA County Fire Reserve Program Fire Engine 271 was first staffed by paid-call firefighters and then by full-time firefighters, which conflicted with local expectations. However, LA County Fire ordered all reserve fire engines Countywide to be staffed with career personnel.

Finding 36: LA County Fire had 59 reserve fire engines on November 8 to be used during extreme situations.

- Only 21 reserve fire engines were immediately available for service due to fleet viability.
- Five additional reserve fire engines were quickly put into service to help support the two pre-position strike teams for a total of 26 reserve fire engines in service.

Finding 37: Fleet mechanics were called in and worked around the clock to put reserve engines back into service, resulting in all but 11 reserve engines returning to service by November 13.

Finding 38: LA County Fire did not initially staff Command / Safety / Communications Aid / Drivers for command officers because Cal OES guidelines do not allocate for these positions as part of the pre-positioning program. Many command officers later in the incident commandeered firefighters for drivers as needed.

Finding 39: A single mutual aid (outside agencies) strike team of five engines was assigned to the upper bowl area Corral Canyon and worked to protect it Friday evening just before the fire hit. Before the fire burned the area over, two units staged in El Neito partway up the road and three units staged in the southern edge section of upper Corral to assist as the fire front passed to provide safe structure protection operations.

Finding 40: Limited resources led to a severe lack of tactical patrols, which control fires from initially burned vegetation and homes to those the fire front did not burn.

Finding 41: During the application of the Life Safety First priority, some unit leaders may not have fully understood the rules of engagement to decide when to dedicate their limited resources to address limited structure protection needs in between managing 9-1-1 life safety responses. LA County Fire has been teaching all company officers and command officers TIER—Take Initiative Engage and Report—which empowers every LA County Fire company on the road to conduct needed tasks without asking for permission.

4.2.3 Infrastructure Challenges

Finding 42: Road closures greatly impeded emergency response movements, including:

- Highway 101 closed in both directions in Newberry Park (Hill Fire).
- Pacific Coast Highway (PCH) at Las Posas, closed eastbound at First (Woolsey Fire).
- PCH in Malibu, closed for contraflow evacuation.
- Highway 101 in both directions, closed as Woolsey jumped the freeway.
- All laterals closed, such as Kanan, Decker, Mulholland, and Topanga roads.

Finding 43: Given the cellular data network failures, fire crews had to depend upon previously loaded mapping tools to locate victims in hazardous areas.

Finding 44: As the fire grew, communications on the Ventura County command channel became marginal in some geographic areas.

4.2.4 County Sheriff's Department Response Findings

Finding 45: Limited participation in emergency management training due to staffing shortages at local units caused a delay of development in unity of effort. Infrequent training and lack of familiarity with the ICS made interfacing with key agencies awkward.

Finding 46: CHP learned of planning meetings and briefings indirectly due to limited information sharing; once the County Sheriff's Department IMT-1 was established, CHP brought its concerns to the County Sheriff's Department command staff for quick resolution.

Finding 47: CHP was not made aware of the severe traffic congestion on PCH until late morning on November 9.

Finding 48: CHP only has jurisdiction of two miles of PCH in the incident response area.

Finding 49: Law enforcement staffing road closure posts, at times, lacked current information, policy, and the reasons for closures to better advise the public with whom they interacted.

Finding 50: Managing resources, relieving Deputies, and providing water, food, and fuel were a challenge during the first operational days.

4.2.5 County Emergency Operation Center Activation Findings

Finding 51: A Finance/Administration Section was not established as part of the County EOC organization as the incident base and Department Operations Centers (DOCs) were managing costs.

Finding 52: An EOC Policy Group meeting was convened on November 9 without a clearly communicated agenda or meeting objectives, causing the meeting to fail to identify near-term strategic policy goals for the EOC Director. Further, some participants lacked the appropriate authority to commit their Departments to a course of action in response to the disaster.

Finding 53: EOC was largely ineffective at maintaining a common operating picture and situational awareness among the critical locations/functions of the County EOC, various DOCs, and involved cities.

Finding 54: The County's Mass Care and Shelter plan is not robust enough to meet long-term, large-incident, mass-care needs for an incident the size of or larger than the Woolsey incident.

Finding 55: The County EOC is 26 years old. The current emergency management demands for space, connectivity, and workflow exceed its original design intent, and a replacement strategy should be considered for the future. Further, the EOC has no dedicated, annual budget for the replacement of equipment and capital repairs. The working quarters are cramped and are not designed for the number of people who occupy them. The interior structure is not conducive to general collaboration during normal business or emergencies.

4.2.6 County Public Works Response Findings

Finding 56: County Public Works pre-deployed resources in the Woolsey Fire region due to the extreme weather forecast for November 8.

Finding 57: County Public Works, with the assistance of County Emergency Management, the Los Angeles County Department of Public Health (DPH), the Los Angeles County Department of Regional Planning (DRP), and LA County Fire's Hazard Materials Division, successfully implemented the State's new Private Property Debris Removal (PPDR) program for the first time in the County. This new system provided a more robust debris removal opportunity for property owners to help the community prepare for the rebuild process with funding from the State.

Finding 58: This State-funded PPDR program potentially created an expectation with the public that the program will be available in the future, which would not be so without Federal and State disaster reimbursement.

Finding 59: County Public Works had agency representatives and technician specialists assigned to the ICP.

Finding 60: County Public Works did not have enough medically cleared, trained, and equipped personnel certified for respiratory protection for all field operations conducted in the burn area, resulting in delays to wait for the environment to improve.

Finding 61: Productivity time was occasionally lost due to potentially avoidable traffic logistics related to field staff driving to a central location prior to being deployed to their area of operations. Additionally, some field crews and DOC staff did not have their personal needs, including meals, supported in a fashion similar to their public safety peers.

Finding 62: When access permitted entry, County Public Works deployed six inspection teams to the Santa Monica Mountain area to inspect accessible bridges. Over 60 bridges were inspected.

Finding 63: The City of Malibu requested fuel support from County Public Works, and the request was honored via the existing General Services Agreement.

Finding 64: During response operations and when declared safe for entry, County Public Works teams were dispatched to inventory damaged signage, striping, and markings. To enhance safety of responders and others, County Public Works fabricated signs to provide informative road closure information.

Finding 65: Road infrastructure conditions were collected using geographic information system software and provided to all County Public Works crews involved in the response efforts.

- Using information collected during this assessment and in coordination with unified command, County Public Works staff coordinated with unified command to plan debris removal and road repairs by identifying priority routes.

Finding 66: Four internal levels of closure were established for all major roads depending on existing road conditions and mapped on the damage assessment application: Road Closed to Everyone, Road Open to Recovery Crews, Road Open to Residents, and Road Open.

- Three of these levels of closure were published on the County Public Works Road Closure website for public use: Road Closed to Everyone, Road Open to Residents, and Road Open.

Finding 67: During the fire, power was lost at fire stations and County Public Works facilities within the footprint of the fire. Power was restored by bringing in generators.

Finding 68: County Public Works worked closely with the CHP to ensure all required / requested changeable road signs were properly positioned and operating. The region had a sufficient number of these signs to meet the requests. Numerous additional changeable signs were also located elsewhere in the County that could have been quickly deployed to the area if needed.

Finding 69: County Public Works operates and maintains Los Angeles County Waterworks District No. 29 (County Waterworks) that supplies water mainly to the City of Malibu and the Topanga community.

Finding 70: When red flag conditions were announced, County Waterworks topped off all water storage tanks. All tanks were at their greatest possible capacity prior to the Woolsey Fire.

Finding 71: County Waterworks utilized an Emergency Repair Contractor to complete repairs to the water system caused by the fire so County Waterworks staff could fully focus on recovery and normal operation of the system.

4.2.7 Los Angeles County Department of Animal Care and Control Response Findings

Finding 72: Los Angeles County Department of Animal Care and Control (County Animal Care) can only account for those animals that are legally licensed in the service areas, such as dogs and cats; livestock are not licensed through the County Animal Care. This makes pre-planning difficult. A voluntary large and exotic animals registration program was previously attempted with marginal results.

Finding 73: County Animal Care began incident actions as the Hill Fire started because it is under contract with the City of Thousand Oaks, which initially put it ahead of the service request curve.

Finding 74: County Animal Care had a representative at the Lost Hills Sheriff's Department substation.

Finding 75: County Animal Care welfare checks were not directly coordinated with occupant support functions.

Finding 76: County Animal Care had trouble responding to the incident due to heavy traffic congestion in non-fire areas due to normal traffic issues and because they do not have Code-3 vehicles.

Finding 77: County Animal Care has been following County directives for clean-energy vehicles, but those vehicles do not meet the operational needs for large animal transports, especially concerning horsepower and fuel type.

4.3 Communications – Public Notifications

4.3.1 Communications Findings

Finding 78: There was an insufficient number of redundant communication methods to adequately communicate with all the effected residents.

Finding 79: During the early stages of the Woolsey Fire incident, there was confusion regarding who was the lead Information Officer.

Finding 80: There was a lack of an identified, single, informed voice addressing community concerns. There was no single body that oversaw conflicting and/or complicated actions/messages between the Hill Fire and Woolsey Fire that affected Los Angeles and Ventura Counties and the various cities.

Finding 81: There is a lack of an effective communications plan for when technology fails.

Finding 82: The Alert LA County tool, including its application for wireless emergency alerts and the radio/TV Emergency Alert System (EAS), was vastly underutilized.

Finding 83: A review of the utilization of the Alert LA County mass notification system indicates that its promotion to the public needs to be increased to improve its adoption by the public and key stakeholders. Many features of the system were underutilized and can be incorporated into a comprehensive, multi-layered mass notification protocol.

Finding 84: An over reliance on Twitter failed to account for people not utilizing Twitter and those normally, or due to the disaster's power failures, without internet service. An overuse of internet tools creates a digital divide where people without that type of access do not receive emergency messages from their government.

Finding 85: The existence of multiple uncoordinated communication efforts by the County EOC, the Woolsey ICP, and various other communicators was not consistent with County policy for a single, integrated voice as outlined in the Emergency Public Information Annex of the Emergency Operations Plan, and this practice conflicted with ICS.

Finding 86: There was a clear lack of understanding of the Joint Information Center (JIC)'s role and responsibilities across many elements of the emergency management organization for this incident (County Chief Executive Officer (CEO), EOC, ICP).

Finding 87: The number of road closures in the same geographic area between the Hill and Woolsey Fires created a media information overload for the public to fully understand which access/direction to use.

4.3.2 LA County Fire Communications Findings

Finding 88: Many residents have not really heard that firefighters might not defend their homes due to poor access, water supply, topography, and fuel conditions. This sets up

conditions in which the public expectations during the Woolsey Fire were not in alignment with safe fireground operations.

Finding 89: Regional fire department Public Information Officers (PIOs) and Community Services Liaisons (CSLs) maintain positive working relationships with their local city partners and the news media.

Finding 90: There was a lack of sufficient LA County Fire PIO resources into November 10. There is little to no LA County Fire PIO surge capacity or bench depth. None of the LA County Fire PIO staff were ICS Type 1 Information Officers at the time of the fire.

Finding 91: LA County Fire PIO lacks a strategic plan for release of critical public information.

Finding 92: Due to lack of a formal and institutionalized communication protocol, PIO and CSL workload was unnecessarily high.

Finding 93: The decision to assign the LA County Fire PIO as lead for the incident instead of the IMT-3 PIO deviates from ICS protocol and standard fire department past practice.

Finding 94: LA County Fire PIO section had no chief officer or Type 1 strategic leadership qualified person for the initial 48 to 72 hours.

Finding 95: LA County Fire PIO lacked an established plan for answering/prioritizing media requests.

4.3.3 County Sheriff's Department Communications Findings

Finding 96: Station supervisors need training and checklists regarding the correct procedures to promptly send out Alert LA messages.

Finding 97: Because they were perceived to be indirect tools that cover too wide of an area, the EAS and Wireless Emergency Alerts were not utilized to provide emergency public notifications as identified in the Emergency Public Information Annex of the Emergency Operations Plan.

Finding 98: Multiple official County Sheriff's Department Twitter accounts exist, and the public cannot be expected to be required to monitor multiple accounts to obtain timely, accurate, and critical information.

Finding 99: Only one County Sheriff's Department Sheriff's Information Bureau (SIB) staff member has advanced PIO training.

4.3.4 County Emergency Management Communications Findings

Finding 100: An incident communications organization was in place on November 9. A JIC was established in the EOC by noon and managed by the County Emergency Management Associate Director.

Finding 101: The JIC was not staffed 24 hours per day.

Finding 102: There was good communication between the JIC and the 2-1-1 call center.

Finding 103: The JIC needed more workspace in the EOC.

Finding 104: During the first 48 to 72 hours, multiple requests for County Emergency Management to send a PIO to the ICP went unfilled, creating challenges with the flow of timely public information to the JIC.

4.3.5 County Public Works Communications Findings

Finding 105: County Public Works staff communicated cellular phone system weak spots to local carriers, AT&T and Verizon. AT&T deployed mobile cellular antennae to boost coverage and signal strength.

- Where County radio systems had weak spots in the mountains, County Public Works obtained and used satellite phones.

4.4 EVACUATION

4.4.1 Countywide Evacuation Findings

Finding 106: A repopulation group comprising the cities and both counties' law enforcement, fire services, public works, and utility companies was formed and worked together. Repopulation was delayed by multiple agency concerns for the public's safety and was further hampered by insufficient information available to Deputies staffing road closures.

Finding 107: Early repopulation dialogue and decisions did not engage or inform all key stakeholders.

Finding 108: LA County Fire staff should be commended for creating the three-zone evacuation plan at LA County Fire Fire Station #89 during the initial hours of the fire. Voluntary evacuation orders were given to the Malibu area at 3:45 PM on November 8.

Finding 109: Decisions to order mandatory evacuations were conducted appropriately, but the communication of the orders was not optimal.

Finding 110: The road closure access issues at the Hill Fire further exacerbated the access issues within the Woolsey Fire in the western sections of both counties along the Highway 101 and Highway 1 corridors.

Finding 111: Repopulation guidelines are not communicated to the public in a similar way evacuation is taught.

Finding 112: LA County Fire used shelter-in-place to save lives at Camp 13, Camp Kilpatrick, and Pepperdine University (Pepperdine).

Finding 113: The Pepperdine shelter-in-place operation was a pre-planned procedure and did not distract from tactical fire operations. There were communications conflicts, which created different media reports.

Finding 114: The contraflow evacuation action, when finally engineered on PCH on Friday, November 9, was led/actuated by a single CHP Officer.

Finding 115: LA County Fire learned from the Ventura County Fire Thomas Fire (2017) and created the occupant support function to assist residents.

4.4.2 County Sheriff's Department Evacuation Findings

Finding 116: Deputies/Officers in the field did not have accurate information for evacuating citizens, for counseling those seeking re-entry, nor to provide to those who stayed behind and were seeking to leave and return.

Finding 117: Outside of Topanga Canyon, there were no maximum traffic load and directional options as part of planning or instructions for evacuations.

Finding 118: Coupled with fire-related network connectivity outages, a lack of physical maps was an issue for Deputies unfamiliar with the area.

Finding 119: During community listening sessions, some community members expressed concern regarding instances of rudeness and lack of professionalism by some non-local agency Deputies.

4.4.3 County Animal Care Evacuation Findings

Finding 120: County Animal Care staff developed positive workarounds to create animal sheltering sites and welfare checks.

Finding 121: A County Public Works water tender teamed up with County Animal Care to deliver water to large animals that were left behind by their owners.

Finding 122: County Animal Care and the American Red Cross (Red Cross) worked well together, and the Red Cross allowed pets in shelters (against standard Red Cross rules) to encourage victims' attendance.

Finding 123: County Animal Care staff and volunteers had to evacuate the Agoura Hills Animal Care facility.

Finding 124: In an effort to utilize the co-location model of sheltering, County Animal Care was awaiting information and notification of human sheltering sites from the Red Cross.

Finding 125: County Animal Care has limited staff to respond to animal evacuations because it must still care for over 2,000 animals and maintain regular operations, such as responding to calls for service at seven animal care centers 24 hours per day, seven days per week.

Finding 126: County Animal Care relies heavily on mutual assistance partners and volunteer groups during adverse times for reserve capacity.

Finding 127: Damaged/destroyed homes and animal enclosures prevented timely return of animals, thus causing longer County Animal Care shelter operations and increased costs, which may not be reimbursable.

4.5 TRANSITION TO RECOVERY

4.5.1 Countywide Transition to Recovery Findings

Finding 128: Some staff from other County agencies were specifically assigned to the Recovery Coordinating Center (RCC) because of their specialized qualifications.

Finding 129: There was early realization that at least two local Disaster Assistance Centers (DACs) would be needed to serve fire victims: one in the Malibu area and another in the Highway 101 corridor.

Finding 130: This was the earliest in a disaster event that the County had opened a DAC; prior philosophy/practice was to have a longer preparation period between the conclusion of the incident and the opening of the DAC.

Finding 131: DACs were staffed by 60 to 100 or more employees, and volunteers representing over 50 local, State, and Federal agencies, cities, and non-governmental organizations.

Finding 132: Inter-departmental cooperation was instrumental in the major lift to getting DACs operational so quickly.

Finding 133: The Federal Emergency Management Agency (FEMA) Area Field Office opened in Westlake Village on December 18.

Finding 134: The Agoura Hills DAC transitioned to a Disaster Recovery Center (DRC) on December 18, and then the DRC closed on January 11, 2019.

Finding 135: The Malibu DAC closed on January 9, 2019.

Finding 136: There is no common, County-level, information collection database management process for the initial damage assessment efforts of LA County Fire and County Public Works. Early, accurate damage assessment information/data is critical to local, State, and Federal disaster/emergency proclamations/declarations.

Private Property Debris Removal

Finding 137: During the first week of the Woolsey Fire, County Emergency Management communicated with Cal OES and FEMA to identify a timeline and critical components of debris removal needs. Considering this was the County's first utilization of PPDR with an associated learning curve, the process went very well. In partnership with Cal OES and CalRecycle, a unified command PPDR IMT was developed.

Finding 138: Los Angeles County engaged in dialogue with PPDR leaders and technical experts from Cal OES and CalRecycle to develop the Woolsey Fire PPDR plan and operations.

Finding 139: Coordination was needed amongst all County departments before the County entered into memorandums of understanding with third party stakeholders to ensure uniformity and full coordination.

Finding 140: Phase 1 of PPDR involved participation by Federal Environmental Protection Agency, California Environmental Protection Agency, and the Los Angeles County Certified Unified Program Agency to perform a visual inspection and removal of "immediate life hazard hazardous chemicals," such as asbestos, unsecured chimneys, and exposed active utilities.

- Phase 1 is the only phase that is not optional for property owners.
- Phase 2 of PPDR addressed erosion control.

Finding 141: Phase 2 of PPDR addressed debris removal and related excavation of contaminated soil.

- Property owners representing approximately 900 properties opted in to participate in the government-sponsored PPDR program.
- Property owners representing approximately 450 properties did not want to participate in the government-sponsored PPDR program and opted to participate in the local program developed by County Public Works.
- Local debris removal policy requires property owners to independently perform debris removal following County Public Works developed requirements.
- Themes regarding those opting out of the government-sponsored PPDR program included: 1) concern about foundation condition and the property owner's desire to preserve their foundation and 2) a general distrust of government.
- Property owners who opted out of the government-sponsored PPDR program were put on a timeline for completing their required clean up through the local debris removal program.
- The first home was not removed until February 2019 due to delays waiting for FEMA to approve the hire of contractors for debris removal.
- State agency partners found that County staff offered superior customer service; however, sometimes in the delivery of this high level of service, County staff was tentative to firmly communicate unpopular facts.
- Particularly in the beginning, public education, information, and outreach was inconsistent and decentralized. The outcomes ranged from extreme satisfaction to confusion and frustration.
- Staff at the DACs received conflicting information, particularly about how and when to permit temporary housing applications when debris still existed on site. There was significant confusion related to the DPH declaration of a public safety hazard, whether that conflicted with FEMA regulations, and how that would impact temporary housing permits. In some cases, early on, planning staff was telling people they could place temporary trailers on site but then were directed to stop doing that without clear direction as to why. There was a lack of inclusive coordination between the CEO, County Counsel, the DPH, County Public Works, and the debris removal program during the early period of recovery. The DRP had handouts for temporary housing permits prepared as soon as 11/17, but information on the 100-foot

setback from debris piles was not clearly communicated for weeks. This resulted in the DRP providing incorrect information to early visitors to the DACs.

- With greater collaboration with County Emergency Management, the accuracy and satisfaction of public information increased.
- Some property owners conveyed their experience of being told conflicting facts about the PPDR program. Some were told that they could easily opt to keep their structure's foundation, only to later learn this was not the case.
- The website www.lacountyrecovers.com provided vital information to residents.
- The hotline phone number was very beneficial for customer service needs.
- Concrete foundations are not typically covered by FEMA disaster reimbursement under PPDR, a fact which exposes a huge financial liability to communities implementing PPDR programs.

Finding 142: Disparate systems of tracking structures (e.g., by parcel number or by address) created problems for field crews and created confusion for some property owners who sought to check the status of their structures.

Finding 143: With great support from FEMA officials, the Board of Supervisors staff, and the County CEO staff, PPDR-assigned personnel participated in many productive, highly beneficial public meetings.

4.5.2 County Emergency Management Transition to Recovery Findings

Finding 144: County Emergency Management recognized early in the response phase that local disaster assistance would be needed. RCC was activated by the CEO on the afternoon of November 14.

Finding 145: RCC section head positions were selectively filled utilizing the CEO Office's network of known County personnel based on their skill sets, which was instrumental to getting assistance centers established quickly and effectively and to the success and effectiveness of the overall recovery effort.

Finding 146: During the incident, response and recovery were overlapping, so the Damage Inspection Specialist Unit at the incident produced preliminary Damage Inspection Reports and, as the incident stabilized, this report was continually revised and updated.

4.5.3 County Public Works Transition to Recovery Findings

Finding 147: Initially, LA County Fire, DPH, County Public Works, and, later, the CAL FIRE IMT deployed teams of engineers, inspectors, and personnel certified in the Safety Assessment Program to survey the Woolsey Fire to confirm the extent of damage and whether damage was to residential, commercial, or County-owned buildings.

- There are approximately 200 County Public Works personnel trained and certified to function in the Safety Assessment Program.
- Within two weeks, over 400 residential and commercial sites were surveyed, with 658 structures classified as demolished, moderately damaged, or lightly damaged.
- A rapid evaluation report accompanied by pictures was made for every site surveyed.
- County Public Works also provided substantial assistance to the affected cities, most especially to the City of Malibu, to assess the damages to private property.
- Damage assessment teams were challenged by a lack of visible addresses on many structures due to the destruction caused by the fire.
- Damage assessment teams found that different County agencies were relying on different addressing data / databases.
- Damage assessment teams found stand-alone, handheld, satellite-based Global Positioning System devices to be the most reliable device for damage reporting by structure and location.

Finding 148: As soon as conditions permitted, the County Building Evaluation Team was activated through the County EOC to perform damage assessment operations on County buildings.

Finding 149: County Public Works staff were deployed to provide geotechnical assessments and recommendations to address rock falls, debris flows, and slope stability concerns.

Finding 150: While the Woolsey Fire was active, County Public Works staff began an analysis of potential drainage and mud/debris flow concerns and mitigations in preparation of the upcoming storm season.

Finding 151: Once inspection data was available and site area inspection operations were safe, County Public Works personnel worked diligently to assess and address drainage issues.

Finding 152: County Public Works provided homeowners with "Protecting Your Home from Debris Flow" guides to answer questions, reduce preventable damage, and inform the public.

Finding 153: When conditions were safe, County Public Works immediately evaluated and addressed the repairs needed to the rail and timber structures and inlets.

Finding 154: Communication between the County Public Works DOC and field operations were excellent. For example, when flashflood warnings were issued in the Trancas Canyon area, the field personnel were immediately informed to make sure no one was in harm's way.

Finding 155: When conducting sediment removal, County Public Works had pre-identified Sediment Placement Sites in the region.

- With the assistance of the Los Angeles County Department of Beaches and Harbors, the Zuma Beach parking lot was temporarily provided to support this operation.
- The Calabasas Landfill had a limit of depositing 3,500 tons per day, which initially limited daily debris/sediment removal operations. County Public Works negotiated with the Los Angeles County Sanitation District to increase the maximum limit allowed under an emergency waiver.
- To increase the rapid turnaround of vehicles going to the landfill, the landfill created an express lane for County Public Works vehicles when the lines at the landfill became too long.



SECTION 5—RECOMMENDATIONS

Any After Action Review (AAR) of an incident the size and scope of the Woolsey Fire will include many recommendations within a framework of continuous process improvement across all the agencies to varying degrees. Citygate's recommendations are based on its findings and, more importantly, the totality of analyses in the AAR. As a result, not every recommendation is coupled to any single finding or group of findings.

In Los Angeles County, the responding agencies are large and capable. They are *extremely* experienced with large wildfires, as are many of the affected neighborhoods. However, even some of the largest, most experienced agencies in the United States were, at times, overwhelmed in the first hours by this incident's *speed and weight of impact*, exposing some limitations between the agencies and systems as they meshed into a single, wide-area regional response team in less than a 24-hour period. This was more evident until the fire's pace slowed and sufficient response resources assembled for control and a transition to recovery.

To assist the user of this AAR, the following recommendations are categorized by the major themes established in the County's Woolsey Task Force process:

- The Response
- Communications
- Evacuation
- Repopulation
- Transition to Recovery

The following table includes consecutively numbered recommendations, organized by theme, and include columns indicating which agency or agencies are the primary organization to implement change as recommended. These agencies are:

LAC Los Angeles County Fire Department

LASD Los Angeles County Sheriff's Department

CPW Los Angeles County Public Works

OEM Los Angeles County Office of Emergency Management

DACC Los Angeles County Department of Animal Care and Control

5.1 THE RESPONSE

	Recommendation	LAC	LASD	CPW	OEM	DACC
1.	Memorialize the successes of the Woolsey responses and recovery effort into policies, guidelines, and procedures to ensure ongoing success.	X	X	X	X	X
2.	Reset the operation of the Los Angeles County Emergency Operations Center (County EOC) to the Los Angeles County Office of Emergency Management (County Emergency Management) to become the central coordination and support hub for all County agencies and the County Operational Area by activating and managing the County EOC.		X		X	
3.	Closely practice and communicate the understanding that the unified ordering point may start with the originating jurisdiction but may be best located at the jurisdiction that has the largest incident exposure.	X				
4.	Draft an addendum to the Santa Susana mutual threat zone (MTZ) agreement that delegates action if the other party cannot fulfill its obligations.	X				
5.	Review radio frequency coverage to ensure effective talk/receive capability on incidents. Add additional command frequencies or upgrade the radio system with repeaters to cover from the Cheseboro to Malibu areas.	X	X	X	X	X
6.	Ensure all staff have communications training for satellite phones and Countywide Interoperable Radio System radios.	X	X	X	X	X
7.	Develop plans to assign Command Aids / Drivers to field command chief officers during augmented staffing fire weather days and long-term incident response to enhance operational effectiveness.	X				
8.	Continue to train officers and commanders on TIER (Take Initiative Engage and Report) for Fire Front Following and Life Safety First implementation to allow flexible engagement.	X				
9.	Grow a program to assist with survival and support of individuals within evacuation areas.	X	X	X	X	X
10.	Reinforce existing triage criteria for critical infrastructure and key resources (residential, commercial, governmental) and other properties when firefighting resources are scarce and priorities must be set.	X				
11.	Update command and tactical maps for major threat areas throughout Los Angeles County.	X	X	X	X	X
12.	Ensure incident response / tactical maps can be sustained without internet connection and digitally or physically transferred to outside resources.	X	X	X	X	X
13.	Recognize and mitigate, as practical, the detrimental effects of fatigue on safety, operations, and decision-making.	X	X	X	X	X

	Recommendation	LAC	LASD	CPW	OEM	DACC
14.	Incorporate the concepts of Fire Front Following and Life Safety First into Department wildfire programs to educate the public and policy leaders.	X				
15.	Install Global Positioning System tracking technology on all County vehicles for safety and tactical location awareness.	X	X	X	X	X
16.	Increase participation at all Los Angeles County Sheriff's Department (County Sheriff's Department) Emergency Operations Bureau (EOB) trainings.		X			
17.	Conduct thorough briefings for all personnel prior to deployment. County Sheriff's Department Deputies will be able to make more informed decisions and provide better explanation of limitations to the public.	X	X	X	X	X
18.	Incident Command System (ICS) training should be conducted not by agency but via mixed discipline classes to build relationships and knowledge of shared experiences, including elected officials and their staff.	X	X	X	X	X
19.	Ensure County public safety agencies meet on at least an annual basis to discuss authority/responsibility/tactics in general terms and specific to challenging locations.	X	X	X	X	X
20.	Hold at least one annual training, in strategically identified operational areas, to include area County Sheriff's Department Deputies/leadership (including representation from Incident Management Teams (IMTs)), Los Angeles County Fire Department (LA County Fire) personnel/leadership, Los Angeles County Department of Animal Care and Control (County Animal Care), Los Angeles County Public Works (County Public Works), County Emergency Management, California Highway Patrol (CHP), and other appropriate strategic partners.	X	X	X	X	X
21.	The County Departments must embrace SEMS. Provide regular, ongoing Standardized Emergency Management System (SEMS) / ICS training for all Los Angeles County and city personnel likely to fill an Emergency Operations Center (EOC) and field ICS positions.	X	X	X	X	X
22.	OEM should review and revise the emergency organization of the County to better define the roles and responsibilities of the Emergency Management Council (EMC) members and provide training and exercises to strengthen the Council's capabilities.				X	
23.	Develop a Wildland Fire Plan annex to the Emergency Response Plan that addresses key response issues for all known high-hazard areas.	X			X	
24.	Expand the political and public notification role of County Emergency Management to allow initial incident command staff to focus on respective operational priorities.				X	
25.	Exercise the EOC more frequently to facilitate better EOC/incident communication, cooperation, and coordination.	X	X	X	X	X

	Recommendation	LAC	LASD	CPW	OEM	DACC
26.	Add an Information/Intelligence Section to the EOC.				X	
27.	Provide regular tabletop exercises for designated EOC staff, County department heads, County Chief Executive Officer (CEO) leadership, and County Board of Supervisors chiefs of staff.				X	
28.	Provide geographic information system awareness training for EOC and RCC staff, including capabilities and sample products.	X	X	X	X	X
29.	Conduct a wildland fire deployment study to establish an appropriate ratio of emergency resources in relation to population and animal risk factors. This study should also help to support funding changes as needed.	X	X	X	X	X
30.	Allow case-by-case diesel vehicle exemptions from the County's clean-air policy to allow for agencies to fulfill mission critical tasks.	X	X	X	X	X
31.	Consider establishing local government Type 1 Incident Management Teams within Region 1.	X				
32.	Pre-identify Incident Command Posts (ICPs) that have the size and technology capability to support command and control actions and pre-position a cache of support items.	X	X			
33.	Support the ongoing FIRESCOPE work in the California Mutual Aid System regarding increasing the tempo for catastrophic, fast-moving incident resource triage and resource availability.	X				

5.2 COMMUNICATIONS

	Recommendation	LAC	LASD	CPW	OEM	DACC
34.	Shorten approval tempo of evacuation alerts, use of alerting tools, and the notification process. This requires a more robust multi-department process.	X	X	X	X	X
35.	Increase the quantity, diversity, and redundancy of early public notification/communications tools for evacuations, especially for limited access areas (e.g., canyons).	X	X	X	X	X
36.	Plan a communications system that functions when cellular service and/or radio communications do not work.	X	X	X	X	X
37.	Recognize digital divide issues and design additional types of alert systems to gain public attention.	X	X	X	X	X

	Recommendation	LAC	LASD	CPW	OEM	DACC
38.	Reset Countywide public notifications policies to provide a strategic, single message across all platforms of traditional, auxiliary, and social media, to include a Public Information Officer (PIO) organization chart, information flow protocols, social media message templates, and a regularly updated 24-hour area media contact list.	X	X	X	X	X
39.	When multiple County departments or agencies respond to a major incident, they must implement a joint information system strategy for the incident and adhere to the Operational Area Emergency Public Information Annex.	X	X	X	X	X
40.	Develop and practice a low-tech back-up plan for relaying critical public information during high-tech infrastructure failure (AM radio, ham radio, etc.).	X	X	X	X	X
41.	Develop and annually maintain agreements with local AM radio stations regarding their role in critical public information dissemination.				X	
42.	Mandate common data sharing and and ensure all communications, intelligence, and decision support tools can interface with each County agency.	X	X	X	X	X
43.	Develop sustainable PIO surge capacity / bench depth for all agencies, including elected office resources.	X	X	X	X	X
44.	Develop a qualified PIO staff roster; County departments should invest in high-level PIO training for all personnel assigned as PIOs and include American Sign Language and Spanish language PIOs, as well as any other identified language needs.	X	X	X	X	X
45.	The personnel commitment to the Joint Information Service function must be greatly expanded and the manager of the JIS should be of sufficient rank to communicate to the highest levels of local, county, State, and Federal government representatives.	X	X	X	X	X
46.	Provide adequate space for a fully staffed Joint Information Center (JIC) at the EOC, and/or designate alternate site(s) that will meet the need.		X		X	
47.	Provide regular, ongoing training on the Emergency Public Information Annex of the Emergency Operations Plan for all County and Operational Area cities personnel potentially involved in emergency incident information management.				X	
48.	As part of training, practice using more traditional techniques for communications, intelligence, and decision-making. Future training exercises should include emergency operations problem solving without the use of commonly available technology. Problem-solving, without the use of technology, and demonstrated skills, such as map reading, should be part of a checklist of requisite skills.	X	X	X	X	X

5.3 EVACUATION

	Recommendation	LAC	LASD	CPW	OEM	DACC
49.	Dramatically increase the tempo of pre-alerting and evacuations.	X	X	X	X	X
50.	Prepare a playbook of detailed evacuation plans with traffic engineering capacity, to include, at a minimum: ➢ Areas defined by geography ➢ Pre-defined routes and the signage needed ➢ Estimated time frames for alerting and then areas to evacuate ➢ Pre-determined trigger points ➢ Contraflow plans for the Pacific Coast Highway (PCH)	X	X	X	X	X
51.	Create pre-planned evacuation management procedures in conjunction with law enforcement and County Public Works.		X	X	X	
52.	Establish a Standard Operating Order Process for monitoring traffic flow of vital ingress and egress routes.		X	X		
53.	Create a matrix to ensure that when a field entity orders an evacuation it is confirmed by the responsible entity facilitating the evacuation.	X	X	X	X	X
54.	Develop and provide additional instructions/handouts for residents during an evacuation.	X	X	X	X	X
55.	Conduct thorough safety training and issue personal protective equipment for Deputies prior to fire evacuation deployment, which should include LA-County-Fire-led training on fire behavior, the hazards associated with premature reentry, and how to explain these issues to the public in the field.	X	X			
56.	Working in conjunction with appropriate County health agencies and public utilities (medical baseline customer list), identify and develop a plan for individuals who may require a more specific notification process and evacuation assistance.		X		X	
57.	Build stronger LA County Fire / County Animal Care ties for evacuation information and possible synergies with the Occupant Support Team.	X	X			X
58.	Explore alternate long-term emergency animal sheltering sites with a funding mechanism for displaced animals.					X
59.	Continue to support, enhance, and build public support for the Ready! Set! Go! program.	X	X	X	X	X

	Recommendation	LAC	LASD	CPW	OEM	DACC
60.	Update the Mass Care plans, procedures, and mutual aid agreements to ensure that they reflect the need for government liaison-trained American Red Cross (Red Cross) response personnel to be actively involved in the Los Angeles County Emergency Operations Center (County EOC) and the Los Angeles Department of Public Social Services (DPSS) Mass Care and Shelter Branch during all Level 2 and Level 1 activations.				X	
61.	Invite DPSS and Red Cross personnel to participate in large scale exercises that will include an activation of the Mass Care and Shelter Branch.		X		X	

5.4 REPOPULATION

	Recommendation	LAC	LASD	CPW	OEM	DACC
62.	Redesign, as needed, the repopulation process and establish a decision-making process, including establishing the final authority regarding repopulation determination.	X	X	X	X	X
63.	Implement a program that allows safe, timely, and appropriate access for evacuees to see, grieve, and perform a quick salvage check on their property.	X	X	X	X	
64.	Conduct a public repopulation education campaign commensurate with evacuation training to manage expectations.	X	X	X	X	X
65.	Create a PIO decision flow process to pre-notice all affected agencies and announce repopulation decisions with phased timeframes.		X		X	
66.	Conduct annual repopulation training for all involved agencies (public and private).	X	X	X	X	X
67.	Develop a program to better manage and distribute spontaneous volunteer and donation efforts. Include coordination with the Occupant Support Team.	X	X		X	X

5.5 Transition to Recovery and Future Mitigations

	Recommendation	LAC	LASD	CPW	OEM	DACC
68.	Activate the RCC as early as possible for any emergency with a likely need for disaster assistance.				X	
69.	Update the Damage Assessment annex to the County Emergency Response Plan to include a common data structure and capture tool across all County agencies.	X		X	X	
70.	Develop and maintain a list of suitable pre-designated sub-regional Disaster Assistance Center (DAC) facility sites across the County to reduce the time/effort required to identify and acquire such facilities in the early phases of a disaster event.				X	
71.	Convene a debris management project team with representatives from California Office of Emergency Services (Cal OES), CalRecycle, County Emergency Management, County Public Works, the Los Angeles County Department of Public Health (DPH), Environmental Health, participating cities, and other regional stakeholders to develop a local program and team capable of activating a private property debris removal (PPDR) response without requiring the assistance of Cal OES or CalRecycle.			X	X	
72.	Secure standing contracts with approved, licensed vendors for debris assessment and removal if the County chooses to activate a locally funded PPDR program in smaller incidents.			X	X	
73.	With the DPH, adopt standards, protocols, resources, and timeline expectations for mitigating public health risks associated with post-emergence hazardous debris removal.			X	X	
74.	In a manner reflective of the Public Health Agency requirements, ensure hazardous debris removal is addressed at all scales of emergency, from a single-family house fire to loss of an entire community.			X	X	
75.	Review Federal Emergency Management Agency (FEMA) reimbursement requirements to ensure the County contract award process is aligned (or accept that FEMA does not recognize some contract award considerations reflective of Los Angeles County's interests around minority- and veteran-owned businesses, etc.).				X	
76.	Establish an IMT for PPDR operations, train local personnel to staff it, and adopt trigger points for PPDR implementation.			X	X	
77.	Work with FEMA to ensure inclusion of foundation removal reimbursement when necessary. This is not included in FEMA's debris removal program, which may be based on tornado and hurricane emergencies that do not typically affect foundations.			X	X	

	Recommendation	LAC	LASD	CPW	OEM	DACC
78.	Los Angeles County should develop and implement a standard policy regarding the collection of damage information and the release of the Damage Inspection Report by the Damage Inspection Specialist Unit.	X		X	X	
79.	Identify critical infrastructure sites and ensure associated defensible space needs.	X		X	X	
80.	Increase awareness for voluntary home/property safety inspections through which residents can hear from local firefighters regarding how safe their structures are and/or what the resident can do to enhance survivability and accessibility for firefighters.	X				
81.	Build a unified strategic vegetation management plan for the Santa Monica Mountains among private property owners and land managers for the County, the Federal government, the State, and non-profits. As appropriate, to manage the landscape, use the best-fit tool based on a strategic plan.	X			X	
82.	Create a layered fire defense approach using structure hardening and fuel reduction / change of fuel types to buffer development in relation to managing a neighborhood's expected fire intensity potential. Implementation is the property owners' responsibility.	X				
83.	Explore methods to enhance the soil's ability, through carbon and moisture retention, to increase fuel moisture in defensible landscaping plants.	X				
84.	Increase requirements for development/construction codes and public education programs to gain more hardening of structures.	X		X		
85.	Commit dedicated funds annually for County EOC equipment and building repairs.				X	
86.	Study and plan for the replacement and modernization of the County EOC facility to meet current and emerging standards.				X	



SECTION 6—POLICY LEADERSHIP RECOMMENDATIONS

In addition to departmental recommendations, the Woolsey Fire incident shows the need for policy leadership from Los Angeles County and regional elected officials to enable significant changes for multiple agencies and public participation. Citygate suggests the following recommendations receive *policy leadership focus* from the County of Los Angeles Board of Supervisors:

Premise – Because wildfires and other emergencies do not respect jurisdictional lines, all public jurisdictions should adopt a cross-boundary philosophy that addresses how to prepare, fight, and recover from wildfires without creating silo actions and establish a sub-regional command model to bridge agency/political lines.

1. Utilize an oversight body to institutionalize the Woolsey 2018 lessons learned to ensure that After Action Review (AAR) recommendations become reality and will transcend staffing attrition in the future.
2. Advance an initiative with all applicable public agencies and private interest groups that are involved in the Santa Monica Mountains region to develop a unified, comprehensive, and strategic wildfire hazard reduction plan.
3. Encourage the major fire departments in the area to evaluate creating a sub-regional (three county) Multiple-Agency Coordination and Control Center within the State mutual aid system that will utilize technology to enhance situational awareness and create a shared, *real-time* intelligence, information, and command center on an around-the-clock basis. This concept should further existing agreements and enhance the ability of agencies to work collaboratively during the first one to two days of a catastrophic disaster, for the common welfare, at a pace faster than the Statewide mutual aid system can provide.
4. Reset the operation of the Los Angeles County Emergency Operations Center (County EOC) to the Los Angeles County Office of Emergency Management (County Emergency Management) to become the central coordination and support hub for all County agencies and the County Operational Area by activating and managing the County EOC.
5. Work with Federal officials to advocate Federal disaster reimbursement changes as needed. Federal approvals often cover many County costs, but other costs may not be reimbursable, including long-term animal housing costs for Los Angeles County Department of Animal Care and Control (County Animal Care). As another example, some private property debris removal (PPDR) policies on items such as foundations do not work in California. In addition, the burn scars that result from wildfires are prone to mud and debris flows from winter rains. This subsequent loss

is not viewed as a continuation of the wildfire, but instead as a new standalone event which may not qualify for State and Federal disaster cost recovery.

If the desired end is more resilient communities to meet the current wildfire risks, the improvements suggested by the Citygate team, taken as a whole, should deliver an enhanced union of government services, community bonds, and personal involvement. Citygate's Project Team hopes the communities' common bonds to one another, and to their environmental treasures, will propel earnest conversations to deal with the wildfire lessons from the Woolsey Fire disaster.

6.1 Near-Term Next Steps

1. Absorb the issues identified in this AAR.
2. Direct staff to return in 90 days with an assignment and tracking plan for all the AAR recommendations by agency, the lead manager, and the completion timeline.
3. After the Los Angeles County Board of Supervisors reviews the assignment and tracking plan, ask the County Chief Executive Office and the finance teams of the agencies to estimate the cost of implementing the recommendations over feasible timelines.

APPENDIX A

HISTORY AND CONTEXT PRIOR TO THE WOOLSEY FIRE

APPENDIX B

BACKGROUND ON PRIMARY COUNTY AGENCIES

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GLOSSARY OF ACRONYMS, INITIALISMS, AND ABBREVIATIONS

Each acronym, initialism, or abbreviation is spelled out for its first usage in each section.

AGENCY ACRONYMS, INITIALISMS, AND ABBREVIATIONS

CAL FIRE	California Department of Forestry & Fire Protection
Cal OES	California Office of Emergency Services
CHP	California Highway Patrol
County Ag. Comm.	Los Angeles County Agricultural Commissioner / Weights and Measures
County Animal Care	Los Angeles County Department of Animal Care and Control
County Emergency Management	Los Angeles County Office of Emergency Management
County Public Works	Los Angeles County Public Works
County Sheriff's Department	Los Angeles County Sheriff's Department
County Waterworks	Los Angeles County Waterworks District No. 29
DPH	Los Angeles County Department of Public Health
DPSS	Los Angeles County Department of Public Social Services
DRP	Los Angeles County Department of Regional Planning
EMC	Emergency Management Council
FEMA	Federal Emergency Management Agency
LA City Fire	City of Los Angeles Fire Department
LA County Fire	Los Angeles County Fire Department
Pepperdine	Pepperdine University
Red Cross	American Red Cross
SCE	Southern California Edison
SCVMA	Southern California Veterinary Medical Association
Ventura County Fire	Ventura County Fire Department

GENERAL ACRONYMS, INITIALISMS, AND ABBREVIATIONS

AAR	After Action Review
CEO	County Chief Executive Officer
Command and Control	P. Michael Freeman Command and Control Center
County EOC	Los Angeles County Emergency Operations Center
CSL	Community Services Liaison
DAC	Disaster Assistance Center
DOC	Department Operations Center
DRC	Disaster Recovery Center
EOB	County Sheriff's Department Emergency Operations Bureau
EOC	Emergency Operations Center
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Management Team
JIC	Joint Information Center
MTZ	Mutual Threat Zone

NIMS	National Incident Management System
PCH	Pacific Coast Highway
PIO	Public Information Officer
PPDR	Private Property Debris Removal
RCC	Recovery Coordinating Center
RH	Relative Humidity
ROSS	Resource Order Status System
SEMS	Standardized Emergency Management System
SIB	County Sheriff's Department Sheriff's Information Bureau
UTF	Unable to Fill


LOS ANGELES
FIRE DEPT.

APPENDIX A—HISTORY AND CONTEXT PRIOR TO THE WOOLSEY FIRE

A.1 FIRE HISTORY IN THE AREA

A.1.1 Vegetation, Topography, and Weather

The 2018 Woolsey Fire occurred in an area of Los Angeles and Ventura Counties with an extensive fire history. Between the point of origin and the Pacific Ocean end point lie approximately 17.3 miles of steep, rugged canyons that can direct Santa Ana winds. The terrain has two distinct fuel environments: a drier inland valley with grass, chaparral, and sparse density of oak trees, and a southwestern coastal flank of the Santa Monica Mountains with higher humidity, covered with lush chaparral extending to the Pacific Ocean. At 3,111 feet high, Sandstone Peak in the Santa Monica Mountains separates these two environments. The inland valley is more populated than the rest of the Santa Monica Mountain area, especially along the Highway 101 corridor. The Highway 101 development pattern creates a wildland-urban interface condition where development abuts heavy wildland fuel. The steeper terrain of the southwest, ocean-facing slopes supports less development, which creates more of an intermix condition where development occurs on larger parcels impacted by wildland fuels on all sides. The southwest side also provides access challenges, and the rugged, steep canyons and ravines can drive fire behavior with or without strong winds.

Figure 1—Southern California Landscape Featuring Chaparral

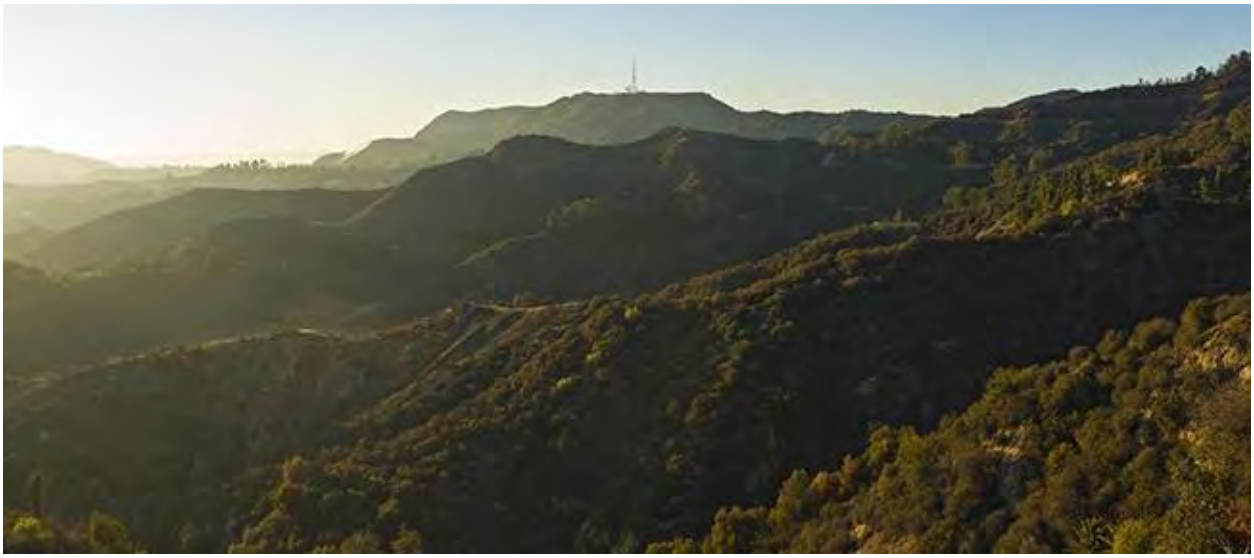


Chaparral is a generic term for the brush that dominates much of Southern California's natural environment. Plant species that typify the chaparral of this region include manzanita, ceanothus, chamise, scrub oak, grasses, and forbs. Plants of the chaparral environment are well known for

their reliance on natural fire behavior for seed germination. The Mediterranean climate of the Santa Monica Mountains supports a robust chaparral environment that is no stranger to wildland fires, even thriving on fire as part of its natural life cycle. Commonly referred to being "fire adapted," chaparral can be seen within weeks following a wildfire as seeds germinate and plants sprout. Wildland fire acts as part of the natural selection process to reduce fuel loads and initiate seed propagation. Alternatively, too frequent of a fire interval coupled with excessive high heat intensities can also interrupt the natural chaparral life cycle and allow invasive plant species to challenge this sensitive ecosystem.

The inland valleys have early grass fires that function as "ladder" fuels to carry fire into its adjoining chaparral beginning in late spring until late fall. Because of this fuel type and gentle sloping terrain, these non-wind-driven fires are somewhat easier to control, especially with a robust local first response system. On the ocean side of the mountains, the chaparral is on steep southwest-facing slopes that dry and pre-heat fuels from late summer to late fall. Dry chaparral coupled with its natural oils and resins creates a flammable mixture that can cause rapid topographical-driven fire spread.

Figure 2—Santa Monica Mountains



Weather patterns and the multiple challenging fire corridors of this region create a well-known active fire area. The fire history is attributed to the Santa Ana winds driving fires quickly through the chaparral-covered canyons of the Santa Monica Mountains. Historically, Santa Ana conditions ran from August through October; however, the window for Santa Ana winds now extends well into the traditional wet season of November through January.

Santa Ana wind conditions in Ventura and Los Angeles Counties are typically preceded one to two days by hot, dry sundowner winds in Santa Barbara County. Strong, dry, downslope winds of

35 to 50 miles per hour with sustained 50 to 80 mile-per-hour gusts typify Santa Ana conditions. The warm, dry conditions created by Santa Ana winds can linger for days or even weeks after the strong winds subside.

A.1.2 Development in the Region

The region of the Woolsey Fire is one of development extremes. Areas of dense retail along major transportation corridors dot this region of vast, rugged open space. The most prominent land feature of this region is the Santa Monica Mountains National Recreation Area, which is rich in historic, ecological, and recreational significance. The Woolsey Fire consumed over 80 percent of this Federal parkland.

The Woolsey Fire impacted the Highway 101 and Pacific Coast Highway (PCH) corridors. Commercial development along these corridors is largely composed of retail, professional services, and tourism-related businesses and accommodations.

Residential development in the Woolsey Fire area has spanned a wide variety of types and zoning density over decades. Private parcels develop under County building and fire code regulations at the time of their permit application. Larger parcels that involve subdivisions must entertain a California Environmental Quality Act process that addresses negative impacts of development and sets forth required mitigation actions before public policy approval is given. Along the Highway 101 corridor, master planned communities and multiple-family dwelling units typify the residential housing stock. In the canyons leading to the PCH, the house stock, construction characteristics, and neighborhood configurations vary greatly. Homes are often built with greater preservation of the natural topography at varying elevations and are accessible through long, narrow, and winding roads.

Throughout the Woolsey Fire region, because codes and regulations change over time, not all structures share the same level of fire code, building code, or land use compliance. Some areas and structures have *grandfathered* old patterns of subdivision (e.g., single entry/exit) or old, less-safe codes and regulations. This is why most structures, at present, are not hardened to resist ember intrusion during a wildfire, and some structures will be more expensive than others to retrofit.

A.1.3 Transportation Infrastructure

Two major transportation corridors traverse the footprint of the Woolsey Fire: Highway 101 and the PCH.

Highway 101 is the larger primary transportation corridor that connects Los Angeles to Ventura County and, further north, San Francisco. This section of Highway 101 is sometimes referred to as the Ventura Highway. In the area of the Woolsey Fire, Highway 101 comprises 12 lanes: four northbound, four southbound, plus emergency access lanes. The opposing lanes of Highway 101 are separated in most areas by a cement barrier. Also, there is sufficient space for emergency parking adjacent to the center and outside lanes of the highway in most areas of this region.

The PCH connects Santa Monica with Ventura County and runs closer to the coastline than Highway 101. In the area of the Woolsey Fire, the PCH is along the Pacific Ocean, and only in Point Dume does the PCH not afford quick access to the beaches along this route. Through much of this area, the PCH is a four-lane highway with intermittent northbound–southbound physical barriers, typically a raised curb and island.

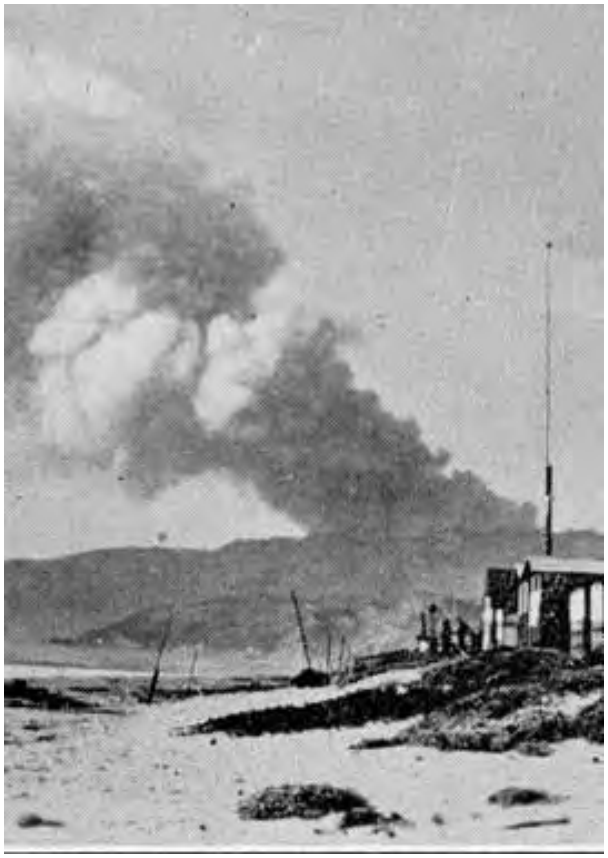
Winding canyon roads connect Highway 101 with the PCH. These include Las Virgenes Road, which becomes Malibu Canyon Road as it enters Malibu at Piuma Road; Kanan Road, which becomes Kanan Dume Road as it crosses Mulholland Highway; Westlake Boulevard, which becomes Mulholland Highway and then Decker Road; and Yerba Buena Road. These roads consist mostly of two-lane winding highways developed to rural highway standards with limited to no emergency parking pullouts.

A.1.4 Timeline and Outcomes of Historic Fires

The 2018 Woolsey Fire consumed a region with an extensive history of aggressive wildfires. While the footprint of the Woolsey Fire's destruction overlays previous fire scars, 2018 marked the first time in recorded history that the entire area burned in a single incident.

The Las Virgenes–Malibu geographic area has been the site for many large fires. These fires typically run from east to west, driven by strong Santa Ana winds. Historical fires started in the Santa Susana and Rocky Peak areas of Chatsworth and moved west toward Las Virgenes and Cheseboro Canyons. Before the widening of Highway 101 was completed in the 1960s, the then-four-lane highway offered little relief to fires jumping across the highway. When planning the expansion of Highway 101, it was hoped that the newly widened 12-lane freeway would create an effective firebreak to prevent fires from running to the ocean. Ensuing fires have shown that severe, wind-driven ember casts—which can deposit embers a mile or more ahead of an advancing fire—dashed these hopes.

Figure 3—Wildfire on December 31, 1917 in the Santa Monica Mountains



Historical fire records show a pattern of repetition in the Santa Monica Mountain region approximately every six to eight years. As population encroached in the fuel zone, increased fire suppression activities followed. Over years, urbanization, fire weather periods of longer duration, drought, and plant disease increased the potential for greater fire energy releases with an associated life and property loss result.

Figure 4—Wildfire in 1958 along Highway 101



Public sentiment and local government activity have been inconsistent—and sometimes at odds—regarding planned fuel reduction efforts. Opinions, priorities, and projects span a broad range from greater human control to habitat conservation to letting nature "run its course."

In response to significant fires, public officials often study fire losses to modify planning and building / fire code regulations to create a more fire-resistant community. One obvious problem of this evolving reactive approach is how to address the hazards of the existing community and the environmental protection afforded to this national recreation area. This includes the existing structures, landscape, transportation network, residential subdivision density, and water systems, which are typically *grandfathered* in despite significant changes in public policy and codes.

A review of California's fire history indicates that five of California's *deadliest* (casualties) wildfires have occurred over the past two years, six of the most *destructive* (structures) wildfires have occurred over the past 10 years, and 15 of the *largest* (acreage) wildfires have occurred over the past 19 years. Contributing fire threat and outcome factors include increased population growth in fire hazard areas, climatic cycles in and out of drought, disease and pest infestation, the cumulative effect of repetitive fires, an associated invasive species growth, and aging utility infrastructures.

Based on the table in **Exhibit A**, the area's fire history from 1897 shows a repetitive fire cycle in the Highway 101 corridor, the mountains, and the PCH, totaling 45 fires with 1,866 structures lost

and 584,404 acres burned *before* the Woolsey Fire. To see a map of the Woolsey Fire area fire history since 1970, see **Exhibit D**.

Table 1—Abbreviated Summary of the 121-Year Recorded History of Santa Susana / Malibu Area Fires*

Year	Fire Name	Location	Acres	Structures Lost	Deaths
1897	Great Drought	Malibu	Unknown or Unrecorded		
1903	Rindge	Malibu Canyon	10,000		
1913	Dry Canyon	Malibu Hills	10,000		
1917	Malibu Canyon	North of Malibu	2,000		
1921	Dume Canyon	Corral Canyon – Malibu	8,000		
1925	Latigo Canyon	Malibu	4,670		
1927	Cooper	Calabasas	3,118		
1929	Malibu Colony	Las Flores Canyon	274	13	
1930	Potrero	Decker Canyon	15,000		
1935	Malibu/Latigo/Sherwood	Kanan/Decker Canyon	28,599		
1935	Pt. Dume	Malibu	150		
1936	Cold Creed	Malibu	2,591		
1938	Topanga	Fernwood – PCH	16,500	350	
1942	Las Flores	Malibu	5,924		
1943	Las Flores	Malibu Canyon	5,800		
1943	Woodland Hills/Las Virgenes	Kanan/Decker Canyon	15,300		
1948	Topanga	Malibu	3,155		
1949	Susana	Simi – Chatsworth	19,080		
1955	Ventu	Thousand Oaks	12,638		
1956	Hume	Malibu	1,940		
1956	Sherwood/Newton	Kanan/Decker Canyon	35,537	120	1
1958	Warner	Malibu	4,040		
1958	Liberty	Malibu Canyon	17,860	107	
1958	Mulholland	Topanga Canyon	4,982		
1961	Topanga	Los Angeles City – Mulholland	8,750		
1967	Palmer	Chatsworth	14,248		

Year	Fire Name	Location	Acres	Structures Lost	Deaths
1967	Latigo	Malibu	2,868		
1970	Wright	Malibu Canyon	31,000	403	10
1970	Clampitt	Simi	107,103	80	4
1973	Potrero	Thousand Oaks	12,297		3
1973	Tripett	Topanga Canyon	2,770		
1976	Los Robles	Thousand Oaks	2,245	1	
1978	Kanan	Agoura – Malibu	25,385	230	2
1980	Las Virgenes	Calabasas	2,521		
1981	Oat Mountain	Chatsworth	17,786		
1981	Chatsworth Reservoir	Chatsworth – Los Angeles City	1,040		
1982	Dayton	Chatsworth – Malibu	42,540	74	
1985	Sherwood	Westlake Village	3,823		
1985	Piuma	Malibu Canyon – Corral Canyon	5,198		
1985	Decker	Malibu	6,526	6	
1985	Rocky Peak (Hummingbird)	Chatsworth	2,420		
1988	Keuhner	Chatsworth	3,818		
1989	Pacific	Malibu	3,180		
1993	Green Meadow	Thousand Oaks	38,152		
1993	Chatsworth	Box Canyon	2,036		
1993	Chatsworth	Chatsworth	37,571	43	
1993	Old Topanga	Topanga – Malibu	16,516	350	3
1996	Calabasas	Malibu Canyon to coast	12,377	10	
2005	Topanga	WB 118 Freeway to Calabasas	23,396	6	
2007	Corral	Corral Canyon – Malibu	4,901	49	
2007	Canyon	Malibu Canyon North of the PCH	3,782	14	
2008	Sesnon	Porter Ranch	14,703	63	1
2013	Springs	Newbury Park	24,000	15	
2016	Mulholland	Santa Monica Mountain	12		1
2018	Woolsey	Santa Susana / Malibu	96,945	1,643	3

* These are the notable 56 historical fires larger than 2,000 acres or with structure loss or deaths. A complete historical fire history chart of 157 fires is contained in **Exhibit A**.

A.2 Fire Loss Mitigation History

A.2.1 Government-Provided Fuel Mitigation Programs

The dry, sunny climate and variable terrain of Southern California combine to create an environment where wildfires are a part of the natural ecosystem and an almost year-round occurrence. This ecosystem fosters a diverse fire-adapted community of plants and animals. Although human-caused wildfires far outnumber naturally occurring wildfires within Los Angeles County, both have the potential to create situations in which structures in the Wildland Urban Interface can be at risk. All vegetation can eventually burn, even though irrigation has created a deceptively lush landscape of ornamental plants.

Following the loss of lives and structures during the 1993 wildfire season, the Los Angeles County Board of Supervisors created the Wildfire Safety Panel to offer recommendations aimed to reduce the threat to life and property in areas prone to wildfires. One such recommendation was to follow the findings of the Wildland Urban Interface Task Force, and another was to enforce the Bates Bill arising from the devastating Oakland Hills Fire in 1991. Jurisdictional fire departments had to establish guidelines and landscape criteria for all new construction in Fire Hazard Severity Zones. Fuel Modification Plans became a requirement within Los Angeles County in 1996. With these changes, all new construction projects, remodels of 50 percent or greater, parcel splits, and subdivision/developments within areas designated as Fire Hazard Severity Zones had to submit Fuel Modification Plans as a condition of approval. Los Angeles County Fire Department (LA County Fire) Forestry Division Fuel Modification Unit assumed responsibility for processing, reviewing, and approving these plans.

The California Department of Forestry & Fire Protection (CAL FIRE) maps and revises Fire Hazard Severity Zones for all land in California. These zone designations establish minimum standards for building construction and exterior landscape features to mitigate the increasing losses from the cycle of wildfire events. CAL FIRE categorizes the Fire Hazard Severity Zones as "Very High," "High," or "Moderate" for all State Responsibility Areas. In Local Responsibility Areas, the jurisdictional county or city determines the Severity Zones with approval from the State. Local ordinance or city councils then adopt these Fire Hazard Severity Zone designations.

The Los Angeles County Agricultural Commissioner / Weights and Measures (County Ag. Comm.) office is vested to protect the environment, the agriculture industry, consumers, and business operators through effective enforcement of Federal and State laws and County ordinances in the areas of health, safety, and consumer concerns of County residents. County Ag. Comm.'s highly diverse public services include ensuring a safe and wholesome supply of food and water, protecting consumers and businesses from fraud, preventing the misuse of pesticides, managing and excluding pests, minimizing fire hazards from weeds and brush, and providing useful consumer and agricultural information.

The County Ag. Comm. has four primary bureaus:

- Weights and Measures
- Weed Hazard and Integrated Pest Management
- Pest Exclusion and Produce Quality
- Environmental Protection

Within the Weed Hazard and Integrated Pest Management Bureau, the County Ag. Comm. addresses fire concerns by enforcing laws and ordinances requiring the removal of weeds, brush, and debris from vacant properties in unincorporated areas and contract cities to protect the health, safety, and property of residents. It also strives to improve environmental quality by eliminating hazardous and invasive weeds, fire hazards, and illegally dumped rubbish.

The Brush Clearance Program is a joint effort between the LA County Fire and the County Ag. Comm. Weed Hazard and Integrated Pest Management Bureau (Weed Abatement Division). This unified enforcement legally declares both improved and unimproved properties public nuisances and, where necessary, requires the clearance of hazardous vegetation. These measures create an up to 200-foot defensible space radius around structures for effective fire protection of property, life, and the environment. The Weed Abatement Division addresses vacant commercial properties throughout the County. Following devastating wildfires in 1993, LA County Fire began its Brush Clearance Unit. The LA County Fire Brush Clearance Unit enforces the adopted Uniform Fire Codes as they relate to brush clearance on improved parcels, coordinates inspections and compliance efforts with fire station personnel, and provides annual brush clearance training to fire station personnel.

Figure 5—Defensible Space



County Ag. Comm.'s efforts focus on unimproved parcels within the County while LA County Fire's efforts focus on improved parcels with structures. LA County Fire inspects all improved parcels, regardless if the parcel is owned, leased, rented or on Federal, State, special district, or private land. The local LA County Fire engine company, with a goal of establishing a minimum 100-foot defensible space in all High Fire Severity Zones and 200-foot defensible space in Very High Fire Severity Zones, performs these parcel inspections. Annually, LA County Fire engine companies inspect parcels and achieve an excellent property owner compliance rate with only 17 parcels referred to County Ag. Comm. in 2018 for clearance.

As climate conditions occur and fire frequency and intensities change, LA County Fire continues to evaluate parcels for inclusion into the program. Keeping enforcement and inspection workloads consistent with new development is difficult to manage.

A.2.2 Fuel Modification Plan Check Review

The defensible space buffer lessens the intensity from convective and radiant heat to structures and gives firefighters an area in which to protect structures. Defensible space has proven itself and should be extended further based upon local parcel placement due to wildland fuel type, slope, and natural wind effect considerations. During wind-driven events, a 200-foot defensible space buffer maintains a minimum protection distance from flying embers but does not ensure against structural ignition. Structures immediately adjacent to wildland fuels, and even within residential communities, are susceptible to flying embers, which often travel one mile or more.

The Fuel Modification Plan Check Review program applies to all parcels within Los Angeles County per the State's Public Resources Code 4290, which states:

> *The board shall adopt regulations implementing minimum fire safety standards related to defensible space that are applicable to state responsibility area lands under the authority of the department, and to lands classified and designated as very high fire hazard severity zones, as defined in subdivision (i) of Section 51177 of the Government Code. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within state responsibility areas approved after January 1, 1991, and within lands classified and designated as very high fire hazard severity zones, as defined in subdivision (i) of Section 51177 of the Government Code after July 1, 2021.*

Fuel modification reduces the radiant and convective heat and provides valuable defensible space for firefighters to make an effective stand against an approaching fire front. Fuel modification zones are strategically placed as buffers to open space or areas of natural vegetation and would occur surrounding the perimeter of a subdivision, commercial development, or isolated development of a single-family dwelling. The objective is to create a defensible space, which is the minimum for effective fire protection in newly constructed and/or remodeled homes within High and Very High Fire Hazard Severity Zones.

A.2.3 Citizen-Focused Fuel Mitigation and Fire Prevention Programs (Ready! Set! Go!, etc.)

LA County Fire works with eight Fire Safe Councils and has several Community Wildfire Preparedness Plans that identify local hazards and list recommended mitigating actions. To date, resident focused fuel reduction actions comprise handwork, mechanical thinning, grazing, and prescribed fires. All follow the Ready! Set! Go! program implemented in 2009, following the horrific "Black Saturday" brushfires in Victoria, Australia, which killed 173 people within communities that largely embraced a stay-and-defend approach. The *Ready* portion focuses on getting citizens to harden their homes, creating defensible space, and maintaining structures against ember intrusion. The *Set* portion increases the public's situational and preparedness awareness as the chance of dangerous wildfires increases. Finally, *Go* encourages citizens to evacuate as soon as they know a dangerous situation exists or are directed by a law enforcement agency.

Forensic review of historical wind-driven wildfires shows that flying embers may travel long distances (one mile or more) and ignite receptive fuels/structures.[1] Within the home ignition zone, embers often land on protected areas, where they ignite, many times smoldering for hours until conditions are conducive for flame propagation and sequential ignition of the structure. Following the San Diego Witch Creek fire, the Insurance Institute for Business and Home Safety wind tunnel tests identified the following common ember hazards:

- Combustible roofs
- Leaf litter on roof valleys and rain gutters
- Organic mulch adjacent to combustible siding
- Wood fencing connected to a home
- Wood piles stacked next to homes
- Lightweight wood decking tied to a home
- Ornamental landscaping
- Combustible furnishings
- General exterior home maintenance

Home "hardening" is required throughout Los Angeles County if a certain percentage of a home is remodeled or during new construction due to revised building/fire codes. While these enhancements are worthy, the largest inventory of ember-susceptible structures is the existing inventory of structures already built. This is where the public can practice home hardening principles taught in Ready! Set! Go!, Firewise USA, or equivalent programs. Even having taken

[1] Insurance Institute for Business and Home Safety, San Diego County Witch Creek fire report, 2007.

these precautions, a homeowner still must maintain their home against ember intrusion throughout the year.

A.2.4 Unique Mitigation Efforts

69Bravo Helicopter Support / Water Site (Helistop)[2]

Helispot 69Bravo has become a unique asset to the firefighting ability of the LA County Fire and the mountain communities of Santa Monica, Topanga Canyon, and Malibu. It was privately developed, leased, and then purchased by LA County Fire. It provides refilling tanks for firefighting helicopters. Such sites significantly lower response refilling cycle times in the nearby mountains and canyons.

The site sits high atop the Santa Monica Mountain range, with two mountaintops covering 34 acres 2,400 feet above the Topanga and Malibu mountains. The Helistop provides emergency service resources 24 hours per day, seven days per week, 365 days per year, including:

- Two helipads with a landing/approach windsock and lighting
- A water well and eight fire hydrants along the property perimeter
- Two separate 6,000-gallon tanks for helicopter water extract
- 10,000-gallon water tank that maintains the water supply
- Line of sight to almost all of Los Angeles County, which allows for radio communications by emergency vehicles to central offices during a crisis

Figure 6—Helicopter Water Drop



[2] The following information comes directly from the 69Bravo website: http://www.69bravo.com/about.

Pepperdine University Shelter-in-Place Design and First-Aid Firefighting Abilities

Pepperdine University (Pepperdine) is on the edge of the Santa Monica Mountain range overlooking the Pacific Ocean. With a total enrollment of approximately 7,700 students, Pepperdine leaders tried to protect the campus and students from wildfires following the aggressive 1985 fire season. Wildfires are not the only risks Pepperdine takes seriously; the campus maintains a current and well-used 43-chapter Emergency Operations Plan that provides guidance for all known hazards.

Pepperdine designed and constructed three dual-purpose buildings that serve their primary function related to normal daily operations and the function of fire-safe shelters. Pepperdine utilizes a state-of-the-art communications system to communicate emergency information to students and parents, including information related to shelter operations. Pepperdine designed and maintains a fire resistive landscape to minimize fire propagation from the wildland interface to the campus core. This landscape design serves also as a fuel break for adjacent properties. The campus maintains a cache of potable water and emergency food rations to support prolonged shelter operations. Pepperdine maintains contracts with vendors to provide supplemental food supplies when necessary and logistically possible. Pepperdine can shelter-in-place all students. At the start of each new educational year, the president of Pepperdine communicates the university's emergency preparedness to all parents/guardians of students.

Healthy, familiar, professional relationships exist between Pepperdine leadership and regional LA County Fire personnel, and Pepperdine enjoys a long history of working closely with LA County Fire during pre-emergency and emergency operations. Fire personnel are commonly invited to review and provide guidance on campus fuel reduction efforts. When fires occur in the region, Pepperdine is typically the site of the Incident Command Post (ICP). This is due to many reasons, including the fire-protective nature of the campus, the campus features, and resources available to emergency responders, and the relationship the agencies enjoy. Some of the unique firefighting features and resources on campus include a helispot on the campus's front lawn for firefighting helicopter operations, space for ICP functions, and water reservoirs maintained for fire operations.

Pepperdine trains its security staff to function as a Fire Patrol group when fires occur. Security officers equipped and acting as Fire Patrol teams circle the campus in search of spot fires. When small fires are discovered, Fire Patrol teams can extinguish them before they grow out of control.

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APPENDIX B—BACKGROUND ON PRIMARY COUNTY AGENCIES

B.1 LOS ANGELES COUNTY FIRE DEPARTMENT



The mission of the Los Angeles County Fire Department (LA County Fire) is "to protect lives, the environment, and property by providing prompt, skillful, and cost-effective fire protection and life safety services." LA County Fire provides all-hazard emergency response services to approximately 4.1 million residents and businesses throughout 58 cities and the unincorporated areas of Los Angeles County. Responding to approximately 400,000 calls for service per year, the agency is one of the busiest in the nation. Under the leadership of Fire Chief Daryl L. Osby, the agency provides service to over 2,300 square miles of diverse geography and demographics and approximately 1.23 million housing units. With a 2017/2018 budget of $1.2 billion, LA County Fire employs approximately 4,700 employees.

B.1.1 LA County Fire Organization

Three major functional areas report to the Fire Chief: Emergency Operations, Business Operations, and the Leadership and Professional Standards Bureau. Led by a Chief Deputy, Emergency Operations is the arm of the Department responsible for leading and directing emergency response personnel. Regarding emergency response personnel, Emergency Operations is further divided into three geographic Bureaus: North Operations Bureau, Central Operations Bureau, and East Operations Bureau.

The Office of Emergency Management and the Emergency Medical Services Bureau are also under the direction of the Chief Deputy of Emergency Operations, as are Homeland Security and the Medical Director.

The three geographically divided operations bureaus of LA County Fire serve 58 cities and unincorporated communities with 22 battalions and nine divisions. An Assistant Chief commands each division, and three shift Battalion Chiefs command each battalion. A Community Services Liaison (CSL) and a Secretary support each of the nine Assistant Fire Chiefs. The CSL partners with the Assistant Fire Chief to develop and maintain strong working relationships with communities and the cities within the Division. The CSL represents the Department at community and civic events. The jurisdictional Assistant Fire Chief and CSL also facilitate emergency and non-emergency communications between the local board office, cities, and communities as needed.

The primary body of the Woolsey Fire occurred in LA County Fire Battalion 5, which includes 12 fire stations serving the incorporated cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village, as well as the surrounding unincorporated areas. Organizationally, Battalion 5 is one of 22 Battalions throughout LA County Fire and is part of Division 7. The Division 7 Assistant Fire Chief reports to the Central Region Deputy Fire Chief, who ultimately reports to the Chief Deputy of Emergency Operations under the Fire Chief.

B.1.2 LA County Fire Emergency Response Resources

At the time of the Woolsey Fire, LA County Fire maintained the following Countywide emergency response resources:

- 174 fire stations
- 179 engine companies
- 67 Paramedic squads
- 32 quints (ladder trucks that have water tanks)
- Specialized resources
  - Four Sikorsky S-70 Firehawk helicopters
  - Five Bell 412 helicopters
  - One seasonally staffed, contracted Erickson helitanker
  - Two seasonally staffed, contracted Bombardier CL-415 Super Scooper fixed-wing aircraft
  - 10 bulldozers
  - 10 fire camps with 26 crews
  - Five California Office of Emergency Services (Cal OES) Type 3 (wildland fire) engines
  - Four hazardous materials squads

- Five swift water rescue units
- Two urban search and rescue squads
- Two fire boats
- Lifeguard Division, Forestry Division, Prevention Division, Health Hazardous Materials Division (Certified Unified Program Agency)

LA County Fire is also the home of California Task Force 2 (also known as USA Task Force 2), an urban search and rescue team qualified to respond to local, national, and international disasters.

B.1.3 LA County Fire Communications

The P. Michael Freeman Command and Control Center (Command and Control) is the epicenter of communications for LA County Fire. This facility opened in 1990 as a state-of-the-art communications center. LA County Fire is one of the busiest fire departments in the nation, and in 2017 Command and Control dispatched over 394,000 emergency responses. Daily staffing includes 17 Dispatchers, three Dispatch Supervisors, one Fire Captain, and one Battalion Chief.

Command and Control also serves as the Cal OES Fire and Rescue Division Region 1 Mutual Aid Coordinator for the counties of Los Angeles, Orange, San Luis Obispo, Santa Barbara, and Ventura. Command and Control also serves as the Los Angeles Area B Operational Coordinator for Region 1.

Command and Control utilizes ultra-high (UHF) and very high (VHF) radio frequencies for dispatch and radio communications with field units. Interoperability for wildland responses is managed through predesignated communication plans that are VHF based.

LA County Fire enhances its communications capabilities with cell phone and satellite phone technology provided to selected chief officers. The Department also maintains an alpha-numeric paging system for regional disaster preparedness communications needs.

B.1.4 LA County Fire Wildland Firefighting Training

Wildland firefighting training is a key aspect of County organizational preparedness. LA County Fire firefighters are exposed to wildland firefighting in their recruit academy, and this training is reinforced and enhanced throughout their careers. All LA County Fire firefighters train for wildland firefighting operations with added emphasis on high hazard wildland firefighting areas. Training includes progressive hose lay operations, line control, helispot setup, and fire behavior. In addition, station personnel conduct defensible space inspections within their jurisdictional areas, providing enhanced insight and preplanning preparedness.

Besides overseeing the preparedness training of line personnel, all chief officers receive annual chief-officer- and wildland-specific training focused on key command and control issues.

The Department's Incident Management Team (IMT) program was developed after the 1993 Old Topanga Fire and has been a successful component of the Department's integrated response strategy to large-scale emergencies that take place within Los Angeles County. There are three Type 3 IMTs that carry command and general staff positions for day and night operations.

B.1.5 LA County Fire Situational Awareness Monitoring

LA County Fire maintains its situational awareness to weather, local emergencies, and regional emergencies on many fronts. Fire weather is monitored daily with the National Weather Service in Oxnard and through the Department's many weather stations and the Remote Automated Weather Stations throughout southern California. Based on the weather data and observed conditions, policies and procedures are in place for augmented and pre-positioned staffing.

To ensure Department-wide situational awareness during the fire season, a daily operations conference call is conducted with all on-duty chief officers and the on-call IMT. The conference call provides a fire weather overview, fire behavior synoptic forecast, and situational overview of wildland fire resources from air operations, camps, heavy equipment, and reserve unit availability.

The Command and Control center is responsible for monitoring local and regional incidents that may affect the Department, operational area, or Region 1. Communications with adjoining regions or the State's Southern Region Operations Center may take place if an incident is escalating and resources are ordered.

B.1.6 LA County Fire Regional Agreements

The Woolsey Fire broke out in the Santa Susana area of Ventura County. Due to this region's proximity to jurisdictions served by LA County Fire, the City of Los Angeles Fire Department (LA City Fire), and the Ventura County Fire Department (Ventura County Fire), the area is defined as a mutual threat zone (MTZ), and the three fire departments developed a regional agreement to address this area as a shared risk. Not only do these agencies commit to responding to fires in the region as a matter of mutual risk, the fire departments train together to ensure operational coordination and effectiveness. Prior to the Woolsey Fire, training specific to the Santa Susana MTZ took place in June 2018.

The MTZ agreement agencies further agree to ensure that only one Incident Command Post (ICP) is established and that Unified Command is positively created at the earliest moment possible. The Unified Command structure recommends whether an IMT is needed.

LA County Fire serves as the Area B Coordinator and Region 1 Coordinator for the California Master Mutual Aid System on behalf of Cal OES. The Mutual Aid Plan facilitates implementation of Chapter 7 of Division 1 of Title 2 of the Government Code entitled "California Emergency Services Act." Among the many duties of area and regional coordination include the following responsibilities:

- Evaluates requests for assistance from Area; determines the region resources from that region which can provide the timeliest assistance and initiates response thereof
- Determines if the timeliest assistance is from an adjacent region and, if so, requests assistance from that Region Fire and Rescue Coordinator (not to exceed five like resources) and must notify the State Fire and Rescue Coordinator of this action
- When resources are needed from more than one adjacent region, either for timely response or when the need is beyond region capability, the request must be made to the State
- Monitors and coordinates backup coverage within an area or region when there is a shortage of resources

B.2 LOS ANGELES COUNTY SHERIFF'S DEPARTMENT



The Los Angeles County Sheriff's Department (County Sheriff's Department) is the largest sheriff's department in the world. The County Sheriff's Department's mission is to enforce the law fairly and within constitutional authority; to be proactive in its approach to crime prevention; to enhance public trust through accountability; to maintain a constitutionally sound and rehabilitative approach to incarceration; to provide a safe and secure court system; to maintain peace and order; and to work in partnership with the communities it serves to ensure the highest possible quality of life. The County Sheriff's Department conducts this mission throughout Los Angeles County, including 44 cities that contract with the Sheriff's Department for law enforcement services.[3]

[3] Source: http://lasd.org/about_us_mission_creed_core.html

B.2.1 County Sheriff's Department Organization

The County Sheriff's Department employs approximately 18,000 employees, including 10,000 sworn and 8,000 non-sworn personnel. Under the leadership of Sheriff Alex Villanueva, sworn into office on December 3, 2018, the Sheriff's Department is organized into three primary operational areas: Custody Operations, Patrol Operations, and Countywide Operations. The Department has, approximately, a $3.2 billion budget.

B.2.2 County Sheriff's Department Emergency Response Resources

Within Patrol Operations, the County Sheriff's Department provides service from 23 patrol stations throughout the County. The Malibu / Lost Hills Sheriff's Station is at 27050 Agoura Road in the City of Agoura. This station serves the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village, as well as the communities of Chatsworth Lake Manor, Malibou Lake, Topanga, and West Hills. The Malibu / Lost Hills Sheriff's Station is inside the footprint of the Woolsey Fire.

B.2.3 County Sheriff's Department Communications

Communications are decentralized in the County Sheriff's Department. Each Sheriff's station receives calls for service via separate business and 9-1-1 lines. Calls for service are then dispatched over the radio from a central dispatch center in Los Angeles at the Los Angeles County Sheriff's Communication Center. The communications system allows Deputies from different Sheriff's stations to communicate via radio. The system also can be patched, allowing interoperability whereby the County Sheriff's Department Deputies can communicate with other law enforcement personnel operating on different radio frequencies. The County Sheriff's Department issues cell phones to Department executives and specialized units. Specialized units are also supplied with satellite phones.

B.2.4 County Sheriff's Department Disaster Response Training

The County Sheriff's Department invested significantly in the organization's enhanced disaster response capabilities. The County Sheriff's Department maintains three Type 3 IMTs, three Los Angeles County Emergency Operations Center (County EOC) Teams, and three Department Operations Center (DOC) Teams. All team members must take National Incident Management System (NIMS) courses IS 100 "Introduction to the Incident Command System," IS 200 "ICS for Single Resources and Initial Action Incidents," ICS 300 "Intermediate ICS for Expanding Incidents," and ICS 400 "Advanced ICS for Command and General Staff."

B.2.5 County Sheriff's Department Situational Awareness Monitoring

The County Sheriff's Department Sheriff's Information Bureau (SIB) Operations Center is staffed around the clock. The SIB monitors operations within the Department and the Los Angeles County

Operational Area. SIB shares information with key stakeholder agencies that elect to receive SIB information and notifications.

B.2.6 County Sheriff's Department Regional Agreements

By law, the County Sheriff's Department is the mutual aid coordinator for law enforcement in Los Angeles County. To manage operations and resources more efficiently, the 88 cities of Los Angeles County are divided into eight geographical areas: A through H. To ensure continuity of operations, the County Sheriff's Department and mutual aid partners update mutual aid agreements annually.

B.2.7 County Sheriff's Department Emergency Operations Bureau

The County Sheriff's Department, under County Code 2.68, has the responsibility to activate and manage, in an emergency, the County EOC, including public notification tools such as Alert LA, the Emergency Broadcast System, and, lately, cell phone push notifications. The County Sheriff's Department Emergency Operations Bureau (EOB) also maintains Sheriff IMTs to respond to area emergencies and support an incident and/or regional sheriff's mutual aid requests. The IMT members are trained to a minimum ICS 400 series course level.

The EOB recognizes that it had become so technology dependent that losing some of its field unit communication technology during the Woolsey Fire created many obstacles.

B.3 Los Angeles County Office of Emergency Management



The Los Angeles County Office of Emergency Management (County Emergency Management) is responsible for comprehensively planning for, responding to, and recovering from large-scale

emergencies and disasters that impact Los Angeles County. County Emergency Management accomplishes this mission through partnerships and collaboration with first response agencies, other necessary County agencies, and non-profit, private sector, and government partners.

County Emergency Management provides disaster plan coordination and functional exercises with the 88 cities, 137 unincorporated communities, and 288 special districts in Los Angeles County. County Emergency Management also assists other County agencies in developing department emergency operation plans and County facility emergency plans. The Board of Supervisors and Emergency Management Council receive support and advice from County Emergency Management, with guidance provided to the Board of Supervisors in matters pertaining to their roles as elected officials during emergencies and disasters.

County Emergency Management maintains the approved Operational Area Emergency Response Plan, and the County EOC state of readiness is maintained by County Emergency Management in partnership with the EOB. County Emergency Management staff serve as the on-call first responders to the County EOC, with service available every minute of every day.

County Emergency Management maintains a cadre of County EOC team members trained in section and position responsibilities and in the use of the Operational Area Response and Recovery System. In addition, County Emergency Management provides ongoing training for County department Emergency Coordinators and building Emergency Coordinators.

County Emergency Management conducts public education campaigns for all hazards through the Emergency Survival Program, expos, and various media presentations in public venues. County Emergency Management maintains a multi-language emergency preparedness website at www.lacounty.gov/emergency.

The County EOC facility is perceived by the employees working there as antiquated and not built for effective collaboration. Relatively recent improvements in computer data bandwidth and communications connectivity have helped; however, not all in-house computer systems are integrated. The working quarters are cramped and not designed for the number of people that occupy them. The interior structure is not conducive to general collaboration during normal business or emergencies.

There is no regular, annual budget for scheduled replacement of equipment for the EOB or the County EOC. Equipment is largely acquired through one-time County funding. At times, grants are used but come with no emphasis on continuation of effort.

B.3.1 County Emergency Management Organization

County Emergency Management is housed in the County EOC Building in East Los Angeles, which also maintains the County EOC for coordination throughout the County Operational Area. Under the leadership of the Director and Deputy Director, County Emergency Management is staffed with 30 personnel organized into one administrative and three functional divisions:

- Administration includes the Director, Deputy Director, three administrative support positions, and a special projects position (six personnel)
- Preparedness Division includes public education, planning, and public information (nine personnel; three vacant)
- Response Division includes operations, training/exercises, operational integration, and homeless initiative (seven personnel; one vacant)
- Recovery Division includes public assistance and individual assistance (five personnel)

B.3.2 County Emergency Management Communications

County Emergency Management's primary communication hardware is triple redundant, consisting of landline, cellular, and satellite telephones, fiber optic internet, and backup satellite internet. For public alerting, County Emergency Management uses the County's numerous web pages, Twitter, and GovDelivery. County Emergency Management also administers the County's Alert LA mass notification system, with the County Sheriff's Department historically responsible for the content and timing of public alerts and warnings.

B.3.3 County Emergency Management Training

County Emergency Management provides emergency management training for County personnel. County Emergency Management is also responsible for coordinating and facilitating disaster/emergency management training and exercises for Los Angeles County Operational Area local jurisdictions under an annual training and exercise plan. County Emergency Management is further charged with developing Countywide emergency management capacity and developing a robust recovery training program.

B.3.4 County Emergency Management Situational Awareness Monitoring

County Emergency Management, as the Operational Area Coordinator, maintains a 24-hour, year-round point of contact as required by the California Standardized Emergency Management System (SEMS) guidelines and is responsible for reacting promptly to events in the County.

B.3.5 County Emergency Management Recovery Program Coordination

The County's 2017 Operational Area Recovery Plan identifies County Emergency Management's recovery role as follows:

> *The county's emergency management director oversees the day-to-day emergency management programs and activities. The emergency management director works with chief elected and appointed officials to establish unified objectives regarding the jurisdiction's emergency plans and activities. This role entails coordinating and integrating all elements of the community. This includes assessing the capacity and*

readiness to deliver the capabilities most likely required during and after an incident and identifying and correcting any shortfalls. The local emergency manager's duties often include:

- *Advising elected and appointed officials during a response or recovery*
- *Conducting response operations in accordance with NIMS*
- *Coordinating the functions of local agencies*
- *Coordinating the development of plans and working cooperatively with other local agencies, community organizations, private sector entities, and non-governmental organizations (NGO)*
- *Developing and maintaining mutual aid and assistance agreements*
- *Coordinating resource requests during an incident through the management of an emergency operations center*
- *Coordinating damage assessments during an incident*
- *Advising and informing local officials and the public about emergency management activities during an incident*
- *Developing and executing accessible public awareness and education programs*
- *Conducting exercises to test plans and systems and obtain lessons learned*
- *Coordinating integration of the rights of individuals with disabilities, individuals from racially and ethnically diverse backgrounds, and others with access and functional needs into emergency planning and response*

B.3.6 County Emergency Management Disaster Assistance Coordination

County Emergency Management is the lead agency for Local Assistance Center planning. Once the Recovery Coordinating Center (RCC) is established, establishing the Local Assistance Centers is the responsibility of the RCC Logistics and Operations sections; however, once established, County Emergency Management has the lead for managing them under the Local Assistance Center Plan functional annex. At the request of the Federal Emergency Management Agency (FEMA), the Local Assistance Centers for the Woolsey Fire were titled Disaster Assistance Centers (DACs).

The RCC Director is the County Chief Executive Officer (CEO), and the Deputy County Emergency Management Director is the RCC Deputy Director. Each RCC Section (Planning, Operations, Logistics, and Finance/Admin.) is led by a County department lead.

Disaster Recovery Centers

Disaster Recovery Centers (DRC) are Cal-OES led; however, a Local Assistance Center / DAC can also transition to a DRC, with Cal OES responsible for management. Sometimes, a DRC can be established without a Local Assistance Center / DAC being established.

Damage Assessment Process

Before an incident is fully concluded, the damage assessment process must set the stage for additional State and Federal assistance and operational priorities. This process starts with forming local Disaster Assistance Teams comprising mixed disciplines of Damage Inspection Specialists. Early on, this process may comprise a quick "windshield survey" to estimate initial damage data, to later be reinforced with more qualified staff. A final Damage Inspection Report is used to document damages.

Unincorporated Private Property Debris Removal

Mass debris management in the Operational Area is led by Los Angeles County Public Works (County Public Works) under the Unincorporated Area Mass Debris Management Plan.

B.3.7 Mass Care Shelters

The independent cities have primary responsibility for shelter needs within their communities, the County has the primary responsibility for the unincorporated communities, and the County provides for needs that exceed the cities' capabilities via request. Both the cities and the County have designated the American Red Cross (Red Cross) as the primary shelter provider.

The Red Cross is the designated mass care service provider in Los Angeles County under the Los Angeles County Department of Public Social Services (DPSS) plan. The Red Cross has a designated seat next to the DPSS to staff the Mass Care and Shelter Branch within the County EOC Operations Section. The Red Cross is a non-profit entity, depends upon donations, receives no government funding, and is the designated shelter service provider during government-managed incidents throughout the United States.

B.4 Los Angeles County Public Works



County Public Works is the largest municipal public works agency in the nation and serves over 10 million people in Los Angeles County over 4,000 square miles. Its mission is to deliver regional infrastructure and services to improve the quality of life for County residents. Under the leadership of the Director, six core service areas provide the diverse operations of Transportation, Water Resources, Environmental Services, Public Buildings, Development Services, and Emergency Management. The organization's annual budget is approximately $2.29 billion.

County Public Works' workforce comprises nearly 4,100 employees in over 500 job classifications, including professional, technical, clerical, and skilled crafts. Through these employees, County Public Works exercises its responsibility for the design, construction, operation, and maintenance of roads, traffic signals, bridges, airports, and sewers, as well as flood control, water supply, water quality, and water conservation facilities. As such, County Public Works had vast responsibility for roads, traffic operations, and waterworks in the Woolsey Fire area.

B.4.1 County Public Works Integrated Emergency Response Manual

Updated in 2018, the Department of Public Works Integrated Emergency Response Manual is the authoritative guide for the Department's internal disaster preparedness and emergency response policies and actions. Internally, this manual is also referred to as the Red Book. This 271-page manual is broken down into eight sections: I.) DOC / Emergency Response Activities; II.) DOC Reference Materials; III.) Communications; IV.) Public Information; V.) Vital Records; VI.) Disaster Claiming; VII.) Disaster Information Reporting Procedures; and VIII.) Policies.

The purpose of the Integrated Emergency Response Manual is "to incorporate and coordinate all the facilities and personnel of the Department into an organization capable of responding to any emergency using NIMS / SEMS, mutual aid and other appropriate response procedures" (p. viii). This manual "establishes the Department's emergency organization, assigns tasks, specifies policies and general procedures, and provides for coordination of planning efforts among the various divisions" (p. viii). Copies of the manual are distributed to each agency division and field office and to key personnel as determined by County Public Works.

As established by the Integrated Emergency Response Manual, each County Public Works division is charged with preparing and maintaining current plans to support their emergency response capabilities, and "all employees should know their role so they can carry out their duties effectively" (p. viii). The espoused culture of County Public Works is organizational planning and preparedness and team/individual knowledge and competence.

B.4.2 County Public Works Department Operations Center

At its Alhambra headquarters location, County Public Works maintains a 24-hour dispatch center and an on-call DOC. County Public Works regularly activates its DOC to support emergency incidents and planned events that have the potential for increased significance and community impact. During the research phase of this report, Citygate Associates witnessed the smooth and efficient opening of the DOC to support a large County Public Works project. The assigned DOC Director summarized the project to the DOC staff and provided a statement of the objectives of the DOC to support the event.

The opening of the DOC is scaled according to incident or event. Smaller events may cause a smaller DOC staff size whereas larger events or incidents can cause a full activation of the DOC. When fully activated, this dedicated workspace can accommodate approximately 50 DOC workers with functional workspaces and assigned seating.

When activated, the DOC is led by one of six County Public Works Deputy Directors. There is also a backup DOC at the Central Yard.

B.4.3 County Public Works Integration with the County Emergency Operations Center

The County EOC coordinates the overall emergency operations in the County for all 88 cities and unincorporated areas. County code identifies the County Sheriff's Department as the Director of Emergency Operations. County Public Works provides staff to the County EOC when deemed necessary by the County Sheriff's Department, CEO, and/or County Emergency Management. County Public Works staffs the Operations Section Construction & Engineering at the County EOC. The Department has designated three teams of four personnel (Senior Civil Engineer or higher) that rotate responsibility for this function monthly.

B.4.4 County Public Works Emergency Response Training

Like all County employees, County Public Works employees must complete Disaster Service Worker training. For employees with an expanded role during a disaster, County Public Works has a multi-tiered training program. DOC personnel must complete an in-house SEMS Emergency Operations Center (EOC) course and online courses NIMS IS 100 "Introduction to the Incident Command System," IS 200 "ICS for Single Resources and Initial Action Incidents," and IS 700 "Introduction to the National Incident Management System." DOC Directors and DOC Section Chiefs must also take IS 800 "National Response Framework," and these Department leaders attend the Situational Awareness / Common Operating Picture course.

When populating the disaster organization chart structure, County Public Works selects DOC Directors from the existing Deputy Director personnel, of which there are six. DOC Section Chiefs are selected from the pool of division heads, particularly those with a strong, broad understanding of Department operations.

Field personnel, including managers, must complete courses IS 100, IS 200, and IS 700. Additional coursework is offered, including the ICS 300 course and the O305 "All Hazard Incident Management Team" course. County Public Works employees selected to function as Agency Representatives must take all the required courses, plus additional in-house Agency Representative coursework. Agency Representatives are chosen by their ability to represent all aspects of County Public Works' mission.

County Public Works employees selected to function as Unified Commanders come from the ranks of County Public Works Principal Engineer and higher. These highly trained employees must complete all the requisite NIMS training and are selected based on their broad knowledge of County Public Works and ability to make decisions commensurate with their role.

B.4.5 County Public Works Communications Infrastructure

County Public Works field personnel utilize the Countywide Interoperable Radio System. The system operates on ultra-high frequencies and a secondary back-up radio system exists for system redundancy. County Public Works operates a 24-hour dispatch center that serves as a communications hub with field forces and with the public. The dispatch center is highly resourceful and integral to response.

B.4.6 County Public Works Facilities, Equipment, and Supply

The County Public Works fleet comprises approximately 3,360 pieces of equipment. The diversity of equipment is incredible, including on-road light-, medium-, and heavy-duty vehicles, which include electric/plug-in hybrid automobiles, pick-up trucks, vans, utility body trucks, large dump trucks, street sweepers, and vacuum jet trucks. There is also off-road and specialized equipment, such as backhoes, wheel loaders, and motor graders. County Public Works also maintains a robust inventory of portable equipment, such as pavement saws, stump grinders, and arrow boards.

County Public Works deployed a water truck to assist with watering animals during the Woolsey incident in cooperation with County Animal Care.

County Public Works maintains contracts for as-needed equipment and vehicle rentals. During normal operations and emergencies, County Public Works regularly executes these contracts to supplement its fleet of equipment.

County Public Works maintains a warehouse network that comprises a main warehouse and outlying satellite warehouses located strategically throughout the County. The warehouses stock a wide variety of materials ranging from road materials, traffic poles, pipes, stationary materials, street posts, signs, guardrails, safety items, seasonal items, emergency items, and thousands of other items. To support the Woolsey Fire, this warehouse system provided several critical items to the divisions deployed directly in the fire areas, including large quantities of traffic signs, barricades of numerous sizes, caution tape, emergency signs, traffic cones, glass beads, and traffic paint for road repairs. Other essential items provided were traffic signals, delineators, barricades, sheet metal, and personal protective equipment, such as safety vests, respirators, and safety glasses.

County Public Works operating divisions control the items the warehouse carries as standard stock. County Public Works also maintains numerous vendor procurement agreements capable of supplying provisions for emergency ordering of a wide variety of commodities. Given the size and duration of the Woolsey Fire, these vendor contracts quickly replenished necessary supplies.

B.4.7 County Public Works Situational Awareness Monitoring

County Public Works monitors and disseminates situational awareness information from the National Weather Service and County Emergency Management, as well as from numerous additional sources, including local news media, U.S. Geological Survey, city feeds, County department feeds, etc.

B.5 Los Angeles County Department of Animal Care and Control



Los Angeles County Department of Animal Care and Control (County Animal Care) is one of the largest and most progressive animal care and control agencies in the United States. County Animal Care's animal care centers serve unincorporated Los Angeles County and 43 contract cities, with a combined total population of over three million residents. The County Animal Care officers patrol over 3,400 square miles of cities, deserts, beaches, and mountains. County Animal Care has 442 employees and an annual budget of $52 million.

B.5.1 County Animal Care Organization

County Animal Care operates seven animal care centers in the cities of Agoura Hills, Baldwin Park, Carson/Gardena, Castaic, Downey, Lancaster, and Palmdale. These animal care centers provide safe, humane care for animals lost or no longer wanted by their owners. The animal care center staff and volunteers work tirelessly to reunite lost pets with their owners or to find new homes for homeless pets.

The Department employs sworn Animal Control Officers who serve as a key component of the community's public and animal safety program. County Animal Care's Animal Control Officers enforce State and local animal laws, respond to requests for service, and patrol neighborhoods seven days a week, 24 hours a day.

B.5.2 County Animal Care Emergency Response Resources

County Animal Care has one person assigned to emergency response. If an emergency occurs, support staff are provided by the seven animal care centers. The scope and size of the emergency dictates how many support staff will be dedicated for an event. During the Woolsey Fire response,

almost one-third of the County Animal Care workforce was deployed to respond to the emergency while simultaneously ensuring normal operations at seven animal care centers:

- Director
- Three Deputy Directors
- Six Animal Control Managers
- Three Lieutenants
- 13 Sergeants
- 29 Corporals
- 31 Animal Control Officers
- 23 Animal Care Attendants
- Three Veterinarians
- Three Registered Veterinary Technicians
- Three Intermediate Typist Clerks

Volunteers and mutual aid partners from six agencies were activated to support County Animal Care efforts.

County Animal Care has seven four-horse trailers, two command-post trailers with two Ford F-350 trucks to pull them, and four AnimalSafe (mobile shelter) trailers. All were deployed during the event.

B.5.3 County Animal Care Communications

The Department has the following methods of communicating during emergencies:

- Countywide Interoperable Radio System radios
- Cell phones
- Email
- Phone trees
- One ham radio (based at the Agoura animal care center)
- Tough books

B.5.4 County Animal Care Disaster Response Training

The Department requires all staff acting in the role of emergency responders to undertake Incident Command System (ICS) training from FEMA. County Animal Care emergency responders receive County Disaster Service Worker training, as well as on-the-job training for various departmental functions during an emergency. County Animal Care staff and key volunteers receive large animal

handling training to respond to livestock sheltering sites. Staff who pull trailers receive departmental training for this activity. All responding staff receive small animal handling training.

B.6 CALIFORNIA HIGHWAY PATROL



Statewide, the mission of the California Highway Patrol (CHP) is to "provide the highest level of safety, service, and security." Two primary CHP areas serve the area of the Woolsey Fire: The West Valley Area in Woodland Hills and the Moorpark Area located in Moorpark.

The primary functions of the CHP in the region affected by the Woolsey Fire include traffic enforcement on all freeway systems and traffic enforcement and traffic investigations on all roadways of unincorporated land. During disasters such as the Woolsey Fire, the CHP engages with their law enforcement partners, maintains a decision-making presence at the ICP, and provides traffic control operations, including road closures. While evacuation is not a primary function of the CHP, when necessary, CHP assists the local sheriff's Deputies with evacuation notification.

B.6.1 CHP Regional Organization

There are eight regional CHP divisions in the State of California. Each division comprises 12 to 20 CHP areas. The offices in these areas are the central point of CHP Officer assignment and deployment.

Officers assigned to the Moorpark area patrol approximately 650 linear miles of freeways, state routes, and unincorporated county roads, including US-101 from the Los Angeles County line to Camarillo Springs Road, State Route 23 from US-101, and State Route 118 from the Los Angeles County line to State Route 34. The Moorpark area also covers many unincorporated areas of

Ventura County, such as Oak Park, Newbury Park, Lynn Ranch, Somis, and Piru. The Moorpark area is led by a CHP Lieutenant.

Officers assigned to the Ventura area patrol the Pacific Coast Highway (Mugu Rock) to Camarillo and north to Santa Barbara.

Officers assigned to the West Valley area patrol an area of approximately 400 square miles. The bulk of the 400 square miles is within the San Fernando Valley, which is approximately 260 square miles. Within the boundaries of the West Valley response area, there are approximately 2.1 million residents, including residents of the City of Los Angeles, Hidden Hills, Calabasas, Agoura Hills, Westlake Village, Malibu, Lake Manor, Twin Lakes, and Topanga Canyon. The West Valley area is led by a CHP Captain.

B.6.2 CHP Regional Emergency Response Resources

The Moorpark area has an approved staff of 40 Officers, four Sergeants, and one Lieutenant. The Ventura area has an approved staff of 35 Officers and six Sergeants. The West Valley area has an approved staff of approximately 100 Officers, 10 Sergeants, two Lieutenants, and one Captain. During normal operations, the West Valley area has approximately 12 to 14 Officers on duty.

B.6.3 CHP Regional Communications

Statewide, the CHP divides communication systems by region. Two regional communications centers cover the footprint of the Woolsey Fire: the Los Angeles Communications Center and Ventura Communications Center. CHP Officers can easily communicate with CHP Officers based in other communications center regions. CHP mobile and handheld radios are programmable and allow for interoperability with local law enforcement agencies. A more common practice for interagency communications is to use the communications dispatchers as relays to other allied agencies.

B.6.4 CHP Regional Disaster Response Training

Every CHP Officer is trained in the ICS annually. Advanced ICS training is mandatory for all CHP personnel at the rank of Sergeant and above. CHP hosts regular training for Officers, including tabletop scenarios for emergencies like the Woolsey Fire. When possible, the CHP enjoys partnering with local law enforcement agencies for joint training. The CHP adopted a goal of ensuring that all field commanders discuss significant issues and training options on a quarterly basis to provide enhanced services to its partner agencies.

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EXHIBIT A

SANTA MONICA MOUNTAINS / MALIBU WILDFIRE HISTORY

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EXHIBIT A—SANTA MONICA MOUNTAINS / MALIBU WILDFIRE HISTORY

157 Historical "Malibu" Wildfires (Ventura and Los Angeles Counties)

Year	Fire Name	Location	Acres	Structures Lost	Deaths
1897	Great Drought	Malibu			
1903	Rindge	Malibu Canyon	10,000		
1904	Malibu	Malibu			
1909	Malibu 9/15/09	Malibu			
1909	Malibu 10/25/09	Malibu			
1910	Malibu	Las Flores – Temescal			
1911	Santa Monica	Malibu Mtns.			
1913	Topanga	Topanga – Escondido			
1913	Dry Canyon	Malibu Hills	10,000		
1917	Malibu Canyon	North of Malibu	2,000		
1921	Decker	Malibu	500		
1921	Dume Canyon	Corral Canyon – Malibu	8,000		
1923	Coopers Ranch	Topanga Canyon – Las Flores Canyon	50		
1924	Mulholland	Santa Monica Mtns.	300		
1925	Latigo Canyon	Malibu	4,670		
1925	Topanga P.O.	Trippet Ranch	150		
1926	Montgomery	Malibu	175		
1926	Old Topanga #2	Topanga	200		
1927	Malibu Junction	Calabasas	420		
1927	Cooper	Calabasas	3,118		
1928	Las Flores	Malibu	400		
1929	Malibu Colony	Las Flores Canyon	274	13	
1929	Encino Reservoir	Mulholland Highway	800		
1930	Tuna Summit	Topanga	157		
1930	Potrero	Decker Canyon	15,000		
1930	Picture City (Paramount Rh.)	Calabasas	400		
1935	Malibu / Latigo / Sherwood	Kanan/Decker Canyon	28,599		
1935	Pt. Dume	Malibu	150		
1936	Medea	Malibu	119		
1936	Cold Creed	Malibu	2,591		
1936	Escondido Canyon	Malibu	200		
1938	Bell Ranch	Calabasas	411		
1938	Topanga	Fernwood – PCH	16,500	350	
1940	Sequit	Malibu	182		
1940	Tuna Summit	Malibu	40		
1942	Malibu	Malibu Canyon			

Year	Fire Name	Location	Acres	Structures Lost	Deaths
1942	Las Flores	Malibu	5,924		
1943	Las Flores	Malibu Canyon	5,800		
1943	Woodland Hills/Las Virgenes	Kanan/Decker Canyon	15,300		
1944	McCoy	Calabasas – Las Virgenes	84		
1944	Summit Ridge	Topanga	47		
1946	Dume	Malibu	210		
1947	La Fouge (Triunfo Pass)	Malibu	640		
1948	Topanga	Malibu	3,155		
1949	Reindl	Malibu	215		
1949	Susana	Simi Chatsworth	19,080		
1951	Houston	Malibu	571		
1952	Topanga – Mulholland	Topanga Canyon	82		
1953	Udell	Malibu	560		
1953	Corral	Malibu	159		
1954	Triunfo	Malibu	169		
1955	Houston	Malibu	500		
1955	Ventu	Thousand Oaks	12,638		
1956	Hume	Malibu	1,940		
1956	Sherwood/Newton	Kanan/Decker Canyon	35,537	120	1
1958	Hertz	Topanga Canyon – Mulholland	191		
1958	Warner	Malibu	4,040		
1958	Liberty	Malibu Canyon	17,860	107	
1958	Mulholland	Topanga Canyon	4,982		
1959	Topanga	Two miles North of PCH	450		
1959	Stuart Ranch	Malibu Knolls	60		
1961	Murphy	Malibu	40		
1961	Topanga	Los Angeles City – Mulholland	8,750		
1963	Rocketdyne	Chatsworth	300		
1966	Susana Knolls	Black Canyon – Rocketdyne	1,100		
1966	Summit Drive	Calabasas Highlands	50		
1966	Rocketdyne	Chatsworth	301		
1967	Palmer	Chatsworth	14,248		
1967	Brown Canyon	Chatsworth	118		
1967	Round Meadow	Calabasas	100		
1967	Junction	Topanga Canyon	640		
1967	Latigo	Malibu	2,868		
1968	Stoney Point	Chatsworth	40		
1970	Stagecoach	Chatsworth	45		
1970	Stokes Canyon	Mulholland Drive – Malibu	50		
1970	Hoagland	Stokes Canyon – Malibu	50		
1970	Summit	Topanga Canyon	65		

Year	Fire Name	Location	Acres	Structures Lost	Deaths
1970	Golf Course	Calabasas	200		
1970	Wright	Malibu Canyon	31,000	403	10
1970	Clampitt	Simi	107,103	80	4
1973	Potrero	Thousand Oaks	12.297		3
1973	Tripett	Topanga Canyon	2,770		
1975	Thompson	Chatsworth	800		
1975	Stagecoach	Chatsworth	325		
1975	Potrero	Thousand Oaks			
1976	Landfill	Las Virgenes Canyon	60		
1976	Malibu	Malibu Canyon - South of Tunnel	35		
1976	Los Robles	Thousand Oaks	2,245	1	
1977	Canyon	Topanga Canyon	1,162		
1977	Carlisle	Westlake	1,368		
1978	Box Canyon	Chatsworth	100		
1978	Ramirez	Malibu	100		
1978	Mulholland	Seminole Hot Springs	50		
1978	Trancas	Malibu	200		
1978	Kanan	Agoura – Malibu	25,385	230	2
1979	Liberty Canyon	Agoura	157		
1979	Lost Hills	Agoura	170		
1979	Box Canyon	Chatsworth	945		
1979	Meyer	Chatsworth	40		
1980	Leota	Chatsworth	40		
1980	Hill	Thousand Oaks			
1980	Las Virgenes	Calabasas	2,521		
1981	Lindero	Westlake Village	111		
1981	Lindero Canyon	Westlake Village	47		
1981	Topanga (Skyline)	Topanga Canyon	60		
1981	Oat Mountain	Chatsworth	17,786		
1981	Chatsworth Reservoir	Chatsworth – L.A. City	1,040		
1982	Hall	Simi			
1982	Highlands	Calabasas Highlands	182		
1982	Dayton	Chatsworth – Malibu	42,540	74	
1984	Gun	Calabasas – Las Virgenes Road	125		
1984	Westlake	Las Virgenes Reservoir	228		
1984	Viewridge	Topanga Canyon	404		
1985	Sherwood	Westlake Village	3,823		
1985	Mulholland	Liberty Canyon – Las Virgenes Road	68		
1985	Piuma	Malibu Canyon – Corral Canyon	5,198		
1985	Decker	Malibu	6,526	6	
1985	Rocky Peak (Hummingbird)	Chatsworth	2,420		

Year	Fire Name	Location	Acres	Structures Lost	Deaths
1985	Box Canyon (Pioneer)	Chatsworth	1,238		
1986	Timberlake	Agoura	60		
1986	Browns	Chatsworth	117		
1986	Cornell	Agoura	40		
1986	Woolsey	Woolsey Canyon – Chatsworth	100		
1987	Lindero Canyon	Westlake Village	40		
1987	Agoura	Agoura	166		
1988	Cornell Rd	Agoura	75		
1988	Adobe	Agoura Hills	242		
1988	Agoura High	Agoura	60		
1988	Rolling Ridge Drive	Agoura	55		
1988	Keuhner	Chatsworth	3,818		
1989	Bowers Ranch	Chatsworth	100		
1989	Pacific	Malibu	3,180		
1992	Farralone	Chatsworth	46		
1992	Westlake	Kristen Lee Drive	50		
1993	Cheeseboro	Highway 101 – Agoura	50		
1993	Green Meadow	Thousand Oaks	38,152		
1993	Chatsworth	Box Canyon	2,036		
1993	Chatsworth	Chatsworth	37,571	43	
1993	Old Topanga	Topanga – Malibu	16,516	350	3
1994	Latigo	Latigo Canyon – Malibu	64		
1996	Calabasas	Malibu Canyon to coast	12,377	10	
1997	Rhapsody	Lindero Canyon – Augora	121		
2000	Calabasas	Las Virgenes Canyon – VNC	1,074		
2003	Pacific	Trancas Canyon – Malibu	797		
2005	Topanga	WB 118 Freeway to Calabasas	23,396	6	
2006	Latigo	Corral Canyon – Mesa Peak Mtwy.	37		
2007	Malibu Road	Pacific Coast Highway	20	5	
2007	Corral	Corral Canyon – Malibu	4,901	49	
2007	Canyon	Malibu Canyon North of PCH	3,782	14	
2008	Sesnon	Porter Ranch	14,703	63	1
2013	Old	NB 101 – Lost Hills Road, Calabasas	236		
2013	Springs	Newbury Park	24,000	15	
2016	Mulholland	Santa Monica Mountain	12		1
2016	Old	Mulholland Highway – Calabasas	516		
2017	Stokes	Calabasas	50		
2017	Topanga	Topanga	29		
2018	Woolsey	Santa Susana /Malibu	96,945	1,643	3

EXHIBIT B

FIRE WEATHER

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EXHIBIT B—FIRE WEATHER

The following figures illustrate weather data on November 8, 2019 in Cheeseboro and Malibu Hills.

Figure 1—Fire Weather Wind Gusts

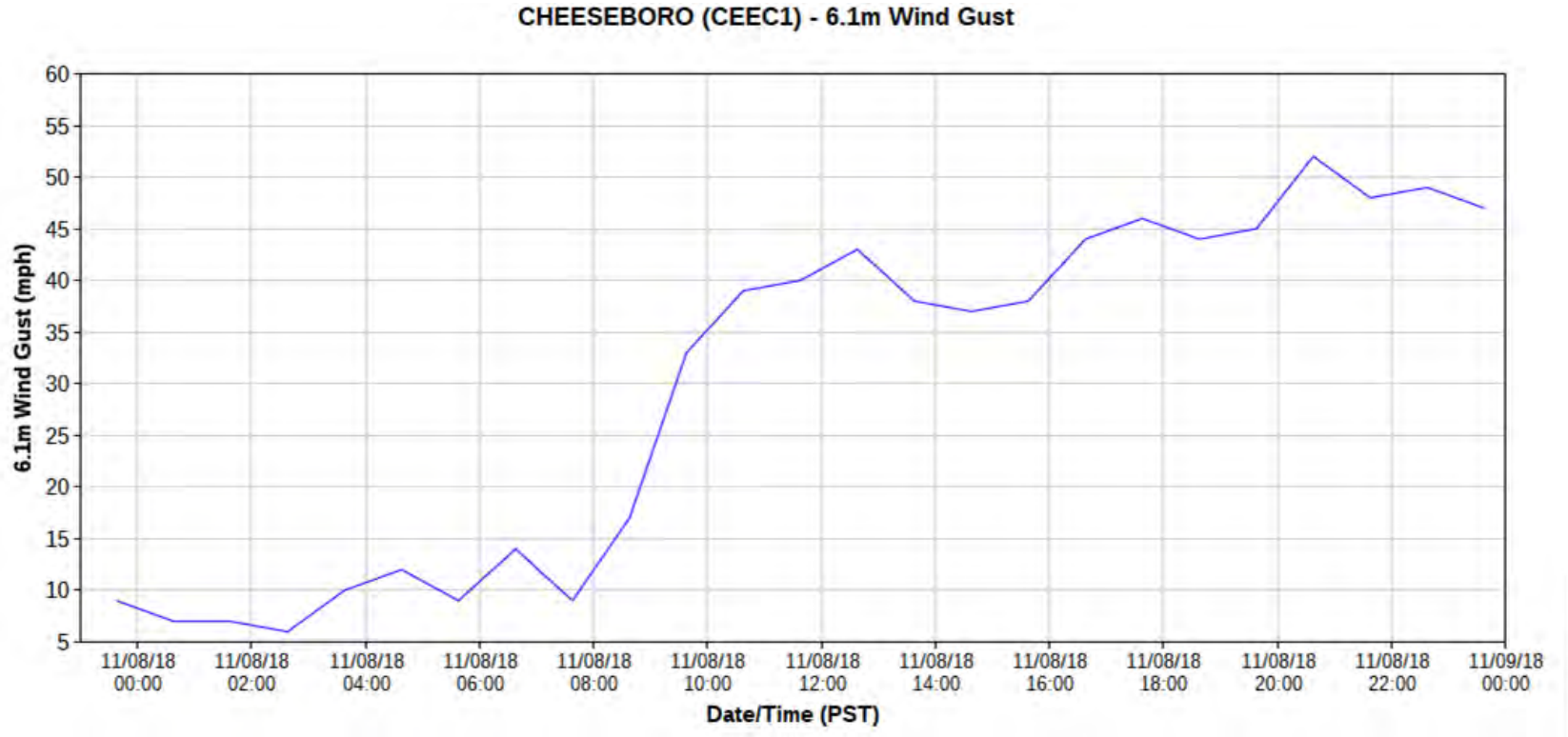


Figure 2—Fire Weather Humidity

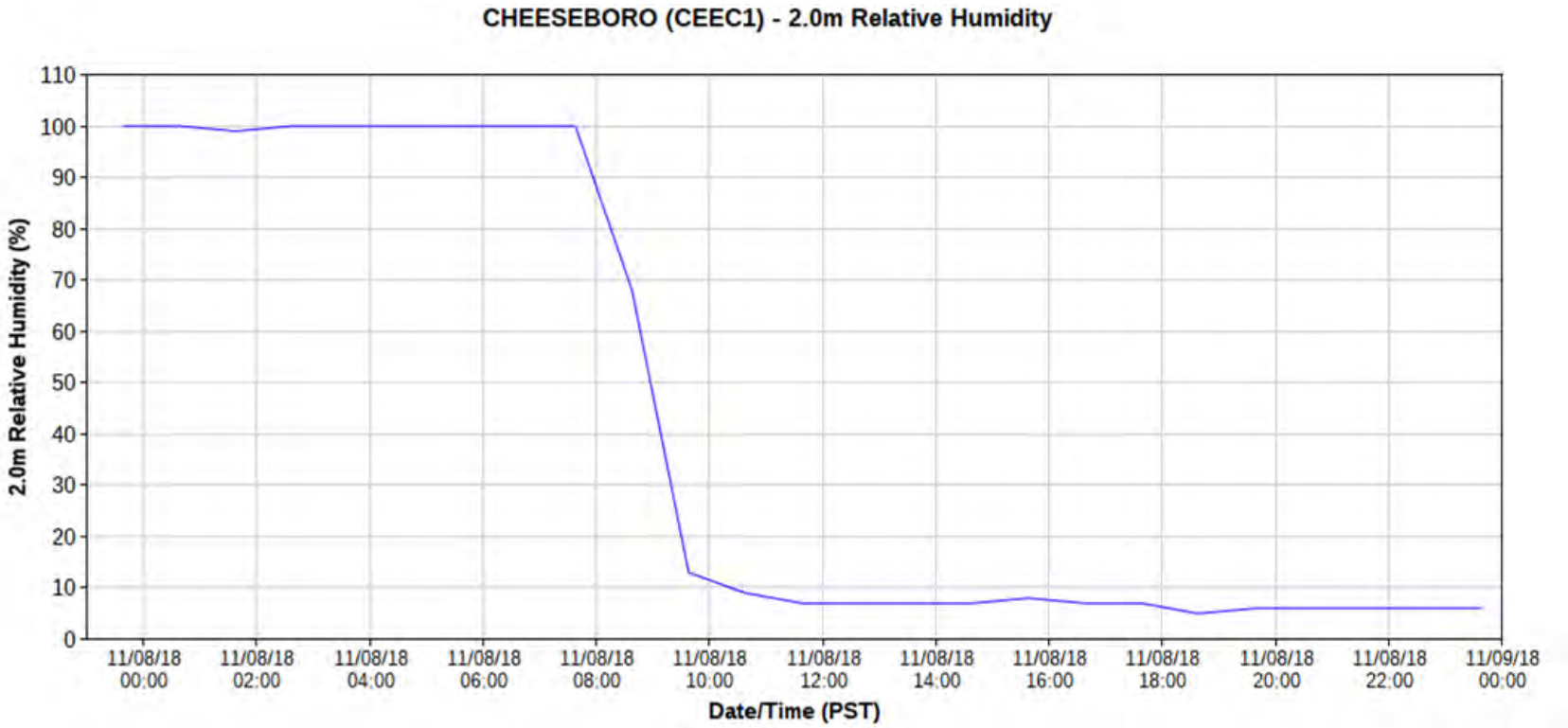


Figure 3—Malibu Hills Wind Gusts

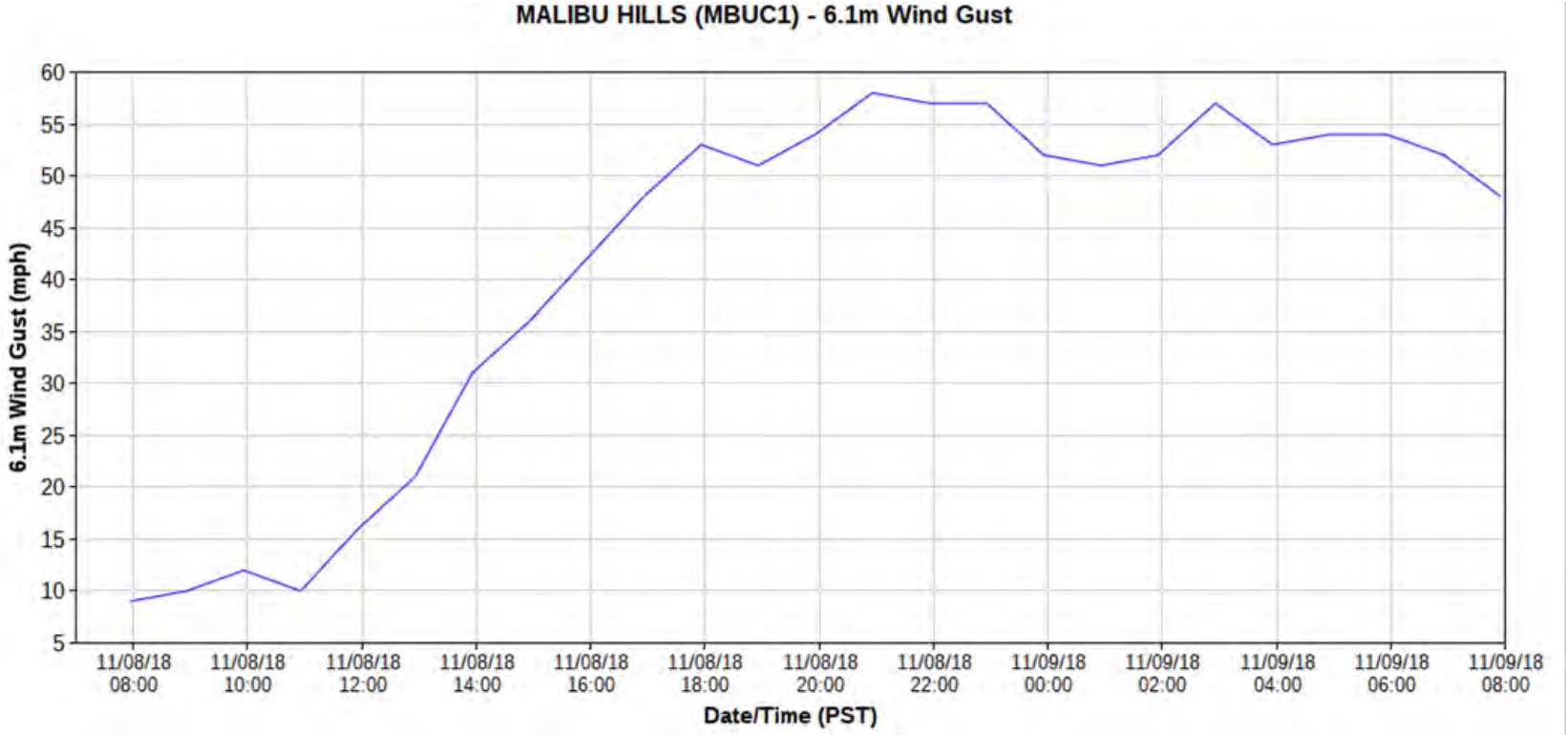


Figure 4—Malibu Hills Humidity

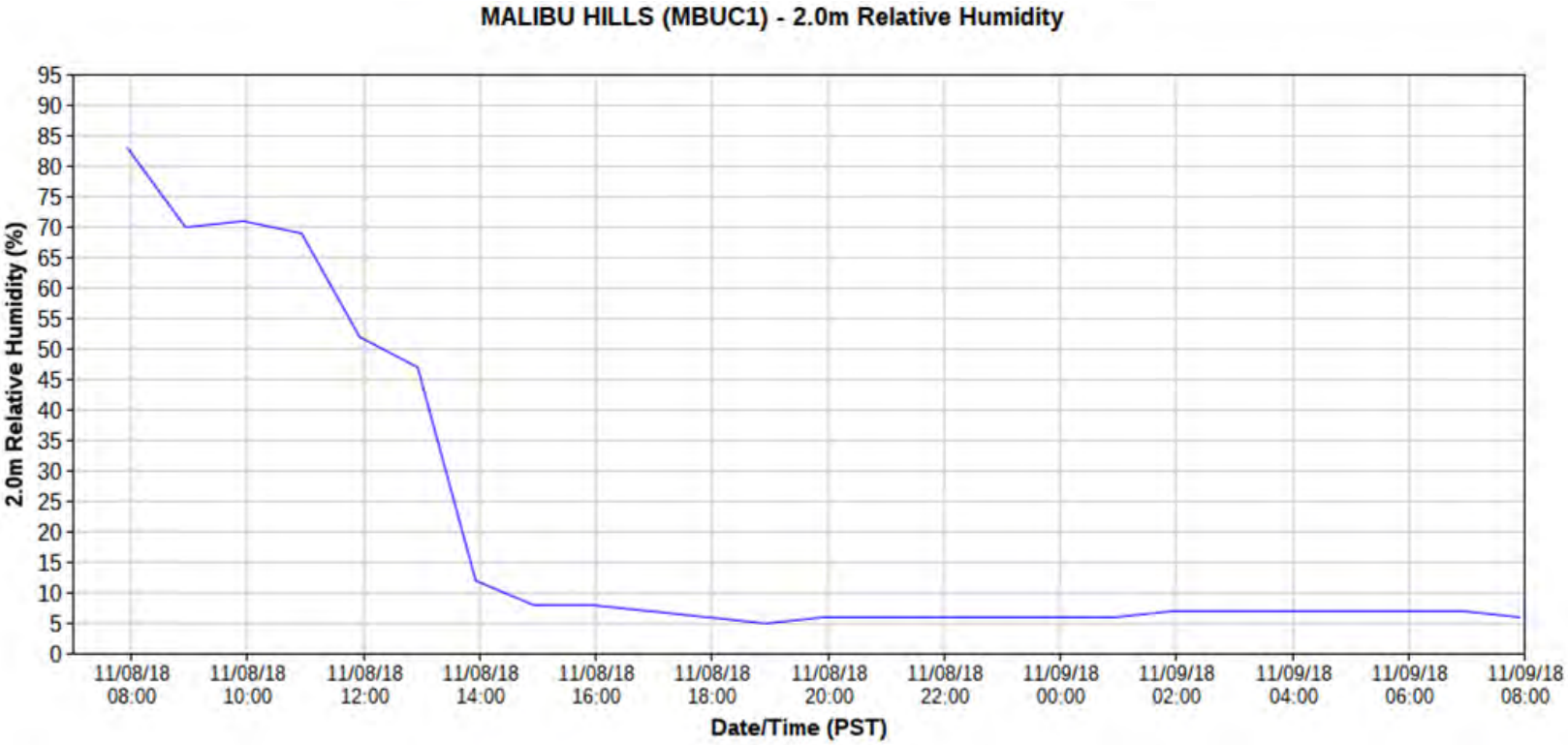


EXHIBIT C

WOOLSEY FIRE PATH PROGRESSION OVER THE GEOGRAPHY

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Fire Start Area to 2:24 – 4:00PM



Fire General Origin Area View to Southwest



Halfway Down Fire Origin



Fire at Sunset

Moorpark
Unincorporated
Simi Valley
Camarillo
IA to Sunset
Unincorporated
Los Angeles
Thousand Oaks
Hidden Hills
Agoura Hills
Westlake Village
Calabasas
Unincorporated
Unincorporated
Malibu

WIND DIRECTION NORTHEAST

Terrain Leaving Origin at Sunset

Fire Spread Sunset to 101 Jump

Moorpark
Unincorporated
Simi Valley
arillo
Unincorporated
IA to Sunset
Sunset to Jump at Hwy 101
Thousand Oaks
Los Angeles
Hidden Hills
Agoura Hills
Westlake Village
Calabasas
Unincorporated
Unincorporated
Malibu

WIND DIRECTION NORTHEAST

Terrain Approaching 101 Cross Point



Closer to 101 Cross Point

← Liberty Canyon Road / Palo Comado Road →

Terrain at 2nd 101 Cross Point



101 Cross Point Looking NE to Origin

101 Main Cross Point Looking East

101 Cross Point Area Fire Behavior



101 Cross Point Upper Hillside Spread



Terrain Behind 101 Cross Point

Fire Spread 101 to Ocean

Moorpark

Unincorporated

Simi Valley

Camarillo

Thousand Oaks

IA to Sunset

Unincorporated

Sunset to Jump at Hwy 101

Los Angeles

Hidden Hills

Agoura Hills

Westlake Village

Calabasas

Unincorporated

Unincorporated

Hwy 101 to Malibu

Malibu

WIND DIRECTION NORTHEAST

101 Cross Point to Malibou Lake

Malibou Lake

Fire Storm Entering Malibu City

Helicopter Work At Fire 1st Contact at Malibu

Terrain Approaching Malibu Inland Edge

First Contact Area to Ocean Distance



West of PCH Back to Mountains



Daytime Fire Behavior

Daytime Fire Behavior



Final Fire Footprint

Sunset to Jump at Hwy 101

IA to Sunset

Hwy 101 to Malibu

WIND DIRECTION

Structure Damage Locations

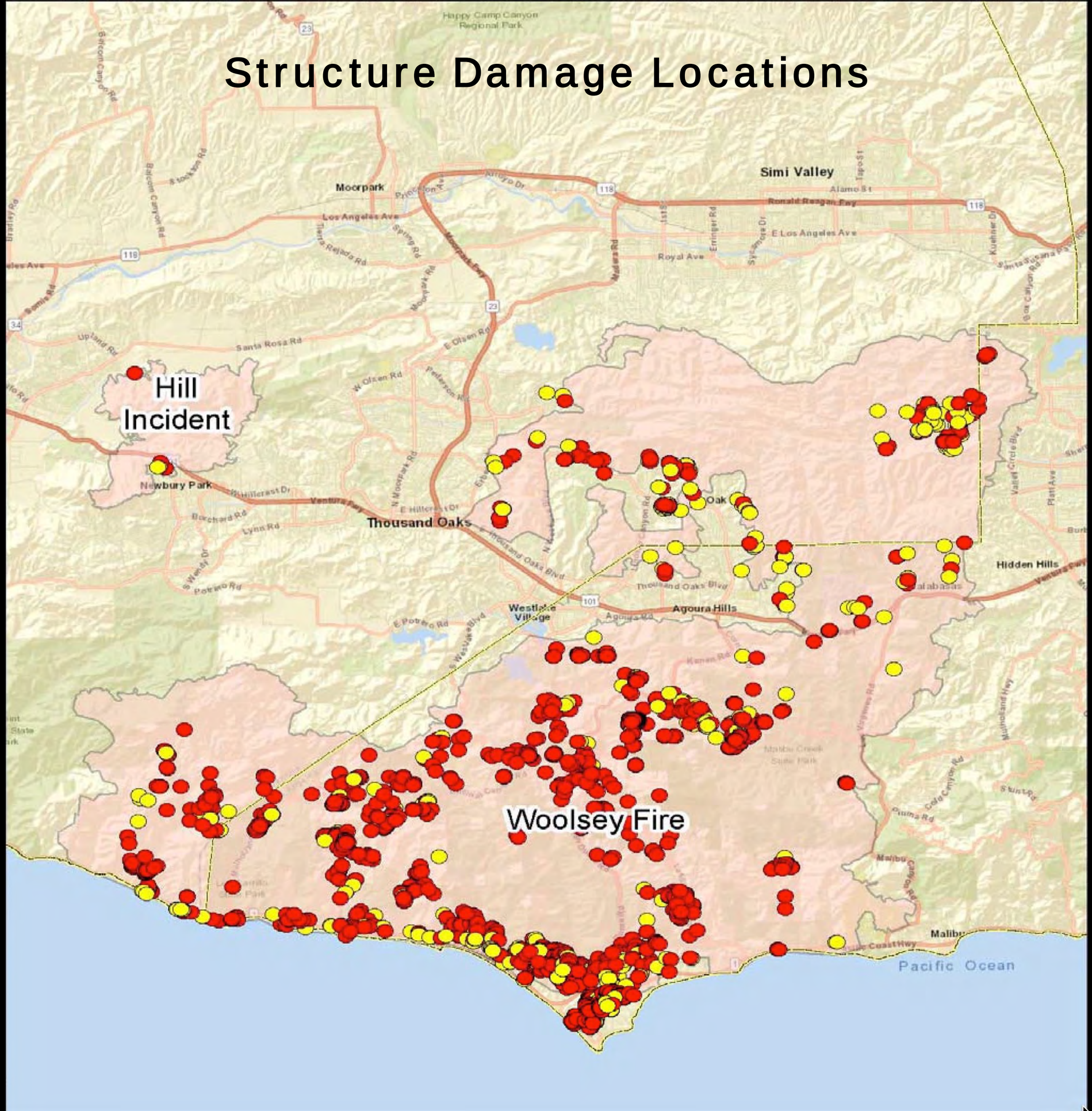
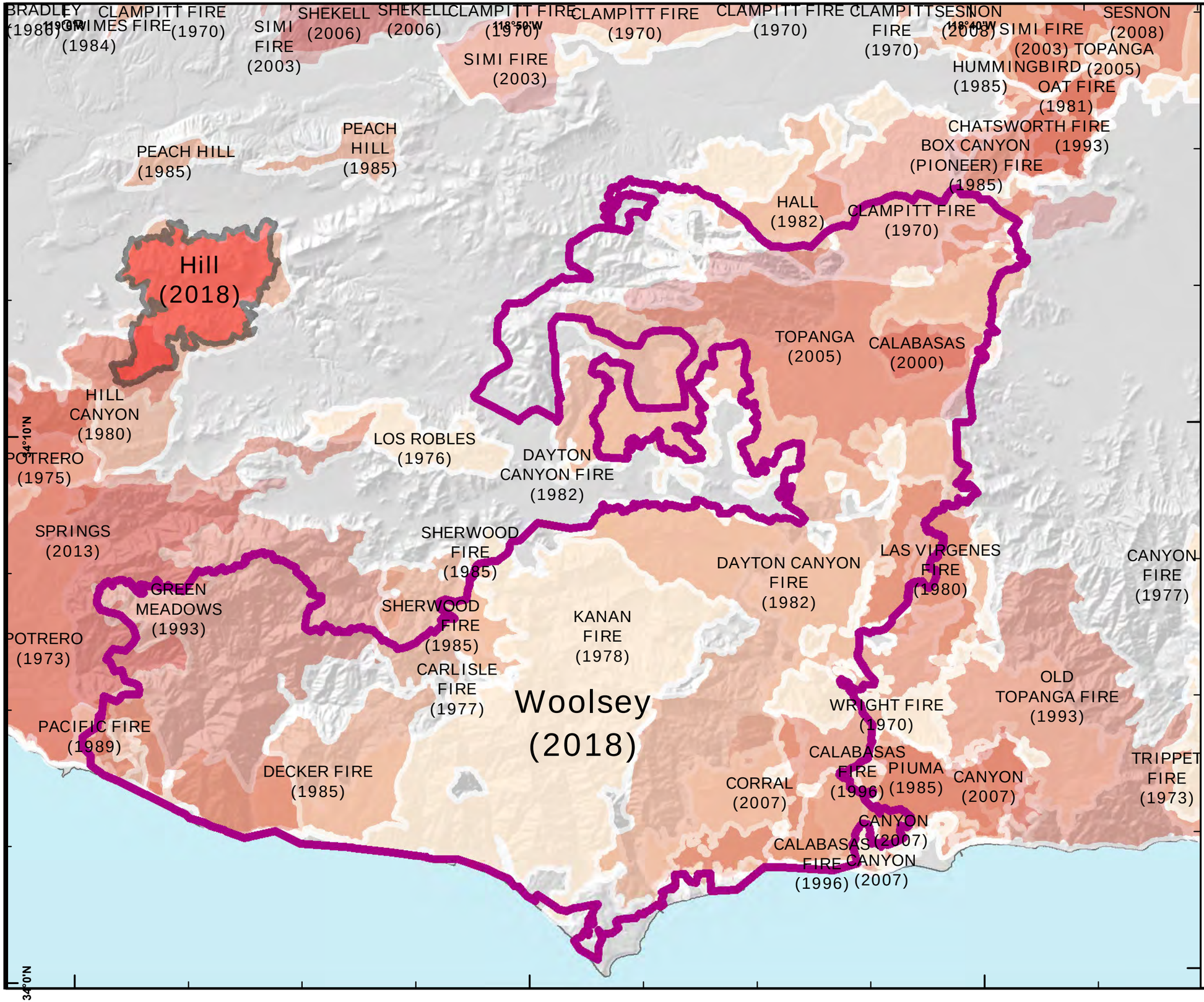


EXHIBIT D

WOOLSEY FIRE AREA FIRE HISTORY MAP

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FIRE HISTORY MAP

Woolsey Incident
CA-VNC-91023
November 19, 2018

Fire History 1970 to Present

- 1970-1979
- 1980-1989
- 1900-1999
- 2000-Present
- Hill Fire 2018
- Woolsey Fire Perimeter

N
W E
S

1:125,000
NAD 83

0 2.5 5
Miles