



2020

URBAN WATER MANAGEMENT PLAN

CRESCENTA VALLEY WATER DISTRICT



**JUNE 2021
PUBLIC DRAFT**





2020

URBAN WATER MANAGEMENT PLAN



Crescenta Valley Water District

2700 Foothill Boulevard
La Crescenta, CA 91214
Phone: (818) 248-3925, Fax: (818) 248-1659

JUNE 2021 PUBLIC DRAFT

Prepared by:



CONSULTING ENGINEERS
1130 W. Huntington Drive
Unit 12
Arcadia, CA 91007
(626) 821-3456



TABLE OF CONTENTS

Executive Summary & Lay Description

Section	Page
Introduction.....	ES-1
Service Area and Facilities.....	ES-1
Water Demand.....	ES-2
Water Sources and Supplies.....	ES-2
Future Water Supply Projects.....	ES-2
Water Service Reliability.....	ES-3
Challenges Ahead & Strategies for Managing Reliability Risks.....	ES-4

Section 1: Introduction

Section	Page
1.1 Urban Water Management Plan Purpose & Summary.....	1-1
1.2 Past Updates to the UWMP Act.....	1-2
1.3 Updates to the UWMP Act for 2020 UWMPs.....	1-2
1.4 2020 UWMP Scope & Format.....	1-3
1.5 Agency Overview.....	1-5
1.6 Service Area and Facilities.....	1-7

Section 2: Water Demand

Section	Page
2.1 Overview.....	2-1
2.2 Factors Affecting Demand.....	2-1
2.3 Water Use within CVWD's Service Area.....	2-5
2.4 Water Conservation Act.....	2-7
2.5 Water Use Reduction Plan.....	2-15
2.6 Demand Projections.....	2-17

Section 3: Water Sources & Supply Reliability

Section	Page
3.1 Overview.....	3-1
3.2 Imported Water.....	3-1
3.3 Groundwater.....	3-7
3.4 Water Quality.....	3-9
3.5 Current Water Supply.....	3-12
3.6 Projected Climate Change Impacts to Supplies.....	3-14
3.7 Water Supply Projections.....	3-20
3.8 Supply vs Demand.....	3-21
3.9 CVWD's Supply Reliability.....	3-26
3.10 Reduced Delta Reliance Reporting.....	3-36
3.11 Energy Intensity.....	3-37

Section 4: Conservation Measures

Section	Page
4.1 Overview	4-1
4.2 CVWD Conservation Programs.....	4-2

Section 5: Water Shortage Contingency Plan

Section	Page
5.1 Overview	5-1
5.2 Water Supply Reliability Analysis	5-1
5.3 Annual Water Supply and Demand Assessment Procedures	5-4
5.4 Shortage Stages and Shortage Response Actions	5-7
5.5 Communication Protocols.....	5-27
5.6 Compliance and Enforcement.....	5-30
5.7 Legal Authorities	5-32
5.8 Financial Consequences of WSCP Implementation	5-32
5.9 Monitoring and Reporting	5-33
5.10 Special Water Feature Distinction	5-34
5.11 WSCP Adoption and Refinement Procedures	5-34

Section 6: Recycled Water

Section	Page
6.1 Overview	6-1
6.2 Wastewater Description & Disposal	6-1
6.3 Current Recycled Water Uses	6-3
6.4 Potential Recycled Water Uses	6-3
6.5 Optimization Plan.....	6-3

Section 7: Future Water Supply Projects & Programs

Section	Page
7.1 Overview	7-1
7.2 MWD Regional Supply Projects & Programs.....	7-1
7.3 Water Management Tools	7-2
7.4 Transfer or Exchange Opportunities	7-2
7.5 Planned Water Supply Projects & Programs.....	7-2
7.6 Desalination Opportunities	7-3

Section 8: Plan Adoption Process

Section	Page
8.1 Overview	8-1
8.2 Details of Coordination Efforts.....	8-2
8.3 Plan Submittal	8-3



Appendices

Appendix	Description
Appendix A	ULARA Judgment
Appendix B	Rockhaven Well Operation & Water Sale Agreement
Appendix C	CVWD Water Conservation Program
Appendix D	2019 County of LA All-Hazards Mitigation Plan
Appendix E.....	CVWD Board Resolutions Adopting 2020 UWMP & WSCP
Appendix F.....	Two-Week & One-Week Notification of Public Hearing
Appendix G	60-Day Notification of Public Hearing
Appendix H	WUE Tool 2020 Population
Appendix I.....	DWR Data Tables & UWMP Checklist

THIS PAGE LEFT BLANK INTENTIONALLY

ACRONYMS

Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
Basin	Verdugo Groundwater Basin
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
Board	Metropolitan Water District of Southern California's Board of Directors
cfs	cubic feet per second
CII	Commercial/Industrial/Institutional
CIMIS	California Irrigation Management Information System
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Crescenta Valley Water District
CWC	California Water Code
DDW	State Water Resources Control Board Division of Drinking Water
DMM	Demand Management Measure
DWR	Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ETo	Evapotranspiration
FMWD	Foothill Municipal Water District
GPCD	gallons per capita per day
gpf	gallons per flush
GW	Groundwater
GWP	Glendale Water and Power
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
HR	Hydrologic Region
IRP	Integrated Resource Plan
IWA	International Water Association
JWPCP	Joint Water Pollution Control Plant
LACSD	Sanitation Districts of Los Angeles County
LADWP	Los Angeles Department of Water and Power

LAGWRP	Los Angeles/Glendale Water Reclamation Plant
LCID	La Cañada Irrigation District
LRWSP	Local, Reliable Water Supply Program
MAF	million acre-feet
MCL	Maximum Contaminant Level
MGD	million gallons per day
MOU	Memorandum of Understanding
MTBE	Methyl tertiary butyl ether
MWD	Metropolitan Water District of Southern California
MWELO	Model Water Efficient Landscape Ordinance
NDMA	N-nitrosodimethylamine
PCE	Tetrachloroethylene
PPCPs	Pharmaceuticals and Personal Care Products
PHETs	Premium HETs
QSA	Quantification Settlement Agreement
RHNA	Regional Housing Needs Assessment
SBx7-7	Senate Bill x7-7
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SDP	Seawater Desalination Program
SMSS	Soil Moisture Sensor System
SWP	State Water Project
TDS	Total Dissolved Solid
ULARA	Upper Los Angeles River Area
ULFT	Ultra-Low-Flow Toilet
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compound
WARN	Water Agency Response Network
WBIC	Weather-Base Irrigation Controller
WRP	Water Reclamation Plant
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSDM	Water Surplus and Drought Management Plan

EXECUTIVE SUMMARY & LAY DESCRIPTION

INTRODUCTION

This report serves as the 2020 update of the Crescenta Valley Water District's (CVWD) Urban Water Management Plan (UWMP). This UWMP has been prepared consistent with the requirements under Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act) and its amendments. The Act requires that "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt, in accordance with prescribed requirements, an urban water management plan." These plans must be filed with the California Department of Water Resources (DWR) every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. 2020 UWMP updates are to be adopted by July 1, 2021.

The Act has been amended on several occasions since its initial passage in 1983. New requirements of the Act due to SBx7-7 state that per capita water use within an urban water supplier's service area must decrease by 20 percent by the year 2020 in order to receive grants or loans administered by DWR or other state agencies. The legislation sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. Each urban retail water supplier developed water use targets by July 1, 2016. Effective 2021, urban retail water suppliers who do not meet the 2020 water conservation requirements established by this bill are not eligible for state water grants or loans.

Section 1.4.3 offers a summary of each section of this 2020 UWMP.

SERVICE AREA AND FACILITIES

CVWD provides water to a population of approximately 32,462 throughout its service area. CVWD receives its water from two main sources, the Verdugo Groundwater Basin (Basin), and imported water from Metropolitan Water District of Southern California (MWD) through the Foothill Municipal Water District (FMWD). CVWD provides potable drinking water to its customers via 12 local groundwater wells, and imported water supply through 3 MWD connections and an emergency inter-tie system with the City of Glendale.

WATER DEMAND

The total water demand for the 32,462 people served by CVWD is over 4,200 acre-feet of potable water for the 2020 calendar year.

CVWD has selected to comply with **Method 3**, 95 percent of the State Hydrologic Region Target, of the SBx7-7 compliance options; however, the minimum required target applies and CVWD's 2015 interim water use target was 151 GPCD, and the 2020 final water use target is **142 GPCD**. A description of the compliance options is discussed in **Section 2.4**.

In 2015, CVWD had a per capita water use of 100.5 GPCD. In 2020, CVWD has a per capita water use of 116 GPCD. Despite the COVID-19 pandemic requiring majority of individuals to work from home, CVWD was able to achieve their 2020 Target Goals by having a GPCD of 116 (2020 Target was 142).

WATER SOURCES AND SUPPLIES

On average over the last five years, 48 percent of CVWD's source water is local ground water supply in the Basin. The majority of CVWD's ground water wells are located along the Verdugo Wash, south of Honolulu Avenue. The remaining 52 percent of CVWD's source water is imported water supplied by FMWD, which is a member agency to MWD. The sources of imported water supplies include the Colorado River and the State Water Project.

FUTURE WATER SUPPLY PROJECTS

CVWD is working towards the development of the Crescenta Valley County Park Stormwater Recharge Multiuse Project. This Project will allow CVWD to increase groundwater storage in the Basin by the installation and maintenance of underground infiltration galleries underneath portions of the existing park. This will be accomplished by utilizing the existing Los Angeles County Flood Control channels (Verdugo Wash and Dunsmuir Channel), and surface flow within the Crescenta Valley County Park to divert storm water during the rainy season into underground infiltration basins within the recreational area. The project will potentially increase the local ground water supply by an annual average of 500 acre-feet per year, thus enhancing CVWD's groundwater resource and reducing dependence on imported supplies. Also, through the process of capture, treatment, and reuse of storm water and dry weather flow, the project could potentially reduce the pollutant load from contaminating the Los Angeles River.

As funding permits, CVWD plans to rehabilitate its older groundwater wells with new technologies over the 10-year period that started in 2020. The existing wells are between 70 to 90 years old and have reached the end of their useful life. CVWD's current program is to perform at

least two well rehabilitations a year, which include cleaning the well casing with chemical treatment and installation of a liner to extend the life of the well.

In Fall 2020, CVWD began the rehabilitation of the Rosemont Reservoir. The 500,000-gallon reservoir rehabilitation project is midway through its construction phase, with most of its heavy construction completed. Construction is currently in Phase II of the rehabilitative process, including sandblasting, stripping, and adding primer coats to both the inside and outside of the tank. The project is estimated to be completed by March 2021. The reservoir structure has not been rehabilitated in over 20 years, and though the tank is starting to show signs of aging, its structural integrity has not been compromised over the years. This reservoir project is part of CVWD's Reservoir Rehabilitation Program for the next 12-years where CVWD plans to rehabilitated one reservoir per year.

WATER SERVICE RELIABILITY

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, dry, and multiple dry water years.

Groundwater supplies within the Verdugo Basin have remained stable throughout the recent drought during 2012 – 2016. As a result, groundwater production rights within the basin will continue to remain the same into the future.

The completion of MWD's 2020 Integrated Water Resources Plan will be completed after the submission of CVWD's 2020 UWMP. Information on MWD's 2015 Integrated Water Resources Plan is still relevant to this day. The plan describes the core water resource strategy, which will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2025 through 2045. Furthermore, MWD's 2020 UWMP finds that MWD is able to meet full service demands of its member agencies with existing supplies from 2025 through 2045 during normal years, single dry year, and multiple dry years.

CVWD is therefore capable of meeting the water demands of its customers in normal, single dry, and multiple dry years between 2025 and 2045, as illustrated in **Table 3.13** to **Table 3.19**. CVWD has also conducted a Drought Risk Assessment as part of a new requirement for the 2020 UWMP which mandates water purveyors to assess their water demand and supplies within the next five years under drought situations. Based on the assessment, CVWD is able to meet their demands under drought situations from 2021 – 2025 without the need of the Water Shortage Contingency Plan's (WSCP) water supply augmentation or demand reductions as shown **Table 5.4** in **Section 5**; however, CVWD continues to promote water saving measures to its consumers to ensure reliability of its supplies.

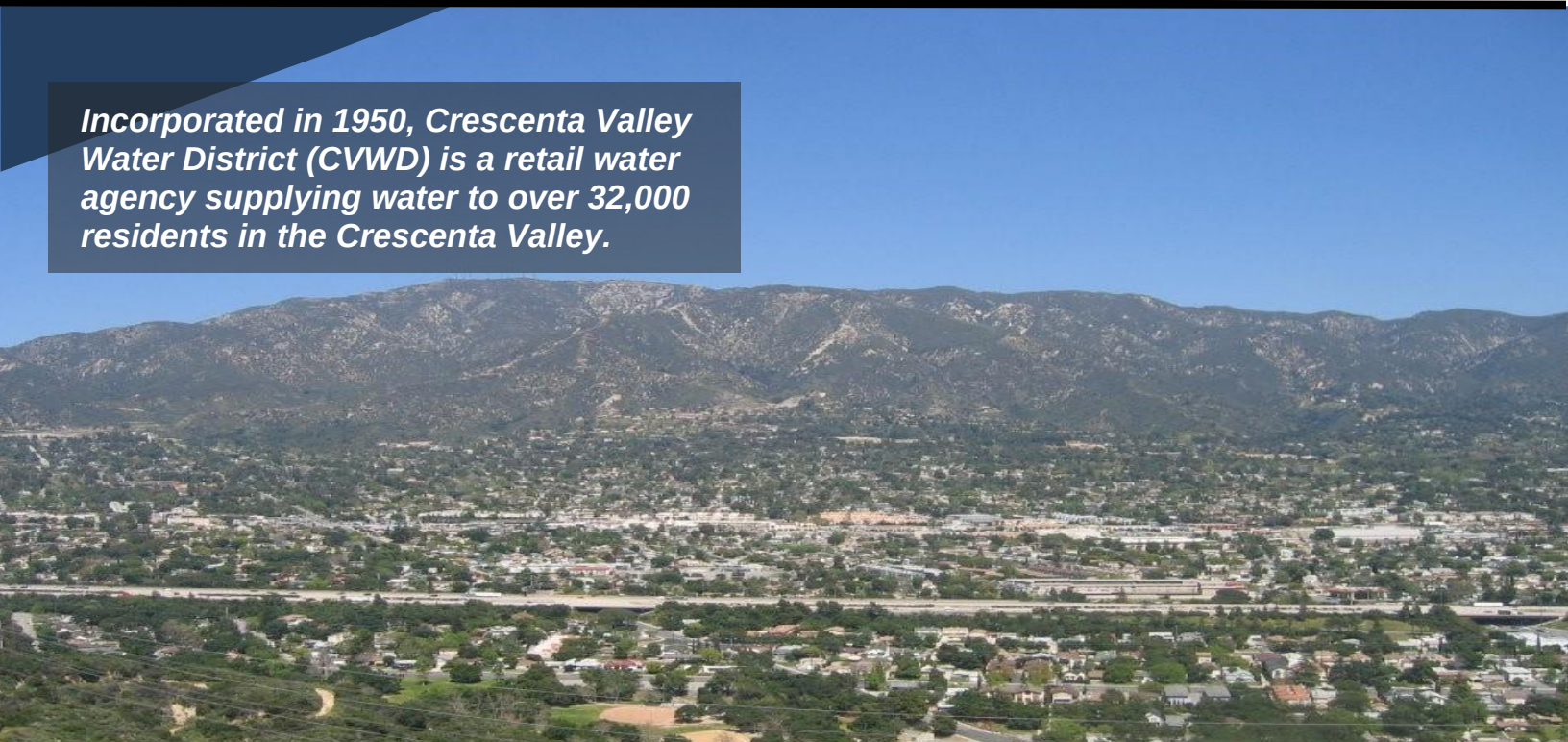
CHALLENGES AHEAD & STRATEGIES FOR MANAGING RELIABILITY RISKS

CVWD faces challenges in the near future regarding water supply including:

- Over the last decade, drastic changes in annual hydrologic conditions statewide have negatively affected water supplies available from the State Water Project (SWP) and the Colorado River Aqueduct (CRA).
- The declining ecosystem of the Bay-Delta has resulted in a reduction in water supply deliveries to State Water Contractors, including MWD.

CVWD's strategies for managing these reliability risks include:

- Continuing a progressive and effective water conservation program.
- Utilizing supplemental water through transfers and exchanges.
- Replacing deteriorating water infrastructure through a proactive capital improvement program, which will reduce water main leaks and conserve water.
- Implementing shortage response actions, as needed, under the WSCP.
- Reactivating ground water wells impacted by water quality contaminants with the addition of treatment systems.



Incorporated in 1950, Crescenta Valley Water District (CVWD) is a retail water agency supplying water to over 32,000 residents in the Crescenta Valley.

SECTION 1: INTRODUCTION

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 1

INTRODUCTION

1.1 UWMP PURPOSE & SUMMARY

This is the 2020 Urban Water Management Plan (UWMP) for Crescenta Valley Water District (CVWD). This plan has been prepared in compliance with the Urban Water Management Planning Act (Act), which has been codified as California Water Code (CWC) sections 10610 through 10657.

As part of the Act, the legislature declared that waters of the state are a limited and renewable resource subject to ever increasing demands; that the conservation and efficient use of urban water supplies are of statewide concern; that successful implementation of plans is best accomplished at the local level; that conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources; that conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and that urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

The UWMP Act requires “every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually, to prepare and adopt, in accordance with prescribed requirements, an urban water management plan.” These plans must be filed with the California Department of Water Resources



Figure 1.1: UWMPs Comply with State Water Code

(DWR) every five years and evaluate reasonable and practical efficient water uses, reclamation, and conservation activities (see generally Water Code § 10631).

1.2 PAST UPDATES TO THE UWMP ACT

The Act has been amended on several occasions since its initial passage in 1983. Of all the amendments, the most significant came in 2009 as a result of the requirements of Senate Bill 7 / Seventh Extraordinary Session. This is better known as the Water Conservation Act of 2009 (SBx7-7). The requirements of this bill state that per capita water use within an urban water supplier's service area must decrease by 20 percent by the year 2020 (20x2020) in order to receive grants or loans administered by DWR or other state agencies. The legislation sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. The state was required to make incremental progress towards this goal by reducing per capita water use by at least 10 percent by December 31, 2015. In addition, each urban retail water supplier was required to develop water use targets by July 1, 2016. Effective 2021, urban retail water suppliers who do not meet the 2020 water conservation requirements established by this bill are not eligible for state water grants or loans. SBx7-7 substantially expanded the role of the UWMPs by requiring all urban retail water suppliers to develop baseline daily per capita water use data, urban water use targets, and other technical information, and to report all of the information in their 2010 UWMPs.

1.3 UPDATES TO THE UWMP ACT FOR 2020 UWMPs

There have not been any significant changes affecting the 2020 UWMPs on the level of SBx7-7; however, there are numerous minor to major updates to the UWMP Act affecting the 2020 UWMPs as follows:

- **Water Loss:** Quantify distribution system water loss for each of the five years preceding the plan update (CWC § 10631 (d) (3) (A), SB 1414, 2019)
- **Drought Risk Assessment:** Assess water supply reliability over a 5-year period examining water supplies, water uses, and the reasonable predicted water supply reliability for five consecutive dry years (CWC § 10635 (b), SB 606, 2018)
- **Reporting of Energy Intensity:** Provide information that the water supplier can readily obtain on the energy used to process water (CWC § 10631.2 (a), SB 606, 2018)
- **Lay Description:** Include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks (CWC § 10630.5, SB 606, 2018)
- **Climate Change Impacts and Considerations:** Provide details on the impacts of climate change and consider them into projections (CWC § 10630, SB 606, 2018)

- **Water Shortage Contingency Plan (WSCP):** The water shortage contingency analysis required in previous UWMPs by former law has been replaced by a WSCP mandate with new elements, which include new six standard water shortage levels (CWC § 10632, SB 606, 2018, AB 1414, 2019)
- **Seismic Risk Assessment and Mitigation Plan:** As part of the WSCP, water suppliers are required to assess seismic risks to their water system facilities and measures to mitigate those risks (CWC § 10632.5, SB 664, 2015)

Of the above, the inclusion of the WSCP (including the seismic risk assessment and mitigation plan as part of the WSCP) as a separate document with revised elements is the most significant update affecting the 2020 UWMPs. AB 1414, SB 606, and SB 664, which amended the WSCP, mark a continued focus on water shortage preparedness and pre-planned strategies for mitigating catastrophic service disruptions.

1.4 2020 UWMP SCOPE & FORMAT

1.4.1 SCOPE & TOPICS OF DISCUSSION

This UWMP provides DWR with information on the present and future water resources and demands and provides an assessment of the water resource needs of CVWD. Specifically, this document will provide water supply planning for a 25-year planning period in 5-year increments and effectively revises CVWD's 2015 UWMP. This plan will identify water supplies for existing and future demands, quantify water demands during normal year, single-dry year, and multiple-dry years, and identify supply reliability under the three hydrologic conditions. CVWD's 2020 UWMP update revises the 2015 UWMP. This document has been prepared in compliance with the requirements of the Act as amended in 2009, and includes the following topics:

- *Water Service Area and Facilities*
- *Water Sources and Supplies*
- *Water Use by Customer Type*
- *Energy Intensity*
- *Climate Change Impacts*
- *Demand Management Measures*
- *Water Supply Reliability*
- *Planned Water Supply Projects and Programs*
- *Water Shortage Contingency Plan*
- *Recycled Water*

With the passage of SBx7-7 in 2009, Demand Management Measures (DMMs) have become a critical component of an agency's UWMP.

The topics listed on the previous page are consistent with the 2015 UWMP with the additions of Climate Change Impacts and Energy Intensity. Furthermore, updates also include narratives related to the above topics reflecting current (2020) conditions. In addition, the incorporation of visual format changes, expansions of existing text, and addition of new sub-categories and/or new data enhance this 2020 UWMP and provide more benefit for CVWD.

1.4.2 SBX7-7 CONSERVATION UPDATES

As required in the 2015 UWMP, each urban retail water supplier must include in its 2020 UWMP the following information from its target-setting process:

- *Baseline daily per capita water use*
- *2020 Urban water use target*
- *2015 Interim water use target*
- *Compliance method being used along with calculation method and support data*
- *Updates on interim (2015) target*

Since the above information was already contained in the 2015 UWMP, an agency has the option of re-stating this information if it is the same from the 2015 UWMP or revising it if different for the 2020 UWMP.

Wholesale water suppliers, including CVWD's imported water supplier, Foothill Municipal Water District (FMWD), are required to include an assessment of present and proposed future measures, programs, and policies that would help CVWD achieve the 20x2020 goal.



Figure 1.2: SBx7-7 Aims to Protect Water Sources

1.4.3 FORMAT OF THE REPORT

The sections in this Plan correspond to the UWMP Act (Article 2, Contents of Plans, Sections 10631, 10632, and 10633). The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of CVWD. The sections are shown on the following page.

Section 1 - Introduction	This section describes the UWMP Act, CVWD's planning and coordination process, the history of CVWD's water supply system, and a description of its service area.
Section 2 – Water Demands	This section describes past, current, and projected future water demands within CVWD's service area, as well as factors that affect demand, including climate and population demographics. This chapter also discusses the requirements of the Water Conservation Act of 2009 (SBx7-7). This section also looks at climate change impacts to water demands and projections.
Section 3 – Water Sources & Supply Reliability	This section describes CVWD's water supplies, including imported water from MWD, and how CVWD handles those supplies. This section also discusses the quality of CVWD's water sources, including a discussion on the treatment and testing of water.
Section 4 – Conservation Measures	This section addresses CVWD's compliance with the current Best Management Practices (BMPs), otherwise known as Demand Management Measures (DMMs).
Section 5 – Water Shortage Contingency Plan	This section describes CVWD's contingency planning in the event of a water supply interruption, such as a drought or catastrophe. This section also discusses CVWD's Board adopted Conservation Plan (adopted in 2009) and MWD's latest version of the Water Surplus and Drought Management Plan (WSDM).
Section 6 – Recycled Water	This chapter describes past, current, and projected recycled water use, along with a description of wastewater collection and treatment facilities.
Section 7 – Future Water Supply Projects & Programs	This section discusses planned and potential future water supplies and programs, including new supply sources, transfers and exchanges, and the feasibility of such supplies and programs.
Section 8 – Plan Adoption Process	This Section describes CVWD's planning and coordination process for the 2020 UWMP, including public and outside agency participation, and Board adoption.
Appendices	The appendices contain references, supplemental information, and specific documents relating to CVWD, used to prepare this 2020 UWMP.

1.5 AGENCY OVERVIEW

The Crescenta Valley Water District was formed as the Crescenta Valley County Water District on December 14, 1950 by the vote of local residents. Organized under the provisions of Division 12 of the CWC, CVWD operates as a political subdivision of the state. The term "County" was officially deleted from CVWD's name in 1996.

In the early 1950's, the newly-formed CVWD purchased the assets and consolidated the infrastructure of several small private water companies then in existence. By 1953, with rapid growth in the Crescenta Valley and surrounding foothill communities, it became

apparent that the local groundwater supply was not going to be sufficient to meet the increasing demand. Residents from La Crescenta to Altadena voted to form the Foothill Municipal Water District (FMWD) to purchase and distribute imported water from the Metropolitan Water District of Southern California (MWD). By 1955, CVWD was augmenting its local well water with MWD water from the Colorado River. In the 1960's, MWD increased its supply by also contracting for Northern California water with the completion of the State Water Project.

The Verdugo Basin is one of four groundwater subbasins within the Upper Los Angeles River Area (ULARA), with the San Fernando Basin being the largest. The ground water rights of CVWD are defined by the Judgement in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants" and the final Judgment was signed on January 26, 1979. The judgement also established a court-appointed position of Watermaster, which oversees parties' extraction and parties' rights to native groundwater, imported return water, and stored waters in the ULARA groundwater basins.

The Judgement states that Glendale and CVWD have appropriative and prescriptive rights to extract 3,856 and 3,294 acre-feet of groundwater per year, respectively, from Verdugo Basin and there are no provisions in the Judgment to allow for stored water credits in the Verdugo Basin.

CVWD has a 5-member Board of Directors who are elected at-large and participate in the management of CVWD. The current members of the Board of Directors are listed below with their Committees:

- **Sharon Raghavachary – President**
Chair of Engineering Committee and Finance Committee
- **James Bodnar – Vice President**
Chair of Employee Relations Committee
- **Kerry Erickson – Board Director**
Chair of Community Relations & Water Conservation Committee & Technology Committee
- **Ken Putnam – Board Director**
Chair of Policy Committee
- **Judy Tejeda – Board Director**
Chair of Emergency Planning Committee

1.5.1 CVWD VALUES

CVWD is dedicated to providing high quality water and wastewater services in partnership with the family of Southern California water agencies. CVWD values:

- *Excellent Customer Service*
- *Fiscal Responsibility*
- *Dedicated Employees*
- *Reliable Water and Sewer Facilities*
- *Community Involvement*
- *Water Conservation*
- *Technology and Innovation*
- *Environmental Sensitivity*

1.6 SERVICE AREA AND FACILITIES

1.6.1 SERVICE AREA DESCRIPTION

CVWD's service area is located in the Crescenta Valley area of Los Angeles County in the foothills of the San Gabriel Mountains, between the San Fernando and San Gabriel valleys. CVWD provides water distribution and sewage collection within its four-square mile service area boundaries to the unincorporated communities of La Crescenta, Montrose, and Verdugo City as well as a small portion of the City of Glendale and City of La Cañada-Flintridge. The service area ranges in elevation from approximately 1,200 feet to almost 3,000 feet above sea level due to its location next to the San Gabriel Mountains and sloping terrain. **Figure 1.3** on the following page shows CVWD's service boundaries.

CVWD currently provides water to over 8,200 accounts representing a population of 32,462. Customer growth is low as the Crescenta Valley area is nearly built-out. Residential growth is occurring through increased housing density in the multiple-unit zoned areas (primarily Montrose) as well as limited in-fill housing developments on random parcels in La Crescenta.

1.6.2 CVWD'S WATER FACILITIES

CVWD's water sources are 12 local groundwater wells, with an average depth of 200 feet, one mountain tunnel (gravity fed), and imported water supply through three separate FMWD connections and emergency inter-tie system with the City of Glendale. On a long-term basis, approximately 48 percent of CVWD's annual water demand is met by the local groundwater supply and 52 percent by imported water. This ratio does change depending on the water supply conditions, weather, and demand. CVWD operates 11 separate water pressure zones served by 14 pumping stations and 17 storage reservoirs totaling 17.5 million gallons.

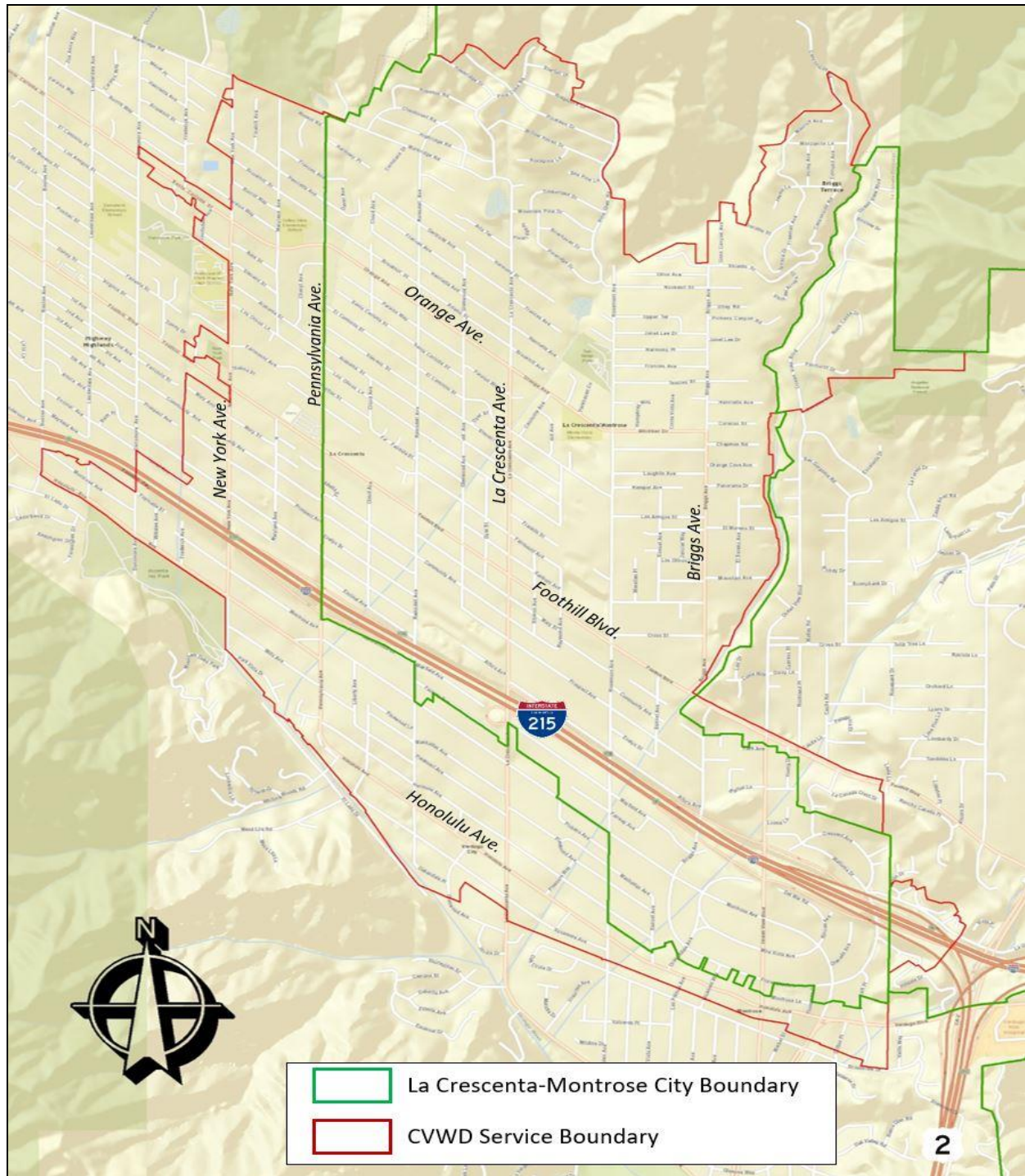


Figure 1.3: CVWD's Service Boundaries



Approximately 79 percent of CVWD's water demand is residential; only 6 percent of the demand is attributed to the Commercial/Industrial/Institutional category.

SECTION 2: WATER DEMANDS

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 2

WATER DEMAND

2.1 OVERVIEW

Water use within CVWD's service area includes residential potable use, landscape irrigation use, commercial and institutional uses, and of course water losses. Water use is variable and depends on a number of factors which include seasonal climate changes, demographic shifts, changes in land use or redevelopment, and of course legislation. Since CVWD's service area is largely residential, changes in residential plumbing fixtures and customer usage habits can significantly affect water usage. CVWD is able to meet its demands with a blend of groundwater and imported water.

This section explores the water usage trends within CVWD's service area and quantifies total usage per customer class. In addition, the provisions of SBx7-7 are explored in detail.

2.2 FACTORS AFFECTING DEMAND

Water consumption is influenced by many factors including climate characteristics of the hydrologic region, demographics (including social and economic demographics), land use characteristics, and economics. The key factors affecting water demand in CVWD's service area are discussed in the following sub-sections.

2.2.1 CLIMATE

CVWD has a Mediterranean climate, with a "foothill" characteristic. Summers are warm to hot, and dry while winters are cool and have an annual historical average precipitation of approximately 22.9 inches. Another feature of this foothill Mediterranean climate is the frequency of high-velocity, low-humidity, northeasterly winds in the fall and early winter. Therefore, CVWD is highly prone to wildfire danger during these periods. Adequate storage of reservoir water supply is deemed critical by the local fire jurisdictions. **Figure 2.1** shows the historical average rainfall for CVWD from 1963 to 2020.

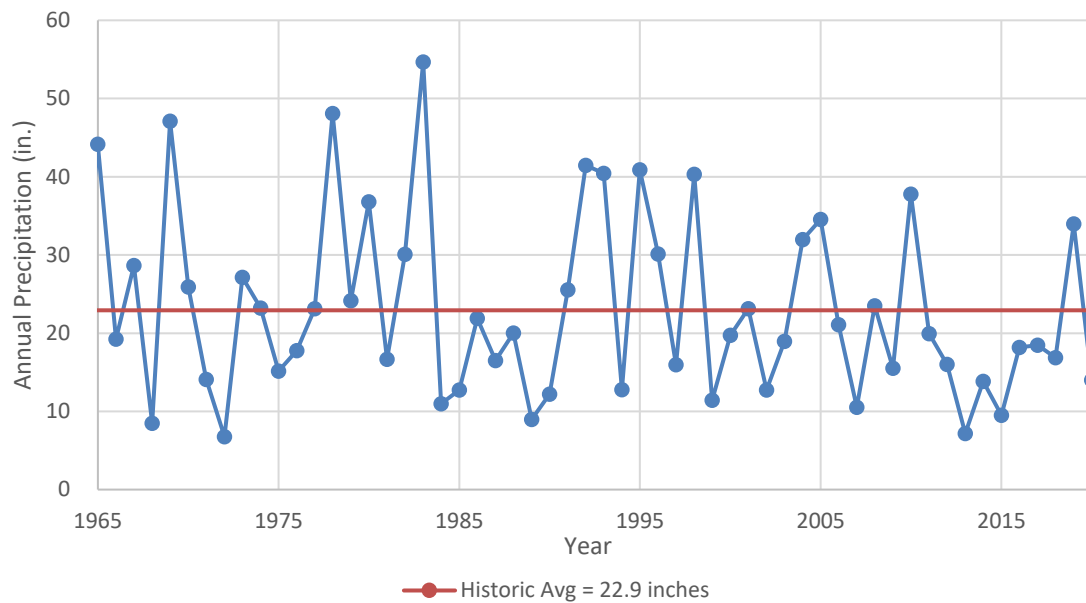


Figure 2.1: Historic Rainfall for CVWD

The sources of CVWD's imported water supplies, the State Water Project (SWP) and Colorado River Aqueduct (CRA), are influenced by weather conditions in Northern California and along the Colorado River Basin region. Both regions have recently been suffering from multi-year drought conditions and record low rainfalls which directly impact demands and supplies to CVWD and Southern California.

Climate fluctuations not only can increase or decrease demand, but can also directly affect CVWD's ratio of groundwater to imported water, since reduced precipitation and snowfall means less groundwater replenishment. When groundwater supplies are reduced, CVWD purchases more imported water.

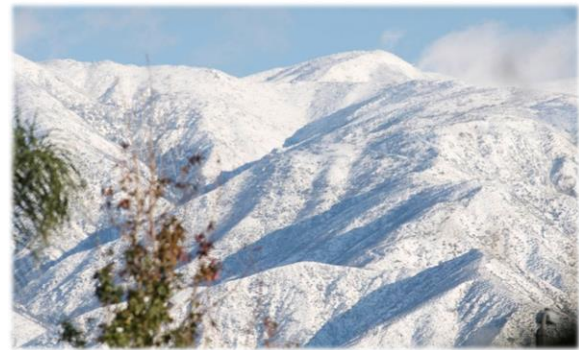


Figure 2.2: Snowfall on San Gabriel Mountains

CLIMATE CHANGE

The rise of anthropogenic activities producing carbon dioxide in the world has changed the earth's climate by emitting greenhouse gasses responsible for global warming. This has resulted in extreme weather events occurring more frequently. The severity and frequency of climate change impacts on temperature and precipitation patterns can be difficult to forecast due to dramatic shifts in weather patterns as a result of increased concentrations

of carbon dioxide in the atmosphere. While the precise timing, severity, and regional impacts of these temperature and precipitation changes are uncertain, climate researchers have identified several important issues of concern for water planners in California. The climate change impacts of concern are as follows:

**Temperature
Increases**

- More winter precipitation falling as rain rather than snow, leading to reduced snowpack water storage, reduced long term soil humidity, reduced groundwater and downstream flows, and reduced imported water deliveries
- Higher irrigation demands as temperatures alter evapotranspiration rates, and growing seasons become longer
- Exacerbated water quality issues associated with dissolved oxygen levels, increased algal blooms, and increased concentrations of salinity and other constituents
- Impacted habitats for temperature-sensitive fish and other life forms, and increased susceptibility of aquatic habitats to eutrophication

**Precipitation
Pattern
Changes**

- Increased flooding (both coastal and inland) caused by more intense storms
- Changes to growth and life cycle patterns caused by shifting weather patterns
- Threats to soil permeability, adding to increased flood threat and decreased water availability
- Reduced water supply caused by the inability to capture precipitation from more intense storms, and a projected progressive reduction in average annual runoff (though some models suggest that there may be some offset from tropical moisture patterns increasingly moving northward)
- Increased turbidity caused by more extreme storm events, leading to increased water treatment needs and impacts to habitat
- Increased wildfires with less frequent, but more intense rainfall, and possibly differently timed rainfall through the year, potentially resulting in vegetation cover changes
- Reduction in hydropower generation potential

Sea Level Rise

- Inundation and erosion of coastal areas (coastal bluffs in particular), including coastal infrastructure
- Saline intrusion of coastal aquifers
- Increased risk of storm surges and coastal flooding and erosion during and after storms
- Changes in near-shore protective biogeography such as loss of sand, tide pools, wetlands, and kelp beds

Although the extent of these changes is uncertain, CVWD is already planning ahead to ensure long lasting reliability of its source for their customers.

2.2.2 DEMOGRAPHICS

The population within CVWD's service area is expected to increase by 8 percent in the next 25 years, or 0.3 percent annually. **Table 2.1** shows the current and projected population for the next 25 years.

Table 2.1: Population – Current and Projected (DWR Table 3-1 Retail)

Year	2020	2025	2030	2035	2040	2045
Service Area Population	32,462	32,974	33,494	34,022	34,558	35,103

The service area populations for CVWD was determined using the DWR Population Tool ("WUE"), which uses the service boundaries, US Census data, and number of residential service connections. The tool calculates population by using past US Census data and service connections to obtain persons per connection. Using the persons per connection and current count on service connections would provide the current service population. Future service population can be projected based on the average growth factor.

There is no industry in CVWD's service area and there are less than 5 percent commercial or institutional accounts. CVWD does not anticipate any significant increases in employment for the area based on the land availability and the zoning. Densification will occur as single-family lots are converted to multi-family dwellings where it is allowed by zoning classification and the governing agency.

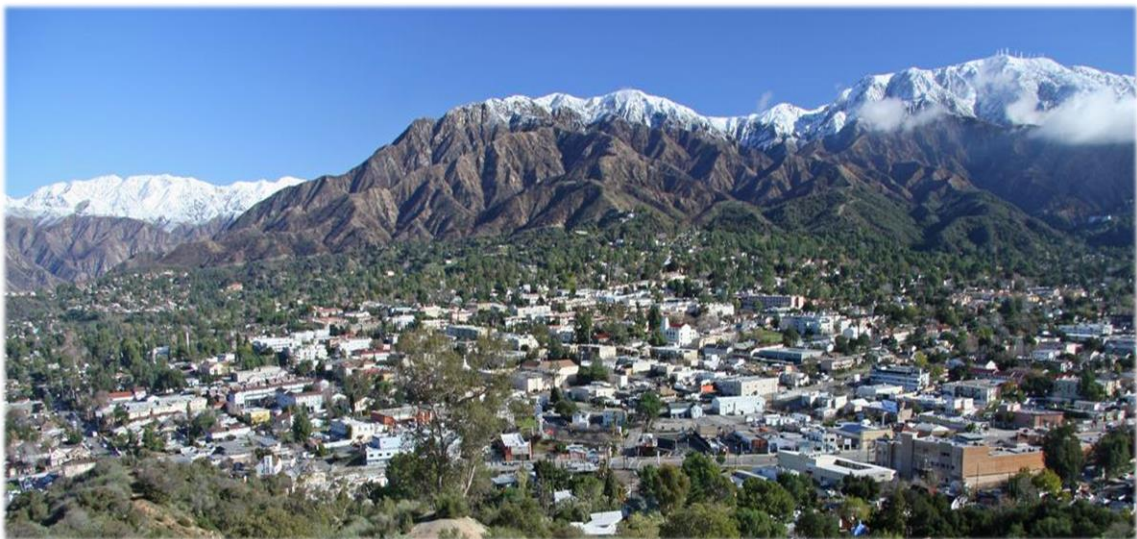


Figure 2.3: Land Use within CVWD's Service Area

2.2.3 LAND USE

Land use in the service area is primarily residential with two commercial/business corridors along Foothill Boulevard and Honolulu Avenue. Of the residential service, some of the area south of Foothill Boulevard continues to be converted over time to multi-family units as zoning permits. There are no industrial or agricultural water users within CVWD, and institutional users are limited to schools, churches, parks, and freeway landscaping.

CVWD currently provides water service to over 8,000 accounts and wastewater collection service to over 6,000 accounts. CVWD's service area is for the most part built-out with densification accomplished through single-family lot splits and conversion of single-family to multi-family dwelling units.

2.2.4 LEGISLATION

The passage of SBx7-7, discussed in **Section 2.4**, has increased efforts to reduce the use of potable supplies in the future. As a retailer, CVWD has provided an assessment of its present and proposed future measures, programs, and policies to help its service area achieve the water use reductions.

Substantial water reductions can be gained by proper landscape design, installation, and maintenance. To improve water savings in this sector, DWR has updated the State Model Water Efficient Landscape Ordinance (MWELo) for cities and counties per Governor Brown's Executive Order B-29-15. MWELo promotes efficient landscapes in new developments and retrofitted landscapes.

The revised MWELo increases water use efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes which can be covered in turf. It also required reporting by cities and counties on the implementation and enforcement of local ordinances, with required annual implementation reports due by January 31 for the previous year.

2.3 WATER USE WITHIN CVWD'S SERVICE AREA

The knowledge of an agency's water consumption by type of use or by customer class is key to developing that agency's water use profile which identifies when, where, and how much water is used, and by whom within the agency's service area. A comprehensive water

use profile is critical to the assessment of impacts of prior water conservation efforts as well as to the development of future conservation programs.

This section provides an overview of CVWD's water consumption by customer class from 2016 to 2020. The customer classes are categorized as follows: single-family residential, multi-family residential, commercial/industrial/institutional (CII), and dedicated landscape, and fire services. Non-revenue water is discussed later in this section.

2.3.1 HISTORIC WATER DEMAND

Water demands within the CVWD's service area over the past six years were met by groundwater from the Verdugo Groundwater Basin (Basin) and imported water from FMWD. Annual water use since 2015 has ranged from about 3,647 AF to 4,174 AF (average 3,843 acre-feet per year (AFY)) as shown below in **Table 2.2**. As indicated by the table, annual water use fluctuates each year.

Table 2.2: Six-Year Historic Total Water Demand (AF)

Year	2015	2016	2017	2018	2019	2020
Demand	3,647	3,775	3,917	3,884	3,777	4,216

2.3.2 WATER USE STATISTICS

CVWD maintains records of water consumption and bills its customers on a bi-monthly basis for water and sewer service. Approximately 80 percent of CVWD's water demand is residential. CII sectors account for approximately under 7 percent of CVWD's potable water supply. The remaining portion of CVWD's demand pertains to fire service and irrigation purposes. CVWD does not provide any sales to agriculture, nor other agencies, saline water intrusion barriers, groundwater recharge, or conjunctive use. Unaccounted for water consists of water losses due to leakage or inaccurate water meters. Water loss calculation was done in accordance with CWC 10631(e)(3)(B). The total number of service connections and water consumption is shown in **Tables 2.3** and **2.4**, respectively.

Table 2.3: 2015 & 2020 Service Accounts by Sector

Sector	2015	2020
Single-Family Residential	6,777	6,955
Multi-Family Residential	695	688
Commercial/Institutional	408	413
Landscape Irrigation	68	81
Fire	102	107
Total Connections:	8,050	8,244

Table 2.4: 2020 Water Demand by Sector (AF) (DWR Table 4-1 Retail)

Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	2,490
Multi-Family		Drinking Water	836
Commercial	w/ Institutional	Drinking Water	279
Landscape		Drinking Water	234
Losses		Drinking Water	376
TOTAL			4,216

2.4 WATER CONSERVATION ACT

2.4.1 SBX7-7 BACKGROUND

Due to the limited amount of water allowed to be pumped in the San Joaquin Delta, the CA Legislature drafted the Water Conservation Act of 2009 (SBx7-7) to protect statewide water sources. The legislation called for a 20 percent reduction in water use in California by the year 2020. The legislation amended the Water Code to call for 2015 and 2020 water use targets in the 2010 UWMPs, updates or revisions to these targets in the 2015 and 2020 UWMPs, and allows DWR to enforce compliance to the new water use standards. In essence, the bill requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020 and an interim 10 percent goal by 2015.

The bill establishes methods for urban retail water suppliers to determine their targets to help achieve statewide water reduction targets, which may or may not be a strict 20 percent level. The retail water supplier must select one of the four target-setting methods as described in **Section 2.4.3**. The retail agency may also choose to comply with SBx7-7 as an individual or as a region in collaboration with other water suppliers. Under the regional compliance option, the retail water supplier is mandated to report the water use target for its individual service area. The bill also includes reporting requirements in the 2010, 2015, and 2020 UWMPs. Beginning in 2016, failure to comply with interim and final targets makes a retail agency ineligible for grants and loans from the state needed to attain water self-sufficiency by 2020; however, if an agency which is not in compliance documents a plan and obtains funding approval to come into compliance, it could then become eligible for grants or loans.

Wholesale water suppliers, including FMWD, are not required to determine baseline daily per capita water use, urban water use target, interim urban water use target, or compliance daily per capita water use. Instead, wholesale water suppliers are required to include in their UWMPs discussions of programs they intend to implement to support the retail water suppliers, such as CVWD, in attaining their reduction goals and targets.



Figure 2.4: CVWD's Water Conservation Efforts Include Drought Tolerant Landscape

2.4.2 SBX7-7 PROVISIONS

In addition to an overall statewide 20 percent water use reduction, the objective of SBx7-7 is to reduce water use within each hydrologic region in accordance with the agricultural and urban water needs of each region. Currently, DWR recognizes 10 separate hydrologic regions in California as shown in **Figure 2.5**. Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. CVWD is located in the South Coast Hydrologic Region (HR), which includes all of Orange County, most of San Diego and Los Angeles Counties, parts of Riverside, San Bernardino, and Ventura counties, and a small amount of Kern and Santa Barbara Counties. The South Coast HR is shown in **Figure 2.6**.

Per capita water use, measured in gallons per capita per day (GPCD), in the South Coast HR varies between different water agencies, depending on the geographic and economic conditions of the agency's service area. The South Coast HR has an overall baseline per capita water use of 180 GPCD and DWR has established a regional target of 149 GPCD for the region as a compliance target to satisfy SBx7-7 legislation.



Figure 2.5: California's 2020 Water Conservation Goals



Figure 2.6: South Coast Hydrologic Region

2.4.3 SBX7-7 COMPLIANCE OPTIONS

DWR has established four compliance methods for urban retail water suppliers to choose from. Each supplier is required to adopt one of the four methods to comply with SBx7-7 requirements. The four options are shown in **Table 2.5** to the right.

These options were established in order to avoid placing any undue hardship on water agencies that have already been implementing water conservation measures. The basic procedure for determining the applicable water reduction target is illustrated by **Figure 2.7**. If an agency's 10-year baseline is slightly higher than the Hydrologic Region's target, that agency still must achieve a five percent reduction from its 5-year baseline. If an agency has a per capita water use of 100 GPCD or less, that agency will not have to adhere to any reduction targets as that agency is already considered water efficient.

Table 2.5: DWR Compliance Methods

Methods	Description
Method 1	A strict 20 percent reduction from the baseline by 2020 and 10 percent by 2015
Method 2	A budget-based approach by requiring an agency to achieve a performance standard based on three metrics: ○ Residential indoor water use of 55 GPCD ○ Landscape water use commiserate with a Model Landscape Ordinance ○ 10 percent reduction in baseline CII water
Method 3	Requires achievement of 95 percent of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan
Method 4	Requires the subtraction of Total Savings from the Base GPCD: ○ Total Savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings

2.4.4 CVWD'S COMPLIANCE OPTION SELECTION

To satisfy the provisions of SBx7-7, CVWD previously established a per capita water use target for the year 2020 as well as an interim target (2015). DWR provided guidelines for determining these targets in its *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (released 2010; revised 2011 and 2016) and also in the 2015 and 2020 UWMP Guidebooks. The *Methodologies* guidebook made provisions that allowed a water supplier to meet the target requirements by achieving any one of a number

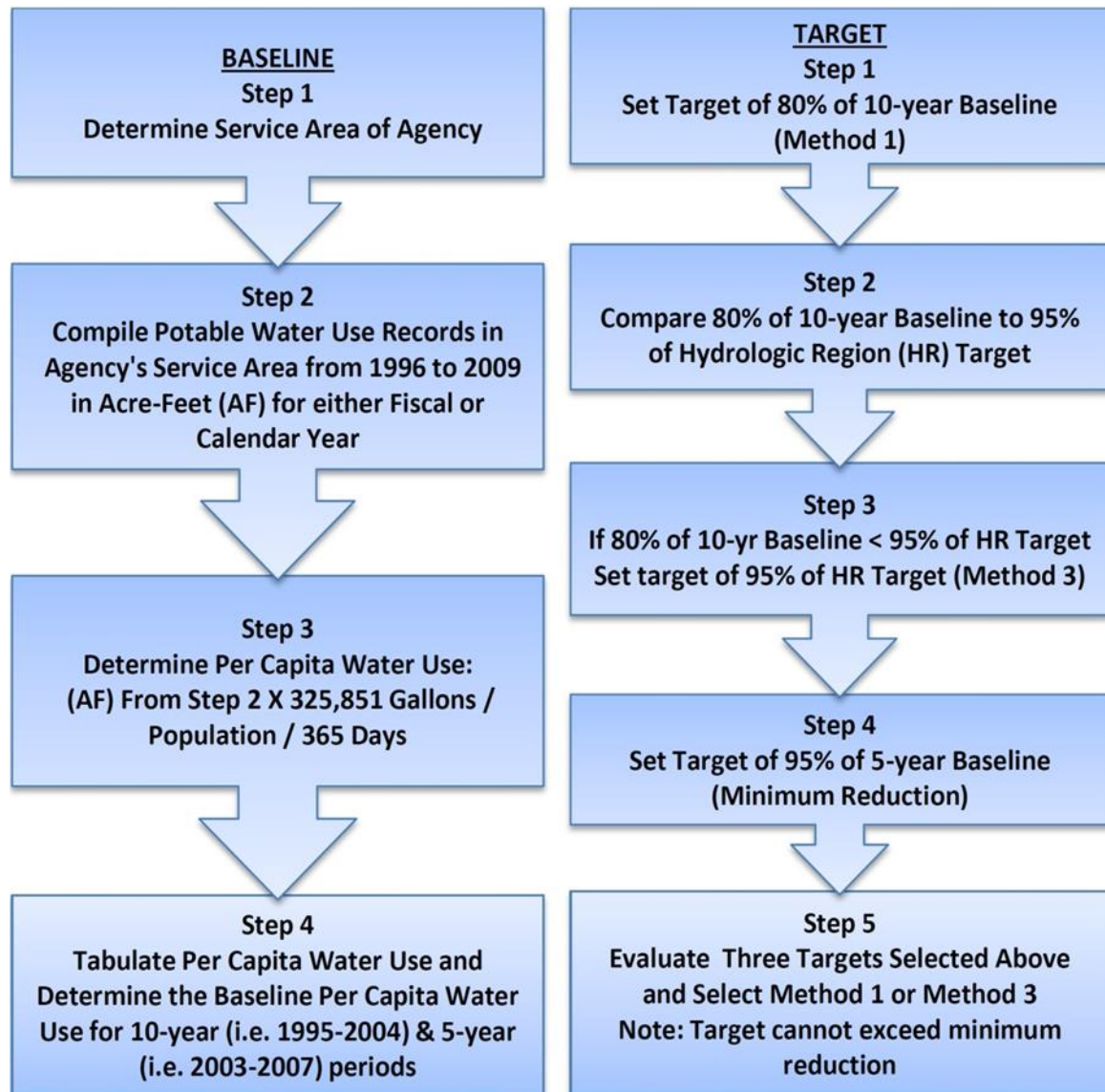


Figure 2.7: Procedures for Determining Baseline & Targets

of target requirements, provided that the water supplier's per capita water use is low enough relative to the region within which it supplies water. The basic options included a minimum reduction requirement of 5 percent (Water Code § 10620), a 5 percent reduction from the Regional (South Coast HR) target (Water Code § 10608.20 (b) (3)), or a strict 20 percent reduction.

While each retail agency was required to choose a compliance option in 2010, DWR allowed for the agency to change its compliance option in 2015, and again in 2020. This will allow CVWD to determine its water use targets for Compliance Options 2 and 4 since CVWD anticipates more data to be available for target calculation in the future.

The first step to calculating an agency's water use target is to determine its base daily-per-capita water use (baseline water use). This baseline water use is essentially the agency's gross water use divided by its service area population, reported in GPCD. Gross water use is defined as volume into the distribution system while deducting any recycled water for direct use during a 10-year period. The baseline water use is calculated as a continuous 10-year average during a period which ends no earlier than December 31, 2004 and no later than December 31, 2010. Agencies for which recycled water made up 10 percent or more of 2008 retail water delivery can use up to a 15-year average for the calculation. The base period must end no earlier than December 31, 2007, and no later than December 31, 2010.

2.4.5 BASELINE WATER USE

Since CVWD does not use recycled water, a 10-year instead of a 15-year rolling average was calculated. CVWD's baseline water use is **160.1 GPCD**, which was obtained from the 10-year period January 1, 1996 to December 31, 2005.

Table 2.6 provides the base period ranges used to calculate the baseline water use for CVWD as well as the service area population and annual water use data from the base daily per capita water use. The data was used to calculate the continuous 10-year and 5-year average baseline. Moreover, regardless of the compliance method adopted by CVWD, it will need to meet the minimum water use target of 5 percent reduction from a five-year baseline as calculated. Values for 1996 to 2007 are from the 2010 UWMP.

Table 2.6: Past GPCD Water Use

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
1996	30,390	5,277	155.0
1997	30,475	5,497	161.0
1998	30,560	5,076	148.3
1999	30,645	5,608	163.4
2000	30,731	5,717	166.0
2001	30,817	5,635	163.0
2002	30,903	5,792	167.0
2003	30,989	5,724	164.7
2004	31,075	5,726	165.2
2005	31,162	5,327	152.6
2006	31,249	5,463	156.8
2007	31,336	5,525	155.2
10-Year Average (1996-2005) Base Daily per Capita Water Use:			160.1
5-Year Average (2003-2007) Base Daily per Capita Water Use:			159.1

2.4.6 SBX7-7 WATER USE TARGETS

In its 2010 UWMP, CVWD selected compliance **Option 3**. Under Compliance Option 3, CVWD chose to achieve 95 percent of the State's hydrologic region target of 141.6 GPCD by 2020; however, the minimum required calendar year target calculated from the five-year base daily GPCD found in **Table 2.7** comes to 151.1 GPCD in 2020. Therefore, under Option 3, CVWD's 2015 interim water use target is 151 GPCD, and the 2020 final water use target is **142 GPCD** as summarized in **Table 2.7**.

Table 2.7: Preferred Compliance Option & Water Use Targets

Option 3	Baseline	2015 Target	2020 Target
95% of State Hydrologic Region Targets	160	151	142

Table 2.8 below shows the CVWD's GPCD since 2015. As shown, CVWD's 2015 GPCD was **100.5** which is well below their 2015 and 2020 Targets. Furthermore, CVWD met their 2020 Target by achieving a GPCD of **115.9**.

Table 2.8: CVWD's Recent GPCD (2015 - 2020)

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
2015	32,385	3,647	100.5
2016	32,400	3,775	104.0
2017	32,416	3,917	107.9
2018	32,431	3,884	106.9
2019	32,447	3,774	103.8
2020	32,462	4,216	115.9

2.4.7 WATER DEMAND IMPACTS FROM COVID-19 PANDEMIC & 2020 SBx7-7 COMPLIANCE

DWR recognizes that extraordinary events may have an impact towards water demands. On March 4, 2020, Governor Newsom proclaimed a state of emergency for the entire state due to the spread of COVID-19. Following Governor Newsom's statement, Los Angeles County also declared a state of emergency the same day. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. As a result, on March 19, 2020, an Executive Order and Public Health Order directed all Californians to stay home except to go to an essential job or to shop for essential needs. This also required most Californians to work remotely from home.

This event resulted in a significant increase to water demands for various water agencies, including CVWD. As shown in Table 2.7, the gross water use in 2020 is significantly higher than the past years averages. In 2020, the water usage was 4,216 AF and the average from 2015 to 2019 was 3,800 AF.

DWR allows water purveyors to make adjustments to their 2020 Gross Water Use in the event of usual events considered as Extraordinary Events, Economic Adjustment, or Weather Normalization; however, according to Section 5.5.1.4 of 2020 UWMP Guidebook, adjustments for COVID-19 are not allowed. This impact resulted in no issues for CVWD to achieve their 2020 targets as shown in **Table 2.9**.

Table 2.9: CVWD 2020 Compliance (DWR Table 5-2 Retail)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD		
116	0	0	142	Yes

2.5 WATER USE REDUCTION PLAN

2.5.1 ON-GOING WATER CONSERVATION EFFORTS

In order to remain below the SBx7-7 targets, CVWD will continue to implement the water use efficiency measures described in **Section 4** of this UWMP and continue to participate in water use efficiency programs offered by MWD rebate programs for its retail agencies. Because residential homes are the largest water use sector in the region, the focus of water conservation efforts will continue to be residential rebate programs and public outreach programs. Single family residential homes and some large landscapes are common in the CVWD area.

In addition to the SBx7-7 provisions, agencies also sought to manage the provisions of Governor Brown's Executive Order B-29-2015. Governor Brown granted this Executive Order in April 2015 that mandated a statewide 25 percent reduction in water use through February 28, 2016, as compared to the amount used in 2013. This executive order helped to further the goals of SBx7-7. Even after the strict 25 percent reduction was lifted, Californians continued to save water, with cumulative water use savings of about 22 percent between June 2015 and January 2017. As Governor Brown ended the drought state



Figure 2.8: SBx7-7 Seeks to Preserve the Waters of the Bay-Delta

of emergency in most of California in April 2017 with Executive Order B-40-17, state agencies released a long-term plan that advanced measures to better prepare the state for future droughts and make conservation a California way of life.

Through financial incentive programs and various public outreach campaigns and events, CVWD has met its SBx7-7 target as shown previously on **Table 2.9**.

2.5.2 FUTURE MWD PROGRAMS

OVERVIEW

In 2016, MWD, in collaboration with its member agencies, released the 2015 Update to the Integrated Water Resources Plan (IRP). The inaugural IRP was adopted in 1996, with previous updates in 2004 and 2010. The 2015 Update continues to assess and address how MWD plans to adapt to the changing conditions facing Southern California. The goals of the 2015 IRP include:

- Maintain Colorado River Aqueduct Supplies:** Develop programs to ensure that a minimum of 900,000 AF is available when needed, with access to 1.2 million acre-feet (MAF) in dry years.

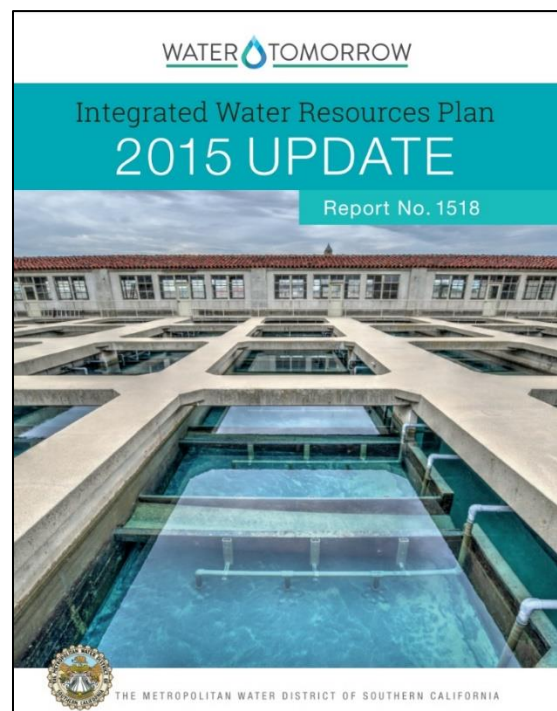


Figure 2.9: MWD's 2015 Integrated Water Resources Plan

- **Stabilize State Water Project Supplies:** Manage SWP supplies in compliance with regulatory restrictions in the near-term for an average of 980,000 AF of SWP supplies. Pursue a successful outcome in the Delta Conveyance Plan and California EcoRestore efforts for long-term average supplies of about 1.2 MAF.
- **Achieve Additional Conservation Savings:** Pursue further water conservation savings of 485,000 AF annually by 2040 through increased emphasis on outdoor water-use efficiency using incentives, outreach/education and other programs.
- **Develop Additional Local Water Supplies:** Develop 230,000 AF of additional local supplies produced by existing and future projects. The region would reach a target of 2.4 MAF by 2040, a key to providing water supply reliability into the future.
- **Maximize the Effectiveness of Storage & Transfer:** Develop a comprehensive strategy to pursue transfers and exchanges to hedge against shorter-term water demands and supplies imbalances until long-term solutions are in place.
- **Encourage Innovation:** Facilitate innovation in recycled water, desalination, stormwater capture and groundwater cleanup through a growing portfolio of initiatives, technologies and new ideas.

MWD is in the process of updating its IRP once again but that process will not be completed until after this UWMP is submitted.

2.6 DEMAND PROJECTIONS

2.6.1 25 YEAR PROJECTIONS

One of the main objectives of this UWMP is to provide CVWD's future water demand outlook. **Tables 2.10** and **2.11** project future demands based on water sector over the next 25 years. Demand projections were determined using 107.7 GPCD, based on the past five-year average and projection population growth. Per capita consumption rates should be expected to remain under 107.7 GPCD and trend further below that rate to continue water conservation efforts to combat climate change. It is important to note that CVWD does not utilize recycled water within its service boundaries. This is further discussed in **Section 6**.

Table 2.10: CVWD's Demand Projections by Sector (AF) (DWR Table 4-2 Retail)

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		2,350	2,387	2,425	2,463	2,502
Multi-Family		789	802	814	827	840
Commercial	w/ Institutional	263	267	271	276	280
Landscape		221	225	228	232	235
Losses		355	361	366	372	378
TOTAL		3,979	4,041	4,105	4,170	4,236

Table 2.11: CVWD Total Water Demands (AF) (DWR Table 4-3 Retail)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	4,216	3,979	4,041	4,105	4,170	4,236
Recycled Water Demand	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage						
TOTAL WATER USE	4,216	3,979	4,041	4,105	4,170	4,236

2.6.2 LOW-INCOME HOUSEHOLD PROJECTIONS

One significant change to the UWMP Act since 2005 is the requirement for retail water suppliers to develop water use projections for “low-income” households at the single-family and multi-family level. These projections assist retail suppliers with compliance with Section 65589.7 of the Government Code, which requires suppliers to grant a priority for the provision of service to low-income households. Consistent with this Code section, a low-income household is defined as a household earning 80 percent or less of the area’s median income.

The 2010 UWMP utilized the Regional Housing Needs Assessment (RHNA) or Regional Housing Needs Plan information to obtain a percentage of low-income households within an area. The information was developed by the Local Council of Governments, in

coordination with the California Department of Housing and Community Development. The RHNA plan lists every city within the Southern California region and provides percentages of very low- and low-income households. The area CVWD main serves is La Crescenta-Montrose, an unincorporated area and a census-designated place.

Existing and projected housing needs for Los Angeles County were incorporated into the most recent RHNA Subcommittee’s report titled 6th Cycle Final RHNA Allocation Plan of the Southern California Association of Governments (SCAG). This plan covers the planning period from October 2021 to October 2029. Based on the RHNA plan, the percentage of very low- and low-income households combined was 43.7 percent within unincorporated areas. This value is not a valid representation and will not be used.

Instead, a percentage was obtained from records from the US Census Bureau. It provides information regarding the breakdown of households per income range and the percentages for each range. Based on their latest records (2019), approximately 6.7 percent of households is considered in poverty.

Therefore, from inference, it is estimated that approximately 6.7 percent of the projected water demands within the CVWD service area will be for housing needed for low-income households. **Table 2.12** provides the projected water needs for low-income household. The projected water demands shown here represent 6.7 percent of the projected residential water demand.

Table 2.12: Projected Water Demands for Low-Income Households

Water use Sector		2025	2030	2035	2040	2045
Single Family	Normal Demand	2,350	2,387	2,425	2,463	2,502
	Low-Income Demand	157	160	162	165	168
Multi-Family	Normal Demand	789	802	814	827	840
	Low-Income Demand	53	54	55	55	56
Total	Normal Demand	3,139	3,189	3,239	3,290	3,342
	Low-Income Demand	210	214	217	220	224

THIS PAGE LEFT BLANK INTENTIONALLY



CVWD imports 51 percent of its supply from Foothill Municipal Water District, water wholesale agency, and 49 percent from local ground supply to meet its demands.

SECTION 3: WATER SOURCES & SUPPLY RELIABILITY

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 3

WATER SOURCES & SUPPLY RELIABILITY

3.1 OVERVIEW

CVWD's water supplies consist of groundwater produced from the Verdugo Basin and imported water purchased from FMWD. Approximately 52 percent of CVWD's water consists of groundwater, while the remaining 48 percent consists of imported water. The majority of CVWD's ground water wells are located along the Verdugo Wash, south of Honolulu Avenue. Local groundwater is disinfected with chlorine before blending with MWD's surface water. The sources of imported water supplies include the Colorado River Aqueduct (CRA) and the State Water Project (SWP). The most dominant feature of CVWD's water supply operations is the intensive pumping required for delivering water to the residents in the communities located in the foothills of the San Gabriel Mountains. In some cases, this water must be lifted over 1,000 feet in order to deliver it to the elevations of some water users in the service area. This section discusses water supply, quality, and water reliability under all foreseeable hydrologic conditions from 2025 through 2045.

3.2 IMPORTED WATER

3.2.1 WATER SOURCES (MWD)

MWD has access to imported water from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. These two water systems provide Southern California with over 2 million acre-feet (MAF) of water annually for urban uses.

COLORADO RIVER

The Colorado River supplies California with 4.4 MAF annually for agricultural and urban uses with approximately 3.85 MAF used for agriculture in Imperial and Riverside Counties. The remaining unused portion (600,000 to 800,000 AF) is used for urban purposes in MWD's service area.



Figure 3.1: Parker Dam at Colorado River

BAY-DELTA

In addition to the Colorado River, the Sacramento-San Joaquin River Delta has historically provided a significant amount of supply annually to Southern California. The Delta is located at the confluence of the Sacramento and San Joaquin Rivers east of the San Francisco Bay and is the West Coast's largest estuary. The Delta supplies Southern California with over 1 MAF of water annually which has been significantly reduced in recent years.

The use of water from the Sacramento-San Joaquin Delta continues to be a critical issue as it competes between uses for water supply and ecological habitat that jeopardizes the Delta's ability to meet either need and may threaten the estuary's ecosystem.

In past years, a planning effort to increase long-term supply reliability for both the State Water Project (SWP) and Central Valley Project (CVP) took place. This plan, formerly known as the Bay Delta Conservation Plan (BDCP), included co-equal goals to improve water supply reliability and restore the Delta ecosystem. In April 2015, state and federal agencies announced a new sub-alternative, California WaterFix and California EcoRestore, which replaced the proposed BDCP as the State's preferred project.

However, plans for the California WaterFix did not gain support from Governor Newsom.

In his speech to the state addressed in February 2019, Newsom announced that he did not “support WaterFix as currently configured,” but does “support a single tunnel”. As a result, on April of 2019, Governor Newsom issued Executive Order N-10-19, which announced a new single tunnel project known as the Delta Conveyance Project (DCP). Later that year, DWR initiated planning and environmental review for the DCP to protect the reliability of SWP supplies from the effects of climate change and seismic events, among other risks. DWR’s current schedule for the DCP environmental planning and permitting extends to the end of 2024. DCP will potentially be operational in 2040 following extensive planning, permitting, and construction.

Ecosystem improvements and habitat restoration (California EcoRestore) more generally would be undertaken under a more phased approach than previously contemplated by the BDCP and would not be linked with the California WaterFix project or permits. Accelerated restoration actions totaling 30,000 acres of tidal marsh habitat were proposed to be undertaken in the coming decade to provide public benefits for listed fish in the Bay-Delta.

As of May 2020, 32 projects have been identified that restore more than the targeted 30,000 acres of habitat, including a projected 18,580 acres of floodplain, 14,000 acres of tidal habitat, 3,500 acres of non-tidal wetlands and 1,650 acres of riparian and upland habitat. To date, 12 projects have been completed, four more are under construction, and the remaining 16 projects are planned to begin construction by 2021.

AQUEDUCT SYSTEMS

In order to provide Southern California with imported water, MWD utilizes two separate aqueduct systems (one for each source of supply) to obtain its supplies. These two aqueduct systems convey water from each source into two separate reservoirs whereupon MWD pumps the water to one of its five treatment facilities. One of these aqueduct systems, known as the Colorado River Aqueduct (CRA), serves as MWD’s primary water delivery system and first constructed shortly after MWD’s incorporation in 1928. The CRA, which is owned and operated by MWD, spans 242 miles and conveys water from the Colorado River to Lake Mathews.

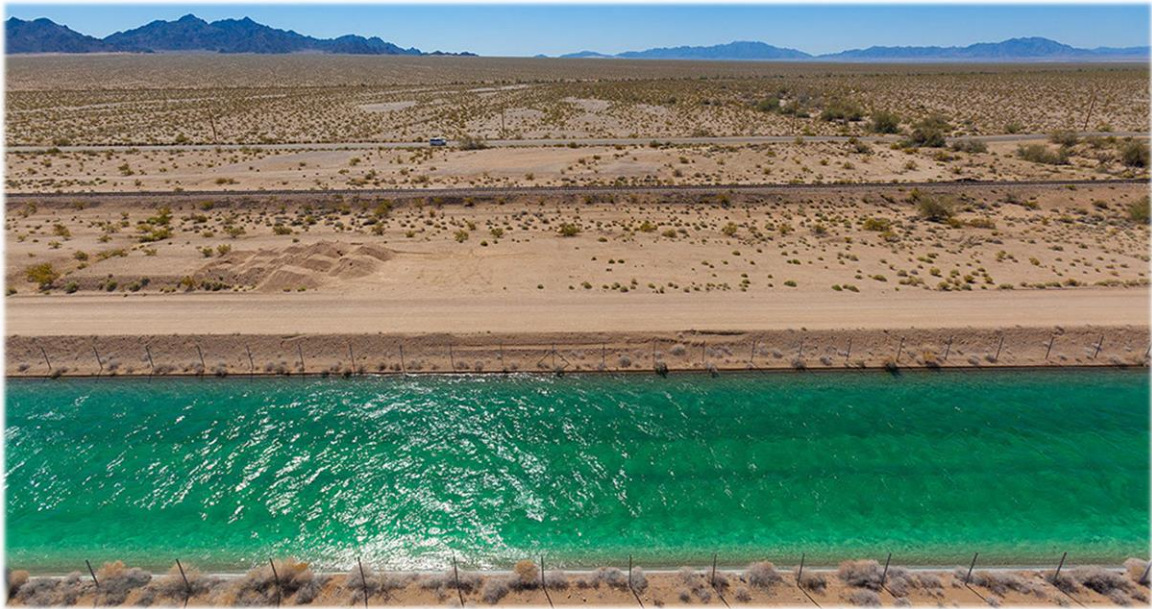


Figure 3.2: Colorado River Aqueduct

In addition to the CRA, MWD receives water from northern California via the California Aqueduct. Also known as the State Water Project (SWP), the California Aqueduct is 444 miles long and carries Delta water to Southern California and is operated by DWR.



Figure 3.3: California Aqueduct or “SWP”

The previously mentioned aqueducts supply Southern California with a significant amount of its water and are crucial to its sustainability. In addition to these two water systems, there are also several other aqueducts vital to the State. The major aqueducts in California are shown in **Figure 3.4**.



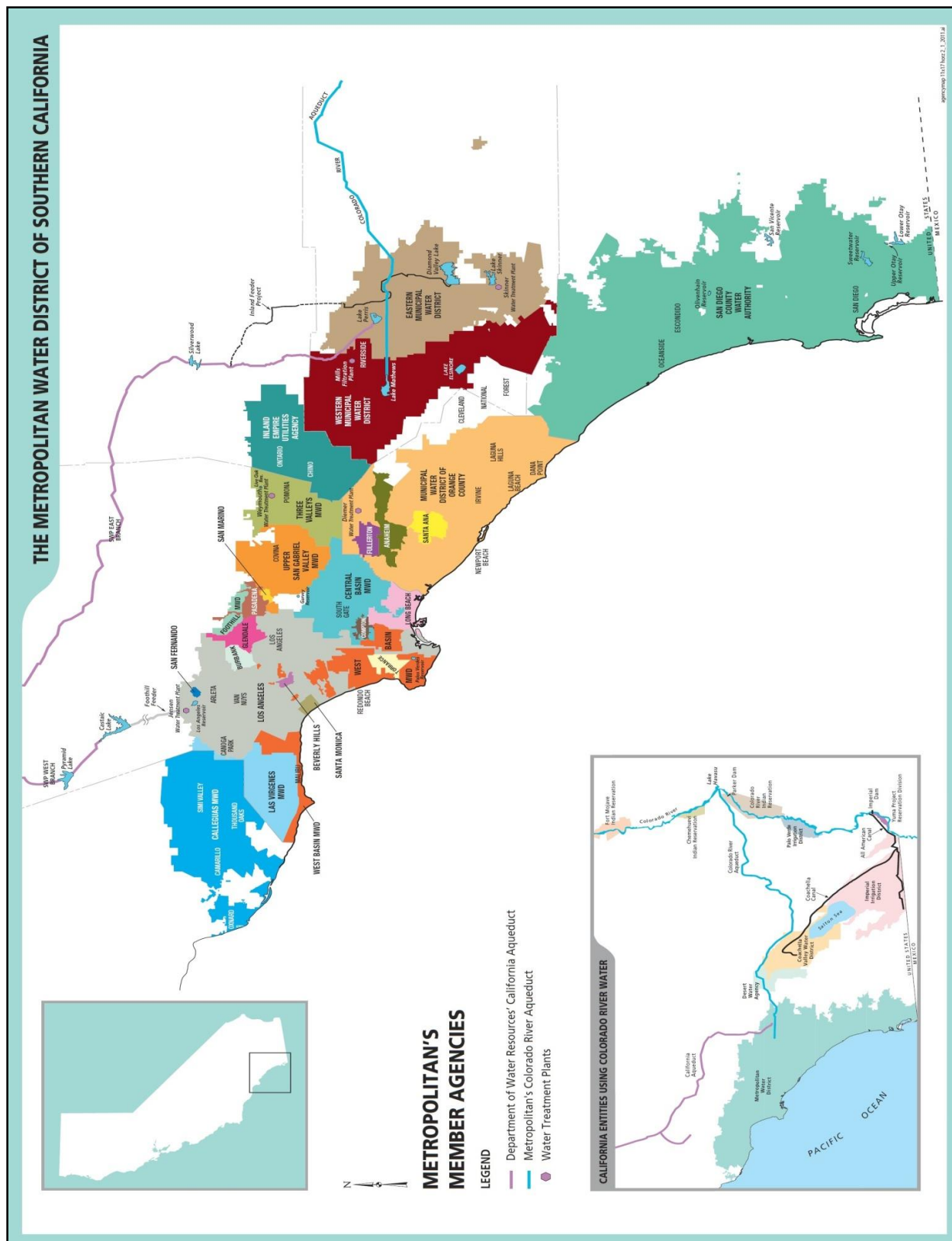


Figure 3.5: MWD Service Area Map

3.3 GROUNDWATER

CVWD owns and operates 12 production wells in the Verdugo Groundwater Basin (Basin). The Basin, shown in **Figure 3.6**, north and east of the Verdugo Mountains, consists of 4,400 acres and comprises 3.6 percent of the total valley fill. It is bounded on the north by the San Gabriel Mountains; on the northwest by a groundwater divide, which separates it from the San Fernando Basin; on the east by a groundwater divide separating it from the Monk Hill Subarea of the Raymond Basin; on the southeast by the San Rafael Hills; and on the south and southwest by the Verdugo Mountains.

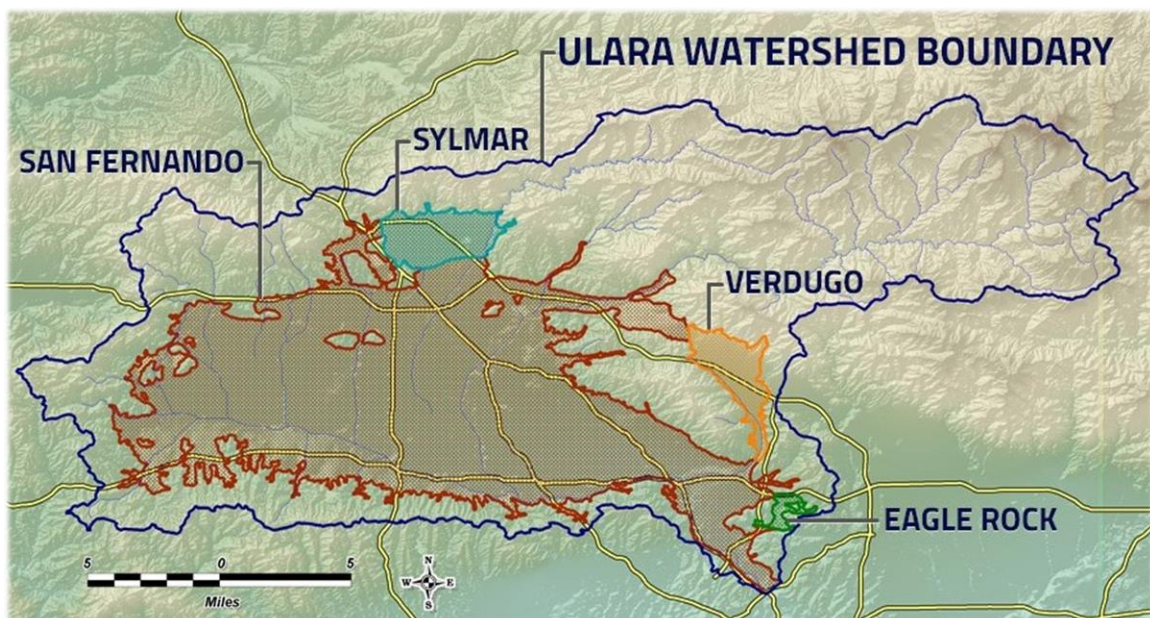


Figure 3.6: Local Groundwater Basins within the Upper Los Angeles River Area

The Basin is an adjudicated basin within the Upper Los Angeles River Area (ULARA). The Basin has an adjudicated "safe yield" of 7,150 AFY. CVWD shares groundwater rights in this basin with the City of Glendale. As the only two water-rights holders in the Basin, CVWD has an annual entitlement of 3,294 AFY and the City of Glendale has an annual entitlement of 3,856 AFY.

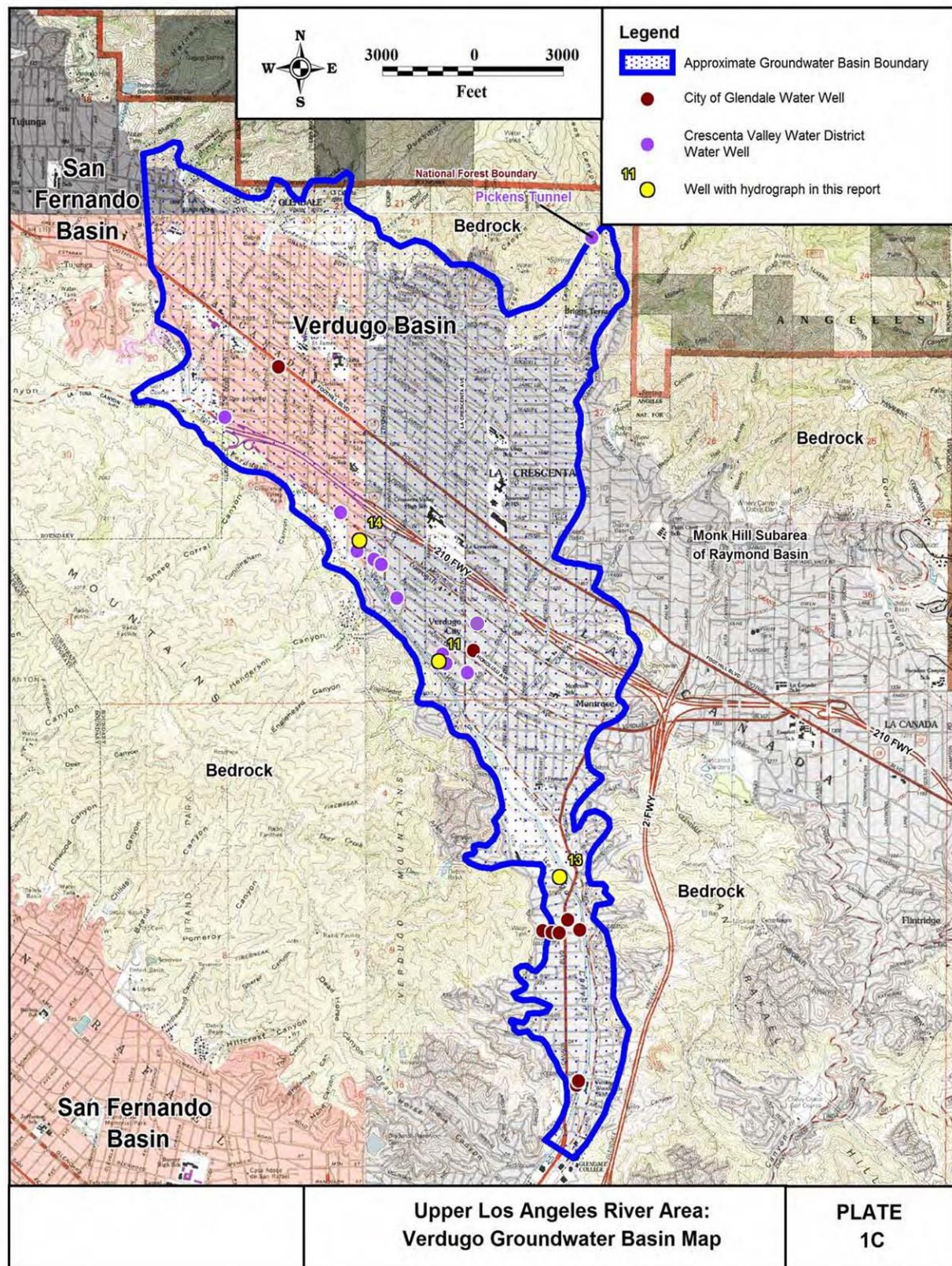


Figure 3.7: Verdugo Groundwater Basin

3.4 WATER QUALITY

In 1974, Congress passed the Safe Drinking Water Act in order to protect public health by regulating the nation's drinking water supply. As required by the Safe Drinking Water Act, CVWD provides annual Water Quality Reports to its customers.



Figure 3.8: Health Standards Protect Drinking Water

To ensure quality of its water, CVWD considers risks to drinking water, including: turbidity, microbiological content, organic and inorganic chemical concentration, radionuclide content, and disinfection by-product concentration.

Adverse health effects from these contaminants include not only acute effects but also chronic effects, which may occur if contaminants are ingested at unsafe levels over many years.

The two main sources of CVWD's water supply are imported water from FMWD (MWD water) and groundwater from the Verdugo Basin. Since MWD draws the majority of its water from the CRA and the SWP, the quality of CVWD's imported water supply is closely related to the quality of these two sources.

3.4.1 IMPORTED WATER QUALITY

MWD is responsible for providing water of a high quality throughout its service area. The water delivered by MWD is tested both for currently regulated contaminants and for additional contaminants of concern. Over 300,000 water quality tests are conducted each year to regulate the safety of its water. MWD's supplies originate primarily from the CRA

and from the SWP. The two sources, proportional to each year's availability of the source, is then treated and delivered throughout MWD's service area.

MWD's primary sources face individual water quality issues of concern. The CRA water source contains a higher level of total dissolved solids (TDS) and a lower level of organic material, while the SWP contains a lower TDS level while its level of organic materials is much higher, leading to the formation of

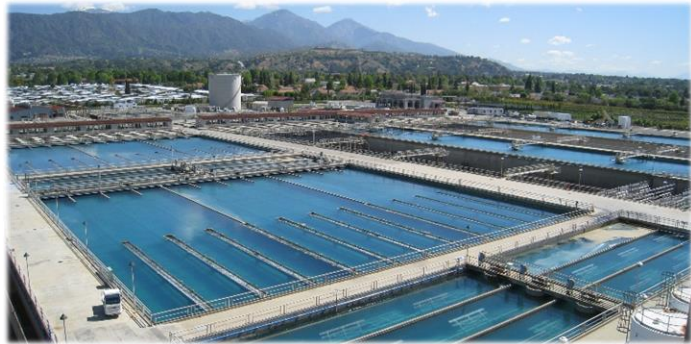


Figure 3.9: MWD's Weymouth Treatment Plant Provides a Safe Supply of Water

disinfection byproducts. To remediate the CRA's high level of salinity and the SWP's high level of organic materials, MWD has been blending CRA water with SWP supplies as well as implementing updated treatment processes to decrease the disinfection byproducts. In addition, MWD engages in efforts to protect its Colorado River supplies from threats of uranium, perchlorate, and chromium VI while also investigating the potential water quality impact of emerging contaminants, N-nitrosodimethylamine (NDMA) and pharmaceuticals and personal care products (PPCPs). MWD has assured its ability to overcome the above mentioned water quality concerns through its protection of source waters, implementation of renovated treatment processes, and blending of its two sources.



Figure 3.10: Native Rock adds to the Salinity of the Colorado River Water Supplies

While unforeseeable water quality issues could alter reliability, MWD's current strategies ensure the deliverability of high-quality water.

3.4.2 GROUNDWATER QUALITY

The water quality of the Basin is high in nitrates and selected wells show the presence of Volatile Organic Compounds (VOCs), particularly tetrachloroethylene (PCE), above the State Water Resources Control Board's Division of Drinking Water (DDW) maximum contaminant levels (MCLs). In addition, CVWD experienced Methyl tertiary butyl ether (MTBE) levels above the public health goal and removed a well from service in 2006. That well was placed back into service in May 2008; however, another well was taken out of service in September 2008 due to high levels of MTBE. That well was placed back into service in March 2011. While MTBE levels remain below detectable concentrations, CVWD continues to monitor all sources on a quarterly basis.

3.4.3 WATER QUALITY IMPACTS

As a result of MWD's efforts, MWD's 2020 UWMP indicates that none of the water quality challenges described below will impact the reliability of its supplies during the next 25 years. CVWD's water system is and has been in compliance with all DDW water quality standards. Groundwater quality does not impact water supply at this time due to CVWD's two (2) Nitrate treatment plant and the ability to blend waters below the MCL for PCE, and Nitrate.

Groundwater containing nitrate is either blended with imported water and/or treated at CVWD's Glenwood Nitrate Reclamation Facility and AroNite Nitrate removal Treatment Plant for Well 2 to meet drinking water standards. Blending with other well water or imported water is sufficient to supply water at less than the MCL for PCE as approved by DDW. MTBE is not present in any of CVWD's wells above the secondary DDW standard. MTBE levels are monitored quarterly throughout CVWD.

In the case that MTBE should reappear at levels above the secondary MCL, CVWD has plans to utilize MWD water to blend down MTBE levels or the groundwater well will be shutdown.

The installation of an AROnite biological nitrate removal treatment facility to reactivate CVWD's Well No. 2 at the Ordunio Reservoir was put into service in June 2019. This treatment facility will increase CVWD's ability to pump its adjudicated rights within the Verdugo Basin, utilize a local water source and as a result reducing CVWD's dependence on imported water from MWD purchased through FMWD.

CVWD was approved in April 2020 for an amended permit to convert the existing disinfection systems from free chlorine to chloramine by adding chlorine and ammonia to the groundwater supply at four locations (Mills, Glenwood, Well 2 and Pickens Canyon

Tunnel) in order to form chloramine before it is blended with chloraminated MWD water. This popular disinfection method is now being used because of the buildup of byproducts from the chlorine treatment process. CVWD plans to convert to chloramines in the October 2021. At the same time, CVWD has converted the disinfection system at Pickens Canyon Tunnel from calcium hypochlorite to sodium hypochlorite.

3.5 CURRENT WATER SUPPLY

3.5.1 IMPORTED WATER PURCHASES

In 2020, CVWD relies on 2,141 AF of imported water wholesaled by MWD through FMWD to supplement local groundwater. Imported water represents approximately 52 percent of CVWD's total water supply. MWD's principal sources of water originate from two sources - the Colorado River via the Colorado Aqueduct and the Lake Oroville watershed in Northern California through the SWP. This water is treated at MWD's Weymouth Treatment Plant. Because of SWP's lower salinity level, MWD blends SWP water with CRA to reduce the salinity of the delivered water.

MWD's Upper Feeder is tapped by FMWD in the vicinity of Seco Street and Rosemont Avenue in the City of Pasadena. Water flows from MWD's system into FMWD's Arroyo Seco Gravity Main, which traverses in a northerly direction in the vicinity of Rosemont Avenue and terminates at FMWD's Main Pumping Plant located near Rosemont Avenue and Washington Boulevard in the City of Pasadena.

Table 3.1 shows the recent imported water from MWD via FMWD in the past six years from 2015 to 2020.

Table 3.1: Amount of Imported Water Between 2015 - 2020 (AF)

Wholesaler Source	2015	2016	2017	2018	2019	2020
FMWD	1,745	1,807	2,218	2,229	1,810	2,141
% of Total Water Supply	49%	49%	57%	57%	48%	51%

3.5.2 GROUNDWATER PRODUCTION

From 2015 to 2020, CVWD has pumped groundwater ranging from 1,892 to more than 2,065 AF. The Basin was adjudicated in a court decision in 1979 and is administered by the ULARA Watermaster. A copy of the ULARA judgment is included in this UWMP as **Appendix A**. CVWD's prescriptive rights in the Basin are 3,294 AFY. To date, the

neighboring City of Glendale, as the only other Basin rights holder, has not pumped its full adjudication (3,856 AFY) in the Basin.

It is CVWD’s goal to maintain full groundwater pumping capabilities in the Basin to pump its adjudicated right of 3,294 AF every year. Since the 2005 UWMP, CVWD implemented a long-term capital improvement program to continue rehabilitating its original 12 wells. In addition, CVWD has installed a new well (Well 16), which came online in 2016 and re-active Well 2, which came back online in 2019.

CVWD has a contract to lease water rights from GWP. The agreement, contained in **Appendix B**, allows CVWD to pump and purchase groundwater through the operation of GWP’s Rockhaven Well (Well 16) and its existing infrastructure. CVWD began purchasing groundwater pumped from GWP’s well in March 2016. Well 16 increased CVWD pumping rights up to 500 AFY.

Table 3.2 shows CVWD’s recent groundwater production from the Basin in the past six years from 2015 to 2020.

Table 3.2: Amount of Groundwater Pumped Between 2015 - 2020 (AF)

Basin Name(s)	2015	2016	2017	2018	2019	2020
Verdugo Basin	1,844	1,624	1,351	1,376	1,824	1,933
GWP Well #16	0	344	347	279	141	142
Total Groundwater	1,844	1,968	1,699	1,655	1,964	2,075
% of Total Water Supply	51%	52%	43%	43%	52%	49%

3.5.3 2020 SUMMARY OF CVWD WATER SUPPLIES

Table 3.3 shows CVWD’s water supplies and max total right / safe yield in 2020. As shown, CVWD does not utilize 100 percent of their full supply capabilities to meet their demands.

Table 3.3: CVWD Water Supplies in 2020 (AF) (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	from FMWD	2,141	Drinking Water	2,154
Groundwater (not desalinated)	CVWD Wells	1,933	Drinking Water	3,294
Groundwater (not desalinated)	Well #16 (GWP)	142	Drinking Water	500
Total		4,216		5,948

3.6 PROJECTED CLIMATE CHANGE IMPACTS TO SUPPLIES

Extensive research has been done on the future impacts due to climate change on the State of California. The state released its latest research on climate, called the California's Fourth Climate Change Assessment, detailing the potential impacts of climate change that affects California such as temperature, sea level rise, droughts, and wildfires. The assessment utilizes historic data and the latest computer models to analyze these potential impacts. Furthermore, the state provided public access to downscaled data, along with mapping and other visualization tools, found at Cal-Adapt. In respect to water resources, research shows that California has a highly variable climate and is susceptible to dry spells. Additionally, extended drought periods could become more pervasive in future decades. Utilizing the extended drought scenario tool on Cal-Adapt provided projections on impacts on CVWD caused by an early 21st century drought (2023–2042). These impacts include increased temperatures and decreases in precipitation, which are key components to take into consideration for water resources planning.

3.6.1 TEMPERATURE

Under an extended drought period scenario from 2023 to 2042, maximum and minimum temperatures are anticipated to increase as shown in **Figures 3.11** and **3.12**, respectively. As a result, average temperature increases range from 3.7°F to 4.7°F for minimum and maximum temperatures, respectively, as shown in **Table 3.4**.

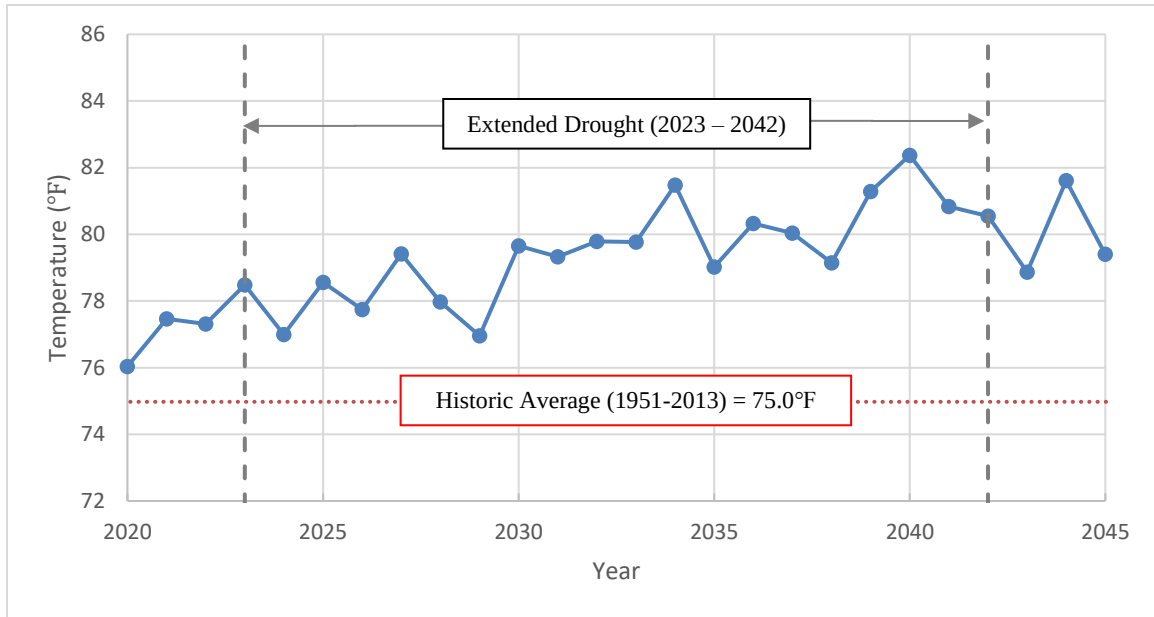


Figure 3.11: Extended Drought Scenario - Maximum Daily Average Temperatures

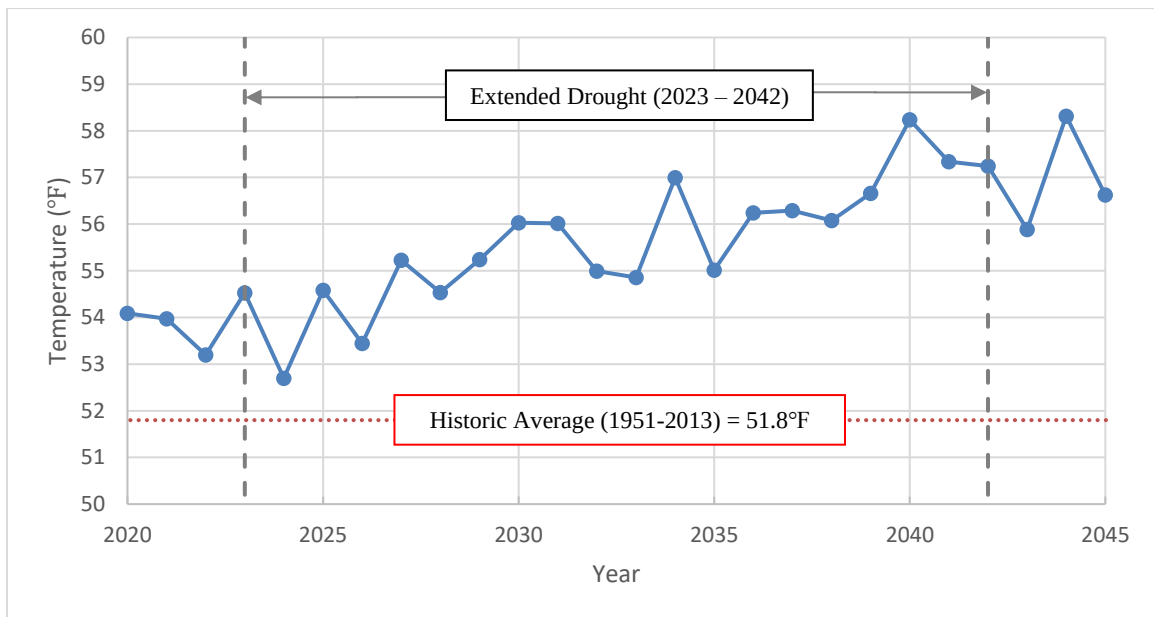


Figure 3.12: Extended Drought Scenario - Minimum Daily Average Temperatures

Table 3.4: Comparison Between Historic and Projected Min/Max Temperatures Under Extended Drought Scenario (2023 – 2042)

	Temperatures (°F)	
	Minimum	Maximum
Historic (1951-2013)	51.8	75.0
Projected (2023-2042)	55.5	79.2
Difference	+3.7	+4.2

3.6.2 PRECIPITATION & STORMWATER RUNOFF

Under an extended drought period scenario from 2023 to 2042, predicted precipitation shows multiple periods of below average annual precipitation as shown in **Figure 3.13**. This is also relating to reduced stormwater runoffs in a similar trend to precipitation as shown in **Figure 3.14**; however, the scenario projected several periods of significantly above average rainfall and runoff volume. **Table 3.5** compares the historical averages with the projected averages under the extended drought period scenario. Although it shows that there is an increase in runoff volume (ideal for stormwater collection), the average increase is driven by the isolated periods of intense storm events.

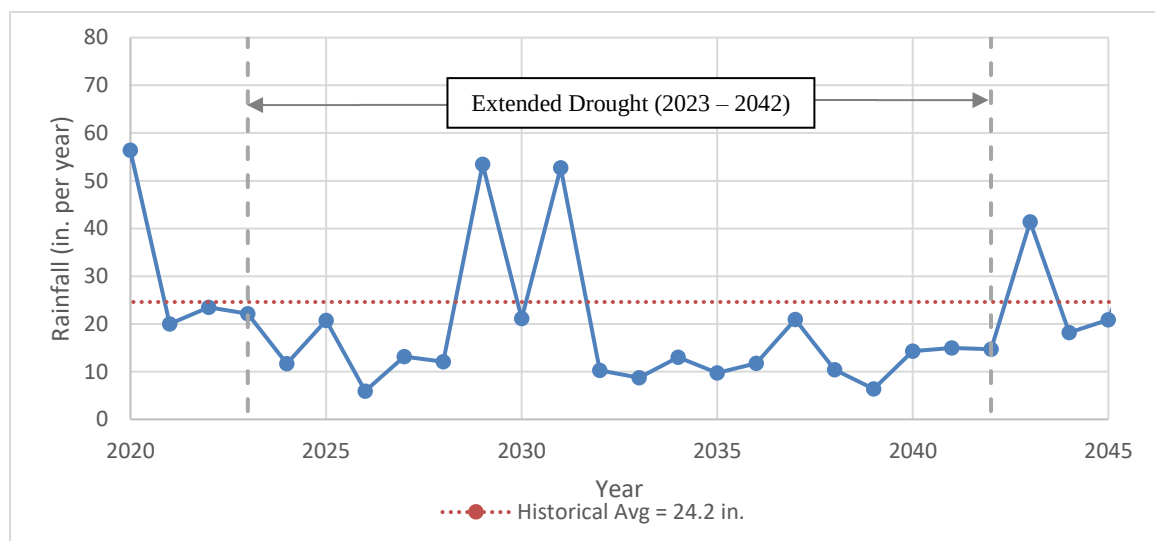


Figure 3.13: Extended Drought Scenario – Projected Annual Rainfall

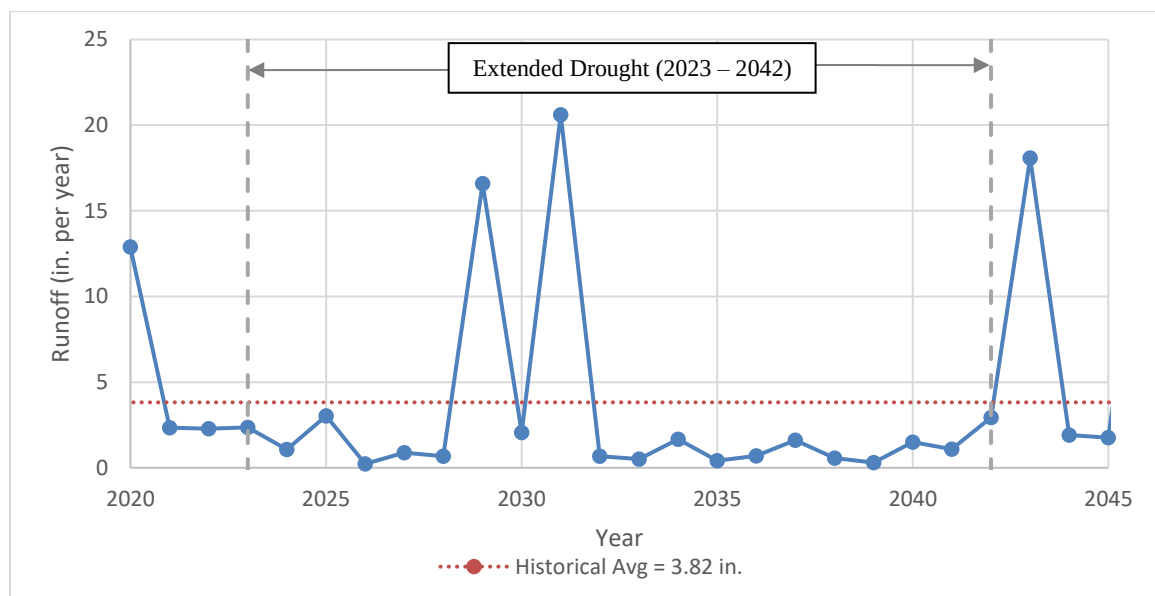


Figure 3.14: Extended Drought Scenario – Projected Annual Runoff

Table 3.5: Comparison Between Historic and Projected Rainfall & Runoff Under Extended Drought Scenario (2023 – 2042)

	Rainfall (in/yr)	Runoff (in/yr)
Historic (1951-2013)	24.2	3.82
Projected (2023-2042)	20.7	4.17
Difference	-3.5	+0.35

3.6.3 CLIMATE CHANGE IMPACTS TO CVWD'S WATER SUPPLIES

Climate data has been recorded in California since 1858. Since then, California has experienced several periods of severe drought: 1928-34, 1976-77, 1987-91, 2007-09, and most recently in 2012-16. California has also experienced several periods of less severe drought. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by DWR. These rivers flow into the Delta and are the source of water for the SWP. Southern California sustained few adverse impacts from the 1976-77 drought, but the 1987-91 drought created considerably more concern.

The drought of 2007-09 resulted in significant impacts on the state's water supplies. SBx7-7 was signed into law by Governor Schwarzenegger that requires mandatory water conservation up to 20 percent by 2020. The recent drought in 2012-16 brought a significant hit to the state's water supplies. The drought strained reservoir levels all across the state. **Table 3.6** compares the reservoir levels in October 2013 during the drought and in present day (February 2021). As shown, the majority of the state's reservoirs were all below average levels. To this day, California is still in a recovery stage from the recent droughts.

Table 3.6: California Reservoirs Level During Drought (2013) and Current (2021)

Reservoir	Drought Period (Oct. 30, 2013)	Current Levels (Feb. 9, 2021)	Historic Average
Trinity Lake	50%	51%	72%
Lake Shasta	38%	48%	70%
Lake Oroville	43%	36%	54%
New Melones Lake	43%	65%	108%
San Luis Reservoir	21%	54%	67%
Millerton Lake	54%	30%	47%
Perris Lake	45%	93%	114%
Castaic Lake	85%	77%	92%
Pine Flat Reservoir	16%	23%	47%
Lake McClure	25%	38%	77%
Don Pedro Reservoir	50%	68%	98%
Folsom Lake	30%	30%	57%

In January of 2014, Governor Brown declared a state of emergency and directed state officials to take all necessary actions to prepare for water shortages. As the drought prolonged into 2015, to help cope with the drought mitigation, Governor Brown issued an Executive Order in April 2015 that mandated a statewide 25 percent reduction in potable water use from a baseline year of 2013.

The effects of the drought was observed in CVWD's supplies as shown in **Figure 3.15**. Since 2011, CVWD's reliance on groundwater has decreased from 3,126 AF at the peak in 2012 to 2,033 AF in 2020 (a decrease of 1,092 AF). This is due to the significantly decreased groundwater elevations caused by the recent droughts. **Figures 3.16, 3.17, and 3.18** shows the groundwater elevation levels from ULARA's Hydrograph Wells 11, 13, and 14, respectively, obtained from the recent ULARA Annual Report (FY 17-18). The location of the hydrograph wells are shown previously on **Figure 3.7**. As shows, groundwater elevations have been an all time low compared to historic averages. As for supplies from FMWD, volumes maintained average around 1,900 AF. Imported supplies maintained to supplement for the reduced groundwater volumes to meet CVWD's demands.

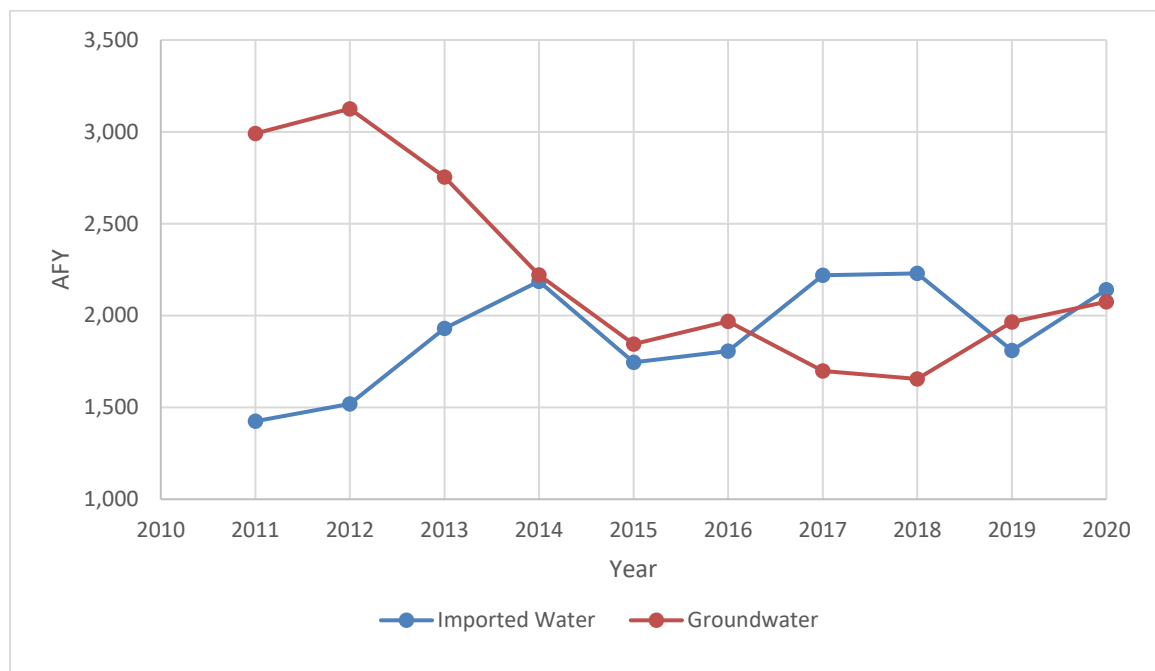


Figure 3.15: CVWD Imported and Groundwater Supplies (2011 - 2020)

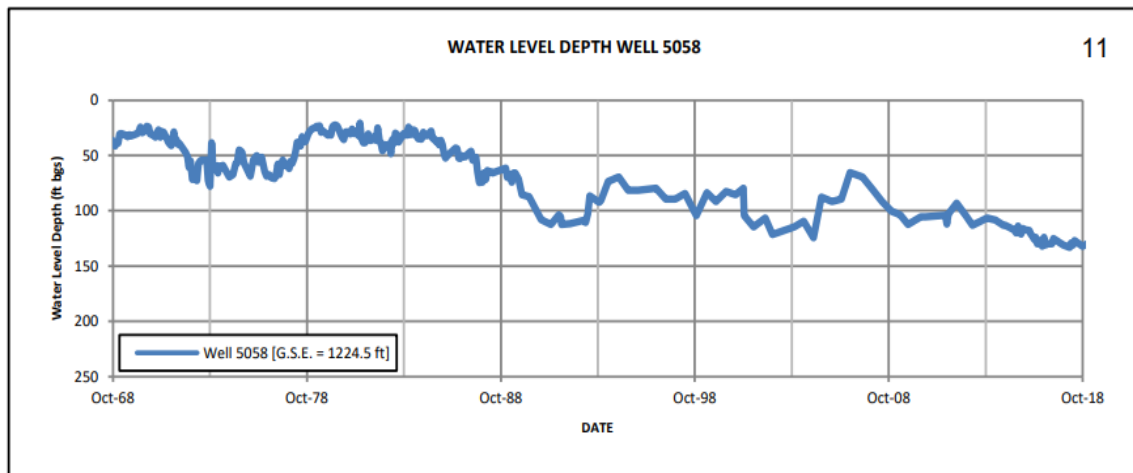


Figure 3.16: Hydrograph Well #11 Historic Groundwater Elevations

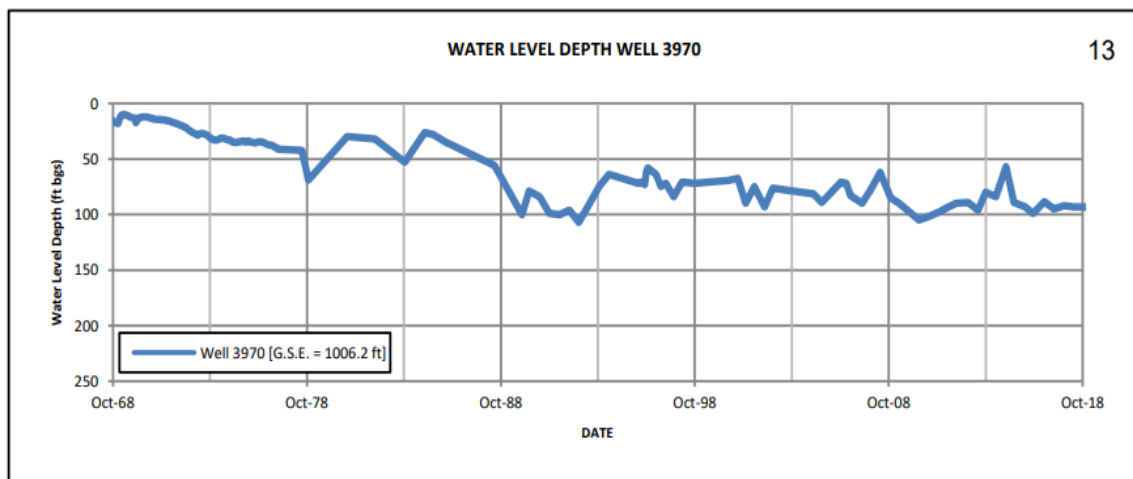


Figure 3.17: Hydrograph Well #13 Historic Groundwater Elevations

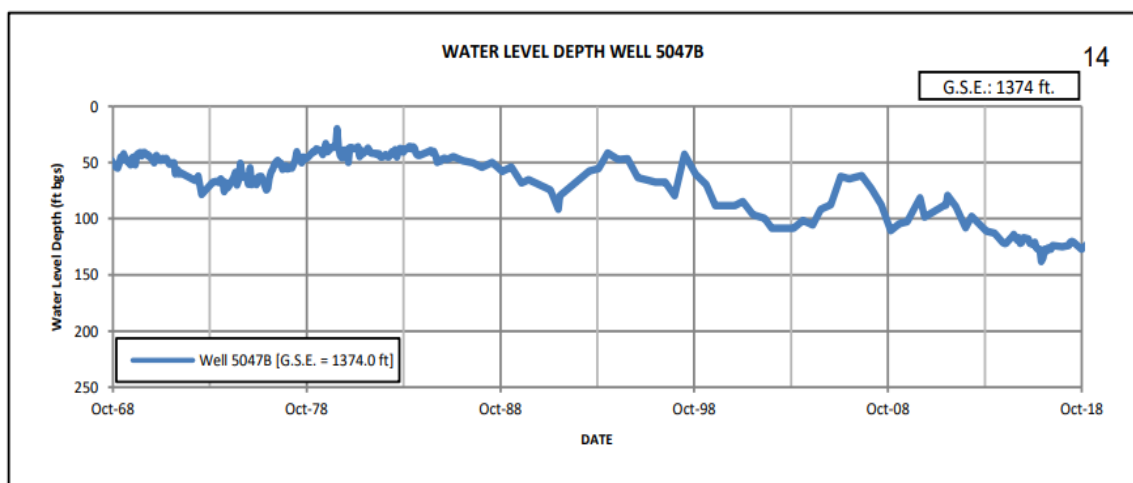


Figure 3.18: Hydrograph Well #14 Historic Groundwater Elevations

3.7 WATER SUPPLY PROJECTIONS

IMPORTED WATER SUPPLY PROJECTIONS

Based on MWD's supply projections that it will be able to meet full service demands under all three hydrologic scenarios, FMWD, CVWD's wholesale supplier concludes that it would also be able to meet the demands of its retail agencies under these conditions.

CWC section 10631(k) requires the wholesale agency to provide information to the urban retail water supplier for inclusion in its UWMP which identifies and quantifies the existing and planned sources of water available from the wholesale agency. **Table 3.7** indicates the wholesaler's water availability projections by source for the next 25 years as provided to CVWD by FMWD.

GROUNDWATER SUPPLY PROJECTIONS

Table 3.7 also shows the amount of groundwater projected to be pumped from the Basin by CVWD over the next 25 years. It also includes CVWD's projected amount of groundwater pumped from GWP's Rockhaven Well (Well #16). The projected amount of groundwater purchased from GWP over the next 25 years averages 300 AFY. In the past, various problems with CVWD's wells have hindered the amount that is able to be pumped. This is a contributing factor to CVWD's intention to embark on a well rehabilitation and development plan to increase reliance on local supplies over imported sources.

Table 3.7: Projected CVWD Water Supplies (AF) (2025 – 2045) (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Purchased or Imported Water	MWD via FMWD	2,154	2,154	2,154	2,154	2,154
Groundwater (not desalinated)	CVWD Wells	3,294	3,294	3,294	3,294	3,294
Groundwater (not desalinated)	Well #16 (GWP)	300	300	300	300	300
Total		5,748	5,748	5,748	5,748	5,748

3.8 SUPPLY VS DEMAND

3.8.1 MWD'S (AND SUBSEQUENTLY FMWD'S) SUPPLY OUTLOOK

COLORADO RIVER SUPPLIES

Water supply from the CRA continues to be a critical issue for Southern California as MWD competes with several agricultural water agencies in California for unused water rights to the Colorado River. Although California's allocation has been established at 4.4 MAF annually, MWD's allotment stands at 550,000 AFY with additional amounts increasing MWD's allotment to 842,000 AFY if there is any unused water from the agricultural agencies.

MWD's Colorado River Allocation continues to be a critical issue.

MWD recognizes that competition from other states and other agencies within California has decreased the CRA's supply reliability. In 2003, the Quantification Settlement Agreement (QSA) facilitated the transfer of water from agricultural agencies to urban uses. This historic agreement provides California the means to implement transfers and supply programs, which will allow California to live within the State's 4.4 MAF basic annual apportionment of Colorado River water.

Lake Mead, located on the Colorado River, is the largest reservoir in the United States. In 2015, it reached its lowest level since the 1930s when the reservoir first filled. As of March 18, 2021, the water level in Lake Mead measured 1,085.7 feet above mean sea level, which is 39 percent of capacity and only 11 feet above the level (1,075 feet) that would trigger a first-ever shortage declaration on the Colorado River.

STATE WATER PROJECT SUPPLIES

The reliability of the SWP affects the MWD member agencies' ability to plan for future growth and supply. DWR develops and releases The State Water Project Delivery Capability Report (DCR) where it provides updates and supply estimations on the SWP delivery capabilities. The latest edition of the report (2019 DCR) incorporates current regulatory requirements for the SWP, and utilizes climate change models from CalSim-II to project supply impacts and estimations.

On an annual basis, each of the 29 SWP contractors, including MWD, request an amount of SWP water based on their anticipated yearly demand. In most cases, MWD's requested

supply is equivalent to its full Table A amount. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on Northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. For example, according to the 2019 DCR, the total SWP annual delivery of water to contractors ranged from 2009 to 2018 as shown in **Figure 3.19**. Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A amount, but instead a percentage of that amount based on available supply.

Each December, DWR provides the contractors with their first estimate of allocation for the following year. As conditions develop throughout the year, DWR revises the allocations. Currently, the total contractor requested allocation for Table A water is 4.2 MAF. MWD initially requested 1.9 MAF, which is 45 percent of the total contractors' requests for Table A water. Due to the variability in supply for any given year, it is important to understand the reliability of the SWP to supply a specific amount of water each year to the contractors.

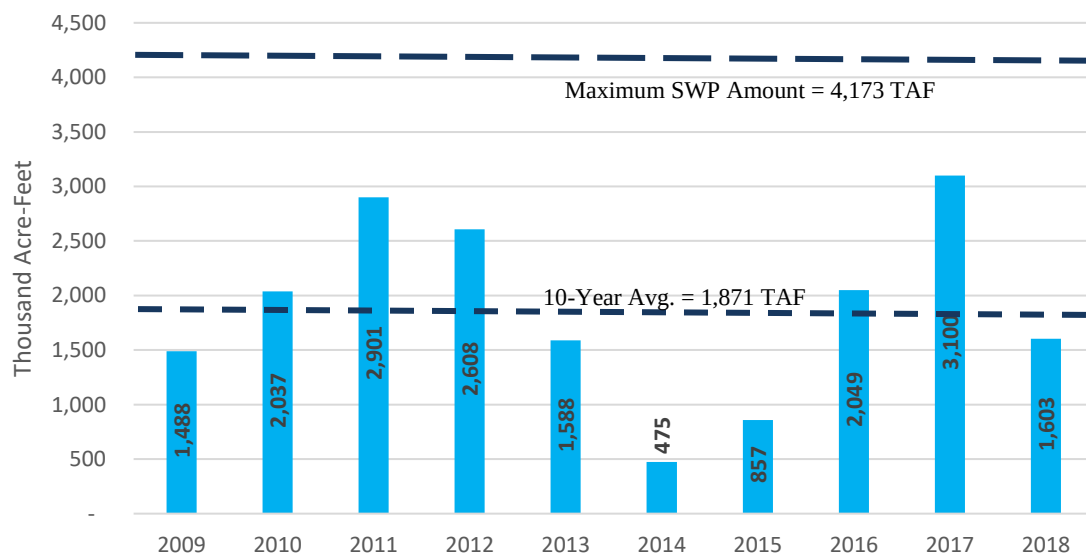


Figure 3.19: SWP Table A Deliveries (2009 - 2018)

With the state undergoing a second consecutive dry year, DWR has already taken the steps to prolong the SWP supplies. On March 2021, DWR decreased the allocation of 2021 SWP deliveries for the contractors from 422,848 AF to 210,266 AF. Based on the recent low amount of precipitation and runoff, and an assessment of overall water supply conditions, SWP supplies are projected to be 5 percent of most SWP contractor's 2021 requested Table A Amounts. This reduction decreased MWD's initial request from 1,911,500 AF to 95,575 AF.

STORAGE RESERVOIR SUPPLIES

Statewide, storage reservoir levels rise and fall due to seasonal climate changes, which induce increase in demand. During periods of drought, reservoir levels typically drop significantly and may limit the amount of supplies available. As a result, both DWR and MWD monitor reservoir levels regularly. Previously shown, **Table 3.6** compares the statewide reservoir levels during the recent drought period (2012-2016) with current levels (February 2021). **Figure 3.20** shows the MWD reservoir levels. As shown, the majority of the state's reservoirs were all at below average levels, and to this day, the state is still in a recovery stage from the recent droughts.

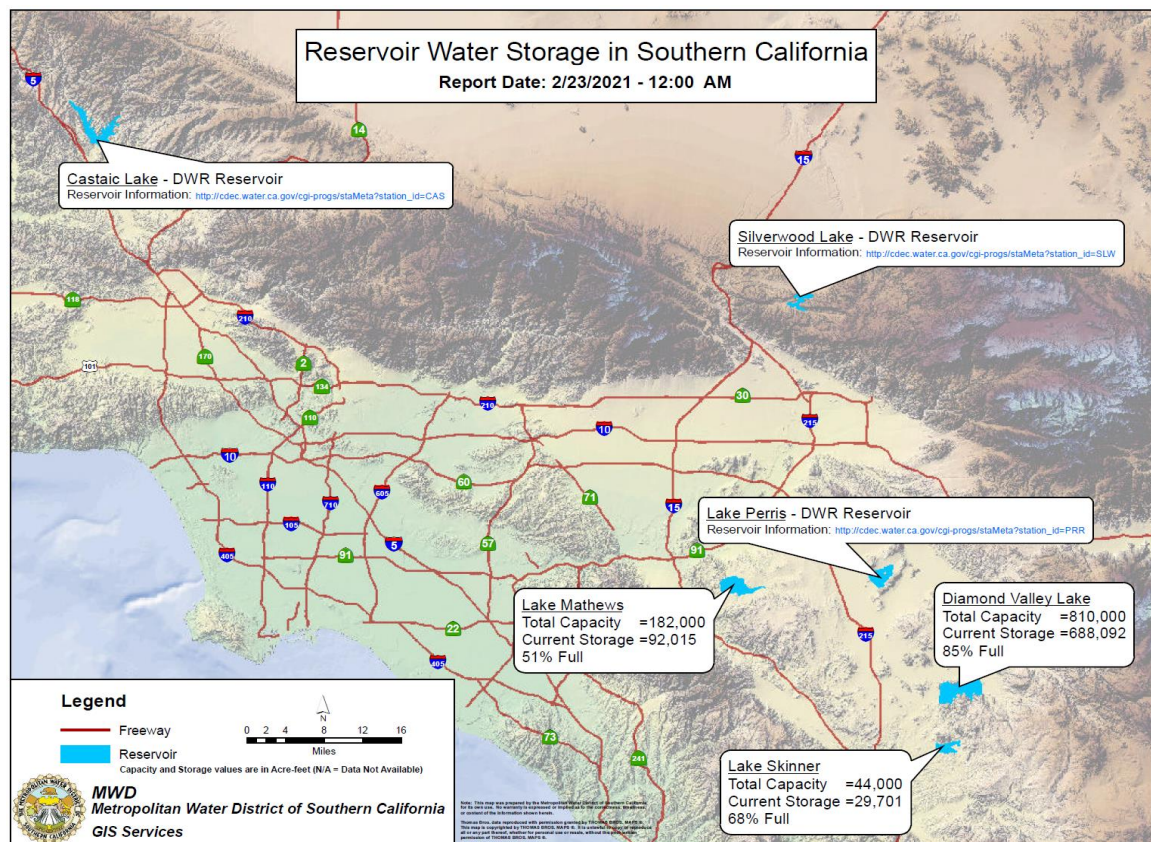


Figure 3.20: MWD Reservoir Levels (Feb. 2021)

3.8.2 MWD'S PROJECTED SUPPLY VS DEMAND COMPARISONS

MWD evaluated supply reliability by projecting supply and demand conditions for the single and multi-year drought cases based on conditions affecting the SWP (MWD's largest and most variable supply). For this supply source, the single driest-year was 1977, and the three-year dry period was 1990-1992. MWD's analysis illustrated in **Tables 3.8** and **3.9**, correspond to MWD's 2020 UWMP Tables 2-1, 2-2, 2-3, 2-4, 2-5, and 2-6. These tables demonstrate that the region can provide reliable water supplies not only under normal conditions but also under both the single driest year and the multiple dry year hydrologies.

Table 3.8: MWD Regional Imported Water Supply Reliability Projections
Average and Single Dry Years (AF) for 2025 to 2045

	Row	Region Wide Projections	2025	2030	2035	2040	2045
Supply	A	Projected Supply: Average Year	3,932,000	3,962,000	3,960,000	3,598,000	3,622,000
	B	Projected Supply: Dry Year	2,727,000	2,791,000	2,789,000	2,551,000	2,572,000
	C = B/A	Projected Dry Yr. / Avg. Yr. Supply (%)	69.4%	70.3%	70.4%	70.9%	71.0%
Demand	D	Projected Average Year Demand	1,274,000	1,256,000	1,273,000	1,294,000	1,319,000
	E	Projected Dry Year Demand	1,402,000	1,387,000	1,408,000	1,431,000	1,457,000
	F=E/D	Projected Dry Year / Avg. Year (%)	110.0%	110.4%	110.6%	110.6%	110.5%
Surplus	G = A-D	Projected Surplus: Average Year	2,658,000	2,706,000	2,687,000	2,304,000	2,303,000
	H = B-E	Projected Surplus: Dry Year	1,325,000	1,404,000	1,381,000	1,120,000	1,115,000
Programs Under Dev.	I	Projected Capability of Programs (Average Year)	47,000	113,000	13,000	372,000	347,000
	J	Projected Capability of Programs (Dry Year)	0	0	0	0	0
Potential Surplus	K=A+I-D	Projected Surplus: Average Year	2,705,000	2,819,000	2,700,000	2,676,000	2,650,000
	L=B+J-E	Projected Surplus: Dry Year	1,325,000	1,404,000	1,381,000	1,120,000	1,115,000
Comparison	I = A/D	Projected Avg. Yr. Supply/Demand (%)	308.6%	315.4%	311.1%	278.1%	274.6%
	J = A/E	Projected Dry Yr. Supply/Demand (%)	280.5%	285.7%	281.3%	251.4%	248.6%

Table 3.9: MWD Regional Imported Water Supply Reliability Projections
Average and Multiple Dry Years (AF) 2025 to 2045

	Row	Region Wide Projections	2025	2030	2035	2040	2045
Supply	A	Projected Supply: Average Year	3,932,000	3,962,000	3,960,000	3,598,000	3,622,000
	B	Projected Supply: Multiple Dry Year	2,198,000	2,210,000	2,209,000	1,973,000	1,995,000
	C = B/A	Projected Dry Yr. / Avg. Yr. Supply (%)	55.9%	55.8%	55.8%	54.8%	55.1%
Demand	D	Projected Average Year Demand	1,274,000	1,256,000	1,273,000	1,294,000	1,319,000
	E	Projected Dry Year Demand	1,412,000	1,414,000	1,435,000	1,457,000	1,484,000
	F=E/D	Projected Dry Year / Avg. Year (%)	110.8%	112.6%	112.7%	112.6%	112.5%
Surplus	G = A-D	Projected Surplus: Average Year	2,658,000	2,706,000	2,687,000	2,304,000	2,303,000
	H = B-E	Projected Surplus: Multiple Dry Year	786,000	796,000	774,000	516,000	511,000
Programs Under Dev.	I	Projected Capability of Programs (Average Year)	47,000	113,000	13,000	372,000	347,000
	J	Projected Capability of Programs (Multiple Dry Year)	10,000	0	0	235,000	213,000
Potential Surplus	K=A+I-D	Projected Surplus: Average Year	2,705,000	2,819,000	2,700,000	2,676,000	2,650,000
	L=B+J-E	Projected Surplus: Multiple Dry Year	796,000	796,000	774,000	751,000	724,000
Comparison	I = A/D	Projected Avg. Yr. Supply/Demand (%)	308.6%	315.4%	311.1%	278.1%	274.6%
	J = A/E	Projected Dry Yr. Supply/Demand (%)	278.5%	280.2%	276.0%	246.9%	244.1%

3.9 CVWD'S SUPPLY RELIABILITY

3.9.1 OVERVIEW

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, dry, and multiple dry water years. CVWD depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure that it has adequate supplies.

3.9.2 IMPORTED WATER RELIABILITY

MWD is participating in the development of groundwater, groundwater recovery, recycled water systems, desalination opportunities, and collection of urban return flows to augment the reliability of the imported water system. There are various factors that may impact reliability of supplies, such as legal, environmental, water quality, and climatic, which are discussed below. The water supplies are projected to meet full-service demands; MWD's 2020 UWMP finds that MWD is able to meet with existing supplies full service demands of its member agencies in 2025 through 2045 during normal years, single dry year, and multiple dry years.

MWD's 2015 Integrated Water Resources Plan (IRP) update describes the core resource strategy used to meet full-service retail demands under all foreseeable hydrologic conditions from 2020 through 2040. The foundation of MWD's resource strategy for achieving regional water supply reliability consists of developing and implementing water resources

**Table 3.10: MWD Supply Reliability
Single & Multiple Dry Years**

		Base Year	Percent Available
Average Year		1922 - 2017	100%
Single Dry Year		1977	100%
Multiple Dry Years	Year 1	1988	100%
	Year 2	1989	100%
	Year 3	1990	100%
	Year 4	1991	100%
	Year 5	1992	100%

programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources, such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance and infrastructure improvements. FMWD is reliant on MWD for all of its imported water. With the addition of planned supplies under development, MWD's 2020 UWMP finds that MWD will be able to meet full-service demands from 2025 through 2045, even under a repeat of the worst drought. **Table 3.10** shows the reliability of the MWD's supply for single dry year and multiple dry year scenarios. MWD's single dry year is based on the drought in 1977. MWD's five-consecutive dry years is based on from 1988 to 1992, which represents as the driest five-

consecutive year historic sequence for MWD's water supply. In addition to meeting full-service demands from 2025 through 2045, MWD projects reserve and replenishment supplies to refill system storage.

3.9.3 FACTORS CONTRIBUTING TO CVWD'S IMPORTED WATER SUPPLY RELIABILITY

The Act requires a description of the reliability of the water supply and vulnerability to seasonal or climatic shortage. The following are some of the factors identified by MWD which may have an impact on the reliability of MWD supplies.

Environment - Endangered species protection needs in the Sacramento-San Joaquin River Delta have resulted in operational constraints to the SWP system. The Bay-Delta's declining ecosystem caused by agricultural runoff, operation of water pumps, and other factors has led to historical restrictions in SWP supply deliveries. SWP and CVP delivery restrictions due to the biological opinions have reduced SWP and CVP supplies by approximately 5.2 MAF since in 2008.

Legal - Listings of additional species under the Endangered Species Act and new regulatory requirements could further impact SWP operations by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations. Additionally, any challenges to the QSA in the court systems may have impacts on the Imperial Irrigation District and San Diego County Water Authority transfer. If there are negative impacts, San Diego could become more dependent on the Metropolitan supplies. One such challenge was settled in 2013 upholding the validity of the QSA.

Water Quality - Water imported from the CRA contains high levels of salts. The operational constraint is that this water needs to be blended with SWP supplies to meet the target salinity of 500 mg/L of TDS. Another water quality concern is related to the quagga mussel. Controlling the spread and impacts of quagga mussels within the CRA requires extensive maintenance and results in reduced operational flexibility.

Climate Change - Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning even more challenging. The areas of concern for California include the reduction in Sierra Nevada snowpack, increased intensity and frequency of extreme weather events, and rising sea levels causing increased risk of levee failure.

Legal, environmental, and water quality issues may have impacts on MWD supplies. It is believed, however, that climatic factors would have more of an impact than the others. Climatic conditions have been projected based on historical patterns; however, severe pattern changes may occur in the future. **Table 3.11** shows the factors that may affect inconsistency of supply. These and other factors are addressed in greater detail in MWD's 2020 UWMP.

Table 3.11: Factors Which May Affect Inconsistency of Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
State Water Project	✓	✓	✓	✓
Colorado River			✓	✓

3.9.4 CVWD'S PROJECTED SUPPLY VS DEMAND COMPARISONS

To project future supply and demand comparisons, it will be assumed that demand will increase annually based on population growth and a constant of 107.7 GPCD in accordance with SBx7-7 requirements. During times of drought, however, demand will increase at a time when supply will decrease. **Table 3.12** outlines the

Table 3.12: CVWD Demand during Single & Multiple Dry Years

	Base Year	Percent Increases
Single Dry Year	2013-2015	111%
Multiple Dry Years	Year 1	115%
	Year 2	121%
	Year 3	122%
	Year 4	115%
	Year 5	95%

various base years and demand increases to project during single and multiple dry drought periods. **Tables 3.13** to **3.19**, shown on the following pages, provide an analysis of CVWD's supply and demand projections.

Based on the data contained in **Tables 3.13** to **3.19**, CVWD can expect to meet future demands through 2045 for all climatologic classifications. Projected groundwater supply capacities are not expected to be significantly affected during times of low rainfall and over short-term dry periods of up to three years; however, during prolonged periods of drought, CVWD's imported water supply capacities may potentially be reduced significantly due to reductions in MWD's storage reservoirs resulting from increases in regional demand.

Table 3.13: CVWD's Water Supply Availability & Demand Projections - Normal Water Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		32,974	33,494	34,022	34,558	35,103
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
Demand	Total Normal Demand	3,979	4,041	4,105	4,170	4,236
	% of 2015-2020 Avg. Demand (3,869)	103%	104%	106%	108%	109%
Supply/Demand Comparison	Supply/ Demand Difference	1,769	1,707	1,643	1,578	1,512
	Supply/Demand (%)	144%	142%	140%	138%	136%

Table is intended only to show CVWD has the capacity to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (SBx7-7) multiplied by population projections shown above.
2. Imported Water Supply represents supply available to CVWD, if needed, based on the CVWD's FMWD's Tier 1 Limit of 2,154 AFY.
3. Groundwater Supplies based on the CVWD's adjudicated rights of 3,294 AF and 300 AF from Glendale during a normal year.

**This Table not intended to be a projection of CVWD's actual groundwater production or FMWD planned purchases. Amounts are based on FMWD's Tier 1 Limit and their Total Pumping Rights.*

**This Table is not intended to be a projection of CVWD's actual demand. Demand of 107.7 GPCD is based on average water demands from 2015 - 2020. Actual demand may be above or below the 107.7 GPCD in accordance with water usage needs in the service area.*

Table 3.14: CVWD's Water Supply Availability & Demand Projections - Single Dry Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		32,974	33,494	34,022	34,558	35,103
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	Total Dry Demand	4,412	4,481	4,552	4,624	4,697
	Normal Year Demand	3,979	4,041	4,105	4,170	4,236
	% of Normal Year	111%	111%	111%	111%	111%
Supply/Demand Comparison	Supply/Demand Difference	1,336	1,267	1,196	1,124	1,051
	Supply/Demand (%)	130%	128%	126%	124%	122%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by single dry year increase of 111%
2. All other items derived in similitude to Table 3.13.

*See notes below Table 3.13 for explanation of groundwater supply / overall demand.

Table 3.15: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2021 – 2025) (AF)

		2021	2022	2023	2024	2025
Water Service Area Population		32,564	32,666	32,768	32,871	32,974
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	Total Dry Demand	4,531	4,781	4,836	4,565	3,789
	Normal Year Demand	3,929	3,942	3,954	3,966	3,979
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	1,217	967	912	1,183	1,959
	Supply/Demand (%)	126.8%	120.2%	118.9%	125.9%	151.7%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

*See notes below Table 3.13 for explanation of groundwater supply / overall demand.

Table 3.16: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2026 – 2030) (AF)

		2026	2027	2028	2029	2030
Water Service Area Population		33,077	33,181	33,285	33,389	33,494
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	Total Dry Demand	4,603	4,857	4,912	4,637	3,849
	Normal Year Demand	3,991	4,004	4,016	4,029	4,041
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	1,145	891	836	1,111	1,899
	Supply/Demand (%)	125%	118%	117%	124%	149%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

*See notes below Table 3.13 for explanation of groundwater supply / overall demand.

Table 3.17: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2031 – 2035) (AF)

		2031	2032	2033	2034	2035
Water Service Area Population		33,599	33,704	33,810	33,916	34,022
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	Total Dry Demand	4,676	4,933	4,989	4,710	3,910
	Normal Year Demand	4,054	4,067	4,080	4,092	4,105
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	1,072	815	759	1,038	1,838
	Supply/Demand (%)	123%	117%	115%	122%	147%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

*See notes below Table 3.13 for explanation of groundwater supply / overall demand.

Table 3.18: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2036 – 2040) (AF)

		2036	2037	2038	2039	2040
Water Service Area Population		34,129	34,235	34,343	34,450	34,558
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	Total Dry Demand	4,749	5,011	5,068	4,785	3,972
	Normal Year Demand	4,118	4,131	4,144	4,157	4,170
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	999	737	680	963	1,776
	Supply/Demand (%)	121%	115%	113%	120%	145%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

*See notes below Table 3.13 for explanation of groundwater supply / overall demand.

Table 3.19: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2041 – 2045) (AF)

		2041	2042	2043	2044	2045
Water Service Area Population		34,667	34,775	34,884	34,994	35,103
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	5,748	5,748	5,748	5,748	5,748
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	Total Dry Demand	4,824	5,090	5,148	4,860	4,034
	Normal Year Demand	4,183	4,196	4,209	4,222	4,236
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	924	658	600	888	1,714
	Supply/Demand (%)	119%	113%	112%	118%	142%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

*See notes below Table 3.13 for explanation of groundwater supply / overall demand.

3.10 REDUCED DELTA RELIANCE REPORTING

3.10.1 INTRODUCTION

An urban water supplier that anticipates participating in or receiving water supply benefits from a proposed project (“covered action”) such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta, should provide information in their 2015 and 2020 UWMPs that can then be used in the covered action process to demonstrate consistency with Delta Plan



Figure 3.21: Delta Plan Aims to Protect Bay-Delta’s Fragile Ecosystem

Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A “covered action” is an activity that may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, directly undertaken by any public agency that will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh.

3.10.2 INFEASIBILITY OF ACCOUNTING SUPPLIES FROM THE DELTA WATERSHED FOR MWD’S MEMBER AGENCIES AND THEIR CUSTOMERS

MWD’s service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. MWD’s member agencies coordinate reliance on the Delta through their membership in MWD, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally, not by individual MWD member agencies and not by the customers of those member agencies.

MWD’s member agencies, and those agencies’ customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. MWD’s member agencies do not control the amount of Delta water they receive from MWD. MWD manages a statewide integrated conveyance system consisting of its participation in the SWP, its CRA including Colorado River water resources, programs and water exchanges, and its regional storage portfolio. Along with the SWP, CRA, storage programs, and MWD’s conveyance and distribution facilities, demand management programs increase the future reliability of water

resources for the region. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the MWD's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

MWD's costs are funded almost entirely from its service area, with the exception of grants and other assistance from government programs. Most of MWD's revenues are collected directly from its member agencies. Properties within MWD's service area pay a property tax that currently provides approximately 8 percent of the fiscal year 2021 annual budgeted revenues. The rest of MWD's costs are funded through rates and charges paid by MWD's member agencies for the wholesale services it provides to them. Thus, MWD's member agencies fund nearly all operations MWD undertakes to reduce reliance on the Delta, including Colorado River Programs, storage facilities, Local Resources Programs and Conservation Programs within MWD's service area.

Because of the integrated nature of MWD's systems and operations, and the collective nature of MWD's regional efforts, it is infeasible to quantify each of MWD member agencies' individual reliance on the Delta. It is infeasible to attempt to segregate an entity and a system that were designed to work as an integrated regional cooperative.

In addition to the member agencies funding MWD's regional efforts, they also invest in their own local programs to reduce their reliance on any imported water. Moreover, the customers of those member agencies may also invest in their own local programs to reduce water demand. However, to the extent those efforts result in reduction of demands on MWD, that reduction does not equate to a like reduction of reliance on the Delta. Demands on MWD are not commensurate with demands on the Delta because most of MWD member agencies receive blended resources from MWD as determined by MWD, not the individual member agency. For most member agencies, the blend varies from month-to-month and year-to-year due to hydrology, operational constraints, use of storage, and other factors.

3.11 ENERGY INTENSITY

3.11.1 OVERVIEW

New to the 2020 UWMP, it is required that every urban water supplier assess the energy required to distribute their water supply to their consumers or member agencies. The water supplier's energy intensity is required for the preparation of an UWMP, as defined in CWC Section 10631.2(a). Energy intensity varies with climate, topography, source

characteristics, proximity, and other factors. Therefore, urban water suppliers face issues related to the economic costs of the energy required for their operations, as well as issues related to the sustainable supply of energy and water. Knowing how much energy is needed to deliver water to customers is important because of its significance for the State's total energy demands, and for its implications regarding greenhouse gas (GHG) emissions and climate goals for the region and state.

This Section includes an assessment of the energy intensity of the water supply operation for FMWD. Energy is required for the pumping, conveyance, treatment and distribution of water, and for collection, treatment, and discharge of wastewater, and/or conveyance and distribution of recycled water. **Figure 3.22** illustrates a typical water use diagram.

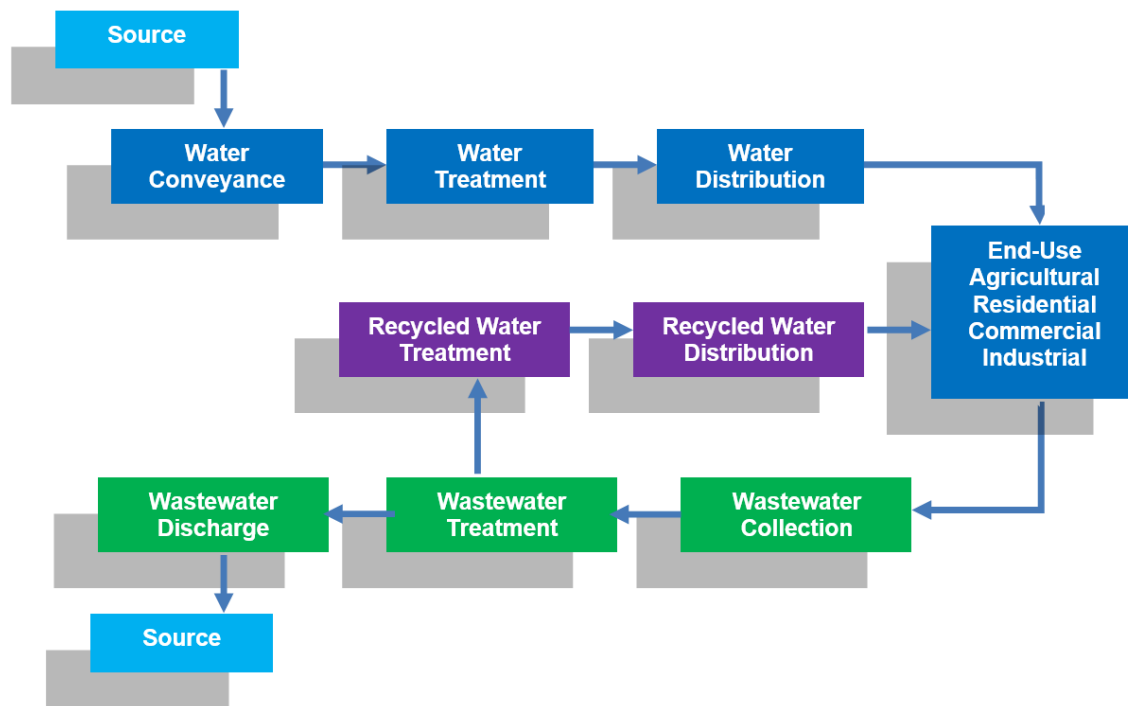


Figure 3.22: Typical Municipal Water Use Diagram

Energy intensity in respect to water supplies is a measure of unit energy consumption an urban water supplier expends per AF to convey water from the point where the supplier acquires the water to the point of delivery. Energy for public water and wastewater services are measured in kilowatt-hours of electricity, which is then normalized by water volume to express energy intensity in kilowatt-hour per acre-feet (kWh/AF).

Some of the main differences between energy use associated with various water supply sources are the distances the water must be transported from its origins (the amount of pumping necessary to harvest and distribute the water) and the location of treatment

facilities in relation to the end users, among others.

3.11.2 Water Use and Energy Relationship

Energy production can emit a number of different types of Greenhouses Gas (GHGs). California's Air Resources Board recognizes that energy production accounts for between 30 and 40 percent of total GHG production in California, and include the following inventory of GHGs: Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF₃). These GHGs vary in magnitude in terms of their GHG strength, and therefore are converted to be equivalent to CO₂ for the purposes of measuring GHG emission across the state. CO₂ emissions (or the equivalent for other GHGs) are the common measurement for GHG emissions. Currently, statewide water uses accounts for nearly 20 percent of electricity use, and 30 percent of non-power plant related natural gas consumption. Water use and energy are linked in at least three critical ways:

- Water pumping and purification: The amount of energy used to pump water will depend upon the source (e.g., surface versus groundwater), the distance and height the water must be moved, and treatment requirements.
- Wastewater treatment: The amount of energy used in wastewater treatment plant typically ranges from 1,100 to 4,600 kWh per million gallons of wastewater treated.
- Water heating: In an average California home, 41 percent of the water is used for dishwashing, faucets, laundry, and bathing water that is often heated.

These amounts, in total, are so significant that one must also count the amount of GHGs from the fossil fuels that are burned to produce the oil, gas, coal and other combustibles which are then burned to produce the electricity. CVWD understand the water-energy nexus and aims to conserving water saves the energy that would have been used to convey, treat, and distribute the water. Reducing the energy consumption in water operations leads to the decreases production of GHGs.

3.10.3 Energy Usage and Intensity

In order to determine energy use related to water supply processes under CVWD's operational control, CVWD collected billing and energy quantity data provided by Southern California Edison (SCE) and GWP for 2020 (January 1, 2020 to December 31, 2020) representing the comprehensive one-year reporting period. The billing amounts for each facility were converted to an energy use quantity measured in kilowatt hours (kWh) for electricity. **Table 3.20** summarizes the energy intensity for CVWD. As shown, nearly 4.3 million kWh of energy was used to deliver over 4,216 AF of potable water. This equates

to an energy intensity of 1,019.4 kWh/AF. DWR requires the reporting of energy intensity as kWh per million gallons (kWh/MG). Therefore, CVWD's energy intensity is 3,128.6 kWh/MG.

Table 3.20: CVWD Total Energy Intensity (DWR Table O1-B)

Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control		
End Date	12/31/2020			
☐ Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
<i>Water Volume Units Used</i>	AF	Total Utility	Hydropower	Net Utility
<i>Volume of Water Entering Process (volume unit)</i>		4216		4216
<i>Energy Consumed (kWh)</i>		4297984		4297984
<i>Energy Intensity (kWh/vol. converted to MG)</i>		3128.6	#DIV/0!	3128.6



CVWD has committed to good faith efforts to implement water conservation measures. CVWD has continued to work with FMWD and MWD to implement all five Best Management Practices to the extent possible.

SECTION 4: CONSERVATION MEASURES

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN



SECTION 4

CONSERVATION MEASURES

4.1 OVERVIEW

As a result of diminished existing supplies and difficulty in developing new supplies, water conservation is important to Southern California's sustainability. In Water Year 2018-2019, Governor Brown signed SB 606 and AB 1668 into law. The legislation required DWR, the State Water Resources Control Board (SWRCB), and three other state agencies to develop a long-term water conservation framework to “*make conservation a California way of life.*” In order to conform to the Water Action Plan, including meeting the SBx7-7 target (20 percent by 2020), many water agencies had to re-examine traditional conservation programs. Agencies statewide acknowledge that efficient water use is the foundation of its current and future water planning and operations policies.

In March 2018, the California Urban Water Conservation Council (CUWCC) disbanded, and members of the CUWCC worked together to form the California Water Efficiency Partnership (CalWEP). CalWEP's mission is to maximize urban water efficiency and conservation throughout California by supporting and integrating innovative technologies and practices; encouraging effective public policies; advancing research, training, and public education; and building collaborative approaches and partnerships. The CUWCC (now CalWEP) drafted the Memorandum of Understanding Regarding Urban Water Conservation (MOU) in 1991. At that time, the MOU established 14 Best Management Practices (BMPs) which define policies, programs, practices, rules, regulations, or ordinances that result in the more efficient use or conservation of water. Eventually the original 14 BMPs were diminished to 5 BMPs as shown in **Section 4.1.1**.

This section of the UWMP satisfies the requirements of § 10631 (f) & (j) of the CWC and describes how CVWD implements each applicable BMP and how CVWD evaluates the effectiveness of the BMPs. This section also provides an estimate of existing conservation savings where information is available.

4.1.1 CalWEP BMPS

The updated CalWEP BMPs from 2015 will still be in effect for the 2020 UWMP. The BMPs are:

- **BMP 1:** Utility Operations
- **BMP 2:** Public Education & Outreach
- **BMP 3:** Residential Programs
- **BMP 4:** Commercial, Institutional, & Industrial Programs
- **BMP 5:** Landscape Programs

4.2 CVWD CONSERVATION PROGRAMS

CVWD recognizes the importance of water conservation and has made water use efficiency an integral part of water use planning. In 2012, CVWD became a signatory to the CUWCC (now CalWEP) by signing the MOU. As a member of CalWEP, CVWD is required to submit Bi-Annual Reports to CalWEP which document the implementation of each BMP. As Signatory to the CalWEP MOU, CVWD has committed to use good-faith efforts to implement all applicable BMPs. CVWD has maintained compliance with the BMPs since becoming a signatory. CVWD actively implements all of the measures with good faith effort by achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in each BMP's definition as described in the MOU. Water conservation is an integral part of the CVWD's water policies.

CVWD, in conjunction with FMWD and MWD, plays an active role in promoting water use efficiency in its service area. To this end, CVWD established Water Conservation Program (Phase I), which was adopted by the Board of Directors in April 2015 as Resolution No. 682, originally adopted in 2009. On May 2017, CVWD amended Resolution No. 681, which adopted a water conservation alert system. To this day, CVWD is continuously working with FMWD and MWD towards implementing the BMPs through means of various conservation measures.

Table 4.1 on the following page provides a status overview of CVWD's Conservation Measures.

Table 4.1: Conservation Measures

BMP	Description
BMP 1: Utility Operations	<i>Deals with water waste prohibitions, water efficiency ordinances, metering, conservation pricing, and other items related to managing water use.</i>
BMP 2: Public Education & Outreach	<i>Deals with outreach efforts including emails, newsletters, advertisements, presentations, promotions, etc. related to outreach & education.</i>
BMP 3: Residential Programs	<i>Deals with showerheads, faucets, toilets, turf removal, and leak detection surveys related to residential water use.</i>
BMP 4: Commercial, Industrial, & Institutional Programs	<i>Deals with toilets, urinals, steamers, cooling towers, food/restaurant equipment, medical equipment, and items related to commercial, institutional, and industrial water use.</i>
BMP 5: Landscape Programs	<i>Deals with establishing parameters for large landscapes, including measurements, budgets, audits, prohibitions, incentives, etc., related to large landscapes.</i>
Other	Any additional BMPs supported by CVWD are listed on the following pages.

4.2.1 BMP 1: UTILITY OPERATIONS

This BMP deals with water waste prohibitions, water efficiency ordinances, metering, conservation pricing, and other items related to managing water use.

WATER WASTE PROHIBITION ORDINANCE

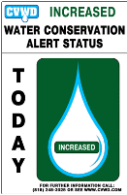
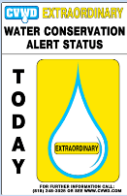
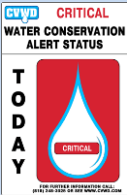
CVWD adopted Water Conservation Alert System (Resolution No. 681) and Water Conservation Program (Phase I) (Resolution No. 682) as water conservation ordinances.



Figure 4.1: Water Waste is Prohibited by District Ordinance

Water Conservation Alert System – The Water Conservation Alert System has been amended as a Phase II of the goal to reduce the risk and severity of water shortages and to notify its customers of the current conservation stage. The stages are color coded and described in **Table 4.2** on the following page.

Table 4.2: Water Conservation Alert System Codes

Alert Sign	Code	Description (as mentioned in Res. No. 681)
	Blue	Color Code “Blue” is defined as the <u>Standard Water Conservation Alert</u> , FMWD can meet all Member Agency demands. Standard water conservation applies as defined in Appendix G of CVWD’s Rules and Regulations. Currently (2021), CVWD has issued this alert as its current conservation status.
	Green	Color Code “Green” is defined as an <u>Increased Water Conservation Alert</u> , some supplies have been impacted and customers should increase efforts to conserve by following strict water conservation practices indoors and limiting outdoor water use to odd or even days, based on ending number of customer address.
	Yellow	Color Code “Yellow” is defined as an <u>Extraordinary Water Conservation Alert</u> , when MWD is pulling water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers. Customers are requested to minimize indoor water use and water outdoors no more than three (3) days per week. Outdoor irrigation will be permitted only on Tuesday, Thursday, and Saturday.
	Orange	Color Code “Orange” is defined as an <u>Allocation Water Conservation Alert</u> , when MWD has implemented its allocation plan to its member agencies. Customers are requested to minimize indoor water use and severely limit outdoor water use as further detailed in Appendix G of CVWD’s Rules and Regulations.
	Red	Color Code “Red” is defined as a <u>Critical Water Conservation Alert</u> , when water supplies are drastically reduced. Customers are requested to minimize indoor water use and water outdoors no more than one (1) day per week.
	Purple	Color Code “Purple” is defined as an <u>Emergency Water Conservation Alert</u> , when water supplies are only available for health and safety needs. Customers are requested to minimize indoor water use and curtail all outdoor water use.

Water Conservation Program (Phase I) – The Water Conservation Program (Phase I) was amended in April 2015 stating waste water prohibitions to its customers. The prohibitions apply to the following:

- Water hose usage
- Leaks
- Windy and rainy days
- Construction water restrictions
- Hotels/Motels
- Prohibiting outdoor watering during or 48 hours following a rain event
- Overspray and Runoff
- Irrigation Times
- Vehicle Washing
- Fire hydrants
- Reporting of waste water
- New Development
- Fountains
- Hand Watering
- Swimming pools
- Drinking water
- Pre-rinse spray valve

A detailed description of each prohibition is shown in **Section 5**.

CVWD Rules and Regulations contain a Water Waste Prohibition Policy allowing termination of water service to customers who do not comply with a notice to remedy their wasteful practice. Additionally, the Rules and Regulations contain a leak repair policy whereby a financial incentive (one-time bill adjustment) is provided for customers who promptly fix internal/external plumbing leaks. The aforementioned sections of the Rules & Regulations are included in **Appendix C**.

The CVWD staff works cooperatively with property owners to reduce water waste. CVWD's billing software automatically flags high usage thresholds from meter reading data for additional staff follow-up. Also, CVWD's field staff reports all visible water waste situations observed to Customer Service for additional follow-up by CVWD's staff.

CVWD has not conducted an evaluation of the water savings attributable to this BMP.

METERING

All CVWD water accounts are metered and billed bi-monthly based on commodity rates. CVWD has a commodity rate structure based upon a billing unit of 1,000 gallons, commonly stated as a unit. The water rate structure is a three-tier increasing block rate. A summary of the water rates is shown in **Table 4.3**.

CVWD began working on the Water Meter Replacement Program in 2012 to replace 3/4" & 1" water meters that were beyond their useful life with new "Smart Meters". The plan was to replace 4,000 meters from FY 12/13 to FY 15/16. CVWD's field crews completed this task and continue to replace meters. To date, 5,212 meters have been replaced.

CVWD is currently applying for grants to fund replacement of the larger sized water meters.

The “Smart Meter” that CVWD chose to replace the older meters with was the Sensus iPERL meter. The iPERL meter offers low flow accuracy with high flow durability. The innovative magnetic technology allows for the capture of previously unmeasured low flow and drives additional revenue for the utility. The meter is 100 percent lead-free with no moving parts and maintains its accuracy over a 20-year lifetime. The iPERL has



Figure 4.2: Water Meter with AMI Technology

Advance Metering Infrastructure (AMI) connectivity and 14 conditions. Diagnostic and lifetime alarms allow for quick resolution to issues experienced in the field.

In August 2020, CVWD awarded a consulting contract to UtiliWorks Consulting, Inc. (UtiliWorks) to provide professional services in assisting CVWD for the procurement and installation of the AMI Communications Network as the next phase towards CVWD having a fully function AMI system.

CVWD is currently under contract with Aqua-Metric for the procurement and installation of the AMI Communication Network project to be completed by the end of 2021.

CONSERVATION PRICING

All of CVWD’s utility water accounts are metered and billed bi-monthly based on commodity rates. CVWD has a commodity rate structure based upon a billing unit of 1,000 gallons, commonly abbreviated as a unit.

CVWD does not have a way of measuring wastewater directly from a residential unit to the sewer, so to get a reasonable estimate of the amount of flow for wastewater, CVWD bases it on a customer’s average water use during the winter months (December through March). Most water during the winter is used indoors and goes into the sewer system. Typically, outdoor irrigation is minimal during the winter months.

CVWD calculates your bimonthly wastewater charge based on the previous year average winter-time water use (i.e., 2021 wastewater charge will be based on December 2019 to March 2020 average winter-time water use) and it will remain in effect for a full year (from July 2021 to June 2022). In July of each year, your bimonthly wastewater charge will be recalculated based on the previous year average winter water use.

The new rate structure was implemented in the 2016/2017 fiscal year and was developed as part of a cost-of-service study and reflects the cost of providing wastewater service to individual residences.

CVWD offers a Low-Income Program to qualifying residents where a 20 percent discount on a combined bill for water (up to 26 units), wastewater and/or wastewater standby charges. This program may be modified or terminated without prior notice and is provided to qualified customers on a first-come, first-served basis until the program funds are no longer available.

CVWD has not conducted an evaluation of the water savings attributable to this BMP, however, CVWD will continue to make customers aware of the rate structure and use it as a tool to affect water conservation.

Since the 2015 UWMP, CVWD has increased their rates towards efforts of water conservation. **Table 4.3** below provides a summary of CVWD's water and sewer rate structures. **Table 4.4** provides a summary of the rates stated in the 2015 UWMP for comparison.

Table 4.3: Current Water & Sewer Rates (as of 09/01/2019)

Sector	Water		Sewer	
	Rate Structure	Rate	Rate Structure	Rate
Single-Family	Tier 1: 0 – 10 Units	\$5.17/Unit	--	Bi-Monthly: \$47.79 \$1.93/Unit
	Tier 2: 11 – 26 Units	\$8.14/Unit		
	Tier 3: 27+ Units	\$12.27/Unit		
Multi-Family	>0 Units	\$7.33/Unit	--	Bi-Monthly: \$31.25 \$2.15/Unit
Commercial / Institutional	>0 Units	\$7.33/Unit	Customer Charge	Bi-Monthly: \$0
			Quantity Charge per 1,000 gal of water use	Bi-Monthly: \$5.10
			Minimum Charge for Each User	Bi-Monthly: \$31.25
Schools	Elementary Schools	7.33	Elementary Schools	\$84.86 per 100 ADA ^[1]
	Middle Schools	7.33	Middle Schools	\$169.73 per 100 ADA
	High Schools	7.33	High Schools	\$254.59 per 100 ADA Customer Charge: \$31.25
Irrigation	Tier 1: 0 – 80 Units	\$5.66/Unit	Not Applicable	Not Applicable
	Tier 2: 81+ Units	\$10.89/Unit		

[1] ADA = Average Daily Attendance

Table 4.4: Past Water & Sewer Rates on 2015 UWMP

Sector	Water		Sewer	
	Rate Structure	Rate	Rate Structure	Rate
Single-Family	Tier 1: 1 – 10 Units	\$4.61/unit	Flat Rate	\$67.50/Mo
	Tier 2: 11 – 33 Units	\$5.96/unit		
	Tier 3: 34 – 50 Units	\$8.50/unit		
	Tier 4: 51 + Units	\$11.39/unit		
Multi-Family	> 0 Units	\$5.96/Unit	Flat Rate	\$67.50
Commercial / Institutional	> 0 Units	\$5.96/Unit	Customer Charge	\$2.10
			Quantity Charger per 1000 Gal of Water Usage	\$5.50
			Minimum Charge for Each Commercial User	\$67.50
Schools	Primary Schools based on Average Daily Attendance	\$4.53/unit	Primary Schools based on Average Daily Attendance	\$81.00/100 students
			Customer Charge	\$2.10
	Secondary Schools based on Average Daily Attendance	\$4.53/unit	Secondary Schools based on Average Daily Attendance	\$81.00/100 students
			Customer Charge	\$2.10
Irrigation	Tier 1: 1 – 70 Units	\$5.96/unit	Not Applicable	Not Applicable
	Tier 2: 71+ Units	\$11.39/unit		

PROGRAMS TO ASSESS & MANAGE DISTRIBUTION SYSTEM REAL LOSS

CVWD monitors water loss in its distribution system on an annual basis. It is CVWD's highest priority to repair all known distribution system and service connection leaks immediately. In the past five years, non-revenue water averaged 8.5 percent.

A significant portion of non-revenue water could be attributed to meter inaccuracy. As mentioned previously on page 4-5, CVWD embarked on a meter replacement program starting mid-June 2012 to replace their meters installed to AMIs. CVWD is currently under contract with Aqua-Metric for the procurement and installation of the AMI Communication Network project to be completed by the end of 2021.

Distribution system leaks are the most-likely culprit for loss of water. CVWD has and will be continuing on its water main replacement program and is planning on a 20-year schedule to replace its deficient pipelines. CVWD prioritized its pipe replacement program by leak history, pipe size, fire-flow rates, and age. CVWD will be working on an updated water master plan, which will further address deficiencies in the system within the next few years.

CVWD has not developed a formal methodology to estimate the water savings attributable to this BMP. There are, however, real water savings as a result of the proactive pre-screening leak detection and repair programs, and the completion of the AMI program, which maintain an acceptable non-revenue water loss of 8 percent.

4.2.2 BMP 2: PUBLIC EDUCATION & OUTREACH

This BMP deals with outreach efforts including emails, newsletters, advertisements, presentations, promotions, etc., related to outreach & education.

SCHOOL PROGRAMS

All of CVWD's public schools within CVWD's service area fall under the Glendale Unified School District. CVWD has been working with GWP to maintain a strong commitment to support educational excellence in the Glendale Unified schools. With this in mind, GWP provides "LivingWise", a water and energy classroom program to sixth grade students in both public and private Glendale schools.

The program was created by a group of teachers for the National Energy Foundation. It is a comprehensive set of 17 hands-on learning activities that use science and other core subjects so that "LivingWise" means being "water wise", "energy wise", and making "wise decisions" to protect the environment.

Each teacher and student receives a LivingWise 86-page workbook and a kit filled with such items as low-flow showerheads, kitchen faucet aerators and toilet leak detection tablets as well as an energy efficient nightlight, a fluorescent light bulb and a CD-Rom computer disk with a "conservation entertainment experience". Because many of the lessons require the students to complete an activity at home, parents and other family members learn conservation practices right along with their students. At the end of the program, the students practice what they have learned by installing the water and energy saving kit items in their homes.

In addition to Glendale's program, CVWD sponsors school assemblies from "Shows that Teach" and "Mad Science" for both public and private schools. Both assemblies offer different interactive lessons that always include water conservation and are geared towards the water cycle, water runoff, water quality, and water supplies and distribution systems. Each elementary school in CVWD's service area is invited to participate every year.

Currently, CVWD does not have a method to evaluate the water savings attributable to this

BMP, however, CVWD will continue to administer this BMP for its ability to educate and interact with customers.

FMWD also offers volunteering opportunities, called Foothill Water Conservation Corps, to assist in water conservation and education outreach. These volunteers will participate in presentations for water conservation at clubs or events, setting up and manning booths at fairs and other community functions. Not only does this aid in spreading awareness but provides incentives for students to earn community service hours at a professional setting.

GENERAL PUBLIC INFORMATION (BROCHURES, MAILINGS, WEBSITE, ETC.)

CVWD provides water conservation literature, brochures, posters, landscape advice and tips, home water conservation devices etc., directly to the public and its customers. These materials are available at CVWD's Administrative Office and during special events. In addition, CVWD posts online classes and other information on its Facebook page. CVWD also maintains a library of water resource education conservation films and videos for loan to local organizations. MWD will also provide speakers to various groups upon request.

Currently, CVWD does not have a method to evaluate the water savings attributable to this BMP; however, CVWD will continue to administer this BMP for its ability to educate and interact with customers.

4.2.3 BMP 3: RESIDENTIAL PROGRAMS

This BMP deals with showerheads, faucets, toilets, and leak detection surveys related to residential water use.

RESIDENTIAL PROGRAMS

Water Survey Assistance - CVWD offers formal water audits for qualified residents (those using over 22 units of water per billing period). There is a budget limit of \$6,000 per year which covers 35 audits. The service is performed by a contractor, WaterWise Consulting.



Figure 4.3: Residential Water Surveys

In addition to water audits, CVWD's customer service staff respond to residential and commercial requests for investigation of high-water bills. The investigation consists of meter

leak tests, meter accuracy testing, property leak checks, irrigation system analysis, or a complete “on-premises” water audit. A water bill adjustment is given to all customers who demonstrate that they have repaired an on-site leak along with proof of the repair. This appears to be an effective water conservation measure which potential savings are outlined on the audit forms.

In addition, CVWD’s utility billing software identifies customers who exceed a higher-than-normal usage threshold in a given billing period, which prompts staff to further investigate as described above. Staff costs for this included measure are part of customer service duties.

CVWD also participates in various FMWD/MWD programs aimed at increasing landscape water use efficiency for residential customers, including rebate programs that provide financial incentives. SoCal Water\$mart, formerly Save Water Save A Buck, is the conservation rebate program offered through MWD. The program offers rebates for high-efficiency clothes washers (HEWC), premium high-efficiency toilets (PHET), weather-based irrigation controllers (WBIC), soil moisture sensor system (SMSS), rotating sprinkler nozzles, rain barrels/cisterns, and turf removal, as described below.

- ***Weather-Based Irrigation Controllers Program*** – This program, previously called the “Smart Timer Rebate Program,” started in FY 2004/05. Under this regional program, residential and small commercial properties are eligible for a rebate when they purchase and install a weather-based irrigation controller, which has the potential to save 13,500 gallons a year per residence. Rebates start at \$80 per controller for landscapes less than 1 acre in area and \$35 per station for more than 1 acre.
- ***Rotating Nozzle Rebate Program*** – This rebate program started in 2007 and is offered to both residential and commercial customers. Through this program, site owners will purchase and install rotary nozzles, which can use up to 20 percent less water than conventional fan spray nozzles, in existing irrigation systems. These sprinklers reduce runoff onto sidewalks and into local storm drain system and provide uniform water distribution onto the landscape. MWD offers \$2 per nozzle with a minimum of 30 nozzles.
- ***Rain Barrels & Cisterns Program*** – Residential and commercial customers can receive rebates for installing rain barrels and/or cisterns to collect rainwater for re-use for watering their landscapes. Customers may receive rebates starting at \$35 per barrel or \$250-\$350 per cistern. The barrels and cisterns must adhere to specified design guidelines. For the past seven years, CVWD participated in a Rain Barrel and Drought-Tolerant Landscape Event that took place at Descanso Gardens (La Cañada Flintridge,

CA). CVWD co-sponsored the event along with FMWD and the Cities of Burbank, Glendale, Pasadena, and South Pasadena. As a result of the event, over 1,000 rain barrels were purchased by local residents.

- ***Soil Moisture Sensor System Program*** – For large residential sites, a soil moisture sensor, which measures soil moisture content in the active root zone, can be installed to receive rebates starting at \$80 or \$35 per SMSS. The sensor must be connected to a compatible irrigation system controller.
- ***Turf Removal Program*** – Through this program, residential and small commercial customers of participating retail water agencies are eligible to receive a minimum of \$2 per square foot of turf removed for qualifying projects.

RESIDENTIAL PLUMBING RETROFIT

CVWD participates in the distribution of low-flow showerheads, aerators, hose shut-off nozzles, water buckets, and toilet-tank leak detection kits at its customer service counter and various local outdoor events. Assuming each device saves 3 gallons per day, approximately 3.4 AF are saved annually.

Additionally, CVWD through FMWD/MWD offered rebates through SoCal Water\$mart program for high-efficiency clothes washers and premium high-efficiency toilets.

CVWD also works with the local building/planning departments of the City of La Cañada-Flintridge, City of Glendale, and County of Los Angeles to assure enforcement of the ultra-low-flush toilet (ULFT) installation requirements for new construction, and supports the prohibition of the sale of toilets using more than 1.1 gallons per flush (gpf). Developers' needs for fire-flow certificates, "will-serve" certificates, and ultimately water service connections are used as ways to ensure compliance.

Another program offered by MWD offered rebates for HETs (1.28 gpf) for both residential and CII customers. Starting November 11, 2015, rebates are only eligible for Premium HETs (1.1 gpf or less) and no longer available for HETs at 1.28 gpf.

HIGH-EFFICIENCY WASHING MACHINE REBATES

Starting in 2002, CVWD passed along MWD's high efficiency washing machine rebate. CVWD promotes the program on its website and with flyers posted at the administration office and distributed at local events.

Residents in CVWD's service area are eligible to receive a \$85 rebate when they purchase a new High Efficiency Clothes Washer (HECW) as CVWD supplements MWD's rebate. Rebates are available on a first-come, first-served basis, while funds last. To qualify for a rebate, the HECW must have a water factor of 4.0 or less. An HECW with a water factor



Figure 4.4: High-Efficient Washing Machines

of 4.0 will use approximately 14 gallons of water per load compared to a conventional top-loading clothes washer which can use 40 gallons or more per load. Depending on use, these machines can save 10,000 gallons of water per year. Participants are encouraged to contact their local gas and/or electric utility as additional rebates may be available.

4.2.4 BMP 4: COMMERCIAL, INDUSTRIAL, & INSTITUTIONAL PROGRAMS

CVWD has a relatively small number of commercial accounts and no industrial accounts. The vast majority of businesses within CVWD do serve as small mom and pop shops or local restaurants. CVWD currently offers financial incentives under MWD's SoCal Water\$mart Program, which offers rebates for various water efficient devices to some CII customers.

SoCal Water\$mart – MWD launched this program on July 1, 2008 and offers rebates to assist CII customers in replacing high-flow plumbing fixtures with low-flow fixtures. Rebates are available only on those devices listed in **Table 4.5** and must replace higher water use devices. Installation of devices is the responsibility of each participant. Participants may purchase and install as many of the water saving devices as are applicable to their site.

CVWD also provided a list of restaurants to MWD for retrofit of a pre-rinse spray valve. Due to very limited number of CII customers, CVWD has no formal plans to initiate an active CII replacement program beyond the programs offered by MWD.

Table 4.5: CII Retrofit Devices & Rebate Amounts under SoCal Water\$mart Program

Retrofit Device	Rebate Amount
High Efficiency Toilet	\$40
Ultra-Low & Zero Water Urinal	\$200
Connectionless Food Steamers	\$485 per compartment
Air-Cooled Ice Machines	\$1,000
Cooling Tower Conductivity Controller	\$625
pH / Conductivity Controller	\$1,750
Dry Vacuum Pumps	\$125 per 0.5 HP
Weather Based Irrigation Controller and Computer Irrigation Controller	\$35 per station and \$80 per controller
Rotating Nozzles for Pop-up Spray Head Retrofits	\$2 (minimum of 30 per rebate)

4.2.5 BMP 5: LANDSCAPE PROGRAMS

CVWD supports large landscape conservation through FMWD/MWD's regional programs including:

SoCal Water\$mart Program – CVWD, through FMWD/MWD, offered rebates through SoCal Water\$mart program for landscape plumbing retrofitting. Landscape rebates are available for WBIC, SMSS, rotating sprinkler nozzles, and turf removal. The available landscape programs are described in **Section 4.2.3** and listed below:

- Weather-Based Irrigation Controllers Program (WBIC)
- Rotating Nozzle Rebate Program
- Rain Barrels & Cisterns Program
- Soil Moisture Sensor System Program (SMSS)
- Turf Removal Program

California Friendly Landscape Training – On behalf of its member agencies, FMWD supports MWD's California Friendly Landscape and Gardening Training, which provides education to residential homeowners and professional landscape contractors on a variety of landscape water use efficiency practices. These classes are hosted by MWD's member agencies to encourage participation across the county. The Professional Training Program

course consists of four consecutive classes in landscape water management, each building upon principles presented in the preceding class. Each participant receives a bound handbook containing educational materials for each class. These classes are offered throughout the year and taught in both English and Spanish languages.

In addition, CVWD takes advantage of regional and local efforts which target and market to large landscape properties using bill inserts and direct marketing efforts. CVWD also sponsors three or more independent water efficient gardening classes per year. Topics include turf removal, design, placement, irrigation, plant selection, composting, gardening with worms, and efficient watering practices.

4.2.6 OTHER FMWD CONSERVATION MEASURES

WHOLESALE AGENCY PROGRAMS

CVWD is a retail water agency. Therefore, this BMP does not apply. CVWD is a member agency of FMWD. FMWD provides financial incentives or equivalent resources, as appropriate and beneficial to distributing retail agencies, to advance water conservation efforts and effectiveness.

CVWD is currently budgeting approximately \$50,500 per year for its conservation programs. The funding amounts for FY 2020-21 are shown in **Table 4.6**.

Table 4.6: CVWD's Water Use Efficiency Programs Budget for FY 20-21

Program Description	Budget
Water Conservation Expenses	\$25,500
Water Conservation Rebates	\$5,000
Community Outreach	\$20,000
Total	\$50,500

THIS PAGE LEFT BLANK INTENTIONALLY

An aerial photograph of a large, deep reservoir with dark blue water, surrounded by dry, brownish hills and sparse vegetation. The reservoir has several smaller inlets and a small island in the center. The surrounding land is divided into some rectangular plots, possibly for agriculture or land management.

During times of severe drought or catastrophic supply interruptions, CVWD will implement its phased Water Conservation Program. CVWD's efforts are dependent on MWD's regional efforts, which call for reductions in water use and greater utilization of storage reservoirs.

SECTION 5: WATER SHORTAGE CONTINGENCY PLAN

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 5

WATER SHORTAGE CONTINGENCY PLAN

5.1 OVERVIEW

Water supplies may be interrupted or reduced significantly in a number of ways, including droughts, earthquakes, and power outages, which hinder a water agency's ability to effectively deliver water. The ability to manage water supplies in times of drought or other emergencies is an important part of water resources management for a community.

Recent water supply challenges throughout the American Southwest and the State of California have resulted in the development of a number of policy actions that water agencies would implement in the event of a water shortage. In Southern California, the development of such policies has occurred at both the wholesale and retail level. This section addresses elements related to the urban water supplier's Water Shortage Contingency Plan (WSCP) describing new and existing policies that MWD, FMWD, and CVWD have in place to respond to water supply shortages, including a catastrophic interruption and greater than a 50 percent reduction in water supply.

5.2 WATER SUPPLY RELIABILITY ANALYSIS

5.2.1 WATER SERVICE RELIABILITY ASSESSMENT

Southern California is expected to experience an increase in regional demands in the years 2025 through 2045 as a result of population growth. Although increases in demand are expected, future demands are effectively limited due to the requirements of SBx7-7. It can be reasonably expected that the majority of agencies have met or were near their compliance targets for 2020 and will continue to meet, or will soon meet, their per-capita usage limit in the future.

The data in the MWD 2020 UWMP shows supply reliability projections for average and single dry years and is important to effectively project and analyze supply and demand over the next 25 years for many regional agencies. Projected supplies during single and multiple dry year scenarios indicate MWD's projected supply will exceed its projected single dry year demands in all years. Likewise, for average years, MWD supply exceeds projected demands for all years.

Due to the semi-arid nature of CVWD's climate and as a result of past drought conditions, CVWD is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. **Section 3** describes the water availability during single and multiple dry year scenarios. **Tables 5.1, 5.2, and 5.3** summarize the supply and demand comparisons during normal, single-dry year, and multiple dry year, respectively. As shown, CVWD is capable of providing a reliable supply of water to meet the future demands.

Table 5.1: Normal Year Supply & Demand Comparison (AF) (DWR Table 7-2 Retail)

	2025	2030	2035	2040	2045
Supply totals	5,748	5,748	5,748	5,748	5,748
Demand totals	3,979	4,041	4,105	4,170	4,236
Difference	1,769	1,707	1,643	1,578	1,512

Table 5.2: Single Dry Year Supply & Demand Comparison (AF) (DWR Table 7-3 Retail)

	2025	2030	2035	2040	2045
Supply totals	5,748	5,748	5,748	5,748	5,748
Demand totals	4,412	4,481	4,552	4,624	4,697
Difference	1,336	1,267	1,196	1,124	1,051

Table 5.3: Multiple Dry Year Supply & Demand Comparison (AF) (DWR Table 7-4 Retail)

		2025	2030	2035	2040	2045
First year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,531	4,603	4,676	4,749	4,824
	Difference	1,217	1,145	1,072	999	924
Second year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,781	4,857	4,933	5,011	5,090
	Difference	967	891	815	737	658
Third year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,836	4,912	4,989	5,068	5,148
	Difference	912	836	759	680	600
Fourth year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,565	4,637	4,710	4,785	4,860
	Difference	1,183	1,111	1,038	963	888
Fifth year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	3,789	3,849	3,910	3,972	4,034
	Difference	1,959	1,899	1,838	1,776	1,714

5.2.2 FIVE-YEAR DROUGHT RISK ASSESSMENT

During a five-year drought, CVWD may import water to meet demands in excess of its adjudicated pumping right of 3,294 AFY as necessary. Imported water supplies, like groundwater, are subject to demand increases and reduced supplies during dry years; however, MWD modeling in its 2020 UWMP, as referenced in **Tables 3.8** and **3.9** in **Section 3**, results in 100 percent reliability for full-service demands through the year 2045 for all climatic conditions. Based on the conditions described above, CVWD anticipates the ability to meet water demand for all climatic conditions for the near future.

New to the 2020 UWMP is the Drought Risk Assessment (DRA) over a 5-year period examining the reliability of CVWD’s water supplies. **Table 5.4** shows the results of the analysis. The analysis was done utilizing DWR’s DRA Planning Tool to determine supply and demand projections, and to analyze CVWD’s vulnerability to droughts. The tool also allows water purveyors to utilize potential water usage saving or supply augmentation methods to mitigate supply shortfalls. These water usages saving methods (restrictions) are further discussed in the WSCP. As shown, CVWD is capable to meet the projected demands based on the estimated water supplies during drought conditions without the need for WSCP stage implementation and supply augmentation.

Table 5.4: Five-Year Drought Risk Assessment (AF) (DWR Table 7-5)

	2021	2022	2023	2024	2025
Total Water Use	3,929	3,942	3,954	3,966	3,979
Total Supplies	5,741	5,745	5,748	5,748	5,748
Surplus/Shortfall w/o WSCP Action	1,812	1,803	1,794	1,782	1,769
Planned WSCP Actions (Use Reduction and Supply Augmentation)					
Supply Augmentation Benefit from WSCP Response	0	0	0	0	0
Use Reduction Savings Benefit from WSCP Response	0	0	0	0	0
Revised Surplus/Shortfall	1,812	1,803	1,794	1,782	1,769
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

Response to a future drought would follow the water use efficiency mandates of CVWD's Water Conservation Program along with implementation of the appropriate stage of regional plans, such as MWD's Water Surplus Drought Management (WSDM) Plan as described later in this section.

5.3 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Under CWC Section 10632(a)(2), beginning by July 1, 2022, each urban water supplier is required to prepare their annual water supply and demand assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to DWR. The Annual Water Shortage Assessment Report will be due by July 1 of every year, as required by CWC Section 10632.1.

This section outlines CVWD's procedures used in conducting an Annual Assessment, including the following: 1) written decision-making process for determining water supply reliability; and 2) key data inputs and assessment methodology for evaluating the water supply reliability for the current year and one dry year.

5.3.1 DECISION-MAKING PROCESS

CVWD's Annual Assessment will be mostly based on daily recorded water production and supply figures, which are reported to the General Manager on a daily basis throughout the year. Water consumption is monitored regularly through the metering of all CVWD service connections in its distribution system. To determine its water supply reliability and actual reductions in water use during declared water shortages or emergencies, CVWD can rely on its daily records as well as the CVWD Water Production Reports including the monthly totals. These periodical analyses are used by CVWD to manage resources to meet projected demands and adjust to changing conditions (i.e., precipitation) throughout the year.

Starting in 2022, CVWD staff will submit and present a finalized Annual Water Shortage Assessment Report to the Board of Directors for approval by June each year. CVWD staff will also present determination of recommended water shortage response actions deemed appropriate as a result of the Annual Assessment. Following approval, CVWD staff will submit the approved Annual Water Shortage Assessment Report to DWR by July 1 of every year. The functional procedures for the decision-making process are depicted in the following timeline shown in **Figure 5.1**.

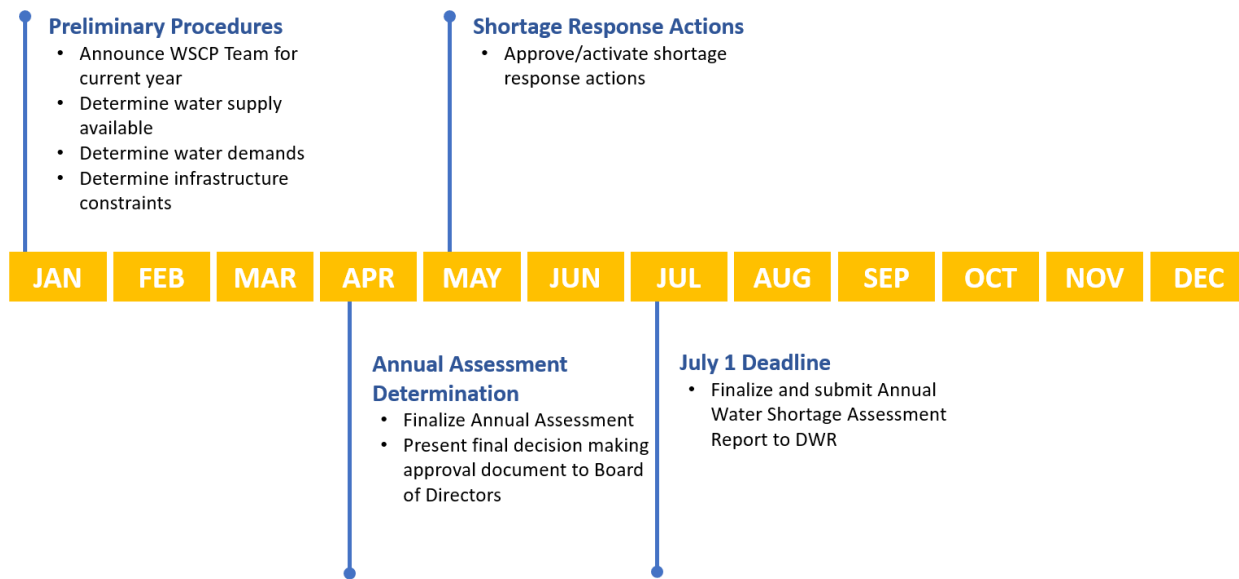


Figure 5.1: Sample Annual Assessment Decision-Making Process Timeline

5.3.2 KEY DATA INPUTS AND ASSESSMENT METHODOLOGY

This section defines the key data inputs and assessment methodology used to evaluate the water supply reliability for the anticipated conditions for the current year and for one dry year that follows. The Annual Assessment determination will focus on the current year unconstrained demand, infrastructure constraints, and total water supply availability. Moreover, the Annual Assessment will consider the current year's weather, population growth, policies in place that will impact demands, and other influencing factors. The current year available supply will incorporate the hydrological regulatory conditions for the current year and following dry year.

LOCALLY APPLICABLE EVALUATION CRITERIA

The locally applicable evaluation criteria that will be consistently relied on for each Annual Assessment include the following:

- 1) Assumed unconstrained demand (i.e., demand without any conservation measures) for current year and one dry year
- 2) Assumed total water supply availability for current year and one dry year
- 3) Existing infrastructure capabilities and plausible constraints
 - Any known issues with the water facilities (including water quality conditions limiting local sources)

- Planned power outages for operation and maintenance
- New construction and repairs
- Environmental mitigation measures
- Other constraints that may affect near-term water supply reliability

WATER SUPPLY SOURCES DESCRIPTION AND QUANTIFICATION

As part of the Annual Assessment, the total available water supply evaluation criteria will comprise of CVWD's water supply sources as shown and quantified in **Tables 5.5** and **5.6**.

Table 5.5: CVWD Water Supplies in 2020 (AF) (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	from FMWD	2,141	Drinking Water	2,154
Groundwater (not desalinated)	CVWD Wells	1,933	Drinking Water	3,294
Groundwater (not desalinated)	Well #16 (GWP)	142	Drinking Water	500
Total		4,216		5,948

Table 5.6: Projected CVWD Water Supplies (AF) (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Purchased or Imported Water	MWD via FMWD	2,154	2,154	2,154	2,154	2,154
Groundwater (not desalinated)	CVWD Wells	3,294	3,294	3,294	3,294	3,294
Groundwater (not desalinated)	Well #16 (GWP)	300	300	300	300	300
Total		5,748	5,748	5,748	5,748	5,748

Imported Water Purchases

CVWD receives its imported water supply from MWD through their wholesaler FMWD. Supply from MWD originates from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. Currently, CVWD supply is comprised of 48 percent imported water and is projected to be able to have access of its full Tier 1 limit supply with FMWD of 2,154 AF as shown in **Table 5.6**.

Groundwater Supply

CVWD utilizes groundwater from the Verdugo Groundwater Basin. CVWD draws from this groundwater through 12 of its wells which fulfills 52 percent of its total supply. CVWD's current safe yield of the Basin is 3,294 AFY as shown in **Table 5.6**. Furthermore, CVWD has agreements with GWP to produce additional groundwater through Well #16 to obtain an additional 300 AFY. Groundwater supplies within the Verdugo Basin have remained stable throughout the recent drought during 2012 – 2016. As a result, groundwater production rights within the basin will continue to remain the same into the future until otherwise mandated for reduction by the Upper Los Angeles River Area (ULARA) Watermaster.

5.4 SHORTAGE STAGES AND SHORTAGE RESPONSE ACTIONS

5.4.1 MWD STAGES OF ACTION

WATER SURPLUS & DROUGHT MANAGEMENT PLAN (WSDM)

CVWD works in conjunction with FMWD and MWD to implement conservation measures within the framework of MWD's Water Shortage and Drought Management (WSDM) Plan. The WSDM Plan was developed in 1999 by MWD with assistance and input from its member agencies. The plan addresses both surplus and shortage contingencies. MWD's WSDM Plan documents the stages of action that it would undertake in response to a water supply shortage. FMWD's water supply shortage stages reflect MWD's WSDM Plan.

The WSDM Plan guiding principle is to minimize adverse impacts of water shortage. The plan guides the operations of water resources (local resources, Colorado River, SWP, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions MWD will take during surpluses and shortages of water to minimize the probability of severe shortages, which require curtailment of full-service demands. Mandatory allocations are avoided to the extent practical; however, in the event of an extreme shortage, an allocation plan will be implemented.



Figure 5.2: Severe Droughts Highlight the Importance of Conservation Ordinances (Lake Oroville in 2014)

In addition to its WSDM Plan, MWD developed a Water Supply Allocation Plan (WSAP), which provides a standardized methodology for allocation of supplies during times of extreme shortage (Stage 7 in MWD's WSDM Plan). During a shortage, CVWD's imported water supplies will be allocated based on the methodology documented in FMWD's Allocation Plan, which typically mirrors the MWD allocation plan.

MWD's WSDM and WSAP Plans help guide drought management for many agencies throughout the region.

The description of shortage stages below is from MWD's 2020 UWMP, page 2-29:

"Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation.

Extreme Shortage: Metropolitan allocates available supply to full-service customers.

The WSDM Plan also defines six shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a 10 percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage.

When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Under most of these stages, Metropolitan is still able to meet all end-use demands for water. For shortage stages 1 through 3, Metropolitan will meet demands by withdrawing water from storage. At shortage stages 4 and 5, Metropolitan may undertake additional shortage management steps, including issuing public calls for extraordinary conservation and exercising water transfer options, or purchasing water on the open market."

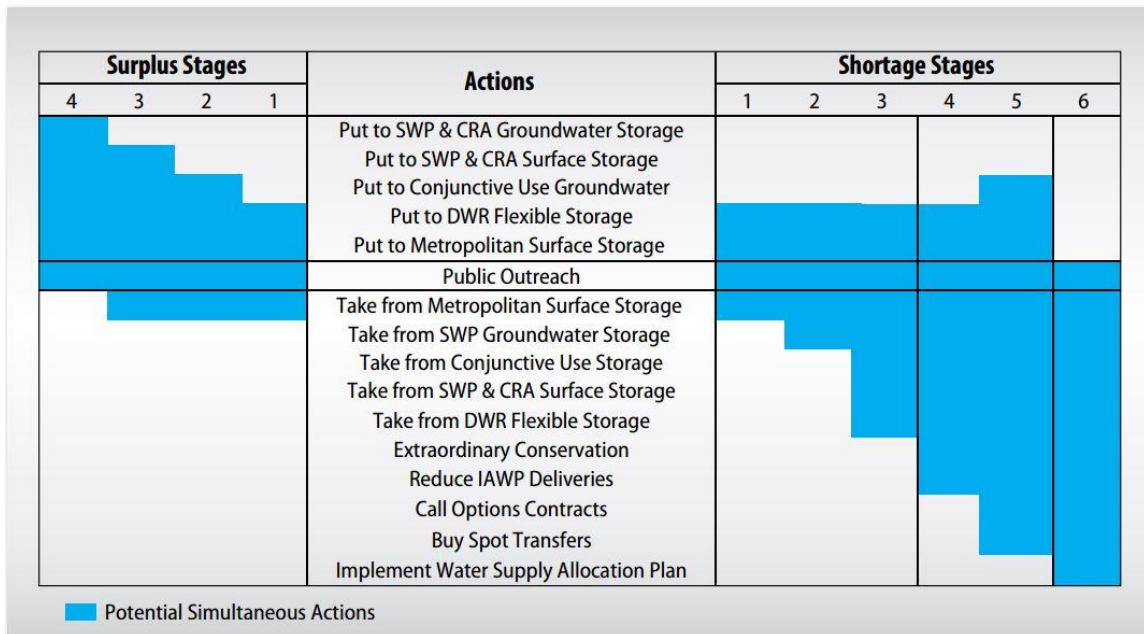


Figure 5.3: MWD WSDM Surplus & Drought Stages

MWD WATER SUPPLY ALLOCATION PLAN (FOR WSDM SHORTAGE STAGE 7)

In February 2008, MWD's Board of Directors adopted a WSAP, which includes a methodology for calculating supply allocations in the event that MWD enters a Shortage Stage 7 and is unable to meet the demands of its member agencies. MWD revised its WSAP in 2014 to include the following updates: new FY 12-13 to FY 13-14 baseline, implement a Conservation Demand Hardening Adjustment, create a separate Groundwater Replenishment Allocation for applicable agencies, and replace WSAP Penalty Rates with Allocation Surcharges based on the marginal costs of turf removal. It should be noted that the WSAP is not a rationing plan. Rather, it is a pricing plan where water is allocated at regular prices and agencies that choose to take more than the allocated water pay surcharges. The surcharge pricing mechanism acts to discourage the use of water above the allocation. The WSAP uses a combination of estimated total retail demands and historical local supply production within the member agency service area to estimate the demands on MWD from each member agency in a given year. Based on a number of factors, including storage and supply conditions, MWD then determines whether it has the ability to meet these demands or will need to allocate its limited supplies among its member agencies. Thus, implicit in MWD's decision not to implement an allocation of its supplies is that, at a minimum, MWD will be able to meet the demands identified for each of the member agencies.

According to MWD's 2015 IRP, the approach seeks to balance the impacts of a shortage

at the retail level while maintaining equity on the wholesale level and takes into account growth, local investments, changes in supply conditions and the demand hardening aspects of non-potable recycled water use and the implementation of conservation savings programs. The methodology attempts to allocate supplies based on an estimate of an agency's relative need for imported water using the following process:

1. Establish a baseline for total retail demands (and adjust for growth) to determine the allocation year total retail demands. (*"What are your total water demands?"*)
2. Estimate the amount of local supplies to be utilized in the allocation year and subtract from total retail demands. This is the allocation year baseline demand on MWD. (*"How much imported water do you need from MWD?"*)
3. Apply the minimum allocation percentage (per the regional shortage level) to the allocation year baseline demand and provide minor adjustments based on various criteria. (*"Restrict normal supply deliveries and provide allocation."*)

BASE PERIOD CALCULATIONS (USED TO DETERMINE WSAP REDUCTIONS)

The Base Period is calculated using data from FY 2012-13 and FY 2013-14. Base Period wholesale demands are based on the two-year average of demands on MWD during the Base Period, including full-service, seawater barrier, seasonal shift, and surface storage operating agreement demands.

Local supplies for the base period are calculated using a two-year average of groundwater production, groundwater recovery, Los Angeles Aqueduct supply, surface water production, and other imported supplies. Non-potable recycling production is not included in this calculation, which, according to MWD, is intended to address the impact of demand hardening due to recycled water use.

Total potable retail demands for the Base Period are then calculated by adding the Base Period wholesale demands on MWD and the Base Period local supplies.

WSAP ALLOCATION YEAR CALCULATIONS

The next step is to estimate water needs in an allocation year by (1) adjusting the Base Period total retail demands for population or economic growth, and (2) accounting for



Figure 5.4: MWD's Diamond Valley Lake (Potential Reserves for WSAP Allocations)

changes in local supplies.

The Base Period retail demands are adjusted for growth using the average annual rate of population growth occurring since the two-year base period based on county-level data generated by the California Department of Finance.

Next, these growth-adjusted demands are adjusted again to account for (1) gains and losses of local supply, and (2) extraordinary increases in production over the base year. According to MWD, these adjustments are made to give a more accurate estimate of actual supplies in the allocation year, and, in turn, more accurately reflect an agency's demand for MWD supplies.

The adjustment for gains in local supplies is intended to account for planned or scheduled gains in local supply production above the Base Period, which are not due to extraordinary actions to increase water supply in the allocation year. These previously scheduled increases in supply programs (i.e., San Diego County Water Authority/Imperial Irrigation District) or local production are added to the base period local supplies. Again, new supplies from non-potable recycling projects are not counted as local supplies.

While the local agency does become more reliable with the addition of the new supplies,

assuming that the new supplies are available during an allocation, the benefits of these programs are partially offset because the impact of adding the new supplies to the Base Period local supplies is to reduce an agency's dependence on MWD and thus their allocation under the WSAP.

Alternatively, only a portion of the additional supplies from what are termed "extraordinary increases in production" are added back to Allocation Year local supplies depending on the retail shortage level. Extraordinary increases in production include such efforts as purchasing transfers or mining of groundwater basins. By adding only a percentage of the yield from these supplies to Allocation Year local supplies, it has the effect of "setting aside" the majority of yield for the agency who procured the supply.

Table 5.7 reflects the set of percentages used in the WSAP to establish water allocations for each agency.

Table 5.7: Water Allocation Percentages

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Percentage	Maximum Retail Impact Adjustment Maximum
1	5%	92.5%	2.5%
2	10%	85.0%	5.0%
3	15%	77.5%	7.5%
4	20%	70.0%	10.0%
5	25%	62.5%	12.5%
6	30%	55.0%	15.0%
7	35%	47.5%	17.5%
8	40%	40.0%	20.0%
9	45%	32.5%	22.5%
10	50%	25.0%	25.0%

5.4.2 FMWD SHORTAGE STAGES OF ACTION

FMWD's plan mirrors MWD's plan with two exceptions. The first exception is that since FMWD does not take delivery of any Seawater Barrier water and FMWD is considered ineligible for the Replenishment Allocation, reference to those deliveries has been deleted.

The second exception is because of the way the water is allocated, without a further adjustment, total water allocated to FMWD's member agencies will never match the total water allocated to FMWD. Thus, an adjustment has been added to prorate the

difference between the amount allocated to FMWD by MWD and the initial allocation by FMWD.

Additionally, FMWD will reconcile over use and under use of member agency allocations at the same time that MWD does, typically at the end of every 12 months. Any allocation under used by agencies will be pooled together in one pot to be distributed to those agencies who over use their allocation. Any agency using that pooled water will be charged the regular FMWD Tier 1 or Tier 2 rate for having taken the water plus 50 percent of MWD's penalty rate. Any penalties assessed would go into the Water Resource and Conservation Fund.

FMWD only assesses 50 percent of the surcharge against its retail agencies in situations where FMWD is not subject to the Allocation Surcharge from MWD. In cases where FMWD as a whole is subject to the Allocation Surcharge from MWD, member retail agencies that have over used their allocation will take on the obligation proportionally and be subject to 100 percent of the surcharge.

Supply Allocation Formula Elements

The following are the elements of the allocation formula:

Base Period Demands – A two-year average of historical water use utilizing data from FY 2012-13 and FY 2013-14. Water use is divided into three components: total retail demand, locally produced water, and imported water.

Growth Adjustment – Retail demands are adjusted for growth between the base period and the time of allocation based on county level estimates of average annual growth in population. Growth for Los Angeles County is 0.46 percent. Agencies have an option to use weighted average population and job growth instead based on an appeal process to MWD.

Local Supplies – The amount of local supplies that are planned to be utilized in an allocation year.

Extraordinary Allocation Year Local Supplies – These are previously unscheduled local water supplies to be utilized in an allocation year, including transfers, recycled water, desalination, and recovery of groundwater. This amount is credited without reduction in the Wholesale Minimum Allocation. In addition, it decreases both the Retail Impact Adjustment and the reliance on MWD.

Conservation Demand Hardening Adjustment – An adjustment is made for demand hardening due to active conservation based on GPCD. Calculation considers conservation savings, dependence on MWD and the associated Regional Shortage Level percentage.

Regional Shortage Percentage – This is the percentage of shortage between supplies and demands and will be declared by MWD’s Board. **Table 5.7** contains the percentages used to establish water allocations for agencies.

Wholesale Minimum Allocation – This is the first step in the formula and provides the minimum imported water allocation from MWD. It is calculated as an allocation baseline demand on MWD (Base Period Demands minus Local Supplies) multiplied by the Wholesale Minimum Percentage of the associated Regional Shortage Level.

Retail Impact Adjustment – This is the maximum additional allocation an agency may receive based on impacts to retail customers. Those agencies with less local supplies would receive a higher adjustment than those agencies with more local supplies. This adjustment is calculated as a percent dependence on MWD times the allocation baseline demand on MWD multiplied by the Retail Impact Adjustment factor of the associated Regional Shortage Level.

Minimum Per-Capita Adjustment – An adjustment made should gallons per capita per day for an agency drop to 100 GPCD or lower.

Total FMWD Allocation – A preliminary allocation is provided to agencies based on calculations, which mirror MWD’s WSAP. Without a further adjustment, total water allocated to FMWD’s member agencies will never match the total water allocated to FMWD. Thus, an adjustment has been added to prorate the difference between the amount allocated to FMWD by MWD and the initial allocation by FMWD.

Allocation Surcharge – Previously known as WSAP Penalty Rates, an Allocation Surcharge will be in effect based on the costs to implement outdoor water use reductions through turf removal programs. The Allocation Surcharge would provide a price signal based on the marginal conservation costs incurred to reduce water use in dry and shortage years.

Conservation Plan Ordinance

FMWD’s Conservation Plan (adopted April 2009; revised plan adopted June 2021) establishes a comprehensive staged water conservation program, which will encourage

reduced water consumption within FMWD through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within FMWD. In June 2021, FMWD amended its Conservation Plan to conform to six standard water shortage levels as required by CWC Section 10632(a)(3)(A) and to better align with long-term water use goals. Along with permanent water conservation requirements, FMWD’s Water Conservation Plan consists of six stages, which are described in **Table 5.8**, to respond to a reduction in potable water available to FMWD for distribution to its customers. Stage 1 conservation requirements are in effect at all times unless a mandatory conservation stage has been implemented by the Board of Directors.

5.4.3 CVWD STAGES OF ACTION

CVWD has adopted a Water Conservation Program. The purpose of this program is to provide water conservation regulations, in a phased approach, to minimize the effect of a shortage of water supplies on the customers of CVWD during various critical stages of a water shortage. Along with permanent water conservation requirements, CVWD’s Water Conservation Program consists of six stages, as shown in **Table 5.8**, to respond to a reduction in potable water available to CVWD for distribution to its customers with Phase 1 conservation requirements in effect at all times unless a mandatory conservation stage has been implemented by CVWD Board of Directors.

Table 5.8: Water Supply Shortage Stages and Conditions – Rationing Stages

Stage No.	Water Supply Conditions	% Shortage
Phase 1 - Color Code “Blue”	Standard Water Conservation. FMWD can meet all Member Agency demands. Voluntary water conservation applies.	Up to 10%
Phase 2 - Color Code “Green”	Increased Water Conservation. Some supplies have been impacted, and consumers should increase efforts to conserve.	10% to 20%
Phase 3 - Color Code “Yellow”	Extraordinary Water Conservation. MWD is withdrawing water from most of its storage programs to meet demands. Extraordinary conservation is called for from consumers.	20% to 30%
Phase 4 - Color Code “Orange”	Allocation. MWD has implemented its allocation plan to its member agencies. Thus, supplies are limited.	30% to 40%
Phase 5 - Color Code “Red”	Critical. Water supplies are reduced drastically.	40% to 50%
Phase 6 - Color Code “Purple”	Emergency. Water supplies are only available for health and safety needs.	Greater than 50%

5.4.4 PROHIBITIONS

CVWD's Water Conservation Plan promotes the efficient use of water, reduce or eliminate water waste, complement CVWD's Water Quality regulations and urban runoff reduction efforts, and enable implementation of CVWD's Water Shortage Contingency Measures. Prohibitions include, but are not limited to: restrictions on outdoor watering, washing of vehicles, food preparation establishments, repairing of leaks and other malfunctions, swimming pools, decorative water features, construction activities, and water service provisions, which can be found in **Table 5.9**.

Table 5.9: Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas shall not be permitted. Exception: Flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety. Businesses or schools required to hose down public eating areas will be provided with access to a water broom.	Phase 1 - Color Code "Blue"
Use of water for any purpose which results in overspray, excessive runoff onto hardscapes, driveways, streets, adjacent lands or into gutters shall not be permitted.	Phase 1 - Color Code "Blue"
Water used to clean, fill or maintain levels in decorative fountains or similar structures must be part of a recirculation system.	Phase 1 - Color Code "Blue"
Leaks from any facility both inside and outside of a customer's premises must be repaired within seventy-two hours after the customer is notified of, or discovers the leak. Failure to affect the repair of any leak shall subject said customer to all penalties provided herein for waste of water.	Phase 1 - Color Code "Blue"
No watering, sprinkling or irrigating shall take place between the hours of nine a.m. (9:00AM) and five p.m. (5:00PM) in any landscaped or vegetated areas, including, but not limited to, golf courses, parks, cemeteries and school areas landscaped with, but not limited to, grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, trees, and California-friendly plantings. With the exception of drip irrigation systems or weather based irrigation controllers,	Phase 1 - Color Code "Blue"

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
residential timers shall not run for more than a total of 10 minutes per station.	
Hand watering of non-turf areas is allowed using a hose with a positive shut-off nozzle or watering can within the allowable times as specified above.	Phase 1 - Color Code "Blue"
No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray. No irrigation or watering of turf or ornamental-landscapes during and 48 hours following measurable precipitation.	Phase 1 - Color Code "Blue"
The washing of commercial and non-commercial privately owned automobiles, trucks, trailers, motor-homes, boats, buses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.	Phase 1 - Color Code "Blue"
Owners of outdoor swimming pools, wading pools or spas, when these are not in use, are requested to use covers to minimize the evaporation of water.	Phase 1 - Color Code "Blue"
Water for construction purposes including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner which will not result in runoff.	Phase 1 - Color Code "Blue"
The use of potable water from fire hydrants shall be limited to firefighting related activities or other activities immediately necessary to maintain the health, safety, and welfare of the residents of the city.	Phase 1 - Color Code "Blue"
No restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless expressly requested by a customer.	Phase 1 - Color Code "Blue"
Hotels, motels, and other commercial lodging establishments are requested to post notices informing their guests about CVWD's water conservation policy and urging guests to conserve water. Water conservation notices will be provided by CVWD.	Phase 1 - Color Code "Blue"

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Hotels, motels and other commercial lodgings are requested to post notices giving their guests the option of not laundering towels and linens daily.	Phase 1 - Color Code "Blue"
Where applicable, restaurants must utilize water conserving nozzles.	Phase 1 - Color Code "Blue"
Watering Days: Odd/Even assigned days	Phase 2 - Color Code "Green"
Watering Days: Tuesday, Thursday, Saturday	Phase 3 - Color Code "Yellow"
Residential and commercial landscape irrigation is limited to no more than two (2) days per week on Tuesday and Saturday. Exempt are public areas owned or operated by School Districts or public use areas greater than 4,000 square feet.	Phase 4 - Color Code "Orange"
The filling, refilling or adding of water to indoor and outdoor pools, wading pools, or spas is prohibited. Exemptions: Commercial Repairs mandated by the Federal Virginia Graeme Baker Act, or adding water for the prevention of equipment failure is permissible, however, the District strongly urges that a cover be used to prevent evaporation and thereby reducing the frequency of refilling.	Phase 4 - Color Code "Orange"
The use of water to clean, maintain, fill, or refill decorative fountains or similar structures is prohibited. Exemptions: Adding water for the prevention of equipment failure is permissible.	Phase 4 - Color Code "Orange"
Vehicle washing is restricted to the use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle.	Phase 4 - Color Code "Orange"
Fix leaks within 48 hours.	Phase 4 - Color Code "Orange"
1 day limit per week year-round irrigation.	Phase 5 - Color Code "Red"
All outdoor water use is prohibited.	Phase 6 - Color Code "Purple"
Fix any leaks within 24 hours.	Phase 6 - Color Code "Purple"

5.4.5 CONSUMPTION REDUCTION METHODS

Methods to reduce the use of potable water exist in all Water Shortage Levels are listed in **Table 5.10**.

Table 5.10: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Phase 1 Conservation Measures	"Blue"	Up to 10%
Phase 2 Conservation Measures	"Green"	10% to 20%
Phase 3 Conservation Measures	"Yellow"	20% to 30%
Phase 4 Conservation Measures	"Orange"	30% to 40%
Phase 5 Conservation Measures	"Red"	40% to 50%
Phase 6 Conservation Measures	"Purple"	>50%

5.4.6 CATASTROPHIC SUPPLY INTERRUPTION

Given the great distances imported water supplies travel to reach the FMWD service area, the region is vulnerable to interruptions along hundreds of miles of aqueducts, pipelines and other facilities associated with delivering the supplies to the region. Additionally, this water is distributed to customers through an intricate network of pipes and water mains that are susceptible to damage from earthquakes and other disasters, natural or otherwise.

MWD

MWD has comprehensive plans for stages of actions it would undertake to address a catastrophic interruption in water supplies through its WSDM and WSAP Plans. MWD also developed an Emergency Storage Objective to mitigate potential interruption in water supplies resulting from catastrophic occurrences within the Southern California region, including seismic events along the San Andreas Fault. In addition, MWD is working with the state to implement a comprehensive improvement plan to address catastrophic occurrences that could occur outside of the Southern California region, such as a probable maximum seismic event in the Delta, which could cause levee failure and disruption of SWP deliveries.

In July 2019, MWD's Board adopted amendments to their Administrative Code allowing deliveries of member agency water supplies in MWD's system during an emergency. With

these enabled deliveries, MWD's member agencies will be able to deliver their water through MWD's system under specific emergency conditions. Emergency deliveries using a portion of MWD's system can only be made if MWD is unable to make deliveries to a member agency due to physical damage to its system resulting from a natural disaster or other emergency, and there are no alternatives.

CVWD

For a sudden or catastrophic water supply interruption, CVWD has developed an Emergency Preparedness and Disaster Response Plan, as required by the State Water Resource Control Board, and an Emergency Response Plan (ERP) to ensure the most effective use of its resources for the benefit and protection of facilities and employees, in addition to the preservation of a reliable water supply for its customers.

Power Outage – In the event of a power outage, CVWD maintains five emergency standby power generators. One of the emergency generators is stationary and dedicated to power water supply wells and the auxiliary equipment at the Glenwood Nitrate Operations Center. Four emergency generators are portable and are mounted on trailers. They can be mobilized to any pump station for movement of water out of a reservoir into a higher pressure zone. Each pump station site is equipped with emergency power receptacles and transfer switches, which allow personnel to hook up the portable generators. The fourth generator is located at CVWD's Administrative Office. CVWD also has Universal Power Supply systems on the computer systems at the Administrative Office, the Supervisory Control and Data Acquisition (SCADA) systems at the Glenwood Nitrate Operations Facility and at booster station at well sites. In addition, FMWD operates standby emergency generators, which could be used by CVWD.

Water Outage – In the event of a water outage, CVWD has the ability to receive water from the City of Glendale, La Cañada Irrigation District, and Los Angeles Department of Water and Power (LADWP) through emergency water supply interconnections.

City of Glendale Emergency Interconnection:

- Glendale/CVWD emergency interconnection was installed in 2004 and allows for CVWD to receive up to 5.0 cubic feet per second (cfs) from Glendale.
- Glendale and CVWD also have an agreement for emergency hydrant-to-hydrant interconnections that allows CVWD to take water from Glendale or for Glendale to take water from CVWD.

La Cañada Irrigation District (LCID) Interconnection:

- CVWD has an interconnection with LCID that allows CVWD to take water from LCID into CVWD's Zone 3.
- LCID has two interconnections with CVWD that allows LCID to take water from CVWD into LCID westerly zones.

LADWP Interconnection:

- CVWD to receive up to 2.2 cfs or 1.9 MGD from LADWP, which will provide an emergency water supply to FMWD through a metered connection.
- LADWP to receive up to 2.2 cfs from CVWD through a booster pump system that will provide LADWP water in emergency situations.

CVWD is an active member of the southern region of the statewide Water Agency Response Network (WARN), a mutual aid coalition of water departments and agencies which allows for coordination of resources during disasters or catastrophic events.

Supplemental Water Supplies – Supplemental water supplies to help offset future shortages due to drought would be available through FMWD via MWD and their WSDM. The WSDM is referenced in FMWD's 2020 UWMP and described in detail in MWD's 2020 UWMP.

Preparation actions for possible catastrophes are summarized in **Table 5.11**.

Table 5.11: Preparation Actions for Catastrophe

Possible Catastrophe	Preparation Actions
Regional Power Outage	• Emergency Preparedness and Disaster Response Plan • Standby Emergency Power Generators • Interconnections with nearby agencies • Water Agency Response Network Membership • Supplemental Water Supplies
Earthquake	
Supply Contamination	
Terrorist Act which Interrupts Service	
Other(s)	

5.4.7 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

INTRODUCTION

Earthquakes can vary significantly in magnitude and the amount of damage caused. Major earthquakes can cause loss of electrical power, damage to CVWD's structures and

equipment, disruption of service, and injuries to staff. This section provides a description of CVWD's procedures (i.e., response and mitigation) after an earthquake event.

As mandated in CWC Section 10632.5, beginning January 1, 2020, water suppliers are required to include a seismic risk assessment and mitigation plan as part of their WSCP to assess the vulnerability of each of the various facilities of their water system and mitigate those vulnerabilities. If an urban water supplier does not have a seismic risk assessment and mitigation plan, the urban water supplier may instead, per CWC Section 10632.5(c), include a local hazard mitigation plan (LHMP) or a multi-hazard mitigation plan. This requirement is satisfied by the incorporation of elements and analyses from CVWD's Risk and Resilience Assessment (RRA), ERP, and seismic evaluation as well as the 2019 County of Los Angeles All-Hazards Mitigation Plan (attached as **Appendix D**). The complete RRA and ERP documents are not presented within this plan due to the highly confidential nature of the reports. Although CVWD does not currently have a seismic risk assessment and mitigation plan, CVWD applied for a planning grant in March 2019 and was awarded funding by the Federal Emergency Management Agency in April 2020 to complete an LHMP.

CVWD LHMP

During the LHMP process, residents and officials from neighboring agencies will be asked to contribute by sharing local knowledge of the area's vulnerability to hazards and by suggesting ways CVWD can mitigate disasters. CVWD also formed a Steering Committee made up of local stakeholders, who oversaw the plan's development and outreach. The committee met on a monthly basis for approximately seven months and meetings were open to the public. The LHMP process was started in late 2020, with a seismic evaluation, and is expected to be completed by the Fall of 2021.



Figure 5.5: The Five Phases of Emergency Management

LHMP Goals and Objectives

The six goals of CVWD's LHMP are listed below:

1. Protect life and property

2. Maintain continuity of essential water and sewer services
3. Increase public awareness of the risk of loss of water/sewer service
4. Facilitate partnerships with recognized stakeholders within the Crescenta Valley and implement a coordination plan between the stakeholders
5. Protect local water supply sources
6. Protect against environmental consequences caused by water and sewer system failure initiated by natural hazards

The CVWD Steering Committee members identified the following plan objectives:

- Implement activities that assist in protecting lives by making CVWD's infrastructure, critical facilities, and other properties more resistant to natural hazards
- Protect water quality and supply
- Properly address aging infrastructure issues to reduce/minimize future hazards and disasters
- Raise awareness and communicate to the Crescenta Valley Community about the risks to CVWD assets
- Leverage grant funding and low interest loan programs to implement hazard mitigation capital projects
- Establish policies to ensure mitigation projects are prioritized for critical facilities, services, and infrastructure
- Create, rehabilitate, enhance, and preserve local ecosystems to serve as natural hazard mitigation functions

SEISMOLOGY OF WATER FACILITIES & VULNERABILITY

According to the maps provided on the California Office of Emergency Services' online planning tool (My Plan) and the California Geological Survey's online earthquake hazards zone application (EQ Zapp), no portion of the CVWD system is crossed by a known fault line as shown in **Figure 5.6**. Furthermore, based on the CVWD seismic evaluation, none of CVWD's pipelines, wells, booster pump stations, reservoirs, or other water facilities are located in areas containing soft, fine grained soils, which amplify the earthquake energy during an earthquake. All water facilities are located in areas of very dense and stiff soil. Therefore, there are no CVWD potable water structures with an extremely high risk of earthquake damage. There are, however, areas with increased risk due to landslides, liquefaction, and some CVWD facilities that are more susceptible to earthquake damage than other facilities.

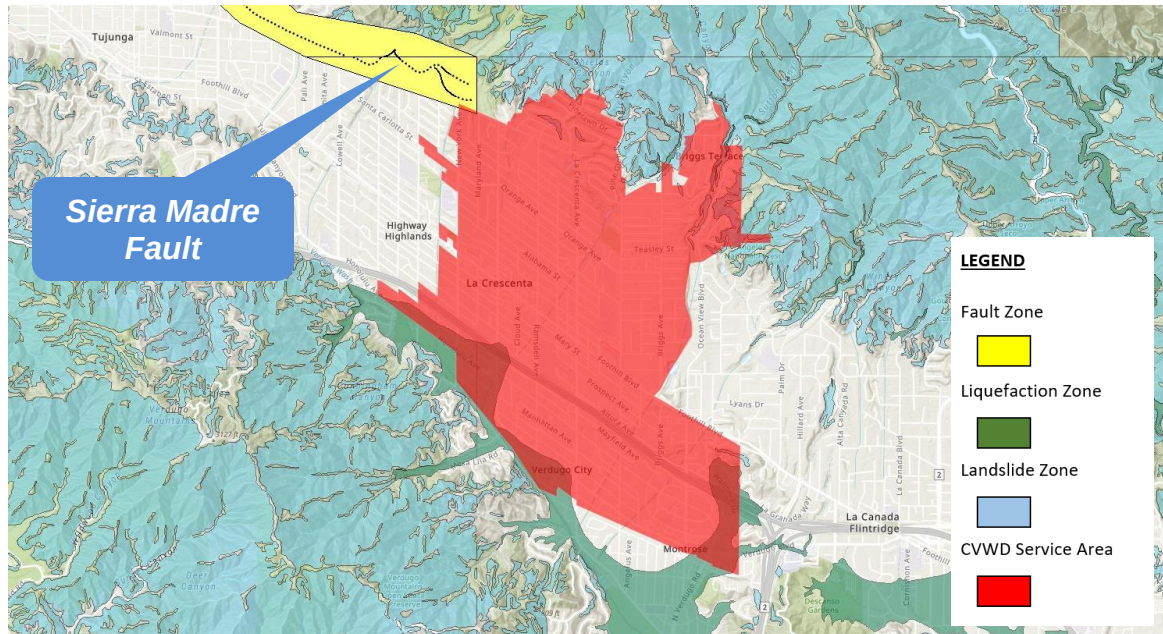


Figure 5.6: Seismic Hazards within CVWD Service Area (California Geological Survey)

An earthquake is caused by the shifting of tectonic plates beneath the Earth's surface. Ground shaking from moving geologic plates collapses buildings and bridges, and sometimes triggers landslides, avalanches, flash floods, fires and tsunamis. The strong ground motion of earthquakes has the potential to cause a great deal of damage to drinking water and wastewater utilities, particularly since most utility components are constructed from inflexible materials (i.e., concrete, metal pipes). Earthquakes create many cascading and secondary impacts that may include, but are not limited to:

- Structural damage to facility infrastructure and equipment
- Water tank damage or collapse
- Water source transmission line realignment or damage
- Damage to distribution lines due to shifting ground and soil liquefaction, resulting in potential water loss, water service interruptions, low pressure, contamination and sinkholes and/or large pools of water throughout the service area
- Loss of power and communication infrastructure
- Restricted access to facilities due to debris and damage to roadways

Additional seismic risks will be further described in the CVWD LHMP.

ERP – EARTHQUAKE EMERGENCY RESPONSE

CVWD is currently updating its ERP to replace its existing ERP by December 31, 2021 in order to meet the requirements of America's Water Infrastructure Act of 2018 (AWIA).

The ERP provides CVWD staff with the necessary information, strategies, procedures, and mitigation actions to address earthquake emergencies. CVWD's ERP policies are intended to guide disaster management planners and emergency responders, and to provide a consistently high level of preparedness at all the facilities.

Per the ERP, after a major earthquake, the Emergency Operations Center (EOC) will be activated if potential or significant damage has occurred in CVWD's service area, and the situation cannot be handled by routine public safety response or immediate mutual aid assistance. The General Manager shall assess the situation and establish the incident command post as necessary. In the event of an emergency, CVWD personnel will be required to inspect all water facilities for apparent signs of damage or abnormal conditions and conserve the existing water supply in the reservoirs from loss through water line breaks in the distribution system.

CVWD SEISMIC EVALUATION

As part of the LHMP preparation process, CVWD performed a seismic evaluation in 2020 involving seismological and geological investigations of the CVWD service area that was used to evaluate the susceptibility of the water system to damage following an earthquake. The purposes of the seismic evaluation were as follows:

- Determine the probability of damage to potable water structures and identify the expected functionality of essential features of the system after a major earthquake in the service area.
- Identify the amount of potable water structures located in high hazard areas (i.e., liquefaction zones, soft soils, landslide risk zones).
- Protect human life against earthquake hazard as it affects the existing water system.

Figures 5.7 and 5.8 show some of the results of the seismic evaluation regarding the potential for damage due to the impacts of a major earthquake event. The evaluation used the aftermath of the 1994 Northridge earthquake as a basis.

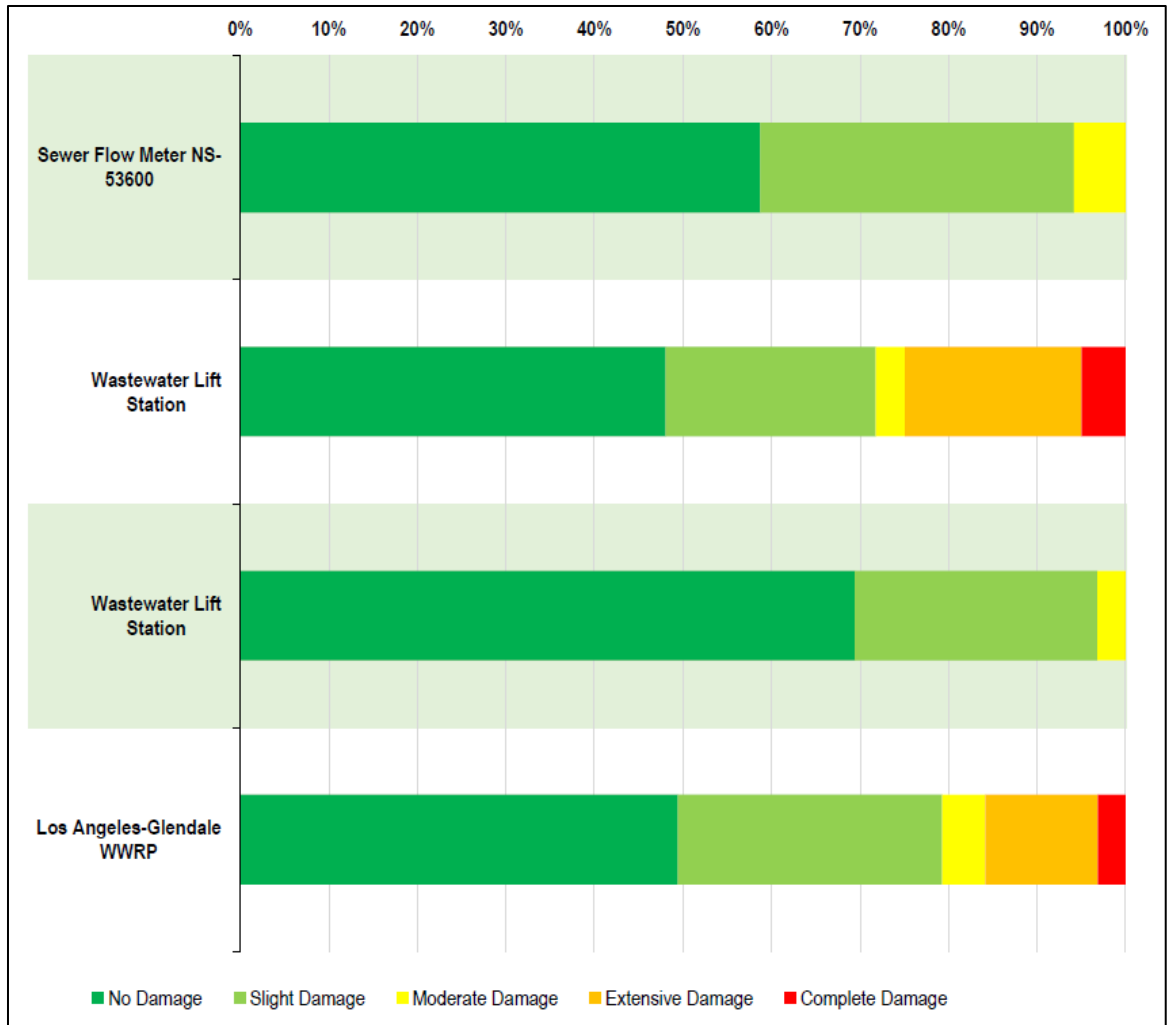


Figure 5.7: Probability of Damage to Facilities from a Magnitude 6.9 Event (2020 Seismic Evaluation)

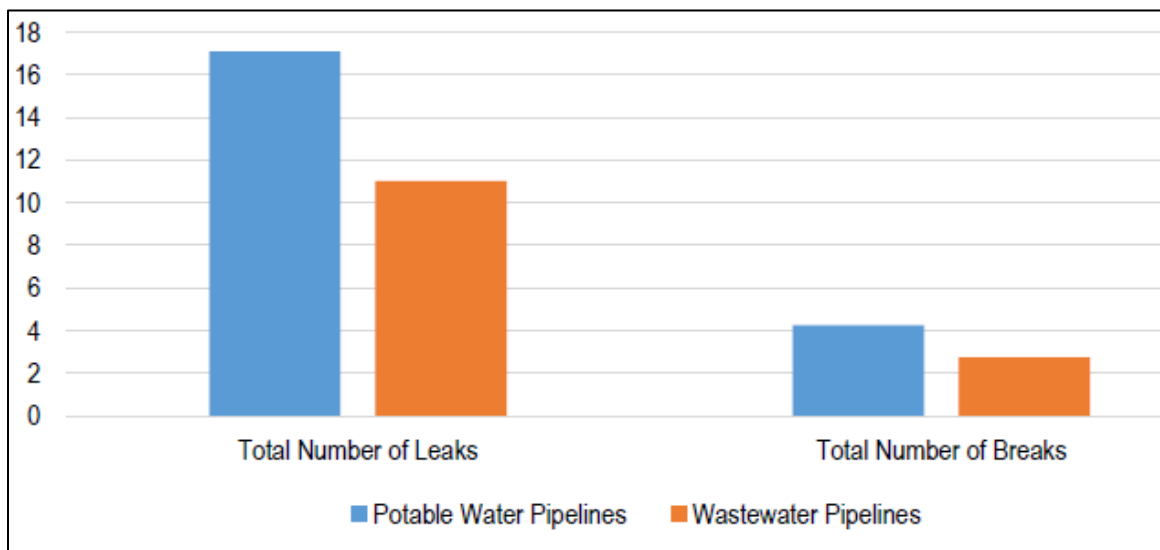


Figure 5.8: Pipeline Repairs Required after a Magnitude 6.9 Event (2020 Seismic Evaluation)

MITIGATION ACTIONS

Hazard mitigation may occur during any phase of a threat, emergency, or disaster. Mitigation can and may take place during the preparedness (before), response (during), and recovery (after) phases. The process of hazard mitigation involves evaluating a hazard's impact and identifying and implementing actions to minimize or eliminate the impact.

As part of the LHMP planning process and risk assessment, CVWD's Core Planning Team developed a mitigation action plan, consisting of pre-mitigation projects, to present how CVWD can reduce the risk and vulnerability of people, property, infrastructure, natural and cultural resources, and economic impacts to future disaster losses, including earthquake events. Emphasis was placed on both existing and future development.

Pre-mitigation projects to mitigate earthquake events may include, but are not limited to, the following:

- New Portable Emergency Electrical Generators – four (4) new portable generators to be staged at Booster Pump Station sites to move water to higher elevations.
- New Seismic Sensors & Valve Actuators on Reservoir Inlet/Outlet Valves (4 sites) to close valve and save water.
- Emergency Preparedness Education Site and Water Refilling Station at Rosemont Reservoir.

Specific seismic mitigation actions/measures will be further described in the CVWD LHMP.

5.5 COMMUNICATION PROTOCOLS

5.5.1 INTRODUCTION

CVWD's communication protocol includes the various channels that CVWD will utilize to convey critical messages regarding water shortage allocations and voluntary and mandatory actions. The goal of CVWD is to provide more public outreach to help increase awareness of water shortages. A strong communication strategy and a common understanding on the water supply situation and necessary actions between CVWD and its customers, the public, elected officials, and other key stakeholders are essential should the WSCP need to be activated. How the water shortage messages are addressed to the public are described in this communication protocol. The communication protocol will be in place prior to a water supply shortage and be initiated in Stage 2 Increased Voluntary Conservation. Activation of the communication protocol will continue through all

subsequent water shortage stages. CVWD will ensure outreach efforts are reaching key audiences as needed.

It is important to communicate to its customers the following when urgent conservation is needed:

- Which shortage stage is being implemented;
- What response actions are triggered to save water;
- Why water needs to be saved; and
- What actions CVWD is taking to respond to the water supply situation.

5.5.2 COORDINATION

The goal of CVWD's outreach plans during dry periods and water shortages is to maintain effective coordination with key audiences. In order to maintain reliability in this communication, CVWD will work closely with the Board of Directors. During dry periods or other times of limited supply, the frequency and extent of coordination will increase to ensure outreach tactics are consistent with the changing needs of CVWD and its customers. In addition to collaboration with its wholesaler, FMWD, CVWD will seek opportunities with outside organizations and agencies to complement its own outreach.

5.5.3 COMMUNICATION GOALS

Communication objectives during an existing or anticipated water shortage condition include the following:

- Motivate key audiences (i.e., customers) to increase conservation in following any voluntary or mandatory actions called for at the current stage of the WSCP.
- Raise awareness of the drought, regulations, or other conditions affecting water sources and supplies.
- Educate customers, key stakeholders, elected officials, and the general public about water supply reliability, water quality, and water delivery.
- Prepare customers for any potential escalation of the supply shortage stages.

5.5.4 COMMUNICATION PROTOCOL FOR CURRENT OR PREDICTED SHORTAGE

A current or predicted shortage, as determined by CVWD's Annual Assessment, will be addressed to the public and its customers upon submittal of the Annual Water Shortage Assessment Report to DWR by July 1 of every year. This notice may be conducted by

CVWD's website, signage in front of the CVWD office, and wholesale agency coordination.

5.5.5 COMMUNICATION PROTOCOL FOR SHORTAGE RESPONSE ACTIONS TRIGGERED OR ANTICIPATED TO BE TRIGGERED

CVWD's customers and public will be notified about any triggered or anticipated to be triggered shortage response actions. CVWD monitors and measures the projected supply and demand for water by its customers monthly and recommends the stage of conservation required to the Board of Directors. After Stage 3, 4, 5 or 6 is declared, and at each regular board meeting, the Board of Directors will consider a report by the General Manager concerning the then current water supply status. The Board will change the stage designation as appropriate; however, unless it is an emergency, the Board will not impose mandatory measures without first conducting a duly-noticed public hearing pursuant to Water Code Sections 350 et seq., or 375 et seq. The appropriate stage of water conservation and the shortage response action triggered by the stage is then declared in a public notification posted on CVWD's website and published in a daily newspaper.

5.5.6 OTHER RELEVANT COMMUNICATION PROTOCOLS

To reduce water use consumption during any water shortage stage, CVWD will increase its public education and outreach efforts to build awareness of needed actions from the public. Moreover, CVWD will regularly revise its outreach campaign to reflect current supply conditions. Key communication strategies and associated water shortage stage implementation are listed below:

- Promote available water assistance resources for vulnerable populations; specialized outreach for impacted industries (Stages 3 and 4).
- Keep stakeholders aware of conditions (all Stages).
- Proclaim stage change to key stakeholders and the general public (all Stages).
- Conduct meetings with elected officials and other key civic and business leaders (Stage 2).
- Encourage reduced optional outdoor use through outreach (Stages 3 and 4).

CVWD may implement these communication strategies through its newsletters, website, and social media platforms to reflect supply conditions. In addition, CVWD may conduct news briefings or other media outlets (i.e., TV, radio, newspapers) to announce changes in supply conditions.

5.5.7 CRISIS COMMUNICATION PROTOCOL

In the event of a catastrophic supply interruption due to a natural disaster or damage to CVWD's facilities, CVWD will implement communication procedures in accordance with local, regional, state, and federal emergency response guidelines as outlined in its ERP. Depending upon the severity of the emergency and potential damage to CVWD's facilities, CVWD may determine that it is necessary to utilize the Standardized Emergency Management System (SEMS) response and the Incident Command System (ICS). Public information and crisis communication are an integral part of the ICS structure. National Incident Management System (NIMS), SEMS, and ICS have been integrated into the ERP. It provides for a strategic response by all employees and assigns specific responsibilities in the event the plan is activated.

When an incident occurs, the General Manager (Emergency Response Manager), District Engineer (Emergency Operations Center Manager) and the Operations Manager (Field Crew Supervisor) will go to the designated EOC and begin implementation of CVWD procedures and employ appropriate strategies from the shortage stages in **Table 5.8**.

Crisis communication efforts will concentrate on providing information to the public and external audiences. Furthermore, outreach messaging will reflect emergency conditions and the need to focus on health and public safety. CVWD will keep the Board of Directors informed of incident status and coordinate with public health officials.

CVWD will maintain communication with FMWD and its customers. Situation status reporting will be conducted during each operational shift during an event. In addition, CVWD may also authorize release of public information to news media to announce conditions and explain needed action. Finally, CVWD will ensure ongoing coordination with emergency response services with daily advisories or alerts as needed.

5.6 COMPLIANCE AND ENFORCEMENT

The District will use all means at its disposal to communicate compliance with its WSCP, including, but not limited to:

- Direct mailings
- Billing messages
- Website posts
- Press releases
- Social media posts
- Newspaper advertisements
- Speaker groups
- Waste of water reporting

5.6.1 PENALTIES OR CHARGES

Any customer who violates provisions of CVWD's Water Conservation Plan Ordinance by either excess use of water or by specific violation of one or more of the applicable water use restrictions for a particular mandatory conservation stage may be cited by CVWD and may be subject to written notices, surcharges, fines, flow restrictions, service disconnection, and/or service termination, which are detailed in **Table 5.12**.

Table 5.12: Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Written Notice (Warning)	First Violation (Any Phase)
Written Notice with Description of Penalties	Second Violation (Any Phase)
Flow restrictors (installation: \$150, removal: \$100) for a period of not less than 48 hours	Third Violation (Any Phase)
Flow restrictors (installation: \$200, removal: \$150) for a period of not less than one week OR Discontinuation of water service	Flagrant Disregard of ordinance or Multiple Violations (Any Phase)

For any violations subsequent to the second violation, if the penalty assessed is, or includes the installation of a flow-restrictor or the discontinuance of water service to the customer for any period of time, notice of the fact of the violation will be delivered 15 working days before the penalty is to be enacted, in the following manner:

- Personal delivery of written notice to the customer at their residence or place of business and obtain their signature of delivery.
- Return receipt delivery to customer at their residence or place of business.

All notices will contain, in addition to the facts of the violation, a statement of the possible penalties for the present violation for which the notice was written and each subsequent violation, a statement of the anticipated date of the penalty, if any, will be enacted for the present violation, and a statement informing the customer of the customer's right to a hearing on the violation.

5.6.2 APPEAL REGARDING VIOLATIONS

Any customer against whom a restriction or limitation is levied has the right to a hearing and a right to appeal to the Board of Directors. Written request from customer to the District must be received within 15 working days of the date of notification of the violation. Before

the hearing can be scheduled, all existing plumbing fixtures in the structure must be retrofitted exclusively with water-conserving plumbing fixtures including low flush or high efficiency toilets, low flow showerheads, and aerators. A water audit will be used to verify installation.

Enactments of the appropriate penalty will be deferred until the appeal is resolved.

If the appeal decision is not in favor of the customer, the determined penalty will be enacted within 10 days after the customer is advised of the decision in writing through certified mail, return receipt requested.

5.7 LEGAL AUTHORITIES

Under California law, including CWC Chapter 3 (commencing with Section 350) of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the CVWD Board is authorized to implement the water shortage response actions outlined in this section. In all water shortage cases, shortage response actions to be implemented will be at the discretion of the CVWD Board and will be based on an assessment of the supply shortage, customer response, and need for demand reductions.

It is noted that upon proclamation by the Governor of a state of emergency under the California Emergency Services Act, Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code, based on drought conditions, the state will defer to implementation of locally adopted water shortage contingency plans to the extent practicable. CVWD will coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

5.8 FINANCIAL CONSEQUENCES OF WSCP IMPLEMENTATION

CVWD has established a target reserve of funds within its annual budget to address the issue of lost revenue during a water shortage or drought situation. CVWD has an established reserve level that includes a 25 percent rate stabilization fund, which can offset short-term loss of revenue. The total target reserve level consists of \$1,000,000, 3 months of operations and maintenance costs (less the cost of imported water) and 25 percent of expected rate revenue. In the case of a long-term water shortage or drought situation,

CVWD has instituted a tiered rate structure on its customers to offset the loss of revenue that will occur. Such measures are listed in **Tables 5.13** and **5.14**.

Table 5.13: Proposed Measures to Overcome Revenue Impacts

Name of Measures
Reserve Funds
Rate Stabilization Fund
Rate Structure Adjustment

Table 5.14: Proposed Measures to Overcome Expenditure Impacts

Name of Measures
Obtain Alternative Sources of Funding
Defer Certain Expenditures

5.9 MONITORING AND REPORTING

5.9.1 REDUCTION MEASURING MECHANISM

Under normal water supply conditions, potable water production figures are recorded daily. Water Production totals are reported to the General Manager and the Management staff on a daily basis and monthly totals are incorporated into CVWD's Water Production Report.

During any declared water shortage emergency, the General Manager and the Management staff will compare the daily water production to a maximum water supply capacity and a targeted daily production to see if the reduction goals are being met. Those daily updates will be forwarded to CVWD's Board of Directors semi-monthly. Corrective action may be taken by the CVWD Board of Directors if reduction goals are not met.

During local water shortage emergencies due to a natural disaster, production figures will be monitored daily by the General Manager and the Management staff. Reports will be provided to the CVWD Board of Directors as necessary. Water use Monitoring Mechanisms are listed in **Table 5.15**.

Table 5.15: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type of Data Expected
Daily Records	Potable water production figures

5.10 SPECIAL WATER FEATURE DISTINCTION

As required under CWC 10632(b), water features that are not pools or spas must be analyzed and defined separately from pools and spas in the WSCP. Non-pool or non-spa water features may use recycled water, whereas, for health and safety considerations, pools and spas must use potable water. Although CVWD does not currently use recycled water and does not have the ability to use recycled water due to a lack of infrastructure, CVWD would use non-potable water for non-pool water features if and when recycled water supply ever becomes available to CVWD. Furthermore, the WSCP requires potable water recirculation for fountains and decorative water features.

5.11 WSCP ADOPTION AND REFINEMENT PROCEDURES

5.11.1 WSCP PUBLIC NOTICE AND ADOPTION

To encourage broad community participation in the WSCP preparation process, CVWD provided 60-day notification letters to agencies within CVWD's service area. Copies of the draft WSCP were made available for public review at the CVWD office prior to the public hearing. Shortly before the public hearing, a two-week and a one-week notice was published in the local press alerting the public of the public hearing. At a subsequent board meeting following the public hearing, CVWD's final WSCP was approved and adopted by its Board of Directors on June 8, 2021. **Appendix E** contains the Board resolution adopting the WSCP. The final plan was submitted to DWR within 30 days of Board adoption and includes all information necessary to meet the requirements of CWC Section 10632.

By **June XX, 2021**, CVWD's approved WSCP was filed with DWR. By **July 1, 2021**, CVWD's plan was submitted to the California State Library, County of Los Angeles, and cities within its service area. CVWD will make the plan available for public review no later than 30 days after filing with DWR.

5.11.2 WSCP REFINEMENT PROCEDURES

This section discusses the process for reviewing and updating the WSCP to ensure it

remains actively used, relevant and appropriate to the community, and consistent with applicable state and local requirements. It is vital that CVWD's WSCP remain up to date so as to best ensure shortage risk tolerance is adequate, appropriate water shortage mitigation strategies are implemented as needed, proper procedures for water efficient practices are in place for the community, and better alignment with long-term water use goals.

The CVWD Core Planning Team is responsible for maintaining this plan and updating it as needed. The Director of Engineering and the Regulatory and Public Affairs Manager are the primary CVWD staff members who will carry out this process, under the direction of the General Manager or other appropriate staff member. The General Manager, or their designee, will serve as the WSCP project manager and will coordinate maintenance of the plan, conduct the formal review process, and direct the plan updates. The project manager will assign tasks, which may include collecting data, developing new or updated water shortage mitigation measures, updating sections of the plan, and presenting the plan to others.

THIS PAGE LEFT BLANK INTENTIONALLY



CVWD operates a sewage collection system with approximately 6,000 connections—generating close to 550-600 million gallons of raw wastewater annually.

SECTION 6: RECYCLED WATER

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 6

RECYCLED WATER

6.1 OVERVIEW

Recycled water is defined as domestic wastewater purified through primary, secondary and tertiary treatment. The Southern California region, from Ventura to San Diego, discharges over 1 billion gallons of treated wastewater to the ocean each day. Since recycled water is acceptable for a variety of non-potable water purposes such as irrigation, groundwater recharge, and commercial/industrial processes, it is considered a reliable and drought-proof water source and could greatly reduce the region's reliance on imported water. As technological improvements continue to reduce treatment costs, and as public perception and acceptance continue to improve, more reuse opportunities should develop, which will increase demands for recycled water. Recycled water is a critical part of the California water picture because of the area's high likelihood of drought. As part of its overall water resources planning, CVWD continues to investigate the feasibility and cost-effectiveness of using recycled water.

Cost-effective opportunities for using recycled water are limited due to the lack of large users or large irrigated areas within CVWD's service area. In addition, there is presently a possible source from Glendale Water and Power, but no infrastructure is available. This potential use of recycled water is continually assessed by CVWD, FMWD, and MWD.

6.2 WASTEWATER DESCRIPTION & DISPOSAL

6.2.1 WASTEWATER COLLECTION

Municipal wastewater is generated in CVWD's service area from a combination of residential, commercial, and industrial sources. The quantities of wastewater generated are generally proportional to the population and the water used in the service area. It is estimated that customers within CVWD's service area generate wastewater based on 80 percent of potable water demand, although that is not a strict figure.

CVWD operates a sewage collection system with approximately 6,000 connections. The system transports this wastewater outside CVWD boundaries to a regional wastewater

treatment plant owned by the City of Los Angeles. CVWD pays a flow-based share of treatment and disposal costs to the City of Los Angeles and the treated effluent from the Los Angeles-Glendale (LAG) Water Reclamation Plant (WRP) or LAGWRP. CVWD generates approximately 550 to 600 MG of raw wastewater annually.

Wastewater collection volumes are shown in **Table 6.1**.

Table 6. 1: CVWD Wastewater Collected Within Service Area (AF) (DWR Table 6-2 Retail)

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume	Volume of Wastewater Collected from UWMP Service Area 2020	Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
CVWD	Estimated	3,373	Los Angeles County Sanitation District	Los Angeles-Glendale Water Reclamation Plant	No	No
Total Wastewater Collected from Service Area in 2020:		3,373				
NOTES: Estimated wastewater amount to be 80 percent of water demand.						

6.2.2 WASTEWATER TREATMENT

LOS ANGELES-GLENDALE WRP

The LAGWRP serves a small portion of the west side of La Cañada Flintridge and La Crescenta. The wastewater is treated through a three-step process imitating nature's cleaning processes also referred as tertiary treatment. The LAGWRP processes approximately 20 MG of non-potable water each day. Five new concurrent projects are underway at



Figure 6.1: Los Angeles-Glendale Plant

the LAG campus to improve daily wastewater and recycled water treatment operations and to reduce the strain on major sewers and the Hyperion Water Reclamation Plant. All five

projects are targeted to be completed by December 2024.

6.3 CURRENT RECYCLED WATER USES

There are currently no recycled water uses within CVWD's service area.

6.4 POTENTIAL RECYCLED WATER USES

There are currently no potential recycled water uses within CVWD's service area. It is cost prohibitive due to the low demand for recycled water; however, CVWD will continue to evaluate potential projects.

6.4.1 DIRECT NON-POTABLE REUSE

CVWD does not have the potential for direct non-potable reuse within their service area due to no existing recycled water system.

6.4.2 INDIRECT POTABLE REUSE

CVWD does not have the potential for indirect potable reuse within their service area.

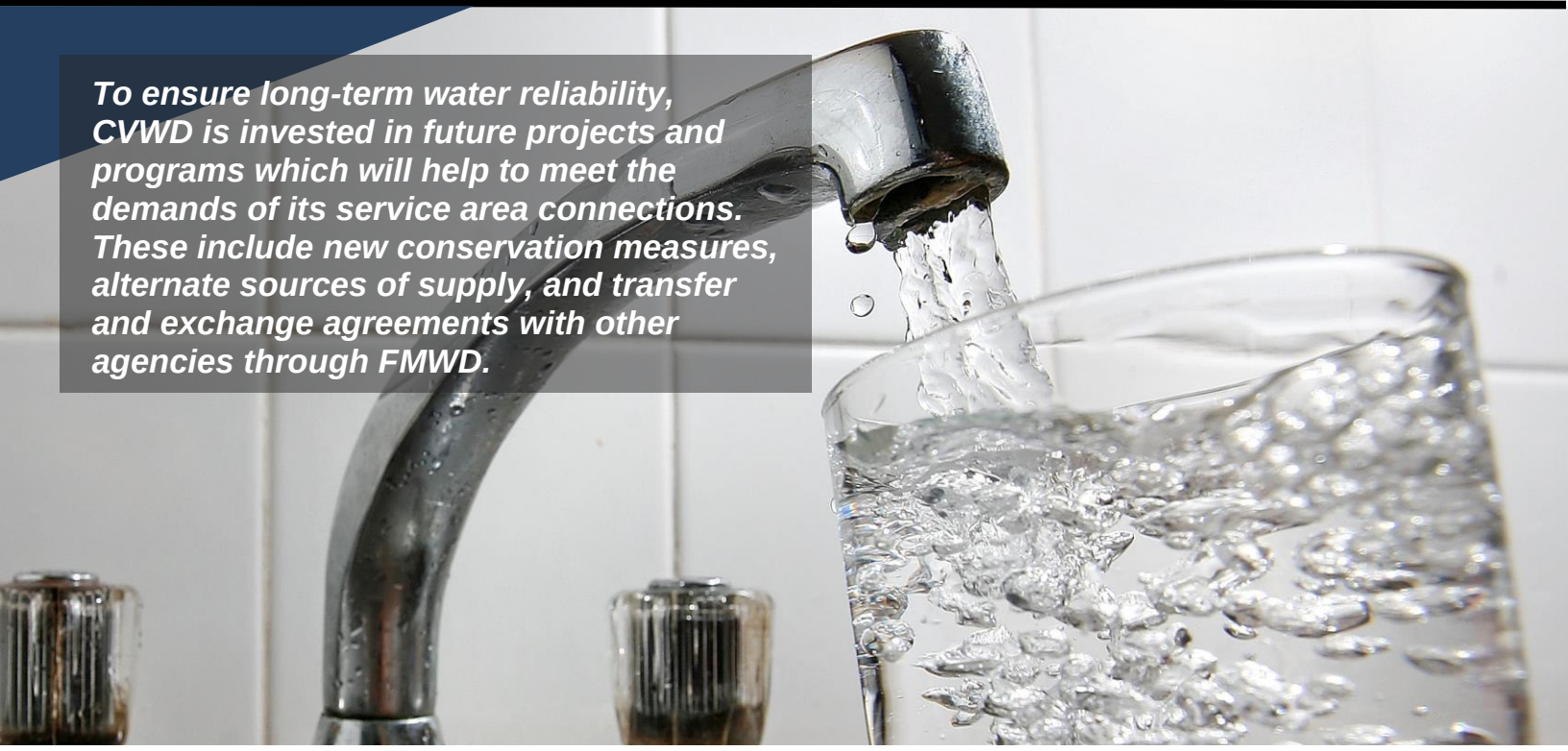
6.5 OPTIMIZATION PLAN

Because CVWD is not using recycled water at this time, it is not practicable to provide a recycled water optimization plan.

To determine if a recycled water project is cost-effective, cost/benefit analyses must be conducted for each potential project. This raises the issue of technical and economic feasibility of a recycled water project requiring a relative comparison to alternative water supply options. Analyses indicate that capital costs of water recycling in CVWD's service area exceed the cost of purchasing additional imported water from MWD.

CVWD will continue to conduct cost/benefit analyses for various recycled water projects and seek creative solutions in coordination with MWD and other cooperative agencies. These include solutions for funding, regulatory requirements, institutional arrangements, and public acceptance.

THIS PAGE LEFT BLANK INTENTIONALLY



To ensure long-term water reliability, CVWD is invested in future projects and programs which will help to meet the demands of its service area connections. These include new conservation measures, alternate sources of supply, and transfer and exchange agreements with other agencies through FMWD.

SECTION 7: FUTURE WATER SUPPLY PROJECTS & PROGRAMS

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 7

FUTURE WATER SUPPLY PROJECTS & PROGRAMS

7.1 OVERVIEW

In general, CVWD continually reviews practices that will provide its customers with adequate and reliable supplies. As discussed in previous sections, CVWD is dedicated to maximizing its supply sources while reducing its dependency on imported supplies. CVWD considers plans for alternate sources such as recycled, greywater, and rainwater harvesting. This section discusses planned and potential future water supply projects and programs, while updating existing plans from 2015 as well as presenting new plans.

7.2 MWD REGIONAL SUPPLY PROJECTS & PROGRAMS

MWD is implementing water supply alternative strategies for the region and on behalf of member agencies to ensure available water in the future, including:

- Conservation
- Water recycling & groundwater recovery
- Storage and groundwater management programs within the region
- Storage related to SWP & CRA
- Other water supply management programs outside of the region

MWD has made investments in conservation and supply augmentation as part of its long-term water management strategy. MWD's approach to a long-term water management strategy was to develop an Integrated Resource Plan (IRP) to include diversified supply sources.

MWD is currently updating its IRP; however, that process will not be completed until after submittal of this UWMP. The IRP projects demands and identifies a mix of supplies to meet those demands. These supplies include desalination, recycling, conservation, brackish groundwater recovery and conjunctive use. MWD has financial incentive programs in place for local agencies to develop these supplies. FMWD, as a member agency of MWD, supports these incentive programs and contributes to these financial incentives through its payments for water from MWD.

7.3 WATER MANAGEMENT TOOLS

Resource optimization, such as local groundwater, storm water recharge, and recycled feasibility studies to minimize the needs for imported water, is key for CVWD to meet future water demands. CVWD can meet projected demands with existing facilities and distribution systems. With the eventual replacement of older wells with new and more efficient wells in addition to the continued efforts in reducing water waste, CVWD can meet projected demands with existing facilities and distribution systems.

7.4 TRANSFER OR EXCHANGE OPPORTUNITIES

At this time, CVWD is not currently involved in any transfer or exchange opportunities.

7.5 PLANNED WATER SUPPLY PROJECTS & PROGRAMS

GROUNDWATER RECHARGE

CVWD is working towards the development of the Crescenta Valley County Park Multiuse Project. This Project will allow CVWD to increase groundwater storage in the Basin by installation and maintenance of underground infiltration galleries underneath portions of the existing park. This will be accomplished by utilizing the existing Los Angeles County flood control channels (Verdugo Wash) and surface flow within the Crescenta Valley to divert storm water during the rainy season and capturing dry weather flow to proposed underground infiltration basins within the recreational areas. The project will potentially increase the local water supply by an annual average of 340 AFY, thus enhancing CVWD's groundwater resource and reducing dependence on imported supplies. Also, through the process of capture, treatment, and reuse of storm water and dry weather flow, the project could potentially reduce pollutant load from contaminating the Los Angeles River.

NEW WELLS

CVWD is planning to replace its older groundwater wells with new modern constructed wells over a 10-year period, which started in 2015. The existing wells are between 55 to 80 years old and are reaching the end of their useful life. CVWD's current program is to perform at least two well rehabilitations a year, which includes cleaning the well casing with chemical treatment and installation of steel liner to extend the life of a well.

RESERVOIR REHABILITATION

In Fall 2020, CVWD began the rehabilitation of the Rosemont Reservoir. The 500,000-gallon reservoir rehabilitation project is midway through its construction phase, with most of its heavy construction completed. Construction is currently in Phase II of the rehabilitative process, including sandblasting, stripping, and adding primer coats to both the inside and outside of the tank. The project is estimated to be completed by April 2021. The reservoir structure has not been rehabilitated in over 20 years, and though the tank is starting to show signs of aging, its structural integrity has not been compromised over the years. This reservoir project is part of CVWD's Reservoir Rehabilitation Program for the next 12-years where CVWD plans to rehabilitated one reservoir per year.

7.6 DESALINATION OPPORTUNITIES

There are technologies in place to remove the salts in both brackish groundwater and ocean water for potable use. CVWD does not have any projects to remove salts from local supplies to replace imported water; however, it supports these projects through MWD's programs where MWD provides incentives to other agencies for treatment.

7.6.1 DESALINATION OF GROUNDWATER

There are currently no brackish groundwater opportunities within CVWD's service area.

7.6.2 DESALINATION OF OCEAN WATER

CVWD does not have opportunities to directly develop desalinated supplies. It does not border the ocean and cannot participate directly in ocean desalination; however, CVWD supports MWD's Seawater Desalination Program, which provides incentives to MWD's member agencies of up to \$340 per AF for the production of desalinated ocean water.

THIS PAGE LEFT BLANK INTENTIONALLY



CVWD recognizes that the success of its operations comes from the participation of other agencies and the general public. For this 2020 UWMP, CVWD encouraged participation prior to the public hearing and Board Adoption.

SECTION 8: PLAN ADOPTION PROCESS

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 8

PLAN ADOPTION PROCESS

8.1 OVERVIEW

Recognizing that close coordination among other relevant public agencies is the key to the success of its 2020 UWMP, CVWD worked closely with other agencies to develop and update this planning document. CVWD provided 60-day notification letters to encourage agencies to participate in the UWMP preparation process (**Appendix G**). Copies of the draft UWMP and draft WSCP were made available for public review at the CVWD office prior to the public hearing. Shortly before the public hearing, a two-week and a one-week notice was published in the local press alerting the public of the public hearing (**Appendix F**). At a subsequent Board meeting following the public hearing, CVWD adopted the 2020 UWMP on **June 22, 2021**. Finally, as required by the UWMP Act, this 2020 UWMP and the WSCP are being provided by CVWD to DWR, the California State Library, and the public within 30 days of Board adoption. Details of coordination efforts are provided in **Sections 8.1.1** and **8.2**.

CVWD's 2020 UWMP is a collaborative effort involving its own staff, outside agencies, and the general public.

8.1.1 WATER CODE REQUIREMENTS

Article 3 of the CWC requires that CVWD provide a minimum level of agency and public participation during the UWMP preparation process, as well as the adoption and implementation process of the UWMP. **Table 8.1** on the following page summarizes external coordination and outreach activities carried out by CVWD during the preparation of its 2020 UWMP, along with corresponding dates.

Also in accordance with Article 3 of the CWC, CVWD is required to distribute its official (adopted) UWMP and WSCP and make it publicly available. After the adoption of the 2020 UWMP and WSCP by Board Resolutions (attached as **Appendix E**) on June 22,

2021, CVWD provided copies of its adopted UWMP in accordance with **Table 8.2**.

Table 8.1: Coordination & Outreach during UWMP Preparation

Effort	Description	Date
"60-Day Notification"	Letters sent to Cities, County, & other Agencies	March 9, 2021
Public Hearing	Public Hearing Held at CVWD Headquarters (two-week and one-week notices published)	June 22, 2021
Board Adoption	Board Adoption of UWMP by Resolution	June 22, 2021

Table 8.2: UWMP & WSCP Distribution Following Adoption of Plans

Effort	Description	Date
DWR Submittal	Submitted UWMP and WSCP to DWR (within 30 days of adoption)	June XX, 2021
Agency Submittal	Submitted UWMP and WSCP to the California State Library and County of Los Angeles (within 30 days of adoption)	July 1, 2021
Public Access	Made UWMP and WSCP available to public (within 30 days of submittal to DWR)	July 1, 2021

8.2 DETAILS OF COORDINATION EFFORTS

8.2.1 GENERAL PUBLIC COORDINATION

To meet the CWC and to provide for its own benefit, CVWD has actively solicited community participation during the UWMP preparation and adoption process by performing the following activities:

- Encouraging attendance and participation in Board Meetings prior to the actual UWMP Public Hearing as part of CVWD's ongoing community outreach efforts
- Soliciting comments on the UWMP while providing copies of its Draft 2020 UWMP at the CVWD office and on its website
- Holding a public hearing for the express purpose of inviting UWMP comments and

opening the floor for public comments to be received

On June 22, 2021, CVWD held a Public Hearing to receive comments on the 2020 UWMP, including the WSCP as part of the UWMP. Notification of the public meeting for consideration of adoption of CVWD's draft UWMP was printed in a local newspaper, a copy of which is provided in **Appendix F**. All comments received prior to and during the Public Hearing were taken into consideration in the preparation of the final report. **No comments were received during the public hearing.**

8.2.2 OUTSIDE AGENCY COORDINATION

CVWD coordinated the development of this UWMP with several outside agencies and the cities which reside in CVWD's service area.

All of CVWD's water supply planning relates to the policies, rules, and regulations of its regional and local providers. CVWD is dependent on imported water from MWD via FMWD and local groundwater from the Basin which is an adjudicated basin within the ULARA. CVWD is also a member of the Administrative Committee, which oversees the ULARA Watermaster. The Watermaster is responsible for coordinating all groundwater pumping activities within the Basin. As such, CVWD involved these entities in the development of its 2020 Draft UWMP at various levels of contribution as summarized in **Table 8.3**.

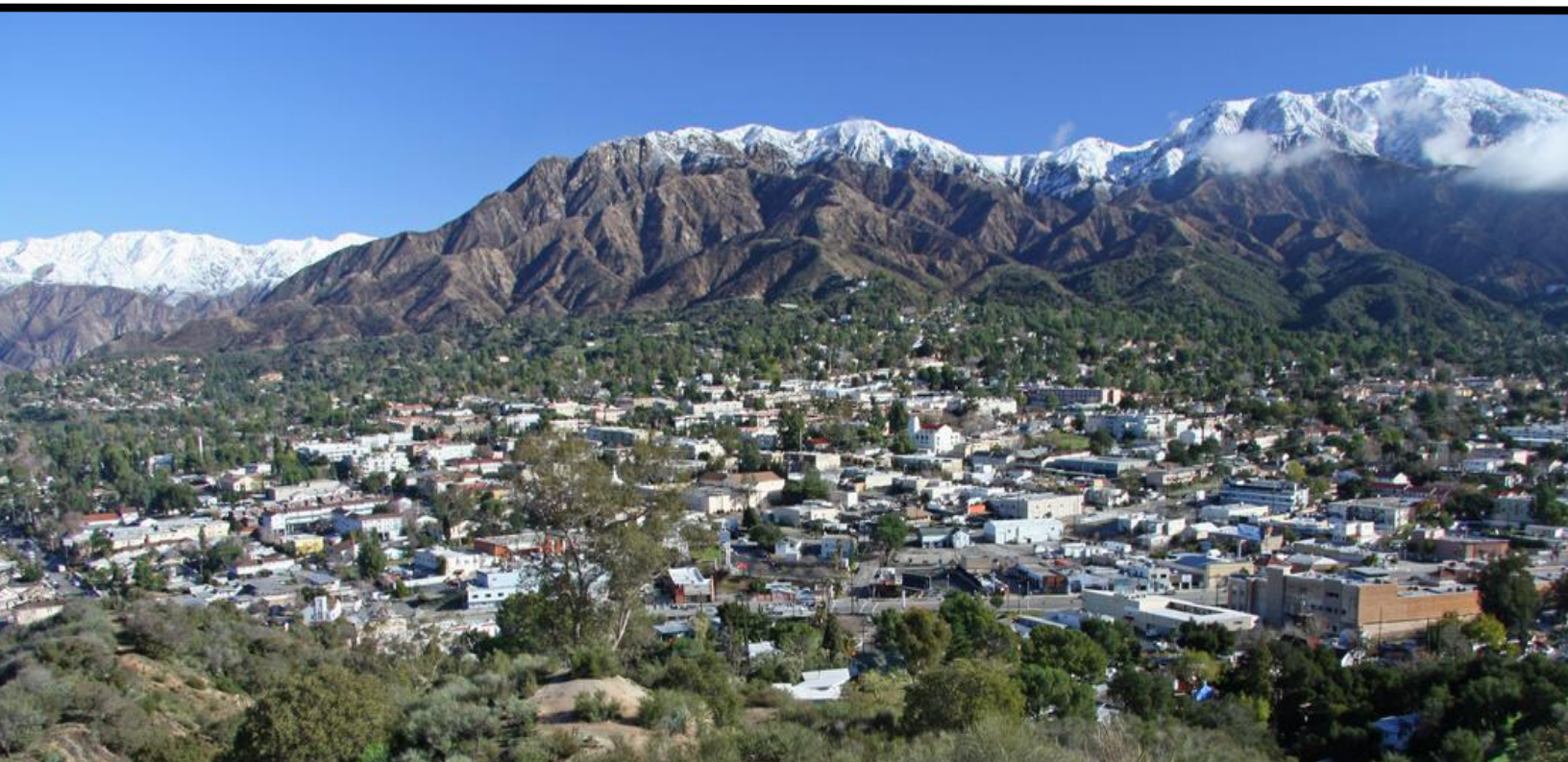
Table 8.3: UWMP Coordination Efforts

Agency	Helped Plan Prep.	Contacted for Assistance	Comments on Draft	Notified of Public Hearing	Attended Public Hearing
FMWD	✓	✓	✓	✓	✓
City of Glendale		✓		✓	
City of La Cañada Flintridge		✓		✓	
LA County		✓		✓	

8.3 PLAN SUBMITTAL

CVWD's final 2020 UWMP, including the WSCP, was approved by its Board of Directors on June 22, 2021. The final plans were submitted to DWR within 30 days of Board approval and includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

By June XX, 2021, CVWD's approved 2020 UWMP and WSCP were filed with DWR. By July 1, 2021, CVWD's plans were submitted to the California State Library, County of Los Angeles, and cities within its service area. CVWD will make both plans available for public review no later than 30 days after filing with DWR.



APPENDICES A - I

CRESCENTA VALLEY WATER DISTRICT | 2020 URBAN WATER MANAGEMENT PLAN



Appendix A: ULARA Judgment

Crescenta Valley Water District 2020 Urban Water Management Plan

1
2
3
4
5
6
7
8 SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 FOR THE COUNTY OF LOS ANGELES
10

11 THE CITY OF LOS ANGELES,)
12)
13 Plaintiff,) No. 650079
14)
15 vs.) JUDGMENT
16)
17)
18 CITY OF SAN FERNANDO, ET AL.)
19)
20 Defendants.)
21)
22)
23)
24)
25)
26)
27)
28)

17
18 There follows by consecutive paging a Table of Contents (pages
19 i. to vi.), Recitals (page 1), Definitions and List of
20 Attachments (pages 1 to 6), Designation of Parties (page 6),
21 Declaration re Geology and Hydrology (pages 6 to 12),
22 Declaration of Rights (pages 12 to 21), Injunctions (pages 21
23 to 22), Continuing Jurisdiction (page 23), Watermaster (pages
24 23 to 29), Physical Solution (pages 29 to 34), and
25 Miscellaneous Provisions (pages 34 to 35), and Attachments
26 (pages 36 to 46). Each and all of said several parts
27 constitute a single integrated Judgment herein.
28

1 1. RECITALS

2 This matter was originally tried before the Honorable Edmund M.
3 Moor, without jury, commencing on March 1, 1966, and concluding with
4 entry of Findings, Conclusions and Judgment on March 14, 1968, after
5 more than 181 trial days. Los Angeles appealed from said judgment and
6 the California Supreme Court, by unanimous opinion, (14 Cal. 3d 199)
7 reversed and remanded the case; after trial of some remaining issues
8 on remand, and consistent with the opinion of the Supreme Court, and
9 pursuant to stipulations, the Court signed and filed Findings of Fact
10 and Conclusions of Law. Good cause thereby appearing,

11 IT IS ORDERED, ADJUDGED AND DECREED:

12
13 2. DEFINITIONS AND ATTACHMENTS

14 2.1 Definitions of Terms. As used in this Judgment, the
15 following terms shall have the meanings herein set forth:

16 [1] Basin or Ground Water Basin -- A subsurface geologic
17 formation with defined boundary conditions, containing a ground
18 water reservoir, which is capable of yielding a significant
19 quantity of ground water.

20 [2] Burbank -- Defendant City of Burbank.

21 [3] Crescenta Valley -- Defendant Crescenta Valley County
22 Water district.

23 [4] Colorado Aqueduct -- The aqueduct facilities and system
24 owned and operated by MWD for the importation of water from the
25 Colorado River to its service area.

26 [5] Deep Rock -- Defendant Evelyn M. Pendleton, dba Deep
27 Rock Artesian Water Company.
28

1 [6] Delivered Water -- Water utilized in a water supply
2 distribution system, including reclaimed water.

3 [7] Eagle Rock Basin -- The separate ground water basin
4 underlying the area shown as such on Attachment "A".

5 [8] Extract or Extraction -- To produce ground water, or
6 its production, by pumping or any other means.

7 [9] Fiscal Year -- July 1 through June 30 of the following
8 calendar year.

9 [10] Foremost -- Defendant Foremost Foods Company, successor
10 to defendant Sparkletts Drinking Water Corp.

11 [11] Forest Lawn -- Collectively, defendants Forest Lawn
12 Cemetery Association, Forest Lawn Company, Forest Lawn Memorial-
13 Park Association, and American Security and Fidelity Corporation.

14 [12] Gage F-57 -- The surface stream gaging station operated
15 by Los Angeles County Flood Control District and situated in Los
16 Angeles Narrows immediately upstream from the intersection of the
17 Los Angeles River and Arroyo Seco, at which point the surface
18 outflow from ULARA is measured.

19 [13] Glendale -- Defendant City of Glendale.

20 [14] Ground Water -- Water beneath the surface of the ground
21 and within the zone of saturation.

22 [15] Hersch & Plumb -- Defendants David and Eleanor A.
23 Hersch and Gerald B. and Lucille Plumb, successors to Wellesley
24 and Duckworth defendants.

25 [16] Import Return Water -- Ground water derived from
26 percolation attributable to delivered imported water.

1 [17] Imported Water -- Water used within ULARA, which is
2 derived from sources outside said watershed. Said term does not
3 include inter-basin transfers wholly within ULARA.

4 [18] In Lieu Storage -- The act of accumulating ground water
5 in a basin by intentional reduction of extractions of ground
6 water which a party has a right to extract.

7 [19] Lockheed -- Defendant Lockheed Aircraft Corporation.

8 [20] Los Angeles -- Plaintiff City of Los Angeles, acting by
9 and through its Department of Water and Power.

10 [21] Los Angeles Narrows -- The physiographic area northerly
11 of Gage F-57 bounded on the east by the San Rafael and Repetto
12 Hills and on the west by the Elysian Hills, through which all
13 natural outflow of the San Fernando Basin and the Los Angeles
14 River flow en route to the Pacific Ocean.

15 [22] MWD -- The Metropolitan Water District of Southern
16 California, a public agency of the State of California.

17 [23] Native Safe Yield -- That portion of the safe yield of
18 a basin derived from native waters.

19 [24] Native Waters -- Surface and ground waters derived from
20 precipitation within ULARA.

21 [25] Overdraft -- A condition which exists when the total
22 annual extractions of ground water from a basin exceed its safe
23 yield, and when any temporary surplus has been removed.

24 [26] Owens-Mono Aqueduct -- The aqueduct facilities owned
25 and operated by Los Angeles for importation to ULARA water from
26 the Owens River and Mono Basin watersheds easterly of the Sierra-
27 Nevada in Central California.

1 [27] Private Defendants -- Collectively, all of those
2 defendants who are parties, other than Glendale, Burbank, San
3 Fernando and Crescenta Valley.

4 [28] Reclaimed Water -- Water which, as a result of
5 processing of waste water, is made suitable for and used for a
6 controlled beneficial use.

7 [29] Regulatory Storage Capacity -- The volume of storage
8 capacity of San Fernando Basin which is required to regulate the
9 safe yield of the basin, without significant loss, during any
10 long-term base period of water supply.

11 [30] Rising Water -- The effluent from a ground water basin
12 which appears as surface flow.

13 [31] Rising Water Outflow -- The quantity of rising water
14 which occurs within a ground water basin and does not rejoin the
15 ground water body or is not captured prior to flowing past a
16 point of discharge from the basin.

17 [32] Safe Yield - The maximum quantity of water which can be
18 extracted annually from a ground water basin under a given set of
19 cultural conditions and extraction patterns, based on the long-
20 term supply, without causing a continuing reduction of water in
21 storage.

22 [33] San Fernando -- Defendant City of San Fernando.

23 [34] San Fernando Basin -- The separate ground water basin
24 underlying the area shown as such on Attachment "A".

25 [35] Sportsman's Lodge -- Defendant Sportsman's Lodge
26 Banquet Association.

27 [36] Stored Water -- Ground water in a basin consisting of
28 either (1) imported or reclaimed water which is intentionally

1 spread, or (2) safe yield water which is allowed to accumulate by
2 In Lieu Storage. Said ground waters are distinguished and
3 separately accounted for in a ground water basin, notwithstanding
4 that the same may be physically commingled with other waters in
5 the basin.

6 [37] Sylmar Basin -- The separate ground water basin
7 underlying the area indicated as such on Attachment "A".

8 [38] Temporary Surplus - The amount of ground water which
9 would be required to be removed from a basin in order to avoid
10 waste under safe yield operation.

11 [39] Toluca Lake -- Defendant Toluca Lake Property Owners
12 Association.

13 [40] ULARA or Upper Los Angeles River Area - The Upper Los
14 Angeles River watershed, being the surface drainage area of the
15 Los Angeles River tributary to Gage F-57.

16 [41] Underlying Pueblo Waters -- Native ground waters in the
17 San Fernando Basin which underlie safe yield and stored waters.

18 [42] Valhalla -- Collectively, Valhalla Properties, Valhalla
19 Memorial Park, Valhalla Mausoleum Park.

20 [43] Van de Kamp -- Defendant Van de Kamp's Holland Dutch
21 Bakers, Inc.

22 [44] Verdugo Basin -- The separate ground water basin
23 underlying the area shown as such on Attachment "A".

24 [45] Water Year -- October 1 through September 30 of the
25 following calendar year.

26 Geographic Names, not herein specifically defined, are used to
27 refer to the places and locations thereof as shown on Attachment "A".
28

1 Angeles River at Gage F-57. Said watershed contains a total of
2 329,000 acres, consisting of approximately 123,000 acres of
3 valley fill area and 206,000 acres of hill and mountain area,
4 located primarily in the County of Los Angeles, with a small
5 portion in the County of Ventura. Its boundaries are shown on
6 Attachment "A". The San Gabriel Mountains form the northerly
7 portion of the watershed, and from them two major washes--the
8 Pacoima and the Tujunga--discharge southerly. Tujunga Wash
9 traverses the valley fill in a southerly direction and joins the
10 Los Angeles River, which follows an easterly course along the
11 base of the Santa Monica Mountains before it turns south through
12 the Los Narrows. The waters of Pacoima Wash as and when they
13 flow out of Sylmar Basin are tributary to San Fernando Basin.
14 Lesser tributary washes run from the Simi Hills and the Santa
15 Susana Mountains in the westerly portion of the watershed. Other
16 minor washes, including Verdugo Wash, drain the easterly portion
17 of the watershed which consists of the Verdugo Mountains, the
18 Elysian, San Rafael and Repetto Hills. Each of said washes is a
19 non-perennial stream whose flood flows and rising waters are
20 naturally tributary to the Los Angeles River. The Los Angeles
21 River within ULARA and most of said tributary natural washes have
22 been replaced, and in some instances relocated, by concrete-lined
23 flood control channels. There are 85.3 miles of such channels
24 within ULARA, 62% of which have lined concrete bottoms.

25 4.1.2 San Fernando Basin. San Fernando Basin is the major
26 ground water basin in ULARA. It underlies 112,047 acres and is
27 located in the area shown as such on Attachment "A". Boundary
28 conditions of the San Fernando Basin consist on the east and

1 northeast of alluvial contacts with non-waterbearing series along
2 the San Rafael Hills and Verdugo Mountains and the Santa Susana
3 Mountains and Simi Hills on the northwest and west and the Santa
4 Monica Mountains on the south. Water-bearing material in said
5 basin extends to at least 1000 feet below the surface. Rising
6 water outflow from the San Fernando Basin passes its downstream
7 and southerly boundary in the vicinity of Gage F-57, which is
8 located in Los Angeles Narrows about 300 feet upstream from the
9 Figueroa Street (Dayton Street) Bridge. The San Fernando Basin
10 is separated from the Sylmar Basin on the north by the eroded
11 south limb of the Little Tujunga Syncline which causes a break in
12 the ground water surface of about 40 to 50 feet.

13 4.1.3 Sylmar Basin. Sylmar Basin underlies 5,565 acres and
14 is located in the area shown as such on Attachment "A". Water-
15 bearing material in said basin extends to depths in excess of
16 12,000 feet below the surface. Boundary conditions of Sylmar
17 Basin consist of the San Gabriel Mountains on the north, a
18 topographic divide in the valley fill between the Mission Hills
19 and San Gabriel Mountains on the west, the Mission Hills on the
20 southwest, Upper Lopez Canyon Saugus Formation on the east, along
21 the east bank of Pacoima Wash, and the eroded south limb of the
22 Little Tujunga Syncline on the south.

23 4.1.4 Verdugo Basin. Verdugo Basin underlies 4,400 acres
24 and is located in the area shown as such on Attachment "A".
25 Boundary conditions of Verdugo Basin consist of the San Gabriel
26 Mountains on the north, the Verdugo Mountains on the south and
27 southwest, the San Rafael Hills on the southeast and the
28 topographic divide on the east between the drainage area that is

1 tributary to the Tujunga Wash to the west and Verdugo Wash to the
2 east, the ground water divide on the west between Monk Hill-
3 Raymond Basin and the Verdugo Basin on the east and a submerged
4 dam constructed at the mouth of Verdugo Canyon on the south.

5 4.1.5 Eagle Rock Basin. Eagle Rock Basin underlies 807
6 acres and is located in the area shown as such on Attachment "A".
7 Boundary conditions of Eagle Rock Basin consist of the San Rafael
8 Hills on the north and west and the Repetto Hills on the east and
9 south with a small alluvial area to the southwest consisting of a
10 topographic divide.

11 4.2 Hydrology.

12 4.2.1 Water Supply. The water supply of ULARA consists of
13 native waters, derived from precipitation on the valley floor and
14 runoff from the hill and mountain areas, and of imported water
15 from outside the watershed. The major source of imported water
16 has been from the Owens-Mono Aqueduct, but additional supplies
17 have been and are now being imported through MWD from its
18 Colorado Aqueduct and the State Aqueduct.

19 4.2.2 Ground Water Movement. The major water-bearing
20 formation in ULARA is the valley fill material bounded by hills
21 and mountains which surround it. Topographically, the valley-
22 fill area has a generally uniform grade in a southerly and
23 easterly direction with the slope gradually decreasing from the
24 base of the hills and mountains to the surface drainage outlet at
25 Gage F-57. The valley fill material is a heterogeneous mixture
26 of clays, silts, sand and gravel laid down as alluvium. The
27 valley fill is of greatest permeability along and easterly of
28 Pacoima and Tujunga Washes and generally throughout the eastern

1 portion of the valley fill area, except in the vicinity of
2 Glendale where it is of lesser permeability. Ground water occurs
3 mainly within the valley fill, with only negligible amounts
4 occurring in hill and mountain areas. There is no significant
5 ground water movement from the hill and mountain formations into
6 the valley fill. Available geologic data do not indicate that
7 there are any sources of native ground water other than those
8 derived from precipitation. Ground water movement in the valley
9 fill generally follows the surface topography and drainage except
10 where geologic or man-made impediments occur or where the natural
11 flow has been modified by extensive pumping.

12 4.2.3 Separate Ground Water Basins. The physical and
13 geologic characteristics of each of the ground water basins,
14 Eagle rock, Sylmar, Verdugo and San Fernando, cause impediments
15 to inter-basin ground water flow whereby there is created
16 separate underground reservoirs. Each of said basins contains a
17 common source of water supply to parties extracting ground water
18 from each of said basins. The amount of underflow from Sylmar
19 Basin, Verdugo Basin and Eagle Rock Basin to San Fernando Basin
20 is relatively small, and on the average has been approximately
21 540 acre feet per year from the Sylmar Basin; 80 acre feet per
22 year from Verdugo Basin; and 50 acre feet per year from Eagle
23 Rock Basin. Each has physiographic, geologic and hydrologic
24 differences, one from the other, and each meets the hydrologic
25 definition of "basin". The extractions of water in the
26 respective basins affect the other water users within that basin
27 but do not significantly or materially affect the ground water
28 levels in any of the other basins. The underground reservoirs of

1 Eagle Rock, Verdugo and Sylmar Basins are independent of one
2 another and of the San Fernando Basin.

3 4.2.4 Safe Yield and Native Safe Yield. The safe yield and
4 native safe yield, stated in acre feet, of the three largest
5 basins for the year 1964-65 was as follows:

6 <u>Basin</u>	<u>Safe Yield</u>	<u>Native Safe Yield</u>
7 San Fernando	90,680	43,660
8 Sylmar	6,210	3,850
9 Verdugo	7,150	3,590

10 The safe yield of Eagle Rock Basin is derived from imported water
11 delivered by Los Angeles. There is no measurable native safe
12 yield.

13 4.2.5 Separate Basins -- Separate Rights. The rights of
14 the parties to extract ground water within ULARA are separate and
15 distinct as within each of the several ground water basins within
16 said watershed.

17 4.2.6 Hydrologic Condition of Basins. The several basins
18 within ULARA are in varying hydrologic conditions, which result
19 in different legal consequences.

20 4.2.6.1 San Fernando Basin. The first full year of
21 overdraft in San Fernando Basin was 1954-55. It remained in
22 overdraft continuously until 1968, when an injunction herein
23 became effective. Thereafter, the basin was placed on safe
24 yield operation. There is no surplus ground water available
25 for appropriation or overlying use from San Fernando Basin.

26 4.2.6.2 Sylmar Basin. Sylmar Basin is not in
27 overdraft. There remains safe yield over and above the
28 present reasonable beneficial overlying uses, from which

1 safe yield the appropriative rights of Los Angeles and San
2 Fernando may be and have been exercised.

3 4.2.6.3 Verdugo Basin. Verdugo Basin was in
4 overdraft for more than five consecutive years prior to
5 1968. Said basin is not currently in overdraft, due to
6 decreased extractions by Glendale and Crescenta Valley on
7 account of poor water quality. However, the combined
8 appropriative and prescriptive rights of Glendale and
9 Crescenta Valley are equivalent to the safe yield of the
10 Basin. No private overlying or appropriative rights exist
11 in Verdugo Basin.

12 4.2.6.4 Eagle Rock Basin. The only measure water
13 supply to Eagle Rock Basin is import return water by reason
14 of importations by Los Angeles. Extractions by Foremost and
15 Deep Rock under the prior stipulated judgments have utilized
16 the safe yield of Eagle Rock Basin, and have maintained
17 hydrologic equilibrium therein.

18 5. DECLARATION OF RIGHTS

19 5.1 Right to Native Waters.

20 5.1.1 Los Angeles River and San Fernando Basin.

21 5.1.1.1 Los Angeles' Pueblo Right. Los Angeles, as
22 the successor to all rights, claims and powers of the
23 Spanish Pueblo de Los Angeles in regard to water rights, is
24 the owner of a prior and paramount pueblo right to the
25 surface waters of the Los Angeles River and the native
26 ground waters of San Fernando Basin to meet its reasonable
27 beneficial needs and for its inhabitants.
28

1 5.1.1.2 Extent of Pueblo Right. Pursuant to said
2 pueblo right, Los Angeles is entitled to satisfy its needs
3 and those of its inhabitants within its boundaries as from
4 time to time modified. Water which is in fact used for
5 pueblo right purposes is and shall be deemed needed for such
6 purposes.

7 5.1.1.3 Pueblo Right -- Nature and Priority of
8 Exercise. The pueblo right of Los Angeles is a prior and
9 paramount right to all of the surface waters of the Los
10 Angeles River, and native ground water in San Fernando
11 Basin, to the extent of the reasonable needs and uses of Los
12 Angeles and its inhabitants throughout the corporate area of
13 Los Angeles, as its boundaries may exist from time to time.
14 To the extent that the Basin contains native waters and
15 imported waters, it is presumed that the first water
16 extracted by Los Angeles in any water year is pursuant to
17 its pueblo right, up to the amount of the native safe yield.
18 The next extractions by Los Angeles in any year are deemed
19 to be from import return water, followed by stored water, to
20 the full extent of Los Angeles' right to such import return
21 water and stored water. In the event of need to meet water
22 requirements of its inhabitants, Los Angeles has the
23 additional right, pursuant to its pueblo right, withdraw
24 temporarily from storage Underlying Pueblo Waters, subject
25 to an obligation to replace such water as soon as practical.

26 5.1.1.4 Rights of Other Parties. No other party to
27 this action has any right in or to the surface waters of the
28

1 Los Angeles River or the native safe yield of the San
2 Fernando Basin.

3 5.1.2 Sylmar Basin Rights.

4 5.1.2.1 No Pueblo Rights. The pueblo right of Los
5 Angeles does not extend to or include ground waters in
6 Sylmar Basin.

7 5.1.2.2 Overlying Rights. Defendants Moordigian
8 and Hersch & Plumb own lands overlying Sylmar Basin and have
9 a prior correlative right to extract native waters from said
10 Basin for reasonable beneficial uses on their said overlying
11 lands. Said right is appurtenant to said overlying lands
12 and water extracted pursuant thereto may not be exported
13 from said lands nor can said right be transferred or
14 assigned separate and apart from said overlying lands.

15 5.1.2.3 Appropriative Rights of San Fernando and
16 Los Angeles. San Fernando and Los Angeles own appropriative
17 rights, of equal priority, to extract and put to reasonable
18 beneficial use for the needs of said cities and their
19 inhabitants, native waters of the Sylmar Basin in excess of
20 the exercised reasonable beneficial needs of overlying
21 users. Said appropriative rights are:

22 San Fernando 3,580 acre feet

23 Los Angeles 1,560 acre feet.

24 5.1.2.4 No Prescription. The Sylmar Basin is not
25 presently in a state of overdraft and no rights by
26 prescription exist in said Basin against any overlying or
27 appropriative water user.

1 5.1.2.5 Other Parties. No other party to this
2 action owns or possesses any right to extract native ground
3 waters from the Sylmar Basin.

4 5.1.3 Verdugo Basin Rights.

5 5.1.3.1 No Pueblo Rights. The pueblo right of Los
6 Angeles does not extend to or include ground water in
7 Verdugo Basin.

8 5.1.3.2 Prescriptive Rights of Glendale and
9 Crescenta Valley. Glendale and Crescenta Valley own
10 prescriptive rights as against each other and against all
11 private overlying or appropriative parties in the Verdugo
12 Basin to extract, with equal priority, the following
13 quantities of water from the combined safe yield of native
14 and imported waters in Verdugo Basin:

15 Glendale 3,856 acre feet

16 Crescenta Valley 3,294 acre feet.

17 5.1.3.3 Other Parties. No other party to this
18 action owns or possesses any right to extract native ground
19 waters from the Verdugo Basin.

20 5.1.4 Eagle Rock Basin Rights.

21 5.1.4.1 No Pueblo Rights. The pueblo right of Los
22 Angeles does not extend to or include ground water in Eagle
23 Rock Basin.

24 5.1.4.2 No Rights in Native Waters. The Eagle Rock
25 Basin has no significant or measurable native safe yield and
26 no parties have or assert any right or claim to native
27 waters in said Basin.

28 5.2 Rights to Imported Waters.

1 5.2.1 San Fernando Basin Rights.

2 5.2.1.1 Rights to Recapture Import Return Water.

3 Los Angeles, Glendale, Burbank and San Fernando have each
4 caused imported waters to be brought into ULARA and to be
5 delivered to lands overlying the San Fernando Basin, with
6 the result that percolation and return flow of such
7 delivered water has caused imported waters to become a part
8 of the safe yield of San Fernando Basin. Each of said
9 parties has a right to extract from San Fernando Basin that
10 portion of the safe yield of the Basin attributable to such
11 import return waters.

12 5.2.1.2 Rights to Store and Recapture Stored Water.

13 Los Angeles has heretofore spread imported water directly in
14 San Fernando Basin. Los Angeles, Glendale, Burbank and San
15 Fernando each have rights to store water in San Fernando
16 Basin by direct spreading or in lieu practices. To the
17 extent of any future spreading or in lieu storage of import
18 water or reclaimed water by Los Angeles, Glendale, Burbank
19 or San Fernando, the party causing said water to be so
20 stored shall have a right to extract an equivalent amount of
21 ground water from San Fernando Basin. The right to extract
22 waters attributable to such storage practices is an
23 undivided right to a quantity of water in San Fernando Basin
24 equal to the amount of such Stored Water to the credit of
25 any party, as reflected in Watermaster records.

26 5.2.1.3 Calculation of Import Return Water and
27 Stored Water Credits. The extraction rights of Los Angeles,
28 Glendale, Burbank and San Fernando in San Fernando Basin in

1 any year, insofar as such rights are based upon import
2 return water, shall only extend to the amount of any
3 accumulated import return water credit of such party by
4 reason of imported water delivered after September 30, 1977.
5 The annual credit for such import return water shall be
6 calculated by Watermaster based upon the amount of delivered
7 water during the preceding water year, as follows:

8 Los Angeles: 20.8% of all delivered water
9 (including reclaimed water) to
10 valley fill lands of San
11 Fernando Basin.

12 San Fernando: 26.3% of all imported and
13 reclaimed water delivered to
14 valley-fill lands of San
15 Fernando Basin.

16 Burbank: 20.0% of all delivered water
17 (including reclaimed water) to
18 San Fernando Basin and its
19 tributary hill and mountain
20 areas.

21 Glendale: 20.0% of all delivered water
22 (including reclaimed water) to
23 San Fernando Basin and its
24 tributary hill and mountain
25 areas (i.e., total delivered
26 water, [including reclaimed
27 water], less 105% of total
28 sales by Glendale in Verdugo
Basin and its tributary
hills).

In calculating Stored Water credit, by reason of direct
spreading of imported or reclaimed water, Watermaster shall
assume that 100% of such spread water reached the ground
water in the year spread.

5.2.1.4 Cumulative Import Return Water Credits.

Any import return water which is not extracted in a given
water year shall be carried over, separately accounted for,

1 and maintained as a cumulative credit for purposes of future
2 extractions.

3 5.2.1.5 Overextractions. In addition to
4 extractions of stored water, Glendale, Burbank or San
5 Fernando may, in any water year, extract from San Fernando
6 Basin an amount not exceeding 10% of such party's last
7 annual credit for import return water, subject, however, to
8 an obligation to replace such overextraction by reduced
9 extractions during the next succeeding water year. Any such
10 overextraction which is not so replaced shall constitute
11 physical solution water, which shall be deemed to have been
12 extracted in said subsequent water year.

13 5.2.1.6 Private Defendant. No private defendant is
14 entitled to extract water from the San Fernando Basin on
15 account of the importation of water thereto by overlying
16 public entities.

17 5.2.2 Sylmar Basin Rights.

18 5.2.2.1 Rights to Recapture Import Return Waters.
19 Los Angeles and San Fernando have caused imported waters to
20 be brought into ULARA and delivered to lands overlying the
21 Sylmar Basin with the result that percolation and return
22 flow of such delivered water has caused imported waters to
23 become a part of the safe yield of Sylmar Basin. Los
24 Angeles and San Fernando are entitled to recover from Sylmar
25 Basin such imported return waters. In calculating the
26 annual entitlement to recapture such import return water,
27 Los Angeles and San Fernando shall be entitled to 35.7% of
28 the preceding water year's imported water delivered by such

1 party to lands overlying Sylmar Basin. Thus, by way of
2 example, in 1976-77, Los Angeles was entitled to extract
3 2370 acre feet of ground water from Sylmar Basin, based on
4 delivery to lands overlying said Basin of 6640 acre feet
5 during 1975-76. The quantity of San Fernando's imported
6 water to, and the return flow therefrom, in the Sylmar Basin
7 in the past has been of such minimal quantities that it has
8 not been calculated.

9 5.2.2.2 Rights to Store and Recapture Stored Water.

10 Los Angeles and San Fernando each have the right to store
11 water in Sylmar Basin equivalent to their rights in San
12 Fernando Basin under paragraph 5.2.1.2 hereof.

13 5.2.2.3 Carry Over. Said right to recapture stored
14 water, import return water and other safe yield waters to
15 which a party is entitled, if not exercised in a given year,
16 can be carried over for not to exceed five years, if the
17 underflow through Sylmar Notch does not exceed 400 acre feet
18 per year.

19 5.2.2.4 Private Defendants. No private defendant
20 is entitled to extract water from within the Sylmar Basin on
21 account of the importation of water thereto by overlying
22 public entities.

23 5.2.3 Verdugo Basin Rights.

24 5.2.3.1 Glendale and Crescenta Valley. Glendale
25 and Crescenta Valley own appropriative and prescriptive
26 rights in and to the total safe yield of Verdugo Basin,
27 without regard as to the portions thereof derived from
28 native water and from delivered imported waters,

1 notwithstanding that both of said parties have caused waters
2 to be imported and delivered on lands overlying Verdugo
3 Basin. Said aggregate rights are as declared in Paragraph
4 5.1.3.2 of these Conclusions.

5 5.2.3.2 Los Angeles. Los Angeles may have a right
6 to recapture its import return waters by reason of delivered
7 import water in the Basin, based upon imports during and
8 after water year 1977-78, upon application to Watermaster
9 not later than the year following such import and on
10 subsequent order after hearing by the Court.

11 5.2.3.3 Private Defendants. No private defendant,
12 as such, is entitled to extract water from within the
13 Verdugo Basin on account of the importation of water thereto
14 by overlying public entities.

15 5.2.4 Eagle Rock Basin Rights.

16 5.2.4.1 Los Angeles. Los Angeles has caused
17 imported water to be delivered for use on lands overlying
18 Eagle Rock Basin and return flow from said delivered
19 imported water constitutes the entire safe yield of Eagle
20 Rock Basin. Los Angeles has the right to extract or cause
21 to be extracted the entire safe yield of Eagle Rock Basin.

22 5.2.4.2 Private Defendants. No private defendants
23 have a right to extract water from within Eagle Rock Basin,
24 except pursuant to the physical solution herein.

25 6. INJUNCTIONS

26 Each of the parties named or referred to in this Part 6, its
27 officers, agents, employees and officials is, and they are, hereby
28

1 ENJOINED and RESTRAINED from doing or causing to be done any of the
2 acts herein specified:

3 6.1 Each and Every Defendant -- from diverting the surface
4 waters of the Los Angeles River or extracting the native waters of SAN
5 FERNANDO BASIN, or in any manner interfering with the prior and
6 paramount pueblo right of Los Angeles in and to such waters, except
7 pursuant to the physical solution herein decreed.

8 6.2 Each and Every Private Defendant -- from extracting ground
9 water from the SAN FERNANDO, VERDUGO, or EAGLE ROCK BASINS, except
10 pursuant to physical solution provisions hereof.

11 6.3 Defaulting and Disclaiming Parties (listed in Attachments
12 "C" and "D") -- from diverting or extracting water within ULARA,
13 except pursuant to the physical solution herein decreed.

14 6.4 Glendale -- from extracting ground water from SAN FERNANDO
15 BASIN in any water year in quantities exceeding its import return
16 water credit and any stored water credit, except pursuant to the
17 physical solution; and from extracting water from VERDUGO BASIN n
18 excess of its appropriative and prescriptive right declared herein.

19 6.5 Burbank -- from extracting ground water from SAN FERNANDO
20 BASIN in any water year in quantities exceeding its import return
21 water credit and any stored water credit, except pursuant to the
22 physical solution decreed herein.

23 6.6 San Fernando -- from extracting ground water from SAN
24 FERNANDO BASIN in any water year in quantities exceeding its import
25 return water credit and any stored water credit, except pursuant to
26 the physical solution herein decreed.

1 6.7 Crescenta Valley -- from extracting ground water from
2 VERDUGO BASIN in any year in excess of its appropriative and
3 prescriptive right declared herein.

4 6.8 Los Angeles -- from extracting ground water from SAN
5 FERNANDO BASIN in any year in excess of the native safe yield, plus
6 any import return water credit and stored water credit of said city;
7 provided, that where the needs of Los Angeles require the extraction
8 of Underlying Pueblo Waters, Los Angeles may extract such water
9 subject to an obligation to replace such excess as soon as practical;
10 and from extracting ground water from VERDUGO BASIN in excess of any
11 credit for import return water which Los Angeles may acquire by reason
12 of delivery of imported water for use overlying said basin, as
13 hereinafter confirmed on application to Watermaster and by subsequent
14 order of the Court.

15 6.9 Non-consumptive and Minimal Consumptive Use Parties. The
16 parties listed in Attachment "F" are enjoined from extracting water
17 from San Fernando Basin, except in accordance with practices specified
18 in Attachment "F", or pursuant to the physical solution herein
19 decreed.
20
21
22
23
24
25
26
27
28

1 7. CONTINUING JURISDICTION

2 7.1 Jurisdiction Reserved. Full jurisdiction, power and
3 authority are retained by and reserved to the Court for purposes of
4 enabling the Court upon application of any party or of the Watermaster
5 by motion and upon at least 30 days' notice thereof, and after hearing
6 thereon, to make such further or supplemental orders or directions as
7 may be necessary or appropriate, for interpretation, enforcement or
8 carrying out of this Judgment, and to modify, amend or amplify any of
9 the provisions of this Judgment or to add to the provisions thereof
10 consistent with the rights herein decreed; provided, however, that no
11 such modification, amendment or amplification shall result in a change
12 in the provisions of Section 5.2.1.3 or 9.2.1 hereof.

13
14 8. WATERMASTER

15 8.1 Designation and Appointment.

16 8.1.1 Watermaster Qualification and Appointment. A
17 qualified hydrologist, acceptable to all active public agency
18 parties hereto, will be appointed by subsequent order of the
19 Court to assist the Court in its administration and enforcement
20 of the provisions of this Judgment and any subsequent orders of
21 the Court entered pursuant to the Court's continuing
22 jurisdiction. Such Watermaster shall serve at the pleasure of
23 the Court, but may be removed or replaced on motion of any party
24 after hearing and showing of good cause.

25 8.2 Powers and Duties.

26 8.2.1 Scope. Subject to the continuing supervision and
27 control of the Court, Watermaster shall exercise the express
28 powers, and shall perform the duties, as provided in this

1 Judgment or hereafter ordered or authorized by the Court in the
2 exercise of the Court's continuing jurisdiction.

3 8.2.2 Requirement for Reports, Information and Records.

4 Watermaster may require any party to furnish such reports,
5 information and records as may be reasonably necessary to
6 determine compliance or lack of compliance by any party with the
7 provisions of this Judgment.

8 8.2.3 Requirement of Measuring Devices. Watermaster shall

9 require all parties owning or operating any facilities for
10 extraction of ground water from ULARA to install and maintain at
11 all times in good working order, at such party's own expense,
12 appropriate meters or other measuring devices satisfactory to the
13 Watermaster.

14 8.2.4 Inspection by Watermaster. Watermaster shall make

15 inspections of (a) ground water extraction facilities and
16 measuring devices of any party, and (b) water use practices by
17 any party under physical solution conditions, at such times and
18 as often as may be reasonable under the circumstances to verify
19 reported data and practices of such party. Watermaster shall
20 also identify and report on any new or proposed new ground water
21 extractions by any party or non-party.

22 8.2.5 Policies and Procedures. Watermaster shall, with the

23 advice and consent of the Administrative Committee, adopt and
24 amend from time to time Policies and Procedures as may be
25 reasonably necessary to guide Watermaster in performance of its
26 duties, powers and responsibilities under the provisions of this
27 judgment.

1 8.2.6 Data Collection. Watermaster shall collect and
2 verify data relative to conditions of ULARA and its ground water
3 basins from the parties and one or more other governmental
4 agencies. Where necessary, and upon approval of the
5 Administrative Committee, Watermaster may develop supplemental
6 data.

7 8.2.7 Cooperation With Other Agencies. Watermaster may act
8 jointly or cooperate with agencies of the United States and the
9 State of California or any political subdivisions, municipalities
10 or districts (including any party) to secure or exchange data to
11 the end that the purpose of this Judgment, including its physical
12 solution, may be fully and economically carried out.

13 8.2.8 Accounting for Non-consumptive Use. Watermaster
14 shall calculate and report annually the non-consumptive and
15 consumptive uses of extracted ground water by each party listed
16 in Attachment "F".

17 8.2.9 Accounting for Accumulated Import Return Water and
18 Stored Water. Watermaster shall record and verify additions,
19 extractions and losses and maintain an annual and cumulative
20 account of all (a) stored water and (b) import return water in
21 San Fernando Basin. Calculation of losses attributable to Stored
22 Water shall be approved by the Administrative Committee or by
23 subsequent order of the Court. For purposes of such accounting,
24 extractions in any water year by Glendale, Burbank or San
25 Fernando shall be assumed to be first from accumulated import
26 return water, second from stored water, and finally pursuant to
27 physical solution; provided, that any such city may, by written
28

1 notice of intent to Watermaster, alter said priority of
2 extractions as between import return water and stored water.

3 8.2.10 Recalculation of Safe Yield. Upon request of the
4 Administrative Committee, or on motion of any party and
5 subsequent Court order, Watermaster shall recalculate safe yield
6 of any basin within ULARA. If there has been a material long-
7 term change in storage over a base period (excluding any effects
8 of stored water) in San Fernando Basin the safe yield shall be
9 adjusted by making a corresponding change in native safe yield of
10 the Basin.

11 8.2.11 Watermaster Report. Watermaster shall prepare
12 annually and (after review and approval by Administrative
13 Committee) cause to be served on all active parties, on or before
14 May 1, a report of hydrologic conditions and Watermaster
15 activities within ULARA during the preceding water year.
16 Watermaster's annual report shall contain such information as may
17 be requested by the Administrative Committee, required by
18 Watermaster Policies and Procedures or specified by subsequent
19 order of this Court.

20 8.2.12 Active Party List. Watermaster shall maintain at
21 all times a current list of active parties and their addresses.

22 8.3 Administrative Committee.

23 8.3.1 Committee to be Formed. An Administrative Committee
24 shall be formed to advise with, request or consent to, and review
25 actions of Watermaster. Said Administrative Committee shall be
26 composed of one representative of each party having a right to
27 extract ground water from ULARA, apart from the physical
28

1 solution. Any such party not desiring to participate in such
2 committee shall so advise Watermaster in writing.

3 8.3.2 Organization and Voting. The Administrative
4 Committee shall organize and adopt appropriate rules and
5 regulations to be included in Watermaster Policies and
6 Procedures. Action of the Administrative Committee shall be by
7 unanimous vote of its members, or of the members affected in the
8 case of an action which affects one or more basins but less than
9 all of ULARA. In the event of inability of the Committee to
10 reach a unanimous position, the matter may, at the request of
11 Watermaster or any party, be referred to the Court for resolution
12 by subsequent order after notice and hearing.

13 8.3.3 Function and Powers. The Administrative Committee
14 shall be consulted by Watermaster and shall request or approve
15 all discretionary Watermaster determinations. In the event of
16 disagreement between Watermaster and the Administrative
17 Committee, the matter shall be submitted to the Court for review
18 and resolution.

19 8.4 Watermaster Budget and Assessments.

20 8.4.1 Watermaster's Proposed Budget. Watermaster shall, on
21 or before May 1, prepare and submit to the Administrative
22 Committee a budget for the ensuing water year. The budget shall
23 be determined for each basin separately and allocated between the
24 separate ground water basins. The total for each basin shall be
25 allocated between the public agencies in proportion to their use
26 of ground water from such basin during the preceding water year.

27 8.4.2 Objections and Review. Any party who objects to the
28 proposed budget, or to such party's allocable share thereof, may

1 apply to the Court within thirty (30) days of receipt of the
2 proposed budget from Watermaster for review and modification.
3 Any such objection shall be duly noticed to all interested
4 parties and heard within thirty (30) days of notice.

5 8.4.3 Notice of Assessment. After thirty (30) days from
6 delivery of Watermaster's proposed budget, or after the order of
7 Court settling any objections thereto, Watermaster shall serve
8 notice on all parties to be assessed of the amount of assessment
9 and the required payment schedule.

10 8.4.4 Payment. All assessments for Watermaster expenses
11 shall be payable on the dates designated in the notice of
12 assessment.

13 8.5 Review of Watermaster Activities.

14 8.5.1 Review Procedures. All actions of Watermaster (other
15 than budget and assessment matters, which are provided for in
16 Paragraph 8.4.2) shall be subject to review by the Court on its
17 own motion or on motion by any party, as follows:

18 8.5.1.1 Noticed Motion. Any party may, by a
19 regularly noticed motion, apply to the court for review of
20 any Watermaster's action. Notice of such motion shall be
21 served personally or mailed to Watermaster and to all active
22 parties.

23 8.5.1.2 De Novo Nature of Proceedings. Upon the
24 filing of any such motion, the Court shall require the
25 moving party to notify the active parties of a date for
26 taking evidence and argument, and on the date so designated
27 shall review de novo the question at issue. Watermaster's
28 findings or decision, if any, may be received in evidence at

1 said hearing, but shall not constitute presumptive or prima
2 facie proof of any fact in issue.

3 8.5.1.3 Decision. The decision of the Court in
4 such proceeding shall be an appealable supplemental order in
5 this case. When the same is final, it shall be binding upon
6 the Watermaster and all parties.

8 9. PHYSICAL SOLUTION

9 9.1 Circumstances Indicating Need for Physical Solution. During
10 the period between 1913 and 1955, when there existed temporary surplus
11 waters in the San Fernando Basin, overlying cities and private
12 overlying landowners undertook to install and operate water
13 extraction, storage and transmission facilities to utilize such
14 temporary surplus waters. If the injunction against interference with
15 the prior and paramount rights of Los Angeles to the waters of the San
16 Fernando and Eagle Rock Basins were strictly enforced, the value and
17 utility of those water systems and facilities would be lost or
18 impaired. It is appropriate to allow continued limited extraction
19 from the San Fernando and Eagle Rock Basins by parties other than Los
20 Angeles, subject to assurance that Los Angeles will be compensated for
21 any cost, expense or loss incurred as a result thereof.

22 9.2 Prior Stipulated Judgments. Several defendants heretofore
23 entered into separate stipulated judgments herein, during the period
24 June, 1958 to November, 1965, each of which judgments was subject to
25 the court's continuing jurisdiction. Without modification of the
26 substantive terms of said prior judgments, the same are categorized
27 and merged into this judgment and superseded hereby in the exercise of
28 the Court's continuing jurisdiction, as follows:

1 9.2.1 Eagle Rock Basin Parties. Stipulating defendants
2 Foremost and Deep Rock have extracted water from Eagle Rock
3 Basin, whose entire safe yield consist of import return waters of
4 Los Angeles. Said parties may continue to extract water from
5 Eagle Rock Basin to supply their bottled drinking water
6 requirements upon filing all required reports on said extraction
7 with Watermaster and Los Angeles and paying Los Angeles annually
8 an amount equal to \$21.78 per acre foot for the first 200 acre
9 feet, and \$39.20 per acre foot for any additional water extracted
10 in any water year.

11 9.2.2 Non-consumptive or Minimal-consumptive Operations.
12 Certain stipulating defendants extract water from San Fernando
13 Basin for uses which are either non-consumptive or have a minimal
14 consumptive impact. Each of said defendants who have a minimal
15 consumptive impact has a connection to the City of Los Angeles
16 water system and purchases annually an amount of water at least
17 equivalent to the consumptive loss of extracted ground water.
18 Said defendants are:

19 Non-Consumptive

20 Walt Disney Productions

21 Sears, Roebuck & Co.
22
23
24
25
26
27
28

1 Minimal-Consumptive

2 Conrock Co., for itself and as successor to California
3 Materials Co.; Constance Ray White and Lee L. White;
4 Mary L. Akmadzich and Peter J. Akmadzich
5 Livingston Rock & Gravel, for itself and as successor
6 to Los Angeles Land & Water Co.

7 The nature of each said defendant's water use practices is
8 described in Attachment "F". Subject to required reports to and
9 inspections by Watermaster, each said defendant may continue
10 extractions for said purposes so long as in any year such party
11 continues such non-consumptive or minimal-consumptive use
12 practices.

13 9.2.3 Abandoned Operations. The following stipulating
14 defendants have ceased extracting water from San Fernando Basin
15 and no further need exists for physical solution in their behalf:

16 Knickerbocker Plastic Company, Inc.
17 Carnation Company
18 Hidden Hills Mutual Water Company
19 Southern Pacific Railroad Co.
20 Pacific Fruit Express Co.

21 9.3 Private Defendants. There are private defendants who
22 installed during the years of temporary surplus relatively substantial
23 facilities to extract and utilize ground waters of San Fernando Basin.
24 Said defendants may continue their extractions for consumptive use up
25 to the indicated annual quantities upon payment of compensation to the
26 appropriate city wherein their use of water is principally located, on
27 the basis of the following physical solution:
28

9.3.1 Private Defendants and Appropriate Cities. Said private defendants and the cities to which their said extractions shall be charged and to which physical solution payment shall be made are:

			Annual Quantities (acre feet)
Los Angeles	-	Toluca Lake	100
		Sportsman's Lodge	25
		Van de Kamp	120
Glendale	-	Forest Lawn	400
		Southern Service Co.	75
Burbank	-	Valhalla	300
		Lockheed	25

Provided that said private defendants shall not develop, install or operate new wells or other facilities which will increase existing extraction capacities.

9.3.2 Reports and Accounting. All extractions pursuant to this physical solution shall be subject to such reasonable reports and inspection as may be required by Watermaster.

9.3.3 Payment. Water extracted pursuant hereto shall be compensated for by annual payment to Los Angeles, and as agreed upon pursuant to paragraph 9.3.3.2 to Glendale and Burbank, thirty days from day of notice by Watermaster, on the following basis:

9.3.3.1 Los Angeles. An amount equal to what such party would have paid had water been delivered from the distribution system of Los Angeles, less the average energy cost of extraction of ground water by Los Angeles from San Fernando.

1 9.3.3.2 Glendale or Burbank. An amount equal to
2 the sum of the amount payable to Los Angeles under paragraph
3 9.4 hereof and any additional charges or conditions agreed
4 upon by either such city and any private defendant.

5 9.4 Glendale and Burbank. Glendale and Burbank have each
6 installed, during said years of temporary surplus, substantial
7 facilities to extract and utilize waters of the San Fernando Basin.
8 In addition to the use of such facilities to recover import return
9 water, the distribution facilities of such cities can be most
10 efficiently utilized by relying upon the San Fernando Basin for
11 peaking supplies in order to reduce the need for extensive new surface
12 storage. Glendale and Burbank may extract annual quantities of ground
13 water from the San Fernando Basin, in addition to their rights to
14 import return water or stored water, as heretofore declared, in
15 quantities up to:

16 Glendale 5,500 acre feet

17 Burbank 4,200 acre feet;

18 provided, that said cities shall compensate Los Angeles annually for
19 any such excess extractions over and above their declared rights at a
20 rate per acre foot equal to the average MWD price for municipal and
21 industrial water delivered to Los Angeles during the fiscal year, less
22 the average energy cost of extraction of ground water by Los Angeles
23 from San Fernando Basin during the preceding fiscal year. Provided,
24 further, that ground water extracted by Forest Lawn and Southern
25 Service Co. shall be included in the amount taken by Glendale, and the
26 amount extracted by Valhalla and Lockheed shall be included in the
27 amount taken by Burbank. All water taken by Glendale or Burbank
28 pursuant hereto shall be charged against Los Angeles' rights in the

1 year of such extractions.

2 In the event of emergency, and upon stipulation or motion
3 and subsequent order of the Court, said quantities may be enlarged in
4 any year.

5 9.5 San Fernando. San Fernando delivers imported water on lands
6 overlying the San Fernando Basin, by reason of which said city has a
7 right to recover import return water. San Fernando does not have
8 water extraction facilities in the San Fernando Basin, nor would it be
9 economically or hydrologically useful for such facilities to be
10 installed. Both San Fernando and Los Angeles have decreed
11 appropriative rights and extraction facilities in the Sylmar Basin.
12 San Fernando may extract ground water from the Sylmar Basin in a
13 quantity sufficient to utilize its San Fernando Basin import return
14 water credit, and Los Angeles shall reduce its Sylmar Basin
15 extractions by an equivalent amount and receive an offsetting
16 entitlement for additional San Fernando Basin extractions.

17 9.6 Effective Date. This physical solution shall be effective
18 on October 1, 1978, based upon extractions during water year 1978-79.

20 10. MISCELLANEOUS PROVISIONS

21 10.1 Designation of Address for Notice and Service. Each party
22 shall designate the name and address to be used for purposes of all
23 subsequent notices and service herein by a separate designation to be
24 filed with Watermaster within thirty (30) days after Notice of Entry
25 of Judgment has been served. Said designation may be changed from
26 time to time by filing a written notice of such change with the
27 Watermaster. Any party desiring to be relieved of receiving notices
28 of Watermaster activity may file a waiver of notice on a form to be

1 provided by Watermaster. Thereafter such party shall be removed from
2 the Active Party list. For purposes of service on any party or active
3 party by the Watermaster, by any other party, or by the Court, of any
4 item required to be served upon or delivered to such party or active
5 party under or pursuant to the Judgment, such service shall be made
6 personally or by deposit in the United States mail, first class,
7 postage prepaid, addressed to the designee and at the address in the
8 latest designation filed by such party or active party.

9 10.2 Notice of Change in Hydrologic Condition -- Sylmar Basin.

10 If Sylmar Basin shall hereafter be in a condition of overdraft due to
11 increased or concurrent appropriations by Los Angeles and San
12 Fernando, Watermaster shall so notify the Court and parties concerned,
13 and notice of such overdraft and the adverse effect thereof on private
14 overlying rights shall be given by said cities as prescribed by
15 subsequent order of the Court, after notice and hearing.

16 10.3 Judgment Binding on Successors. This Judgment and all
17 provisions thereof are applicable to and binding upon not only the
18 parties to this action, but also upon their respective heirs,
19 executors, administrators, successors, assigns, lessees and licensees
20 and upon the agents, employees and attorneys in fact of all such
21 persons.

22 10.4 Costs. Ordinary court costs shall be borne by each party,
23 and reference costs shall be borne as heretofore allocated and paid.

24 DATED: _____, 1979.

25
26 _____
27 Judge of the Superior Court
28

TABLE OF CONTENTS

	<u>Page</u>
1. RECITALS	1
2. DEFINITIONS AND ATTACHMENTS	1
2.1 Definition of Terms	1
2.2 List of Attachments	6
3. PARTIES.	6
3.1 Defaulting and Disclaiming Defendants	6
3.2 No Rights Other Than as Herein Declared	6
4. DECLARATION RE GEOLOGY AND HYDROLOGY	6
4.1 Geology	6
4.1.1 ULARA	6
4.1.2 San Fernando Basin	7
4.1.3 Sylmar Basin	8
4.1.4 Verdugo Basin	8
4.1.5 Eagle Rock Basin	9
4.2 Hydrology	9
4.2.1 Water Supply	9
4.2.2 Ground Water Movement	9
4.2.3 Separate Ground Water Basins	10
4.2.4 Safe Yield and Native Safe Yield	11
4.2.5 Separate Basins -- Separate Rights	11
4.2.6 Hydrologic Condition of Basins	11
4.2.6.1 San Fernando Basin	11
4.2.6.2 Sylmar Basin	12
4.2.6.3 Verdugo Basin	12
4.2.6.4 Eagle Rock Basin	12
5. DECLARATION OF RIGHTS	12

	<u>Page</u>
5.1 Right to Native Waters	12
5.1.1 Los Angeles River and San Fernando Basin. . .	12
5.1.1.1 Los Angeles' Pueblo Right.	12
5.1.1.2 Extent of Pueblo Right	13
5.1.1.3 Pueblo Right -- Nature and	
Priority of Exercise	13
5.1.1.4 Rights of Other Parties	14
5.1.2 Sylmar Basin Rights	14
5.1.2.1 No Pueblo Rights	14
5.1.2.2 Overlying Rights	14
5.1.2.3 Appropriative Rights of San	
Fernando and Los Angeles	14
5.1.2.4 No Prescription	15
5.1.2.5 Other Parties	15
5.1.3 Verdugo Basin Rights	15
5.1.3.1 No Pueblo Rights	15
5.1.3.2 Prescriptive Rights of Glendale	
and Crescenta Valley	15
5.1.3.3 Other Parties	15
5.1.4 Eagle Rock Basin Rights	15
5.1.4.1 No Pueblo Rights	15
5.1.4.2 No Rights in Native Waters	16
5.2 Rights to Imported Waters	16
5.2.1 San Fernando Basin Rights	16
5.2.1.1 Rights to Recapture Import Return	
Water	16
5.2.1.2 Rights to Store and Recapture	
Stored Water	16

1			
2	5.2.1.3	Calculation of Import Return	
3		Water and Stored Water Credits .	17
4	5.2.1.4	Cumulative Import Return	
5		Water Credits	18
6	5.2.1.5	Overextractions	18
7	5.2.1.6	Private Defendant	18
8	5.2.2	Sylmar Basin Rights	18
9	5.2.2.1	Rights to Recapture Import	
10		Return Waters	18
11	5.2.2.2	Rights to Store and Recapture	
12		Stored Water	19
13	5.2.2.3	Carry Over	19
14	5.2.2.4	Private Defendants	19
15	5.2.3	Verdugo Basin Rights	20
16	5.2.3.1	Glendale and Crescenta Valley . .	20
17	5.2.3.2	Los Angeles	20
18	5.2.3.3	Private Defendants	20
19	5.2.4	Eagle Rock Basin Rights	20
20	5.2.4.1	Los Angeles	20
21	5.2.4.2	Private Defendants	21
22	6.	INJUNCTIONS	21
23	6.1	Each and Every Defendant	21
24	6.2	Each and Every Private Defendant	21
25	6.3	Defaulting and Disclaiming Parties	21
26	6.4	Glendale	21
27	6.5	Burbank	21
28	6.6	San Fernando	22

1			
2	6.7	Crescenta Valley	22
3	6.8	Los Angeles	22
4	6.9	Non-Consumptive and Minimal Consumptive Use Parties	22
5	7.	CONTINUING JURISDICTION	23
6	7.1	Jurisdiction Reserved	23
7	8.	WATERMASTER	23
8	8.1	Designation and Appointment	23
9	8.1.1	Watermaster Appointment	23
10	8.2	Power and Duties	23
11	8.2.1	Scope	23
12	8.2.2	Requirement for Reports, Information and	
13		Records	24
14	8.2.3	Requirement of Measuring Devices	24
15	8.2.4	Inspection by Watermaster	24
16	8.2.5	Policies and Procedures	24
17	8.2.6	Data Collection	25
18	8.2.7	Cooperation With Other Agencies	25
19	8.2.8	Accounting for Non-consumptive Use	25
20	8.2.9	Accounting for Accumulated Import Return	
21		Water and Stored Water	25
22	8.2.10	Recalculation of Safe Yield	26
23	8.2.11	Watermaster Report	26
24	8.2.12	Active Party List	26
25	8.3	Administrative Committee	26
26	8.3.1	Committee to be Formed	26
27	8.3.2	Organization and Voting	27
28	8.3.3	Function and Powers	27

	<u>Page</u>
8.4 Watermaster Budget and Assessments	27
8.4.1 Watermaster's Proposed Budget	27
8.4.2 Objections and Review	28
8.4.3 Notice of Assessment	28
8.4.4 Payment	28
8.5 Review of Watermaster Activities	28
8.5.1 Review Procedures	28
8.5.1.1 Noticed Motion	28
8.5.1.2 De Novo Nature of Proceedings	28
8.5.1.3 Decision	29
9. PHYSICAL SOLUTION	29
9.1 Circumstances Indicating Need for Physical Solution	29
9.2 Prior Stipulated Judgment	29
9.2.1 Eagle Rock Basin Parties	30
9.2.2 Non-Consumptive or Minimal-Consumptive Operations	30
9.2.3 Abandoned Operations	31
9.3 Private Defendants	31
9.3.1 Private Defendants and Appropriate Cities .	32
9.3.2 Reports and Accounting	32
9.3.3 Payment	32
9.3.3.1 Los Angeles	32
9.3.3.2 Glendale or Burbank	33
9.4 Glendale and Burbank	33
9.5 San Fernando	34
9.6 Effective Date	34
10. MISCELLANEOUS PROVISIONS	34

	<u>Page</u>
10.1 Designation of Address for Notice and Service . . .	34
10.2 Notice of Change in Hydrologic Condition--	
Sylmar Basin	35
10.3 Judgment Binding on Successors	35
10.4 Costs	35

ATTACHMENTS

"A" -- Map entitled "Upper Los Angeles River Area", showing separate basins therein	36
"B" -- List of "Dismissed Parties"	37
"C" -- List of "Defaulted Parties"	39
"D" -- List of "Disclaiming Parties"	41
"E" -- List of "Prior Stipulated Judgment"	42
"F" -- List of "Stipulated Non-consumptive or Minimal- consumptive Use Practices"	43
"G" -- Map entitled "Place of Use and Service Area of Private Defendants"	45
"H" -- Map entitled "Public Agency Water Service Areas" . .	46



Appendix B: Rockhaven Well Operation & Water Sale Agreement

Crescenta Valley Water District 2020 Urban Water Management Plan

CITY OF GLENDALE
AND
CRESCENTA VALLEY WATER DISTRICT
ROCKHAVEN WELL OPERATION
AND WATER PURCHASE/SALE AGREEMENT

This Agreement for the operation of the Rockhaven Well and Water Purchase/Sale Agreement ("Agreement"), is made and entered between the City of Glendale acting by and through Glendale Water and Power (interchangeably referred to as "Glendale" or "GWP") and Crescenta Valley Water District (referred to as "District") (also referred to as each a "PARTY" and collectively, the "PARTIES"), on this ____ day of _____, 2015 ("Effective Date"), with reference to the following facts and intentions, which the PARTIES agree are true and correct to the best of their knowledge and belief:

RECITALS

- A. The groundwater rights of District and Glendale within the Verdugo Basin located within the Upper Los Angeles River Watershed in Los Angeles County ("Verdugo Basin") are defined by the January 26, 1979 Judgment in Los Angeles County Superior Court Case No. 650079, entitled *City of Los Angeles, a Municipal Corporation v. City of San Fernando, et. al.* ("Judgment"). The Judgment is incorporated in the Agreement by this reference as though fully set forth herein.
- B. District and Glendale are the only parties with rights in and to the Verdugo Basin. The Judgment provides that the total Safe-Yield for the Verdugo Basin is 7,150 acre-feet per year ("AF/Y"). The Judgment further adjudicates the rights of the PARTIES to the Verdugo Basin and allocates the entire Safe Yield between them.
- C. Each PARTY holds adjudicated water rights in and to the Verdugo Basin as follows: 3,856 AF/Y for GWP and 3,294 AF/Y for District.
- D. In 2011, GWP constructed a groundwater well, commonly known as the Rockhaven Well ("Well"), at 2740 Hermosa Avenue in order to pump groundwater from the Verdugo Basin for its use.
- E. The Well is capable of producing groundwater, however, the water is contaminated with nitrates, rendering the groundwater from the Well unsuitable for reasonable use without proper treatment.
- F. The District desires to operate the Well and its existing infrastructure for GWP and construct additional facilities and features through which groundwater pumped at the Well can be purchased by the District and delivered to District's nitrate treatment facility pursuant to the terms and conditions as set forth in this Agreement and District may thereafter make use of such treated water for its use.

NOW, THEREFORE, in consideration of the foregoing recitals, which are incorporated into the operative provisions of this Agreement by this reference, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the PARTIES hereto agree as follows:

AGREEMENT

1. ADJUDICATED RIGHTS.

- 1.1 District recognizes and acknowledges Glendale's right to pump 3,856 AF/Y from the Verdugo Basin under the Judgment.
- 1.2 Glendale recognizes and acknowledges District's right to pump 3,294 AF/Y from the Verdugo Basin.
- 1.3 The PARTIES acknowledge that they are each entitled to pump no more than their rights as set forth herein, per the Judgment.
- 1.4 District acknowledges and agrees that nothing in this Agreement, or otherwise, shall be construed as a past, present, or future, abandonment, forfeiture or waiver by Glendale of its rights, nor any portion thereof, to the 3,856 AF/Y from the Verdugo Basin. District further acknowledges and agrees that District's past, present or future pumping from the Verdugo Basin in excess of District's right at 3,294 AF/Y shall not give rise to any right, claim or interest by District to any quantity of water in excess of District's right as set forth herein per the Judgment.

2. **TERM.** The term of this Agreement shall be for a period of 25 years commencing on the Effective Date; provided, however, that PARTIES may terminate this Agreement pursuant to Article 10, below.

3. **FINANCAL.** GWP shall invoice the District on a monthly basis, an amount based on the following three (3) components and the Five Year Cost Agreement as shown in Exhibit "A". GWP shall invoice the District using the sample form in Exhibit "B".

- a. **Existing Well and Infrastructure Cost.** District agrees to reimburse GWP for the original cost of construction of the Well and existing facilities and features thereto ("Existing Infrastructure"). The amount to be reimbursed shall be based on the 50-year life cycle of the Existing Infrastructure over the 25-year term of the lease and an agreed upon interest rate on investment. In other words, this component of the monthly payment will be 1/600 of the original cost of construction, and at the conclusion of the original term of this Agreement, half the cost will be repaid.

District acknowledges and agrees that payments made pursuant to this section shall not cause or vest any ownership interest in District in the Well. District shall own the improvements constructed by District pursuant to Section 4 of this Agreement.

- b. **Water Usage Cost.** District agrees to pay GWP for the groundwater produced from the Well at a reasonably consistent rate equal to or better than 225 gallons per minute, at a rate per acre-foot as shown in Exhibit "A".

District agrees to pay GWP for the groundwater produced, if the Well is unable to produce water at a reasonably consistent rate of 225 gallons per minute, at a rate per acre-foot as shown in Exhibit "A".

District acknowledges and agrees that the water pumped from the well shall be from the Glendale adjudicated right of 3,856 AF/Y.

District acknowledges that water currently available from the Well may not be suitable for consumption, potable or agricultural use and agrees to purchase water under this Agreement and during its term on an "as is" basis.

- c. **Land Lease Cost.** District agrees to enter into a ground lease agreement ("Lease Agreement") with the City of Glendale whereby District shall lease the land necessary to carry out the intent of this Agreement. The form of the Lease Agreement is attached hereto as Exhibit "D". The cost to lease the land for the term in Section 2 is shown in Exhibit "A".

- 3.1 District agrees to pay Glendale within 30 calendar days after receiving the invoice following the first of each month.

- 3.2 These components are based on a Cost Analysis Study dated October 2014, prepared by Raftelis Financial Consultants and attached hereto as Exhibit "C". The Cost Analysis Study, the study assumptions and the components shall be reviewed and adjusted every five (5) years from the date of this agreement.

4 **IMPROVEMENTS.**

District shall, at its sole cost and expense, design and install any necessary infrastructure, equipment, facilities, or features ("Improvement(s)") including but not limited to, pumps, motors, piping, meters, small structures, electrical and telemetry systems, waste drain lines, and water mains in connection with the transportation and delivery of water from the Well to District's water treatment facility. District agrees to install a water meter at the Well to accurately record water flows in a manner acceptable to GWP. District shall obtain any necessary permits or licenses related to the construction of any Improvement at its sole cost and expense. District shall comply with all laws and regulatory standards in effect at the time of construction of any Improvement, including any requirements imposed under the California Environmental Quality Act (CEQA) and California Department of Public Health. District shall own any and all Improvements constructed.

- 5 **MAINTENANCE AND REPAIRS.** District shall, at its sole cost and expense, keep and maintain the Existing Infrastructure and any additional Improvements and shall make all necessary repairs and alterations thereto. District agrees to annually calibrate any water meter(s) installed to maintain their accuracy, and any such calibration shall be conducted in the presence of GWP staff.

- 6 **LEASE OF GLENDALE LAND BY DISTRICT.** District agrees to lease the land necessary for District to access and operate the Existing Infrastructure as well as build, maintain and operate the Improvements. The subject land is depicted in the map attached hereto as Exhibit "D". The Lease Agreement to be executed by the PARTIES shall be

concurrent to this Agreement and shall be incorporated herein by reference, for the amount and under the terms and conditions stated therein.

- 7 **WATER OPERATION.** Upon the execution of Ground Lease Agreement described in Section 6 of this Agreement, District shall be solely responsible for the cost and operations of the Existing Infrastructure and any Improvements thereon.

- 8 **GRANTS.** District shall be the lead agency for obtaining any grants from the State of California to finance the construction of the Improvements.

District shall obtain prior approval from Glendale of any future improvements not described in Section 4 of this agreement

District and GWP shall share equally the costs associated with providing matching funds as part of any grants obtained from the State of California for the project proposed herein.

The parties agree that District will apply and deduct the payments to be made by District to Glendale pursuant to Section 3 of this Agreement towards Glendale's portion of the matching funds for grants obtained pursuant to this Section 8, until such time that Glendale's matching fund portion obligation is paid in full.

- 9 **INDEMNITY.** Each PARTY agrees to indemnify, defend, and hold the other PARTY and its respective officers, employees, and agents and representatives harmless from and against any and all liability, suits, actions, proceedings, judgments, claims, losses, liens, damages, injuries (whether in contract, in tort, including personal injury, accidental death or property damage, or as part of an environmental claim, and regardless of whether the allegations are false, fraudulent or groundless), costs and expenses (including attorney fees, litigation, arbitration, mediation, appeal expenses) which in whole or in part arise out of or are connected with, or which are alleged to have arisen out of or to have been connected with, each PARTY's performance under this Agreement.

The indemnified PARTY: (i) shall promptly provide the indemnifying PARTY with written notice of any claim, demand, lawsuit, or the like for which it seeks indemnification pursuant to this Article __ and provide the indemnifying PARTY with copies of any demands, notices, summons, or legal papers received in connection with such claim, demand, lawsuit, or the like; (ii) shall not settle any such claim, demand, lawsuit, or the like without the prior written consent of the indemnifying PARTY; and (iii) shall fully cooperate with the indemnifying PARTY in the defense of the claim, demand, lawsuit, or the like. A delay in notice shall not relieve the indemnifying PARTY of its indemnity obligation, except (1) to the extent the indemnifying PARTY can show it was prejudiced by the delay; and (2) the indemnifying PARTY shall not be liable for any settlement or litigation expenses incurred before the time when notice is given. This provision shall survive expiration or termination of the Agreement.

10 **TERMINATION.**

- 10.1 **Termination Right of GWP.** GWP shall have the right to terminate this Agreement upon giving written notice of such termination to District at least ninety (90) days in advance and pursuant to the notice requirements as set forth in

Section 11.9. In the event that such termination by GWP occurs then Glendale will reimburse the depreciated cost incurred by District in connection with the construction based on the 50-year life cycle of the Improvements. Under no circumstances shall GWP have a right or interest in the District's Glenwood nitrate treatment facility.

10.2 Termination Right of District. District shall have the right to terminate this Agreement upon giving written notice of such termination to GWP at least ninety (90) days in advance, pursuant to the notice requirements as set forth in Section 11.9. In the event of such termination by District, GWP shall not be obligated to reimburse District for any costs incurred by District in the construction, or removal, as elected by District in its sole discretion, of any Improvement. Under no circumstances shall GWP have a right or interest in the District's Glenwood nitrate treatment facility.

10.3 Termination of Lease Agreement. This Agreement shall automatically be terminated upon the termination of the Lease Agreement.

11 GENERAL PROVISIONS.

11.1 Assignment. No PARTY shall assign any right or interest in this Agreement, nor delegate any duty owed, without the other PARTY'S prior written consent. Any attempted assignment or delegation shall be void and ineffective for all purposes, and shall constitute a material breach and grounds for immediate termination or suspension of this Agreement. In the event PARTIES consent to an assignment or delegation, the assignee, delegatee, or its legal representative shall agree in writing to personally assume, perform, and be bound by all of the terms of this Agreement.

11.2 Successors. Subject to the provision regarding assignment, above, this Agreement shall be binding on the heirs, executors, administrators, successors, and assigns of the respective PARTIES.

11.3 Insurance. During the term of this Agreement, District shall carry, at its own cost and expense, the following policies of insurance: (i) Insurance against loss or damage to Existing Infrastructure and any Improvements thereon, as is customarily maintained with respect to works and properties of a like character, which may be carried in conjunction with any other policies of fire and extended coverage insurance; (ii) commercial general liability (CGL) insurance with respect to District's activities in connection with this Agreement, such insurance to afford protection of up to One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) general aggregate; and (iii) Workers' Compensation insurance as necessary and required by the laws of the State of California. Upon written request, District shall deliver to GWP copies of each certificate insurance policy obtained.

11.4 No Third-Party Beneficiaries. This Agreement is for the benefit of PARTIES only, and is not intended to benefit any third parties. This Agreement does not

create, and shall not be construed to create, any rights enforceable by any person, partnership, corporation, joint venture, limited liability company or other form of organization, association or entity of any kind that is not a PARTY to this Agreement.

- 11.5 **Attorneys' Fees.** If any action at law or in equity is brought to enforce or interpret the provisions of this Agreement, the prevailing PARTY shall be entitled to reasonable attorney's fees in addition to any other relief to which it may be entitled.
- 11.6 **Construction.** The provisions of this Agreement shall be liberally construed to effectuate its purposes. The language of this Agreement shall be construed simply according to its plain meaning and shall not be construed for or against any PARTY, as each PARTY has participated in the drafting of this Agreement.
- 11.7 **Entire Agreement.** In conjunction with the matters considered herein, this Agreement, and the concurrently executed Ground Lease Agreement between the Parties, shall contain the entire understanding and agreement of the PARTIES, and there have been no promises, representations, agreements, warranties or undertakings by any of the PARTIES, either oral or written, of any character or nature binding except as stated herein and the Ground Lease Agreement. This Agreement, and/or the Ground Lease Agreement, may be modified, altered or amended only by an instrument in writing, executed by the PARTIES, and by no other means. Each PARTY waives its right to claim, contest or assert that this Agreement was modified, canceled, superseded or changed by any oral agreement, course of conduct, waiver or estoppel.
- 11.8 **Severability.** Should any part, term or provision of this Agreement or any document required herein to be executed be declared invalid, void or unenforceable, all remaining parts, terms and provisions hereof shall remain in full force and effect and shall in no way be invalidated, impaired or affected thereby.
- 11.9 **Notices.** All notices, approvals, acceptances, and other communication required or permitted under this Agreement shall be in writing and shall be deemed validly given on the date either: 1) personally delivered to the address indicated below, or 2) on the third business day following deposit, postage prepaid, using certified mail, return receipt requested, in any U.S. Postal mailbox or at any U.S. Post Office, or 3) one business day after the dispatch date by overnight delivery service, or 4) on the date of transmission by facsimile or electronic mail to the number or e-mail address provided below. All notices shall be addressed to the following:

GLENDAL WATER AND POWER
Attn: Ramon Abueg
Assistant General Manager
Glendale Water and Power
City of Glendale

141 North Glendale Ave., 4th Level
Glendale, CA 91206-4496
Facsimile: (818) 552-2852
E-mail: RAbueg@GlendaleCA.GOV

CRESCENTA VALLEY WATER DISTRICT
Attn: Dennis Erdman
General Manager
2700 Foothill Boulevard
La Crescenta, CA 91214-3516
Facsimile: (818) 248-1659
E-mail: derdman@cvwd.com

Any PARTY may change its address by giving the other PARTIES written notice of its new address as provided above.

11.10 Governing Law. This Agreement will be governed by the laws of California, without regard to conflicts of law.

11.11 Waiver. No waiver of any provision or consent to any action shall constitute a waiver of any other provision or consent to any other action, whether or not similar. No waiver or consent shall constitute a continuing waiver or consent or commit a PARTY to provide a waiver or consent in the future except to the extent specifically stated in writing. No waiver shall be binding unless executed in writing by the PARTY making the waiver, based on a full and complete disclosure of all material facts relevant to the waiver requested.

11.12 Authorizations. All individuals executing this Agreement on behalf of the respective PARTIES certify and warrant that they have the capacity, and have been duly authorized to so execute this Agreement on behalf of the entity so indicated.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their officers hereunto duly authorized on the day and year first above written.

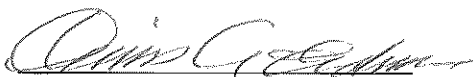
CITY OF GLENDALE



Scott Ochoa
City Manager

Date: 2/23/15

CRESCENTA VALLEY WATER DISTRICT



Dennis Erdman
General Manager

Dated Nov. 24, 2014

APPROVED AS TO FORM


Senior Assistant City Attorney
Date 2/23/15

EXHIBIT "A"

**Rockhaven Well Water Purchase and Sale
Agreement**

Five Year Cost Agreement

2015 – 2019

Exhibit "A"

City of Glendale and Crescenta Valley Water District Rockhaven Well Water Purchase and Sale Agreement Five Year Cost Agreement

Year	2015		2016		2017		2018		2019	
	Annual	Monthly	Annual	Monthly	Annual	Monthly	Annual	Monthly	Annual	Monthly
Existing Well and Infrastructure Cost	\$51,012	\$4,251	\$51,012	\$4,251	\$51,012	\$4,251	\$51,012	\$4,251	\$51,012	\$4,251
	Cost/Ac-ft (above 225 gpm)	Cost/Ac-ft (below 225 gpm)	Cost/Ac-ft (above 225 gpm)	Cost/Ac-ft (below 225 gpm)	Cost/Ac-ft (above 225 gpm)	Cost/Ac-ft (below 225 gpm)	Cost/Ac-ft (above 225 gpm)	Cost/Ac-ft (below 225 gpm)	Cost/Ac-ft (above 225 gpm)	Cost/Ac-ft (below 225 gpm)
Water Usage Cost	\$276	\$236	\$290	\$248	\$305	\$261	\$321	\$275	\$337	\$289
	Annual	Monthly	Annual	Monthly	Annual	Monthly	Annual	Monthly	Annual	Monthly
Land Lease Cost	\$15,040	\$1,253	\$15,040	\$1,253	\$15,491	\$1,291	\$15,956	\$1,330	\$16,435	\$1,370
	Annual	Monthly	Annual	Monthly	Annual	Monthly	Annual	Monthly	Annual	Monthly

Notes:

- Cost shown above are based on the Cost Analysis Study and Worksheets prepared by Raffelis Financial Consultants dated September, 2014
- Cost shown above are based CVWD/GWP receiving Prop. 84, Drought Relief Grant
- Cost and Assumptions of the Cost Analysis Study and Worksheets to be reviewed and revised every 5 years, next revision in 2020.

EXHIBIT "B"
Glendale/CVWD Sample
Monthly Invoice

EXHIBIT "B"

MONTHLY PAYMENT FORM ROCKHAVEN WELL

Month: _____ Year: 2014

WATER USAGE:

End-of-Month Rockhaven Well Meter Read = 17441424 cubic feet (cf)

Prior End-of-Month Rockhaven Well Meter Read = 00000000 cf

Total Usage for Month: 17,441,424 cf ÷ 43,560 = 400.40 Acre-Feet, (AF)

a) Usage for Month at 225 gpm or more: 17,441,424 cf ÷ 43,560 = 400.40 AF

b) Usage for Month at 225 gpm or less: 0.00 cf ÷ 43,560 = 0.00 AF

WATER USAGE COST ⁽¹⁾:

a) \$276 per AF x 400.4 AF = \$ 110,510.40

b) \$236 per AF x 0.00 AF = \$ 0.00

Total Water Usage Cost \$ 110,510.40

EXISTING WELL AND INFRASTRUCTURE COST ⁽¹⁾:

\$51,012 per year or \$4,251 per month \$ 4,251.00

LAND LEASE COST ⁽¹⁾:

\$15,040 per year or \$1,253 per month \$ 1,253.00

Total Payment, CVWD to Glendale \$ 116,014.70

Approved by: _____
Glendale

Approved by: _____
CVWD

NOTES:

1. Unit Costs shown are in accordance with Exhibit "A" of the Agreement.
2. Glendale and CVWD will meet prior to the of the 5th year to revised and adjust the unit costs in accordance with Section 3.2 of the Agreement

EXHIBIT "C"

Cost Analysis Study

Dated October 2014

Prepared by

Raftelis Financial Consultants

Table 1
Existing CVWD Water Supply Costs

Description	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027	CY 2028	CY 2029	CY 2030
Production Capacity (GPM)																	
Annual Average Downtime																	
25%	300																
400	484	242	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484
Average Annual Water Production (GPM)																	
Projected Rockhaven Water Production (APY)																	
FMWD Imported Water Costs (Base Case)																	
Existing FMWD Tier 1 Imported Water Supply Costs																	
CVWD Power Costs for FMWD deliveries																	
Total Unit Cost for FMWD deliveries (\$/AF)																	
Projected Rockhaven Water Production (APY)																	
Annual CVWD Existing Payments to FMWD for the Rockhaven Well Production Level																	
Grand Total																	

Table 2
Rockhaven Well Future Construction Costs

Description		Cost
Rockhaven Well Project Capitalized Cost		
Transmission Pipe to Blending Plant (a)		\$240,000
Well Equipment		
Pump & Motor		\$90,000
Electrical		\$90,000
Piping		\$40,000
SCADA/Telemetry		\$44,000
Building/Misc		\$35,000
Site work		\$25,000
Subtotal		\$564,000
Construction Cost Multipliers		
Contingency	20%	\$112,800
Engineering & Permitting	15%	\$84,600
Soils Engineering	1%	\$5,640
Construction Mgmt	10%	\$56,400
CVWD Labor, Eqpt, Mtls		\$21,560
Grand Total Capital Cost (2014)		\$845,000
Rockhaven Well Site Costs (2013)		
Local Wellsite Labor		
Weekly	Hrs	10
Annual	Hrs	520
Burdened Labor Rate (\$/hour)		\$60
Annual Labor Cost		\$31,200
Materials Cost at Wellsite (\$/year)		\$5,000
Total Annual Labor & Materials		\$36,200
a. The transmission line is 1,200 ft. at \$200/lf.		

Table 3
Rockhaven Well Water Supply Alternative Analysis

Table 3 Rockhaven Well Water Supply Alternative Analysis																						
Description	Amortization & Inflation Rates	Inputs	Conditional Output												Cashflow Input (paid to GWP)							
			CY 2014 Day 1	CY 2015 1	CY 2016 2	CY 2017 3	CY 2018 4	CY 2019 5	CY 2020 6	CY 2021 7	CY 2022 8	CY 2023 9	CY 2024 10	CY 2025 11	CY 2026 12	CY 2027 13	CY 2028 14	CY 2029 15				
Amortized Compensation Schedule for 2011 GWP Construction Costs at Rockhaven Well	2%	Period (Years)	CY 2011 Total																			
		50	\$711,426	\$34,873																		
			\$1,035,841																			
		75																				
		25	\$660,000																			
Groundwater Rights Lease from GWP CVID Annual Lease of Rockhaven Wellbore from GWP (25 Year Contract) Projected Rate for Vordigo Basin GWP Leasing (SMF) Projected Rockhaven Well Production (AFY) CVID Payment to GWP for Producing Adjacent GW	3%																					
			\$183,313	\$103	\$202	\$212	\$223	\$234	\$246	\$258	\$271	\$285	\$299	\$314	\$329	\$345	\$361	\$378	\$395	\$413	\$431	
			\$62	\$84	\$107	\$132	\$158	\$185	\$214	\$244	\$275	\$308	\$342	\$378	\$415	\$454	\$494	\$535	\$578	\$622	\$667	
			\$44,312	\$33,182	\$37,841	\$102,733	\$107,009	\$113,263	\$118,926	\$124,872	\$131,176	\$137,672	\$144,558	\$151,783	\$159,347	\$167,241	\$175,464	\$184,016	\$192,900	\$202,123	\$211,695	
Rockhaven Well Variable Incremental Production Costs Power (\$/kWh per AF) Treatment & Bonding of Groundwater Other Miscellaneous O&M Costs Total Cost (SMF) Projected Rockhaven Well Production (AFY) Annual O&M Costs for Production of Rockhaven Well Water Rockhaven Well Fixed O&M Costs	3%	2013 Rate (AFY)																				
		8%	\$2,684.02	\$5,487.86																		
		10%	\$107	\$113	\$127	\$135	\$145	\$151	\$161	\$170	\$180	\$191	\$203	\$215	\$228	\$241	\$254	\$268	\$282	\$297	\$311	
		20%	\$233	\$240	\$255	\$270	\$287	\$306	\$327	\$350	\$374	\$400	\$428	\$458	\$490	\$524	\$560	\$598	\$638	\$680	\$724	
		30%	\$11	\$11	\$12	\$13	\$14	\$15	\$16	\$17	\$18	\$19	\$20	\$21	\$22	\$23	\$24	\$25	\$26	\$27	\$28	\$29
Cashflow for Rockhaven Well Water Supply (Alternative Case) CVID Reimbursement of GWP Construction Costs CVID Annual Lease of Rockhaven Wellbore from GWP (25 Year Contract) CVID GWP Production Right Lease Payment to GWP Annual O&M Costs for Production of Rockhaven Well Water CVID Production Costs for Rockhaven Well Water Total Annual CVID Costs of Operating Rockhaven Well Grand Total 25 Yr. Expenditures for Rockhaven Well Water Supply																						
		Well & Pipeline	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	
		Const. Cost	\$44,312	\$33,182	\$37,841	\$102,733	\$107,009	\$113,263	\$118,926	\$124,872	\$131,176	\$137,672	\$144,558	\$151,783	\$159,347	\$167,241	\$175,464	\$184,016	\$192,900	\$202,123	\$211,695	
		Grand Total	\$30,233	\$170,659	\$183,569	\$190,744	\$198,512	\$206,211	\$213,910	\$221,610	\$229,310	\$237,010	\$244,710	\$252,410	\$260,110	\$267,810	\$275,510	\$283,210	\$290,910	\$298,610	\$306,310	\$314,010
				\$226,934																		
Comparison of 25 Year Water Supply Alternatives Annual CVID Excluding Payments to FAWD (or the Rockhaven Well Production Level) Less Annual CVID Costs of Rockhaven Well Supply Alternative Net Annual O&M Savings of Rockhaven Well vs. Imported Supply Discount Rate of Return for 25 Year Cashflow		Grand Total																				
			\$25,640,746																			
			\$150,000																			
			\$11,107,449																			
			\$11,107,449																			
Annual Payments to GWP from CVID Reimbursements for GWP Construction Costs at Well Lease of Rockhaven Wellbore Lease of Groundwater Rights from GWP (Water) Rockhaven Production Payments to GWP (SMF)		Grand Total																				
			\$17,437	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	\$34,873	
			\$15,289	\$27,235	\$28,114	\$28,993	\$29,872	\$30,751	\$31,630	\$32,509	\$33,388	\$34,267	\$35,146	\$36,025	\$36,904	\$37,783	\$38,662	\$39,541	\$40,420	\$41,299	\$42,178	
			\$1,870,003																			
			\$2,842,302																			

Rockhaven Well

	Total Investment	Period	
GWP Construction Costs at Rockhaven Well	\$1,095,841	50	
Lease of Rockhaven Wellsite from GWP	\$376,000	25	
Lease of Water Rights from GWP			
Rockhaven Well Fixed O&M	2013 Price		
Treatment O&M (Variable)	\$220		
Other O&M (Variable)	\$10		
Power O&M (Variable)	\$95		
Total Annual O&M Rockhaven			
Total Annual Expenditures Rockhaven Wellsite			

FMWD Import

Imported Water Supply Equivalent			
Power Costs of Delivery			
Total Import Expenditure Equivalent			
Net Annual Rockhaven Savings			

Well and Pipeline Construction Cost

Subtotal

Annual Payments to GWP

GWP Construction Costs at Rockhaven Well			
Lease of Rockhaven Wellsite from GWP			
Lease of Water Rights from GWP			
Annual Payments to GWP			

Rockhaven Well

	Total Investment	Period
GWP Construction Costs at Rockhaven Well	\$1,095,841	50
Lease of Rockhaven Wellsite from GWP	\$376,000	25
Lease of Water Rights from GWP		
	\$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012	
	\$ 15,040 \$ 15,040 \$ 15,491 \$ 15,491 \$ 15,956	
	\$ 55,920 \$ 117,599 \$ 123,656 \$ 123,656 \$ 130,025	
Rockhaven Well Fixed O&M		
Treatment O&M (Variable)	\$220	
Other O&M (Variable)	\$10	
Power O&M (Variable)	\$95	
Total Annual O&M Rockhaven		
	\$ 38,405 \$ 39,557 \$ 40,743 \$ 41,966	
	\$56,467 \$116,323 \$119,812 \$123,407	
	\$2,515 \$5,182 \$5,337 \$5,497	
	\$25,825 \$54,748 \$58,033 \$61,515	
	\$ 123,212 \$ 215,809 \$ 223,926 \$ 232,385	
Total Annual Expenditures Rockhaven Wellsite		
	\$ 245,184 \$ 399,460 \$ 414,084 \$ 429,377	

FMWD Import

Imported Water Supply Equivalent	\$ 226,089 \$ 474,786 \$ 498,526 \$ 523,452
Power Costs of Delivery	\$ 39,494 \$ 83,726 \$ 88,750 \$ 94,075
Total Import Expenditure Equivalent	\$ 265,582 \$ 558,513 \$ 587,276 \$ 617,527
Net Annual Rockhaven Savings	\$845,000 \$ 20,398 \$ 159,052 \$ 173,191 \$ 188,149

Well and Pipeline Construction Cost

Subtotal

-\$845,000

Annual Payments to GWP

GWP Construction Costs at Rockhaven Well	\$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012
Lease of Rockhaven Wellsite from GWP	\$ 15,040 \$ 15,040 \$ 15,491 \$ 15,956
Lease of Water Rights from GWP	\$ 55,920 \$ 117,599 \$ 123,656 \$ 130,025
Annual Payments to GWP	\$ 121,972 \$ 183,651 \$ 190,158 \$ 196,993

EXHIBIT "D"
LEASE AGREEMENT
Between City of Glendale
and
Crescenta Valley Water District

LEASE AGREEMENT

THIS GROUND LEASE AGREEMENT ("Lease Agreement") is made and entered into as of _____, 2014, by and between the **CITY OF GLENDALE, CALIFORNIA**, ("Landlord"), a municipal corporation, and **CRESCENTA VALLEY WATER DISTRICT** ("Tenant"), also referred to as each a "Party" and collectively "Parties".

RECITALS

WHEREAS, Landlord is the owner of certain real property a portion of which is the subject of the terms of this Lease Agreement, which portion is legally described in Exhibit "A" and shown in Exhibit "B" as the "Leased Premises" (hereinafter referred to as the "Leased Premises"); Said Exhibits "A" and "B" are attached hereto and incorporated herein by reference.

WHEREAS, Landlord and Tenant have entered into an executed a memorandum of understanding and agreement entitled City of Glendale and Crescenta Valley Water District Rockhaven Well Operation And Water Purchase/Sale Agreement ("MOU"), which MOU sets forth the Parties' understanding and agreement pertaining to Tenant's proposed use of the Leased Premises;

WHEREAS, Tenant desires to enter into a lease with Landlord for the Leased Premises; and

WHEREAS, Landlord is willing to grant such a lease, subject to the terms and conditions of this Lease Agreement.

NOW, THEREFORE, in consideration of the promises and of the mutual obligations and agreements in this Lease, the Parties agree as follows:

1. TERM

1.1 The term of this Lease Agreement shall be for a period of twenty five (25) years, commencing thirty days following the City Council's approval by way of an ordinance authorizing the subject Lease Agreement. The term of the Lease may be terminated sooner in any one or more of the following: abandonment or voluntary surrender of the Lease by Tenant; forfeiture of the Lease after an uncured breach of the terms of the Lease Agreement; and/or for any other reason stated in this Lease Agreement.

1.2 This Lease Agreement shall terminate prior to the expiration of its Term in the event the MOU between the Parties is terminated, at which time this Lease Agreement shall terminate on the date of the termination of the MOU.

1.3 Landlord may terminate this Lease Agreement, in the event the operations on the Lease Premises are posing or constituting an emergency affecting public welfare, safety and security, and/or in the event Landlord requires the use of the Leased Premises to address an emergency affecting public welfare, safety and security. Such termination shall be effective immediately and shall be without the requirement of any prior notice to Tenant. Landlord will make every effort to provide Tenant with one (1) week notice of termination in instances of public emergency affecting public security and/or safety only if providing such notice is possible in light of the events and circumstances surrounding the emergency.

1.4 This Lease Agreement shall terminate prior to the expiration of its Term in the event the MOU between the Parties is terminated, at which time this Lease Agreement shall terminate on the date of the termination of the MOU.

2. USE OF PREMISES

2.1 The Leased Premises shall be used solely for the purpose of installation/construction of vertical turbine pump and motor, a small building enclosure on a concrete pad over the groundwater well, above ground discharge piping with a flow meter, electrical/telemetry system to provide power for the pump and ability to remotely monitor and control the pump, asphaltic concrete paving and on-site improvements, underground discharge piping to waste, and 8-inch water main which will connect to an existing 8-inch water main to CVWD's Nitrate Removal Treatment and ingress, egress and parking of motor vehicles by Tenant and Tenant's employees, representatives and agents, and for no other purposes, without the written consent of Landlord first being obtained.

2.2 Tenant acknowledges that Landlord shall not be held responsible for the design of the facilities on the Leased Premises. Tenant acknowledges that Landlord shall not be held liable and agrees to defend and hold Landlord harmless to the maximum extent permitted by law from all claims arising out of the design, maintenance and operation of Tenant's Facilities at the Leased Premises.

3. RENT

3.1 Landlord shall invoice Tenant on a monthly basis, pursuant to Section 3 of the MOU. The single monthly invoice shall include, among other components, the rent for the Leased Premises. The rent shall be in the amount as set forth in the Cost Analysis Study dated October 2014, prepared by Raftelis Financial Consultants attached hereto as Exhibit "C". The Cost Analysis Study, the study assumptions and the components shall be reviewed and adjusted every five (5) years from the date of this agreement.

3.2 Tenant shall pay Landlord within 30 calendar days after receiving the invoice following the first of each month.

4. MAINTENANCE AND REPAIRS

4.1 Tenant shall be responsible for maintaining the lighting and landscaping, including planting, trimming and irrigating said landscaping. Tenant acknowledges and agrees that Tenant shall conform to Landlord's reasonable standards, as well as ensure that all work done and any and all site improvements by Tenant is in accordance with the rules, regulations and laws of the City of Glendale, as well as with any applicable State and Federal rules, regulations and mandates.

4.2 Tenant shall be directly responsible for all utilities required by Tenant's use of the Leased Premises, including but not limited to electricity. The cost of any utilities provided by Landlord shall be paid by Tenant to Landlord as payment separate from rent. Tenant shall pay a monthly charge for electricity computed at the then-current public utility rate.

4.3 Tenant shall keep the Leased Premises free from trash and debris. Tenant shall maintain the paved surface of the Leased Premises.

5. ACCESS

5.1 By Landlord: Landlord reserves the right to enter and use the Leased Premises for the purpose of gaining access to Landlord's adjacent properties without interfering with Tenant's use of the Leased Premises.

5.2 By Tenant: At all times throughout the Term of this Lease Agreement, and at no additional charge to Tenant, Tenant and its employees, agents, contractors, and subcontractors, will have twenty-four (24) hour per day, seven (7) day per week right of access to and over Landlord's property, along Landlord's specified access routes, for the installation, repair, maintenance and operation of the Tenant Facilities and any utilities serving the Lease Property. Tenant must provide Landlord with at least 72 hours advance prior notice for any vehicular access if the vehicle or equipment: (1) has a gross vehicle weight in excess of 10,000 pounds; (2) has skid steering including track driven vehicles or equipment; (3) possesses outriggers or stabilizers; (4) needs to be transported by trailer; or (5) is not recognized by the Department of Motor Vehicles to be legally driven or operated across/over public roads or highways. Tenant is responsible for and shall reimburse Landlord for any and all damages to the access to Landlord's property caused by Tenant's activity on Landlord's Property.

6. COMPLIANCE WITH ALL LAWS

6.1 Tenant shall comply with all applicable requirements of federal, state and local laws, rules and to monitor and certify such compliance in accordance with requirements as may be established by Landlord.

6.2 Tenant's ability to use the Lease Property shall be dependent upon Tenant obtaining all the certificates, permits, and other approvals, which may be required from any federal, state, or local authorities. Landlord shall reasonably cooperate with Tenant, but at no expense to Landlord, in obtaining such approvals. If any application by Tenant for any such approval is finally denied or rejected, or if any such certificate, permit, license or approval expires, lapses or is otherwise withdrawn or terminated, or if due to technological changes or for any other reason, Tenant, in its sole discretion, determines that it will be unable to use the Lease Property for Tenant's intended purposes, then Tenant shall have the right to terminate this Lease in accordance with the applicable Sections herein.

7. SIGNS

Tenant shall consult with the Planning Division of the City of Glendale to determine what signs will be permitted. Only those signs permitted by ordinance may be erected on the Leased Premises.

8. TAXES

8.1 Tenant recognizes and understands that this lease may create a possessory interest subject to property taxation and that Tenant may be subject to the payment of property taxes levied on such interest, and Tenant agrees to pay all such taxes levied. Tenant bears the responsibility to determine the subject taxes. Landlord shall not be liable for Tenant's failure to pay such possessory property taxes.

8.2 Tenant shall also pay, before delinquency, all taxes assessed against any personal property of Tenant, which may be located in or upon the Leased Premises, including all facilities, furnishings, fixtures, equipment. Tenant shall not be liable to pay any taxes and assessments arising from fee simple ownership of the Leased Premises.

9. RIGHT OF INSPECTION

Landlord reserves the right, to its officers, agents or employees, to enter upon the Leased Premises, and every part thereof, at all reasonable times during regular business hours for the purpose of inspecting same.

10. INDEMNIFICATION

10.1 Tenant agrees to indemnify, defend and hold harmless, to the maximum extent permitted by law, Landlord and its officers, agents, employees and representatives, from and against any and all liability, suits, actions, proceedings, judgments, claims losses, liens, damages, injuries (whether in contract or in tort, including personal injury, accidental death or property damage, and regardless of whether the allegations are false, fraudulent or groundless), costs and expenses (including attorney's fees), litigation, arbitration, mediation, appeal expenses) which in whole or in part arise out of or are connected with, or which are alleged to have arisen out of or to have been connected with Tenant's use, occupancy, activities, events, or operations on, in or about the Leased Premises.

10.2 Tenant's obligation to indemnify, defend and hold harmless shall remain in effect and shall be binding upon Tenant whether such injury or damage shall accrue, or may be discovered, before or after the termination of this Lease.

11. INSURANCE

11.1 At its own expense, Tenant shall obtain, pay for and maintain during the term of the Lease Agreement an "occurrence" policy for Commercial General Liability (including Contractual Liability) which shall protect Tenant and Landlord from claims for injuries and damages. The policy shall add Landlord, its officers, agents and employees as additional named insureds under the policy in the following amounts:

COMMERCIAL GENERAL LIABILITY INSURANCE in an amount not less than One Million Dollars (\$1,000,000) per occurrence for personal injuries, including accidental death, to any one person.

PROPERTY DAMAGE INSURANCE in an amount not less than One Million Dollars (\$1,000,000); and subject to the above limits and combined single limit of insurance in an amount not less than One Million Dollars (\$1,000,000).

BUSINESS AUTOMOBILE LIABILITY INSURANCE in an amount not less than One Million Dollars (\$1,000,000) per occurrence for bodily injury (including accidental death) to any one person and One Million Dollars (\$1,000,000) per occurrence for property damage, or Two Million Dollars (\$2,000,000) combined single limit.

POLLUTION LIABILITY INSURANCE in an amount not less than One Million Dollars (\$1,000,000) per claim and Two Million Dollars (\$2,000,000) in aggregate.

Complete WORKERS' COMPENSATION INSURANCE meeting or exceeding the coverages and amounts that California law requires.

11.2 At all times, the insurance company issuing the policy shall be an "admitted" insured in the State of California; shall be domiciled within, and organized under the laws of, a state of the United States; and shall carry an A.M. Best & Company minimum rating of "A-"

11.3 All policies shall contain a "Separation of Insured" clause and a "Primary Coverage" clause for any loss arising out of or caused by Tenant's occupation or use of the Leased Premises. In addition, the policies shall contain a statement of obligation on the insurance carrier's part to notify Landlord, by registered mail, at least thirty (30) days in advance of any policy cancellation, termination or reduction of the state limits.

11.4 Before signing this Lease Agreement, Tenant shall deliver to Landlord a "certificate of insurance" and an "additional insured endorsement", both documents countersigned by the insurance carrier or its authorized representative, on forms satisfactory to the City Attorney, which set forth the above provisions.

11.5 Thirty (30) days prior to each anniversary date of this Lease Agreement, each Tenant shall deliver to Landlord a renewal certificate of insurance and renewal additional insured endorsement, in conformance with the requirements set forth herein.

11.6 The countersigned certificate, along with the additional insured endorsement, shall state: "The City of Glendale, its officers, agents and employees are added as additional names insureds under this policy. This insurance is primary to the coverage of the City of Glendale. Neither the Landlord nor any of its insurers shall be required to contribute to any loss. The insurance shall apply separately to each insured. The issuing company shall mail thirty (30) days advance notice to the Landlord of any policy cancellation, termination or reduction of the stated limits."

11.7 Additionally, any deductibles or self-insured retentions shall be set forth on the certificate and shall be subject to Landlord's review and approval. Landlord reserves the right to modify its insurance requirements on an annual basis.

11.8 Tenant's failure to comply with the provisions of this Section shall constitute a material breach upon which Landlord may immediately terminate this Lease Agreement.

12. DEFAULT BY TENANT

12.1 The occurrence of any one or more of the following events shall constitute an "Event of Default" hereunder by Tenant.

1. The failure by Tenant to make the payment of rent or any other payment required to be made by Tenant hereunder when due, where such failure shall continue for a period of ten (10) days after written notice thereof is received by Tenant from Landlord.
2. The failure by Tenant to observe or perform any of the covenants or provisions of this Lease Agreement to be observed or performed by Tenant, other than as specified in Section 13(A) where such failure shall continue for a period of thirty (30) days after written notice thereof is received by Tenant from Landlord; provided, however, that it shall not be deemed an Event of Default by Tenant if Tenant shall commence to cure such failure within said thirty (30) day period and thereafter diligently prosecute such cure to completion.

12.2 If there occurs an Event of Default by Tenant, in addition to any and all other remedies available to Landlord at law or in equity; Landlord shall have the option to terminate this Lease Agreement and all rights of Tenant hereunder.

12.3 In addition, Landlord shall be entitled to immediate restraint by injunction of any violation of any of the covenants, conditions, or provisions of this Lease Agreement.

12.4 Should Tenant engage in activities which may cause or allow the Leased Premises to become a threat or danger to public welfare and safety, Landlord shall have the right, prior to a determination and authorization by a court of competent jurisdiction, to re-enter the Leased Premises and remove persons and personal property therefrom.

13. ASSIGNMENT AND SUBLETTING

13.1 Tenant shall not have the right to assign this Lease, or to sublet the whole or any portion of the Property without the prior written consent of the Landlord, which consent shall not be unreasonably withheld. No assignment or sublet shall release Tenant or change Tenant's primary liability to perform Tenant's obligations hereunder.

13.2 Tenant's rights hereunder shall not be subject to assignment by attachment, execution or proceedings under any Bankruptcy Act provision. Any such assignment or subletting shall be wholly void and of no force and effect without Landlord's prior written consent.

13.3 Any consent by Landlord to Tenant to assign this lease or sublet the whole or any portion of the Property, shall not be construed as consent to any other assignment or subletting, or as a waiver of Landlord's objection or right to object to any such assignment or subletting to which it has not consented.

14. EFFECT OF BANKRUPTCY

If at any time during the Lease term, in any judicial action or Court proceeding against either of the Tenant, a receiver or other officer or agent of the court is appointed to take charge of Tenant's interest under this Lease, and remain in possession of the Leased Premises for a period of more than twenty (20) days, or if Tenant shall be adjudicated bankrupt, or should any attempt to be made to sell Tenant's interest under this Lease by judicial sale, then Landlord shall have the right, to immediately terminate this Lease Agreement.

15. LANDLORD'S RIGHTS UPON TERMINATION

In the event of a termination or cancellation of this Lease Agreement for any cause or reason whatsoever, before the expiration of the term hereof, Landlord shall be entitled to remove Tenant from the Leased Premises and, except as otherwise hereinabove expressly provided, shall be entitled to retain any sum then held by Landlord as security pursuant to Paragraph 6 hereof, to cover damages and rents owed, pursuant to Section 1950.7 of the California Civil Code.

16. HOLDING OVER

Upon termination of this Lease Agreement, Tenant shall surrender the Leased Premises in good, clean, undamaged condition, wear and tear excepted. Any holding over by Tenant after the term of this Lease Agreement expires, with the consent of Landlord, shall create a month to month tenancy, which either party may terminate by giving the

other party written notice at least thirty (30) days before the intended termination date. Rent shall be at a rate equal to the rent for the immediately preceding month, and shall be payable in advance. In the event of a holding over, all other terms and conditions of this Lease shall remain in full force and effect.

17. NOTICE

Any notice to be provided to the Landlord and Tenant hereunder shall be provided in writing and unless otherwise provided herein, shall be deemed validly given on the date either personally delivered to the address indicated below or on the third (3rd) business day following deposit, postage prepaid, using certified mail, return receipt requested, in any U.S. Postal mailbox or at any U.S. Post Office. Notices shall also be allowed via electronic mail ("email"), and shall be deemed validly given on the date of transmission when sent by email. Should Landlord or Tenant have a change of address, the other party shall immediately be notified in writing of such change, provided, however, that each address for notice must include a street address and not merely a post office box. All notices shall be addressed as follows:

TENANTS:

CRESCENTA VALLEY WATER DISTRICT
ATTN: Dennis Erdman, General Manager
2700 Foothill Boulevard
La Crescenta, CA 91214-3516
Facsimile: (818) 248-1659
Email: derdman@cvwd.com

LANDLORD

CITY OF GLENDALE WATER & POWER
ATTN: Ramon Abueg, Chief Assistant General Manager
141 North Glendale Ave., 4th Level
Glendale, CA 91206-4496
Facsimile: (818) 552-2852
Email: rabueg@glendaleca.gov

18 MISCELLANEOUS PROVISIONS

A. WAIVER. Landlord's failure to exercise any of its rights resulting from a default or breach of covenant on the part of Tenant shall not be construed as a waiver thereof, nor shall any custom or practice which may grow up between the parties in the course of administering this Lease be construed to waiver or to lessen the right of Landlord to insist upon the performance by Tenant of any term, covenant or condition hereof, or to exercise any right given it resulting from any such default. A waiver of a particular breach or default shall not be deemed to be a wavier of the same or any other subsequent breach of default.

B. TIME OF ESSENCE. Time is of the essence of this Lease and of each provision.

C. NO PARTNERSHIP. This Lease Agreement shall not be construed to constitute any form or partnership or joint venture between Landlord and Tenant.

D. CONSTRUCTION

1. Section titles or captions contained in this Lease are inserted as a matter of convenience and for reference and in no way define, limit, extend or describe the scope of this Lease or any provision hereof.
2. Unless defined otherwise, the words used in this Lease shall be construed according to their plain meaning in the English language. The language used in this Lease shall not be interpreted strictly for or against either party.
3. If any provision of this Lease is capable of two constructions, one of which would render the provision void and the other of which would render the provision valid, then the provision shall have the meaning that renders it valid.
4. The singular includes the plural and vice versa, and the masculine includes the feminine and neuter, whenever the context so requires.

E. WARRANTEE. Landlord warrants and agrees that Landlord is seized of good and sufficient title to and interest in the Leased Premises and has full authority to enter into and execute this Lease Agreement and that there are no undisclosed liens, judgment or impediments of title on the Leased Premises that would affect this Lease Agreement. Landlord makes no representation or warranty whatsoever concerning the suitability of the Leased Premises for the purposes intended by Tenant. Tenant acknowledges that neither Landlord, nor any of Landlord's officers, agents and employees have made any representations concerning the suitability of the Leased Premises for the purposes intended by Tenant, nor is Tenant entering into this Lease Agreement in reliance upon any such representations.

F. RIGHT OF QUIET ENJOYMENT. Tenant shall have the right of quiet enjoyment of the Leased Premises.

G. GOVERNING LAW. This Lease Agreement and the performance hereon shall be governed, interpreted, construed and regulated by the laws of the State of California.

H. ENTIRE AGREEMENT. This Lease Agreement constitutes the entire agreement between the parties hereto pertaining to the subject matter hereof, fully supersedes any and all prior understandings, representations, warranties and agreements between the parties hereto, or any of them, pertaining to the subject matter hereof, and may be modified only by written agreement signed by all of the parties hereto.

I. BINDING POWER. Each person executing this Lease warrants and represents that he or she is duly authorized to execute this Lease Agreement on behalf of Landlord or Tenant.

J. SEVERABILITY. If any portion of this Lease Agreement is declared by a court of competent jurisdiction to be invalid or unenforceable, then such portion shall be deemed modified to the extent necessary in such court's opinion to render such portion enforceable and, as so modified, such portion and the balance of this Lease Agreement shall continue in full force and effect.

K. ATTORNEYS' FEES. In case suit shall be brought because of the breach or alleged breach of any covenant herein contained on the part of any party to be kept or performed, or for declaratory relief, the prevailing party or parties shall recover from the non-prevailing party or parties all costs and expenses incurred herein, including reasonable attorneys' fees and expenses incurred in enforcing any judgment.

L. FORCE MAJEURE. For the purposes of this Lease Agreement, "Force Majeure" means an unforeseen event or condition deemed by Landlord as calling for immediate action to avoid the threat of loss or injury of property and/or danger to public safety, including but not limited to, an act of God, labor dispute, civil unrest, epidemic, and/or natural disaster.

19. ENFORCEMENT AUTHORIZATION

The City Manager of Landlord, or his assigned representative, is hereby authorized to act on behalf of the City in all matters pertaining to this Lease, with the exception that a termination of the Lease by Landlord due to breach of any of the terms and conditions herein shall be approved by the Council of the City of Glendale.

IN WITNESS WHEREOF, the parties hereto have caused this Lease to be executed by their officers hereunto duly authorized on the day and year first above written.

LANDLORD:

TENANT:

CITY OF GLENDALE

CRESCENTA VALLEY WATER DISTRICT

By: _____
Scott Ochoa
City Manager

By: _____
Dennis Erdman
General Manager

EXHIBIT "A"
LEGAL DESCRIPTION

EXHIBIT "A"

CVWD Well Site Legal Description

A portion of Lot 230 of Tract No. 2535 in the City of Glendale, County of Los Angeles, State of California, according to the map recorded February 3rd, 1914 as filed in Book 24, at Page(s) 72, and 73 of Maps in the office of the Recorder for said County; more particularly described as follows:

Beginning at the Northern most corner of said Lot 230;

Thence, along the Northeasterly line of said Lot and along the Southwesterly line of the Hermosa Avenue right-of-way (50 feet wide) as shown on said map of Tract No. 2535, South 53° 16' 50" East, 72.5 feet to the Eastern most corner of said Lot 230;

Thence, leaving said Southwesterly line of the Hermosa Avenue right-of-way, along the Southeasterly line of said Lot 230, South 36° 43' 10" West, 86.00 feet;

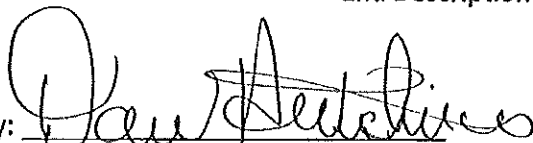
Thence, leaving the Southeasterly line of said Lot 230, along a line parallel with said Southwesterly line of the Hermosa Avenue right-of-way, North 53° 16' 50" West, 72.50 feet to the Northwestern line of said Lot 230;

Thence, along the Northwestern line of said Lot 230, North 36° 43' 10" East, 86.00 feet to the point of beginning;

Containing 6,235 square feet.

End Description

Prepared by:

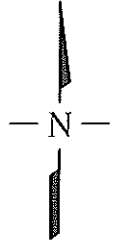

Dan Hutchinson, LS 5139



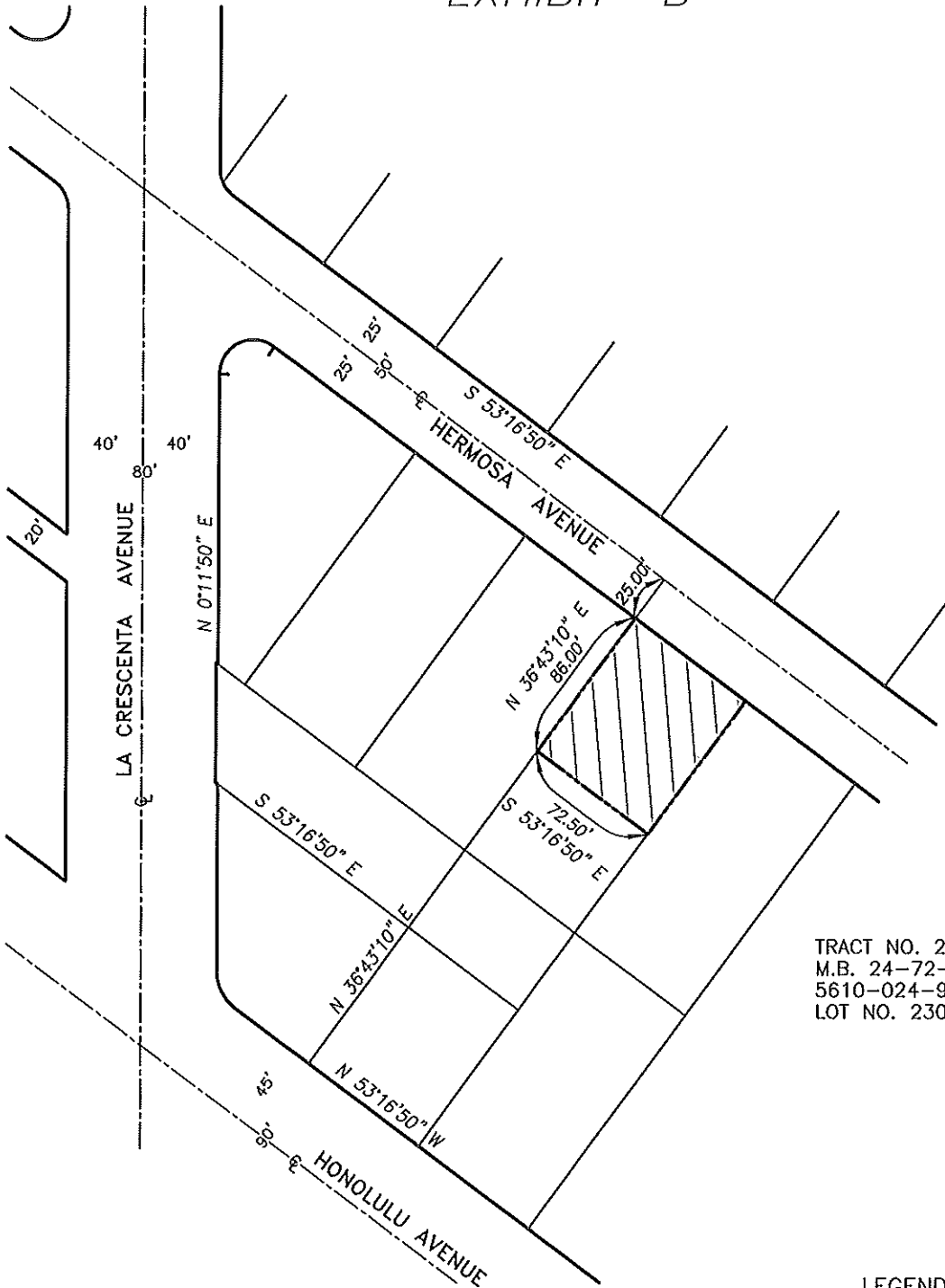
Date: DEC. 3RD, 2014

EXHIBIT "B"
MAP

EXHIBIT "B"



SCALE: 1" = 80'



TRACT NO. 2535
M.B. 24-72-73
5610-024-905
LOT NO. 230 & 231

LEGEND

- LOT LINES
- R/W LINES
- STREET CENTERLINE
- EASEMENT BOUNDARY

CRESCENTA VALLEY WATER DISTRICT

SKETCH TO ACCOMPANY LEGAL DESCRIPTION

SHT. 1 OF 1 SHTS.

CRESCENTA VALLEY WATER DISTRICT

11-19-2014

ROCKHAVEN WELL

JAH

NAME

REVDATE

USDP

EXHIBIT "C"

Cost Analysis Study

Dated October 2014

Prepared by

Raftelis Financial Consultants

Table 1
Existing CVWD Water Supply Costs

Description	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027	CY 2028	CY 2029	CY 2030
Rockhaven Well Production																	
Average Annual Water Production (GPM)	300																
Projected Rockhaven Water Production (AFY)	484	242	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484
FMWD Imported Water Costs (Base Case)																	
Existing FMWD Tier 1 Imported Water Supply Costs																	
CVWD Power Costs for FMWD deliveries		\$935	\$981	\$1,030	\$1,082	\$1,135	\$1,183	\$1,232	\$1,281	\$1,331	\$1,381	\$1,430	\$1,479	\$1,528	\$1,578	\$1,627	\$1,676
Total Unit Cost for FMWD deliveries (\$/AF)		\$163	\$173	\$183	\$194	\$206	\$218	\$231	\$245	\$260	\$275	\$292	\$309	\$328	\$348	\$368	\$390
Projected Rockhaven Water Production (AFY)		\$1,097	\$1,164	\$1,213	\$1,270	\$1,342	\$1,411	\$1,483	\$1,560	\$1,640	\$1,725	\$1,814	\$1,908	\$2,006	\$2,110	\$2,219	\$2,333
Annual CVWD Existing Payments to FMWD for the Rockhaven Well Production Level		242	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484
Grand Total		\$265,505	\$558,350	\$587,103	\$617,344	\$649,150	\$682,602	\$717,787	\$754,795	\$793,720	\$834,663	\$877,728	\$923,028	\$970,674	\$1,020,794	\$1,073,515	\$1,128,973

Table 2
Rockhaven Well Future Construction Costs

Description		Cost
Rockhaven Well Project Capitalized Cost		
Transmission Pipe to Blending Plant (a)		\$240,000
Well Equipment		
Pump & Motor		\$90,000
Electrical		\$90,000
Piping		\$40,000
SCADA/Telemetry		\$44,000
Building/Misc		\$35,000
Site work		\$25,000
Subtotal		\$564,000
Construction Cost Multipliers		
Contingency	20%	\$112,800
Engineering & Permitting	15%	\$84,600
Soils Engineering	1%	\$5,640
Construction Mgmt	10%	\$56,400
CVWD Labor, Eqpt, Mtls		\$21,560
Grand Total Capital Cost (2014)		\$845,000
Rockhaven Well Site Costs (2013)		
Local Wellsite Labor		
Weekly	Hrs	10
Annual	Hrs	520
Burdened Labor Rate (\$/hour)		\$60
Annual Labor Cost		\$31,200
Materials Cost at Wellsite (\$/year)		\$5,000
Total Annual Labor & Materials		\$36,200
a. The transmission line is 1,200 ft. at \$200/lf.		

Table 3
Rockhaven Well Water Supply Alternative Analysis

[illegible]

Rockhaven Well

	Total Investment	Period							
GWP Construction Costs at Rockhaven Well	\$1,095,841	50	\$	51,012	\$	51,012	\$	51,012	\$
Lease of Rockhaven Wellsite from GWP	\$376,000	25	\$	15,040	\$	15,040	\$	15,491	\$
Lease of Water Rights from GWP			\$	66,731	\$	140,333	\$	147,560	\$
Rockhaven Well Fixed O&M	2013 Price		\$	38,405	\$	39,557	\$	40,743	\$
Treatment O&M (Variable)	\$220			\$56,467		\$116,323		\$119,812	
Other O&M (Variable)	\$10			\$2,515		\$5,182		\$5,337	
Power O&M (Variable)	\$95			\$25,825		\$54,748		\$58,033	
Total Annual O&M Rockhaven			\$	123,212	\$	215,809	\$	223,926	\$
Total Annual Expenditures Rockhaven Wellsite			\$	255,994	\$	422,194	\$	437,989	\$

FMWD Import

Imported Water Supply Equivalent	\$	226,089	\$	474,786	\$	498,526	\$	523,452	
Power Costs of Delivery	\$	39,494	\$	83,726	\$	88,750	\$	94,075	
Total Import Expenditure Equivalent	\$	265,582	\$	558,513	\$	587,276	\$	617,527	
Net Annual Rockhaven Savings	-\$160,875	\$	9,588	\$	136,318	\$	149,286	\$	163,013

Well and Pipeline Construction Cost
Subtotal

-\$160,875

Annual Payments to GWP

GWP Construction Costs at Rockhaven Well	\$	51,012	\$	51,012	\$	51,012	\$	51,012	
Lease of Rockhaven Wellsite from GWP	\$	15,040	\$	15,040	\$	15,491	\$	15,956	
Lease of Water Rights from GWP	\$	66,731	\$	140,333	\$	147,560	\$	155,161	
Annual Payments to GWP	-\$160,875	\$	132,783	\$	206,385	\$	214,063	\$	222,129

-\$160,875

Rockhaven Well

	Total Investment	Period
GWP Construction Costs at Rockhaven Well	\$1,095,841	50
Lease of Rockhaven Wellsite from GWP	\$376,000	25
Lease of Water Rights from GWP		
	\$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012	
	\$ 15,040 \$ 15,040 \$ 15,491 \$ 15,491 \$ 15,956	
	\$ 55,920 \$ 117,599 \$ 123,656 \$ 130,025	
Rockhaven Well Fixed O&M		
Treatment O&M (Variable)	\$38,405 \$ 39,557 \$ 40,743 \$ 41,966	
Other O&M (Variable)	\$56,467 \$116,323 \$119,812 \$123,407	
Power O&M (Variable)	\$2,515 \$5,182 \$5,337 \$5,497	
Total Annual O&M Rockhaven	\$25,825 \$54,748 \$58,033 \$61,515	
	\$ 123,212 \$ 215,809 \$ 223,926 \$ 232,385	
Total Annual Expenditures Rockhaven Wellsite	\$ 245,184 \$ 399,460 \$ 414,084 \$ 429,377	

FMWD Import

Imported Water Supply Equivalent	\$ 226,089 \$ 474,786 \$ 498,526 \$ 523,452
Power Costs of Delivery	\$ 39,494 \$ 83,726 \$ 88,750 \$ 94,075
Total Import Expenditure Equivalent	\$ 265,582 \$ 558,513 \$ 587,276 \$ 617,527
Net Annual Rockhaven Savings	\$ -845,000 \$ -20,398 \$ -159,052 \$ -173,191 \$ -188,149

Well and Pipeline Construction Cost
Subtotal

-\$845,000

Annual Payments to GWP

GWP Construction Costs at Rockhaven Well	\$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012 \$ 51,012
Lease of Rockhaven Wellsite from GWP	\$ 15,040 \$ 15,040 \$ 15,491 \$ 15,491 \$ 15,956
Lease of Water Rights from GWP	\$ 55,920 \$ 117,599 \$ 123,656 \$ 130,025
Annual Payments to GWP	\$ 121,972 \$ 183,651 \$ 190,158 \$ 196,993



Appendix C: CVWD Water Conservation Program

Crescenta Valley Water District 2020 Urban Water Management Plan

APPENDIX G

CRESCENTA VALLEY WATER DISTRICT WATER CONSERVATION PROGRAM

CRESCENTA VALLEY WATER DISTRICT

APPENDIX G

WATER CONSERVATION PROGRAM

GENERAL STATEMENT

1. Due to the water supply conditions prevailing in the Crescenta Valley Water District (CVWD) and/or in the area from which CVWD obtains a portion of its water supply, the general welfare requires that:
 - The water resources available to the CVWD be put to the maximum beneficial use;
 - The waste or unreasonable use, or unreasonable method of use of water be prevented;
 - The conservation of such water be practiced with a view to the reasonable and beneficial use thereof in the interest of the customers of CVWD and for the public health and safety.
2. The purpose of this program is to provide water conservation regulations, in a phased approach, to minimize the effect of a shortage of water supplies on the customers of CVWD during various critical stages of a water shortage.

PHASE I –NORMAL WATER CONSERVATION

Phase I standard water conservation practices will be in effect at all times. The CVWD Board of Directors has adopted the following measures to reduce consumption and prohibit water waste for existing and new water users within CVWD in order to sustain water supply reliability.

Prohibited Use Applicable to Existing and New Customers

1. **Water hose usage:** Hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas shall not be permitted. Exception: Flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety. Businesses or schools required to hose down public eating areas will be provided with access to a water broom.
2. **Overspray and runoff:** Use of water for any purpose which results in overspray, excessive runoff onto hardscapes, driveways, streets, adjacent lands or into gutters shall not be permitted.
3. **Fountains, similar structures and swimming pools:** Water used to clean, fill or maintain levels in decorative fountains or similar structures must be part of a recirculation system.
4. **Leaks:** Leaks from any facility both inside and outside of a customer's premises must be repaired within seventy-two hours after the customer is notified of, or discovers the leak. Failure to affect the repair of any leak shall subject said customer to all penalties provided herein for waste of water.
5. **Irrigating times:** No watering, sprinkling or irrigating shall take place between the hours of nine a.m. (9:00AM) and five p.m. (5:00PM) in any landscaped or vegetated areas, including, but not limited to, golf courses, parks, cemeteries and school areas landscaped with, but not limited to, grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, trees, and California-friendly plantings.

6. **Hand Watering:** Hand watering of non-turf areas is allowed using a hose with a positive shut-off nozzle or watering can within the allowable times as specified above.
7. **Windy and rainy days:** No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray. No irrigation or watering of turf or ornamental-landscapes during and 48 hours following measurable precipitation.
8. **Vehicle washing:** The washing of commercial and non-commercial privately owned automobiles, trucks, trailers, motor-homes, boats, buses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.
9. **Swimming pools:** Owners of outdoor swimming pools, wading pools or spas, when these are not in use, are requested to use covers to minimize the evaporation of water.
10. **Construction water restrictions:** Water for construction purposes including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner which will not result in runoff.
11. **Fire hydrants:** The use of potable water from fire hydrants shall be limited to firefighting related activities or other activities immediately necessary to maintain the health, safety, and welfare of the residents of the city.
12. **Drinking water upon request:** No restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless expressly requested by a customer.
13. **Hotels/Motels:** Hotels, motels, and other commercial lodging establishments are requested to post notices informing their guests about the city's water conservation policy and urging guests to conserve water. Water conservation notices will be provided by CVWD.
14. **Hotels/Motels:** Hotels, motels and other commercial lodgings are requested to post notices giving their guests the option of not laundering towels and linens daily.
15. **Reporting waste of water:** The District shall maintain a program for residents to report waste of water throughout the District boundaries. This will include an online submittal form, a dedicated phone number, and follow-up by District staff on all waste of water reports. Residents are requested to report any observed waste of water from surrounding properties or in the community and report to the District for follow-up.
16. **Pre-rinse spray valve:** Where applicable, restaurants must utilize water conserving nozzles.
17. **New Development** (new commercial and multi-family accounts):
 - 1) All new commercial and multi-family accounts are prohibited from water waste such as, but not limited to: single-pass cooling systems; conveyor and in-bay vehicle wash and commercial laundry systems which do not reuse water; non-recirculating decorative water fountains.
 - 2) All landscape must be in accordance with the permitting agency's landscape ordinance. If the permitting agency does not have a landscape ordinance, the Department of Water Resources Model Landscape Ordinance will apply.

BE IT FURTHER RESOLVED, Crescenta Valley Water District urges the following water usage to all of its customers:

1. To reduce the amount of turf and install new drought tolerant landscaping, low-water using trees and plants, and efficient irrigation systems including but not limited to ET controllers, drip irrigation, and “high efficiency sprinkler heads”.
2. To wash only full loads of dishes or clothes in automatic washers, and do not allow indoor faucets to run continuously.
3. To turn water system off when leaving property unoccupied for an extended period of time.
4. To use covers to minimize the evaporation of water from outdoor swimming pools, wading pools or spas when they are not in use.

WATER CONSERVATION ALERT SYSTEM

When a water conservation alert system is implemented by direction of the General Manager, the following measures to reduce water consumption will be required for all water users within CVWD.

- a. Color Code **“Blue”** is defined as the Normal Water Conservation Alert, Foothill Municipal Water District can meet all Member Agency demands. Standard water conservation applies as defined in Appendix G of the Rules and Regulations.
- b. Color Code **“Green”** is defined as an Increased Voluntary Conservation Alert, some supplies have been impacted and customers should increase efforts to conserve by following strict water conservation practices indoors and limiting outdoor water use to odd or even days, based on ending number of customer address.
- c. Color Code **“Yellow”** is defined as an Extraordinary Conservation Alert, when Metropolitan Water District of Southern California is pulling water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers. Customers are requested to minimize indoor water use and water outdoors no more than three (3) days per week. Outdoor irrigation will be permitted only on Tuesday, Thursday, and Saturday.
- d. Color Code **“Orange”** is defined as a Rationing Conservation Alert, when Metropolitan Water District of Southern California has implemented its allocation plan to its member agencies. Customers are requested to minimize indoor water use and severely limit outdoor water use as follows:
 1. Residential and commercial landscape irrigation is limited to no more than two (2) days per week on Tuesday and Saturday.
 2. Exemption: Public use areas owned and/or operated by School Districts are exempt from watering days, and public use areas greater than 4,000 square feet are exempt from watering days so long as best management practices are applied by all.
 3. The filling, refilling or adding of water to indoor and outdoor pools, wading pools, or spas is prohibited. Exemptions: Commercial Repairs mandated by the Federal Virginia Graeme Baker Act, or adding water for the prevention of equipment failure is permissible, however, the District strongly urges that a cover be used to prevent evaporation and thereby reducing the frequency of refilling..
 4. The use of water to clean, maintain, fill, or refill decorative fountains or similar structures is prohibited. Exemptions: Adding water for the prevention of equipment failure is permissible.

5. Vehicle washing is restricted to the use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle.
 6. Fix leaks within 48 hours.
- e. Color Code **“Red”** is defined as a Critical Water Conservation Alert, when water supplies are only available for health and safety needs. Customers are required to minimize indoor water use and curtail all outdoor water use. Fix any leaks within 24 hours.

Notification of the Water Conservation Alert System status on any given day shall be visibly posted at the exterior of the District’s Administration Office (2700 Foothill Blvd., La Crescenta) and other accessible locations throughout the District service area where allowed. At least one direct mailing shall be made to all water customer accounts, with notification and explanation of the alert system. Newspaper coverage will also be used to disseminate alert system status and water conservation updates.

APPENDIX G

Date	Revisions	Approved by Board	Initials
04/28/2010	Residential and commercial landscape irrigation has been increased from two (2) days per week to no more than three (3) days per week on Tuesday, Thursday and Saturday. Watering limits have been reduced to seven (7) minutes per watering station from (10) minutes per station.	04/27/2010	
07/11/12	1. Revise "Prohibited Use Applicable to <u>all</u> Customers" was revised to "Prohibited Use Applicable to <u>Existing and New</u> Customers" 2. Add the following: 17. New Development (new commercial and multi-family accounts) 1) All new commercial and multi-family accounts are prohibited from water waste such as, but not limited to: single-pass cooling systems; conveyor and in-bay vehicle wash and commercial laundry systems which do not reuse water; non-recirculating decorative water fountains. 2) All landscape must be in accordance with the permitting agency's landscape ordinance. If the permitting agency does not have a landscape ordinance, the Department of Water Resources Model Landscape Ordinance will apply.	07/10/12	
7/23/14	1. Revised Orange Alert from three (3) days per week to two (2) days per week, Tuesdays and Saturdays	7/23/2014	
4/7/15	1. Revise Appendix "G": Windy and rainy days: No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray, and on days when it is raining. 2. Add the following: Windy and rainy days: No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray. No irrigation or watering of turf or ornamental-landscapes during and 48 hours following measurable precipitation.		

--	--	--	--

RESOLUTION NO. 681

**RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESCENTA VALLEY WATER DISTRICT
ADOPTING A WATER CONSERVATION ALERT SYSTEM**

WHEREAS, the Crescenta Valley Water District was established for the purpose of providing adequate and reliable potable water to its inhabitants at a reasonable cost; and

WHEREAS, the groundwater supply in the Verdugo Basin is utilized as the primary source of water for District customers; and

WHEREAS, consecutive years of below normal precipitation in the watersheds of the Verdugo Basin have severely reduced the groundwater production capacity and individual well reliability in the Verdugo Basin and hence the water supply available to the District; and

WHEREAS, the District's imported water supply connections with the Foothill Municipal Water District and the emergency water supply interconnection with the City of Glendale, both which provide a supplemental source of water for District customers, are limited in size and capacity, may be subjected to random mechanical failures, and are being subjected to increased demands; and

WHEREAS, the District's imported water supply may be subject to a reduced water allotment from the Foothill Municipal Water District should the Metropolitan Water District of Southern California put into effect their approved allocation plan; and

WHEREAS, the above limitations have created the possibility that the District may be unable to meet customer demand during periods of high water use such as hot weather; and

WHEREAS, the District's Phase I Voluntary Water Conservation Program has been only minimally successful in reducing water demand; and

WHEREAS, conservation of water by District customers will help the District supply water for customers and keep water in storage for fire protection during peak periods; and

WHEREAS, peak summer water demands are generally considered to be caused by outdoor water use and the District should place special emphasis on outdoor water conservation; and

WHEREAS, the District, through its public information program, should advise and alert its customers to the serious nature of the situation and the need for a reduction in demand by customers through the use of a conservation alert system; and

WHEREAS, the District has the power and authority, under Section 375 of the California Water Code, to adopt water conservation measures for activities within its service area; and

WHEREAS, given the current conditions, the District finds it necessary and beneficial to undertake the second phase of its water conservation program; and

NOW, THEREFORE, BE IT RESOLVED, that the General Manager is authorized to implement a color-coded water conservation alert system, as Phase II of the goal to reduce the risk and severity of water shortage; and

BE IT FURTHER RESOLVED, that the Crescenta Valley Water District requires its customers to follow the alert system described below:

- a. Color Code “Blue” is defined as the Normal Water Conservation Alert, Foothill Municipal Water District can meet all Member Agency demands. Standard water conservation applies as defined in Appendix G of the Rules and Regulations.
- b. Color Code “Green” is defined as an Increased Voluntary Conservation Alert, some supplies have been impacted and customers should increase efforts to conserve by following strict water conservation practices indoors and limiting outdoor water use to odd or even days, based on ending number of customer address.
- c. Color Code “Yellow” is defined as an Extraordinary Conservation Alert, when Metropolitan Water District of Southern California is pulling water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers. Customers are requested to minimize indoor water use and water outdoors no more than three (3) days per week. Outdoor irrigation will be permitted only on Tuesday, Thursday, and Saturday.
- d. Color Code “Orange” is defined as a Rationing Conservation Alert, when Metropolitan Water District of Southern California has implemented its allocation plan to its member agencies. Customers are requested to minimize indoor water use and severely limit outdoor water use as further detailed in Appendix G of the District Rules and Regulations.
- e. Color Code “Red” is defined as a Critical Water Conservation Alert, when water supplies are only available for health and safety needs. Customers are requested to minimize indoor water use and curtail all outdoor water use as further detailed in Appendix G of the District’s Rules and Regulations.

BE IT FURTHER RESOLVED, that the Board of Directors of the Crescenta Valley Water District authorize that Appendix G of the District’s Rules and Regulations is amended to read as attached; and

BE IT FURTHER RESOLVED, that if critical water shortages continue to exist and if a water conservation alert system proves insufficient to accomplish the necessary conservation, the Crescenta Valley Water District will consider additional and more restrictive phases of water conservation to curtail water use. Likewise, should water supply conditions return to normal, the Crescenta Valley Water District will also consider ending this program at such time.

PASSED, APPROVED, AND ADOPTED at a Regular Meeting of the Board of Directors of Crescenta Valley Water District held on January 7, 2009, Resolution No. 681 was adopted by the following vote:

AYES: Directors

NOES: Directors None

ABSTAIN: Directors None

**ATTEST: President, Board of Directors
Crescenta Valley Water District**

Secretary of the Board of Directors

**STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)**

I, RON MITCHELL, Secretary of the Crescenta Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 681 of the Board of Directors of Crescenta Valley Water District adopted at a Regular Meeting held on January 7, 2009, and that the same has not been amended or repealed.

**Secretary of the Board of Directors of
Crescenta Valley Water District**

DATED: March 27, 2009 (S E A L)

RESOLUTION NO. 682

**RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESCENTA VALLEY WATER DISTRICT
ADOPTING A WATER CONSERVATION PROGRAM (PHASE I)**

WHEREAS, the Crescenta Valley Water District was established for the purpose of providing adequate and reliable potable water to its inhabitants at a reasonable cost; and

WHEREAS, the groundwater supply in the Verdugo Basin is utilized as the primary source of water for District customers; and

WHEREAS, consecutive years of below normal precipitation in the watersheds of the Verdugo Basin have severely reduced the groundwater production capacity in the Verdugo Basin and hence the water supply available to the District; and

WHEREAS, the District's imported water supply connections with the Foothill Municipal Water District, which provide a supplemental source of water for District customers, are limited in size and capacity and are being subjected to increased demands; and

WHEREAS, the District's imported water supply may be subject to a reduced water allotment from the Foothill Municipal Water District should the Metropolitan Water District of Southern California put into effect their approved allocation plan; and

WHEREAS, California has experienced an energy crisis which has resulted in extremely high energy costs; and

WHEREAS, the District is a user of significant quantities of energy to meet its system demands for the production, transmission, and distribution of water; and

WHEREAS, conservation of water by District customers will help relieve the problems caused by the shortage in supply and the increase in energy costs; and

WHEREAS, the District, through its public information program, should advise and alert its customers to the serious nature of the situation and the need for a reduction in demand by customers; and

WHEREAS, the District has the power and authority, under Section 375 of the California Water Code, to adopt water conservation measures for activities within its service area; and

WHEREAS, given the current conditions, the District finds it necessary and beneficial to undertake a phased water conservation program; and

NOW, THEREFORE, BE IT RESOLVED, that the General Manager is authorized to implement a water conservation program, as Phase I of the goal to reduce water use below pre-drought water usage, to reduce the risk and severity of water shortage; and

BE IT FURTHER RESOLVED, that the Crescenta Valley Water District prohibits the following water usage to all of its customers:

Prohibited Use Applicable to ALL Customers

1. **Water hose usage:** Hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas shall not be permitted. Exception: Flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety. Businesses or schools required to hose down public eating areas will be provided with access to a water broom.
2. **Overspray and runoff:** Use of water for any purpose which results in overspray, excessive runoff onto hardscapes, driveways, street, adjacent lands or into gutters shall not be permitted.
3. **Fountains, similar structures:** Water used to clean, fill or maintain levels in decorative fountains or similar structures must be part of a recirculation system.
4. **Leaks:** Leaks from any facility both inside and outside of a customer's premises must be repaired within seventy-two hours after the customer is notified of, or discovers the leak. Failure to affect the repair of any leak shall subject said customer to all penalties provided herein for waste of water.
5. **Irrigating times: Irrigating times:** No watering, sprinkling or irrigating shall take place between the hours of nine a.m. (9:00AM) and five p.m. (5:00PM) in any landscaped or vegetated areas, including, including, but not limited to, golf courses, parks, cemeteries and school areas landscaped with, but not limited to, grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, trees, and California-friendly plantings. With the exception of drip irrigation systems or weather based irrigation controllers, residential timers shall not run for more than a 10 minutes per station.
6. **Hand Watering:** Hand watering of non-turf areas is allowed using a hose with a positive shut-off nozzle or watering can within the allowable times as specified above.
7. **Windy and rainy days:** No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray. No irrigation or watering of turf or ornamental-landscapes during and 48 hours following measurable precipitation.
8. **Vehicle washing:** The washing of commercial and non-commercial privately owned automobiles, trucks, trailers, motor-homes, boats, buses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.

- 9. Swimming pools:** Owners of outdoor swimming pools, wading pools or spas, when these are not in use, are requested to use covers to minimize the evaporation of water.
- 10. Construction water restrictions:** Water for construction purposes including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner which will not result in runoff.
- 11. Fire hydrants:** The use of potable water from fire hydrants shall be limited to firefighting, related activities or other activities immediately necessary to maintain the health, safety, and welfare of the residents of the city.
- 12. Drinking water upon request:** No restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless expressly requested by a customer.
- 13. Hotels/Motels:** Hotels, motels, and other commercial lodging establishments are requested to post notices informing their guests about the city's water conservation policy and urging guests to conserve water. Water conservation notices will be provided by CVWD.
- 14. Hotels/Motels:** Hotels, motels and other commercial lodgings are requested to post notices giving their guests the option of not laundering towels and linens daily.
- 15. Reporting waste of water:** The District shall maintain a program for residents to report waste of water throughout the District boundaries. This will include an online submittal form, a dedicated phone number, and follow-up by District staff on all waste of water reports. Residents are requested to report any observed waste of water from surrounding properties or in the community and report to the District for follow-up.
- 16. Pre-rinse spray valve:** Where applicable, restaurants must utilize water conserving nozzles.
- 17. New Development.** 1). Prohibit water waste such as, but not limited to: single-pass cooling systems; conveyor and in-bay vehicle wash and commercial laundry systems which do not reuse water; non-re-circulating decorative water fountains, and address irrigation, landscape, and industrial, commercial, and other design deficiencies. 2). Enacts and enforces ordinances or establishes terms of service for water efficient design in new development, and supports local ordinances that establish permits for water efficient design in new development.

BE IT FURTHER RESOLVED, that the Crescenta Valley Water District urges the following water conservation practices to all of its customers:

1. Reduce the amount of turf and install new drought tolerant landscaping, low-water using trees and plants, and efficient irrigation systems including but not limited to evapotranspiration (ET) controllers, drip irrigation, and “high efficiency sprinkler heads”.
2. Wash only full loads of dishes or clothes in automatic washers, and do not allow indoor faucets to run continuously.
3. Turn off water system when leaving property unoccupied for an extended period of time.

VIOLATIONS

For any customer of the District in violation of the provisions listed in the Waste of Water Ordinance:

First Violation: The District shall issue a written notice of the fact of such violation to the customer.

Second Violation: The District shall issue a written warning to the customer of the fact of such second violation with a statement of the possible penalties for the present violation for which the notice was written, the possible penalties for each subsequent violation should they occur, and a written copy of this resolution.

Third Violation: The District shall install a flow-restricting device of one gallon per minute (1gpm) capacity for services up to one and one-half inch size, and comparatively sized restrictors for larger service, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight hours.

The charge for installing a flow-restricting device shall be based upon the size of the meter and shall not exceed \$150.00.

The charge for removal of the flow-restricting device and restoration of normal service shall not exceed \$100.00. Restoration of normal service will be performed during regular working hours on regular working days.

For any subsequent violation or any willful violation: The District shall either install a flow-restricting device, for a period of time not less than one week or discontinue water service to that customer at the premises at which the violation occurred.

The charge for installing a flow-restricting device shall be based upon the size of the meter and shall not exceed \$200.00.

The charge for removal of the flow-restricting device and restoration of normal service shall not exceed \$150.00. Restoration of normal service will be performed during regular working hours on regular working days.

Notice: The District shall give notice of each violation to the customer committing such violation as follows:

For the first violation: The District shall give written notice of the fact of such violation to the customer personally or by United States regular mail.

For the second violation: The District shall give written notice of the fact of such violation to the customer by United States certified mail, return receipt requested.

For any subsequent violations: If the penalty assessed is, or includes the installation of a flow-restrictor or the discontinuance of water service to the customer for any period of time whatsoever, notice of the fact of the violation shall be delivered fifteen (15) working days before the penalty is to be enacted, in the following manner:

- ✚ Personal delivery of written notice to the customer at their residence or place of business and obtain their signature of delivery.
- ✚ Return receipt delivery to customer at their residence or place of business.

All notices shall contain, in addition to the facts of the violation, a statement of the possible penalties for the present violation for which the notice was written and each subsequent violation, a statement of the anticipated date of the penalty, if any, will be enacted for the present violation, and a statement informing the customer of the customer's right to a hearing on the violation.

Hearing: Any customer against whom a restriction or limitation is levied has the right to a hearing and a right to appeal to the Board of Directors. Written request from customer to the District must be received within fifteen (15) working days of the date of notification of the violation. Before the hearing can be scheduled all existing plumbing fixtures in the structure must be retrofitted exclusively with water-conserving plumbing fixtures including low flush or high efficiency toilets, low flow showerheads, and aerators. A water audit will be used to verify installation.

Enactments of the appropriate penalty shall be deferred until the appeal is resolved.

If the appeal decision is NOT in favor of the customer, the determined penalty shall be enacted within ten (10) days after the customer is advised of the decision in writing through certified mail, return receipt requested.

Reservation of Rights: The rights of the District hereunder shall be cumulative to any other right of the District to discontinue service. All monies collected by the District pursuant to any of the penalty provisions of the chapter shall be deposited in the water revenue fund as reimbursement for the District's costs and expenses of administering and enforcing this ordinance.

BE IT FURTHER RESOLVED, that the Crescenta Valley Water District finds that a program of voluntary measures to reduce consumption will assist in achieving the goal of conserving the water supply without causing unnecessary adverse economic consequences; and

BE IT FURTHER RESOLVED, that the Board of Directors of the Crescenta Valley Water District authorize that Section 8.07(c) and Appendix G of the District's Rules and Regulations are amended to read as attached; and

BE IT FURTHER RESOLVED, that if critical water shortages continue to exist and if current measures prove insufficient to accomplish the necessary conservation, the Crescenta Valley Water District will consider additional and more restrictive phases of water conservation to curtail water use. Likewise, should water supply conditions return to normal, the Crescenta Valley Water District will also consider ending this program.

PASSED, APPROVED, AND ADOPTED at a Regular Meeting of the Board of Directors of Crescenta Valley Water District held on April 7, 2015, amendments to Resolution No. 682 were adopted by the following vote:

AYES:

NOES:

None

ABSENT:

None

ATTEST:

**President, Board of Directors
Crescenta Valley Water District**

Secretary of the Board of Directors

STATE OF CALIFORNIA)
)
COUNTY OF LOS ANGELES) ss.

I, RON MITCHELL, Secretary of the Crescenta Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of the amendments to Resolution No. 682 of the Board of Directors of Crescenta Valley Water District adopted at a Regular Meeting held on April 7, 2015 and that the same has not been amended or repealed.

**Secretary of the Board of Directors of
Crescenta Valley Water District**

DATED: April 7, 2015

(S E A L)

Date	Revisions	Approved by Board	Initials
04/07/2015	1. Revise Resolution 682: Windy and rainy days: No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray, and on days when it is raining. 2. Add the following: Windy and rainy days: No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray. No irrigation or watering of turf or ornamental-landscapes during and 48 hours following measurable precipitation.		



Appendix D: 2019 County of LA All-Hazards Mitigation Plan

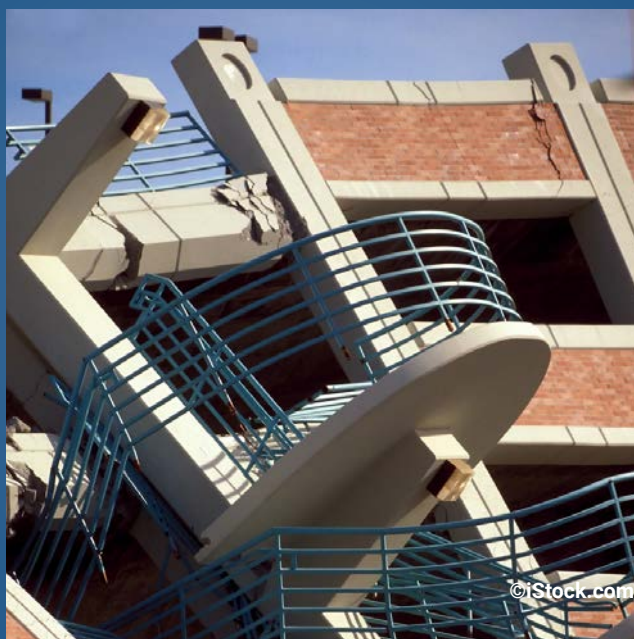
Crescenta Valley Water District 2020 Urban Water Management Plan



PUBLIC DRAFT

2019 County of Los Angeles All-Hazards Mitigation Plan

Chief Executive Office - Office of Emergency Management



**2019 COUNTY OF LOS ANGELES
ALL-HAZARDS MITIGATION PLAN**

TABLE OF CONTENTS

1	Introduction.....	1-1
1.1	Hazard Mitigation Planning	1-1
1.2	2019 All-Hazards Mitigation Plan Synopsis	1-1
2	Planning Process	2-1
2.1	Overview of 2019 AHMP Planning Process.....	2-1
2.2	Opportunities for Stakeholders.....	2-4
2.3	Public Involvement	2-4
2.4	Review and Incorporation of Existing Plans and Reports.....	2-5
2.5	Continued Public Participation.....	2-5
2.6	Plan Update Method and Schedule	2-6
3	Community Profile	3-1
3.1	Planning Area.....	3-1
3.2	Population and Development Trends	3-14
3.3	Vulnerable Populations	3-14
3.4	Critical Facilities	3-17
4	Hazard Identification and Risk Assessment	4-1
4.1	Climate Change.....	4-2
4.2	Dam Failure	4-9
4.3	Earthquake.....	4-16
4.4	Flood.....	4-25
4.5	Landslide	4-32
4.6	Tsunami.....	4-37
4.7	Wildfire	4-42
5	Mitigation Strategy	5-1
5.1	Authorities, Policies, Programs, and Resources.....	5-1
5.2	NFIP Participation.....	5-9
5.3	Mitigation Goals.....	5-9
5.4	Potential Mitigation Actions and Projects.....	5-9
5.5	Mitigation Action Plans	5-14
5.6	Plan Integration	5-15
6	Plan Review, Evaluation, and Implementation.....	6-1
6.1	Changes in Development	6-1
6.2	Progress in Local Mitigation Efforts	6-1

6.3	Changes in Priorities	6-2
7	Plan Adoption	7-1
7.1	Formal Adoption	7-1

LIST OF APPENDICES

Appendix A – Planning Process
Appendix B – Community Profile
Appendix C – Risk Assessment

LIST OF FIGURES

Figure 3-1. Location.....	3-8
Figure 3-2. Supervisorial District 1	3-9
Figure 3-3. Supervisorial District 2	3-10
Figure 3-4. Supervisorial District 3	3-11
Figure 3-5. Supervisorial District 4	3-12
Figure 3-6. Supervisorial District 5	3-13
Figure 3-7. People Experiencing Homelessness in the City of Los Angeles.....	3-15
Figure 3-8. People Experiencing Homelessness in Unincorporated Los Angeles County	3-16
Figure 3-9. Los Angeles County Animal Care & Control.....	3-18
Figure 3-10. Los Angeles County Fire Department.....	3-19
Figure 3-11. Los Angeles County Health Services.....	3-20
Figure 3-12. Los Angeles County Library.....	3-21
Figure 3-13. Los Angeles County Museum of Art and Museum of Natural History	3-22
Figure 3-14. Los Angeles County Office of Education.....	3-23
Figure 3-15. Los Angeles County Other (Offices)	3-24
Figure 3-16. Los Angeles County Parks & Recreation.....	3-25
Figure 3-17. Los Angeles County Department of Public Health.....	3-26
Figure 3-18. Los Angeles County Public Works	3-27
Figure 3-19. Los Angeles County Sheriff's Department	3-28
Figure 4-1. Temperature Change	4-7
Figure 4-2. Sea Level Rise Inundation Areas	4-8
Figure 4-3. Dam Breach Inundation Areas	4-13
Figure 4-4. Major Faults in Southern California	4-22
Figure 4-5. Historical Earthquakes (1769-2019)	4-23
Figure 4-6. Seismic Hazard Areas	4-24
Figure 4-7. Los Angeles County Flood Control System.....	4-30
Figure 4-8. Special Flood Hazard Areas.....	4-31
Figure 4-9. Deep-Seated Landslide Susceptibility Areas	4-36
Figure 4-10. Tsunami Inundation Areas	4-41
Figure 4-11. Fire Hazard Severity Zones.....	4-47
Figure 4-12. Recent Wildfires (2000-2018).....	4-48

LIST OF TABLES

Table 2-1. AHMP Timeline	2-1
Table 2-2. Hazard Mitigation Advisory Committee	2-3
Table 2-3. Existing Plans and Reports	2-5
Table 3-1. Los Angeles County Land Area	3-1
Table 3-2. Supervisorial District 1	3-1
Table 3-3. Supervisorial District 2	3-3
Table 3-4. Supervisorial District 3	3-4
Table 3-5. Supervisorial District 4	3-4
Table 3-6. Supervisorial District 5	3-5
Table 3-7. People Experiencing Homelessness	3-14
Table 3-8. Los Angeles County-Owned and County-Related Critical Facilities.....	3-17
Table 4-1. Climate Change Identification Profile	4-2
Table 4-2. Climate Change Impact on Land Area	4-4
Table 4-3. Climate Change Impact on Vulnerable Populations – People Experiencing Homelessness	4-4
Table 4-4. Climate Change Impact on County Critical Facilities.....	4-5
Table 4-5. Overall Summary of Vulnerability to Climate Change	4-6
Table 4-6. Dam Failure Identification Profile	4-9
Table 4-7. Dam Failure Impact on Land Area	4-11
Table 4-8. Dam Failure Impact on Vulnerable Populations – People Experiencing Homelessness	4-11
Table 4-9. Dam Failure Impact on County Critical Facilities	4-11
Table 4-10. Overall Summary of Vulnerability to Dam Failure	4-12
Table 4-11. Drought Identification Profile	4-14
Table 4-12. Drought Impact.....	4-15
Table 4-13. Overall Summary of Vulnerability to Drought	4-15
Table 4-14. Earthquake Identification Profile	4-16
Table 4-15. Seismic Hazard Impact on Land Area	4-19
Table 4-16. Seismic Hazard Impact on Vulnerable Populations – People Experiencing Homelessness	4-20
Table 4-17. Seismic Hazard Impact on County Critical Facilities	4-21
Table 4-18. Overall Summary of Vulnerability to Earthquakes	4-21
Table 4-19. Flood Identification Profile	4-25
Table 4-20. Flood Impact on Land Area	4-27
Table 4-21. Flood Impact on Vulnerable Populations – People Experiencing Homelessness ..	4-27
Table 4-22. Flood Impact on County Critical Facilities	4-28
Table 4-23. Overall Summary of Vulnerability to Floods	4-29
Table 4-24. Landslide Identification Profile	4-32
Table 4-25. Landslide Impact on Land Area	4-34
Table 4-26. Landslide Impact on Vulnerable Populations – People Experiencing Homelessness	4-34
Table 4-27. Landslide Impact on County Critical Facilities	4-34
Table 4-28. Overall Summary of Vulnerability to Landslides	4-35
Table 4-29. Tsunami Identification Profile	4-37
Table 4-30. Tsunami Impact on Land Area	4-39

Table 4-31. Tsunami Impact on Vulnerable Populations – People Experiencing Homelessness	4-39
Table 4-32. Tsunami Impact on County Critical Facilities	4-39
Table 4-33. Overall Summary of Vulnerability to Tsunamis	4-40
Table 4-34. Wildfire Identification Profile	4-42
Table 4-35. Wildfire Impact on Land Area	4-44
Table 4-36. Wildfire Impact on Vulnerable Populations – People Experiencing Homelessness	4-45
Table 4-37. Wildfire Impact on County Critical Facilities	4-45
Table 4-38. Overall Summary of Vulnerability to Wildfires	4-46
Table 5-1 Human and Technical Resources for Hazard Mitigation	5-2
Table 5-2. Financial Resources for Hazard Mitigation	5-4
Table 5-3. Legal and Regulatory Resources for Hazard Mitigation	5-7
Table 5-4. Potential Mitigation Actions and Projects	5-9
Table 5-5. Tier 1 Mitigation Action Plan	5-14
Table 5-6. Tier 2 Mitigation Action Plan	5-15
Table 6-1. Completed Local Mitigation Efforts	6-1

LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AB	Assembly Bill
AHMP	All-Hazards Mitigation Plan
Cal FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CFR	Code of Federal Regulations
CGS	California Geological Survey
CWPP	Community Wildfire Protection Plans
CPG	Comprehensive Preparedness Guide
CRS	Community Rating System
DFIRM	Digital Flood Insurance Rate Map
DHS	Department of Homeland Security
DMA	Disaster Mitigation Act
DR	Disaster Declaration Number
DSOD	Division of Safety of Dams
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
EQ	Earthquake
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
GIS	Geographic Information System
IPCC	Intergovernmental Panel on Climate Change
LACMA	Los Angeles County Museum of Art
LRA	Local Responsibility Area
M	Magnitude
MARAC	Mutual Aid Regional Advisory Committee
NFIP	National Flood Insurance Program
NHM	Los Angeles County Natural History Museum
OEM	Office of Emergency Management
PGA	Peak Ground Acceleration

RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SRA	State Responsibility Area
U.S.	United States
USACE	United States Army Corps of Engineers
USGS	U.S. Geological Survey
WUI	wildland-urban interface

1 INTRODUCTION

1.1 HAZARD MITIGATION PLANNING

As defined in Title 44 of the Code of Federal Regulations (CFR), Subpart M, Section 206.401, hazard mitigation is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs. Hazard mitigation aims to reduce losses from future disasters. It is a process that identifies and profiles hazards, analyzes the people and facilities at risk, and develops mitigation actions to reduce or eliminate hazard risk. The implementation of the mitigation actions, which include short- and long-term strategies that may involve planning, policy changes, programs, projects, and other activities, is the end result of this process.

In recent years, local hazard mitigation planning has been driven by a federal law, known as the Disaster Mitigation Act of 2000 (DMA 2000). On October 30, 2000, Congress passed the DMA 2000 (Public Law 106-390), which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) (Title 42 of the United States Code Section 5121 et seq.) by repealing the act’s previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. This new section also provided the legal basis for the Federal Emergency Management Agency’s (FEMA’s) mitigation plan requirements for the Hazard Mitigation Assistance grant programs.

1.2 2019 ALL-HAZARDS MITIGATION PLAN SYNOPSIS

To meet the requirements of the DMA 2000, the Los Angeles County Office of Emergency Management (OEM) has prepared an All- Hazards Mitigation Plan (AHMP) (hereinafter referred to as the 2019 AHMP) to assess risks posed by natural hazards and to develop a mitigation action plan for reducing the risks in Unincorporated Los Angeles County. The 2019 AHMP replaces the AHMP that was approved in 2014.

The 2019 AHMP is organized to follow FEMA’s Local Mitigation Plan Review Tool, which demonstrates how local AHMPs meet the DMA 2000 regulations. As such, specific planning elements of this review tool are in their appropriate plan sections.

The 2019 AHMP structure has been updated to including the following sections:

- **Section 2 Planning Process** provides an overview of the 2019 planning process, starting with a plan update timeline. It identifies advisory committee members and describes their involvement with the plan update process. It also details stakeholder outreach, public involvement and continued public involvement. It provides an overview of the existing plans and reports and how they were incorporated into the 2019 AHMP and lastly lays out a plan update method and schedule. Supporting planning process documentation is listed in **Appendix A**.
- **Section 3 Community Profile** describes the planning area for the 2019 AHMP, which includes the unincorporated areas of the county. It touches on the current population and development trends in the county and discusses vulnerable populations in the county, including the growing homeless crisis. Finally, this section lists the county-owned and

county-related critical facilities included in this plan. Supporting community profile information can be found in **Appendix B**.

- **Section 4 Hazard Identification and Risk Assessment** describes each of the eight hazards addressed in this plan. Additionally, it includes impact (i.e., risk assessment) tables for the planning area, vulnerable populations and critical facilities within each hazard area. An overall summary description is also provided for each hazard. **Appendix C** contains supporting hazard identification and risk assessment information.
- **Section 5 Mitigation Strategy** details Los Angeles County's capabilities (authorities, policies, programs and resources) available for hazard mitigation. It also discusses the county's participation in the National Flood Insurance Program (NFIP). Finally, it describes the mitigation strategy, which is the blueprint for how the County will reduce its risks to hazards. The mitigation strategy is made up of three main components: mitigation goal(s); potential mitigation actions and projects; and a mitigation action plan.
- **Section 6 Plan Review, Evaluation and Implementation** discusses the revisions made to the 2019 AHMP to address changes in development, progress made in local mitigation efforts and changes to priorities.
- **Section 7 Plan Adoption** contains a scanned copy of the adoption resolution.

2 PLANNING PROCESS

Section 2 – Planning Process addresses Element A of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element A: Planning Process	
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	

2.1 OVERVIEW OF 2019 AHMP PLANNING PROCESS

The development of the 2019 AHMP was collaborative effort between Los Angeles County OEM, AECOM Technical Services, Inc. (AECOM), an advisory committee, and various county departments and agencies. **Table 2-1** provides a timeline of the major plan update tasks and milestones by month over a 9-month period. **Table 2-2** lists the advisory committee members and how they contributed to the development of the plan.

Table 2-1. AHMP Timeline

Date	Tasks	People Involved
March 2019	Reviewed the 2014 AHMP and decided to continue efforts to streamline the plan Held 2019 AHMP advisory committee kick-off meeting (March 15)	AHMP project manager, advisory committee
April 2019	Determined the hazards to be profiled, including climate change (new to the 2019 AHMP), drought, dam failure, earthquake, flood, landslide, tsunami and wildfire (all addressed in the 2014 AHMP)	AHMP project manager, AECOM
May 2019	Collected local and regional existing plans and reports	AECOM
June 2019	Determined the Geographic Information System (GIS) strategy for risk assessment including land area/geographical boundaries and critical facilities and discussed how to incorporate people experiencing homelessness	AHMP project manager, AECOM, Los Angeles County Office of Emergency Management

Table 2-1. AHMP Timeline

Date	Tasks	People Involved
July 2019	- Identified initial list of stakeholders - Crafted public outreach messages for the Twitter handle @ReadyLACounty - Created draft hazard figures - Developed homeless people risk assessment tables - Developed land area/geographic boundaries risk assessment tables - Rewrote/updated the hazard profiles into a streamlined tabular format - Began developing/updating/collecting draft mitigation actions - Streamlined and updated the community profile section to only address the planning area, population and development trends and county critical facilities (deleted general County information)	AHMP project manager, AECOM
August 2019	- Tweeted public outreach messages about the 2019 AHMP - Emailed stakeholders about the 2019 AHMP - Conducted conference call with Los Angeles County Regional Planning (August 5) to discuss joint public outreach efforts as well as mitigation strategies - Conducted meeting with Los Angeles County Public Works (August 7) to discuss 2019 AHMP, progress made to date, and existing and new mitigation strategies - Developed critical facilities risk assessment tables - Created draft risk assessment tables - Revised plan maintenance approach from quarterly meetings to annual review questionnaires	AHMP project manager, AECOM, Los Angeles County Department of Regional Planning, Los Angeles County Public Works, advisory committee
September 2019	- Updated the capability assessment tables - Developed a list of potential mitigation actions and prioritized actions based on a new tiered approach - Created public outreach flyers in English and Spanish and placed on the Los Angeles County OEM website - Documented progress in local mitigation efforts - Addressed changes in development since the 2014 AHMP - Created Initial Draft AHMP - Created Public Draft AHMP	AHMP project manager, AECOM, advisory committee
October 2019	Created Final Draft AHMP	AECOM

Table 2-2. Hazard Mitigation Advisory Committee

Name	Department / Agency, Title	Contribution
Emily Montanez	Office of Emergency Management, AHMP project manager, Senior Program Manager	Led kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Margaret Carlin	Office of Emergency Management, GIS Project Supervisor	Provided input on GIS, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Stephanie Kim	Office of Emergency Management, Academic Intern	Reviewed and updated the community profile, provided input on people experiencing homelessness, participated on conference calls, attended department meetings, and reviewed the initial draft plan.
Caroline Chen	Los Angeles County Department of Regional Planning, Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Iris Chi	Los Angeles County Department of Regional Planning, Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Loni Eazell	Los Angeles County Public Works, Disaster Services Specialist	Coordinated August 7 department meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Frank Forman	Los Angeles County Fire Department, Battalion Chief	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Andrew Gano	City of Glendale Fire Department, Captain	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Angine Geragoosian	Los Angeles County Public Works, Disaster Services Analyst	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Patricia Hachiya	Regional Planning, Supervising Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Jack Husted	Department of Public Works, Senior Civil Engineer	Attended August 7 meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Sheryll Jones	Emergency Services Coordinator, Southern Region Cal OES	Advised Los Angeles County OEM about initial update process and reviewed initial draft plan.
Sinan Khan	Office of Emergency Management, Associate Director	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.

Table 2-2. Hazard Mitigation Advisory Committee

Name	Department / Agency, Title	Contribution
Diana Manzano	Area D Disaster Management, Coordinator	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
John Eric Pearce	Fire Department, Captain	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Christine Shaffer	Sheriff's Department, Deputy	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Nathaniel VerGow	Los Angeles Homeless Services Authority, Director of Access and Engagement	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Steven Wallace	San Gabriel Fire Department, Interim Fire Chief	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Iain Watt	Office of Emergency Management, Emergency Management Coordinator	Participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.

2.2 OPPORTUNITIES FOR STAKEHOLDERS

On August 20, 2019, the AHMP project manager reached out to stakeholders about the 2019 AHMP to invite them to participate in the plan update process. The stakeholders were also notified on October 4, 2019, that a copy of the public draft plan was available for review on the Los Angeles County OEM website. Stakeholders include members of the Mutual Aid Regional Advisory Committee (MARAC) for the Southern Region. The MARAC consists of: the California Office of Emergency Services (Cal OES) regional administrator, or deputy, for the Administrative Region encompassing the mutual aid region(s); regional mutual aid coordinators (fire, law enforcement, disaster medical and other established mutual aid systems); a representative from each operational area located in the mutual aid region; representatives from two municipalities (small/large and rotates bi-annually); regional public utility representative; private utility representative; special district representative; and other designee as appointed by an individual MARAC. Stakeholder documentation is located in **Appendix A**.

2.3 PUBLIC INVOLVEMENT

The Los Angeles County OEM engaged the public in the plan update process through various media formats. A flyer about the 2019 AHMP was created in both English and Spanish and placed on the Los Angeles County OEM website. The website also includes a copy of the public draft plan for public comment on October 4, 2019.

<https://www.lacounty.gov/emergency/county-of-los-angeles-all-hazards-mitigation-plan/>

Additionally, the Los Angeles County OEM used Twitter, @ReadyLACounty, to engage the public through a series of tweets about the 2019 AHMP, hazards in Los Angeles County, hazard mitigation planning, and the public draft plan.

2.4 REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS

The consultant reviewed existing relevant information to include in the 2019 AHMP. **Table 2-3** lists the plans and reports reviewed as well as information to be incorporated into the 2019 AHMP.

Table 2-3. Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2019 AHMP
Los Angeles County Operational Area Emergency Response Plan (2012)	Appendix K Hazards-Specific to the operational area into Section 4 Hazard Identification and Risk Assessment
Los Angeles County 2035 General Plan (2015)	Safety element mitigation policies into Section 5 Mitigation Strategy
Los Angeles County Floodplain Management Plan (2016)	Flood hazard profile, non-implemented flood mitigation initiatives into Section 4 Hazard Identification and Risk Assessment
County of Los Angeles Floodplain Management Plan Progress Report 2017 – 2018	Non-implemented flood mitigation initiatives into Section 5 Mitigation Strategy, implemented flood mitigation initiatives into Section 6 Plan Review, Evaluation, and Implementation
County of Los Angeles Repetitive Loss Area Analysis Progress Report 2017 – 2018	Non-implemented flood mitigation initiatives into Section 5 Mitigation Strategy, implemented flood mitigation initiatives into Section 6 Plan Review, Evaluation, and Implementation
Unincorporated Los Angeles County Community Climate Action Plan 2020	Climate change mitigation objectives into Section 5 Mitigation Strategy
2019 Greater Los Angeles Homeless Count Results	People experiencing homelessness count into Section 4 Hazard Identification and Risk Assessment
Los Angeles County Fire Department 2018 Strategic Fire Plan	Vegetation management programs into Section 5 Mitigation Strategy
Southern California Earthquake Data Center's Earthquake Catalogs	Historic seismic data into Section 4 Hazard Identification and Risk Assessment
Maritime Tsunami Response Playbooks: Background Information and Guidance for Response and Hazard Mitigation Use (2016)	Historical tsunami information and evaluation data into Section 4 Hazard Identification and Risk Assessment
FEMA Flood Insurance Study, Los Angeles County, California (2018)	Historical flood information and flood hazard areas into Section 4 Hazard Identification and Risk Assessment
U.S. Geological Survey (USGS): Rainfall and Landslides in Southern California (active)	Landslide nature, location, historical and extent information into Section 4 Hazard Identification and Risk Assessment

2.5 CONTINUED PUBLIC PARTICIPATION

A copy of the 2019 AHMP will be kept on the Los Angeles County OEM website along with contact information. The Los Angeles County OEM will also notify residents of any changes or

updates to the 2019 AHMP, including mitigation projects identified in the plan as they are implemented, via @ReadyLACounty on Twitter.

2.6 PLAN UPDATE METHOD AND SCHEDULE

The 2014 AHMP recommended quarterly meetings to discuss and track mitigation projects implemented during the lifespan of the 2014 AHMP. It is unknown how often specific departments/agencies met to track the status of their mitigation actions. For the 2019 AHMP, the plan update method and schedule has been revised to include an annual review and an advisory committee roundtable prior to the 5-year update. Mitigation projects will be monitored via a progress project report. Details are as follows:

- **Annual Review Worksheets:** Every 12 months from plan adoption, the AHMP project manager will email each member of the advisory committee an Annual Review Worksheet to complete. As shown in Appendix A, the Annual Review Worksheet reflects the Local Mitigation Plan Review Tool and includes the following: planning process, hazard profile, risk assessment, and mitigation strategy. Each member of the advisory committee will email completed worksheets back to the AHMP project manager to review. The AHMP project manager will summarize these findings and email them out to the committee. If the AHMP project manager believes that the 2019 AHMP needs to be updated based on the findings, then an invitation will be sent to advisory committee members to attend a formal AHMP update meeting.
- **Mitigation Progress Project Reports:** Mitigation actions will be monitored and updated using the Mitigation Project Progress Report. During each annual review, each department or agency currently administering a mitigation project will submit a progress report to the AHMP project manager. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. As shown in Appendix A, the progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them.
- **Advisory Committee Roundtable:** On the fourth year of the update, the AHMP project manager will reconvene the advisory committee (updating membership, if necessary) and lead a tabletop exercise with the advisory committee to: collect the Annual Review Worksheet and any Mitigation Project Progress Reports and FEMA quarterly reports; determine hazards to be included in the 2024 AHMP; develop a new work plan; and begin the plan update process.

3 COMMUNITY PROFILE

3.1 PLANNING AREA

With approximately 4,760.72 square miles, Los Angeles County is geographically one of the largest counties in the country. As shown in **Figure 3-1**, the county stretches along 75 miles of the Pacific coast of Southern California and is bordered to the east by Orange County and San Bernardino County, to the north by Kern County, and to the west by Ventura County. Los Angeles County has two islands, Santa Catalina (75.00 square miles) and San Clemente (60.69 square miles), which are part of an eight-island group called the Channel Islands.

As shown in **Tables 3-1 – 3-6** and **Figures 3-2 – 3-6**, the county is divided into five supervisorial districts, each representing approximately 2 million people in 88 cities and approximately 140 communities or 122 county-wide statistical areas. The five supervisorial districts consist of 4,150 square miles, with 3,014.17 square miles located in the unincorporated areas. The remaining area of Los Angeles County is federal land, including the Los Padres National Forest and Angeles National Forest.

For the 2019 AHMP, the planning area is defined as Unincorporated Los Angeles County. However, the plan's risk assessment includes: Los Angeles County, Unincorporated Los Angeles County, and supervisorial districts 1-5. In addition, specific county-wide statistical area risk assessment information is provided in **Appendix C**.

Table 3-1. Los Angeles County Land Area

Entity	Square Miles
Los Angeles County	4,760.72
Unincorporated Los Angeles County	3,041.17
Supervisorial District 1	246.19
Supervisorial District 2	161.83
Supervisorial District 3	431.21
Supervisorial District 4	439.95
Supervisorial District 5	2,807.00

Table 3-2. Supervisorial District 1

City	County-wide Statistical Area
Azusa	Arcadia
Baldwin Park	Angeles National Forest
Bell	Avocado Heights
Bell Gardens	Azusa
Claremont	Bandini Islands

Table 3-2. Supervisorial District 1

City	County-wide Statistical Area
Commerce	Bassett
Cudahy	Charter Oak
El Monte	Claremont
Huntington Park	Covina
Industry	Covina (Charter Oak)
Irwindale	Duarte
La Puente	East Los Angeles
Maywood	El Monte
Montebello	Florence – Firestone
Monterey Park	Glendora
Pico Rivera	Hacienda Heights
Pomona	La Verne
Rosemead	Lynwood
South El Monte	North Whittier
South Gate	Padua Hills
Vernon	Pellissier Village
Walnut	Pomona
West Covina	Rowland Heights
	San Jose Hills
	South El Monte
	South San Gabriel
	Sunrise Village
	Valinda
	Walnut
	Walnut Park
	West Puente Valley
	West Whittier / Los Nietos
	Whittier
	Whittier Narrows

Table 3-3. Supervisorial District 2

City	County-wide Statistical Area
Carson	Athens Village
Compton	Athens-Westmont
Culver City	Del Aire
Gardena	Del Rey
Hawthorne	East Rancho Dominguez
Inglewood	El Camino Village
Lawndale	Florence – Firestone
Los Angeles (portion)	Hawthorne
Lynwood	Ladera Heights
	Lennox
	Lynwood
	Marina del Rey
	Rancho Dominguez
	Rosewood
	Rosewood/East Gardena
	Rosewood/West Rancho Dominguez
	View Park/Windsor Hills
	Walnut Park
	West Carson
	West Rancho Dominguez
	Willowbrook
	Wiseburn

Table 3-4. Supervisorial District 3

City	County-wide Statistical Area
Agoura Hills	Angeles National Forest
Beverly Hills	Franklin Canyon
Calabasas	Marina del Rey
Hidden Hills	Miracle Mile
Malibu	Kagel/Lopez Canyons
San Fernando	Santa Monica Mountains
Santa Monica	Universal City
West Hollywood	West LA
Westlake Village	Westhills

Table 3-5. Supervisorial District 4

City	County-wide Statistical Area
Artesia	Cerritos
Avalon	Del Aire
Bellflower	East La Mirada
Cerritos	East Rancho Dominguez
Diamond Bar	East Whittier
Downey	El Camino Village
El Segundo	Hacienda Heights
Hawaiian Gardens	Harbor Gateway
Hermosa Beach	La Habra Heights
La Habra Heights	La Rambla
La Mirada	Lakewood
Lakewood	Lennox
Lomita	Long Beach
Long Beach	Lynwood
Los Angeles (portion)	Marina del Rey
Manhattan Beach	Palos Verdes Peninsula
Norwalk	Rancho Dominguez
Palos Verdes Estates	Rowland Heights
Paramount	San Clemente Island
Rancho Palos Verdes	Santa Catalina Island

Table 3-5. Supervisorial District 4

City	County-wide Statistical Area
Redondo Beach	South Whittier
Rolling Hills	Sunrise Village
Rolling Hills Estates	West Carson
Santa Fe Springs	West Whittier / Los Nietos
Signal Hill	Westfield/Academy Hills
Torrance	Whittier
Whittier	

Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
Alhambra	Acton
Arcadia	Agua Dulce
Bradbury	Altadena
Covina	Anaverde
Duarte	Angeles National Forest
Glendale	Arcadia
Glendora	Azusa
La Canada – Flintridge	Bouquet Canyon
La Verne	Bradbury
Lancaster	Canyon Country
Monrovia	Castaic
Palmdale	Claremont
Pasadena	Covina
San Dimas	Covina (Charter Oak)
San Gabriel	Del Sur
San Marino	Desert View Highlands
Santa Clarita	Duarte
Sierra Madre	East Covina
South Pasadena	East Lancaster
Temple City	East Pasadena
Los Angeles City	Elizabeth Lake
Canoga Park (portion)	Glendora

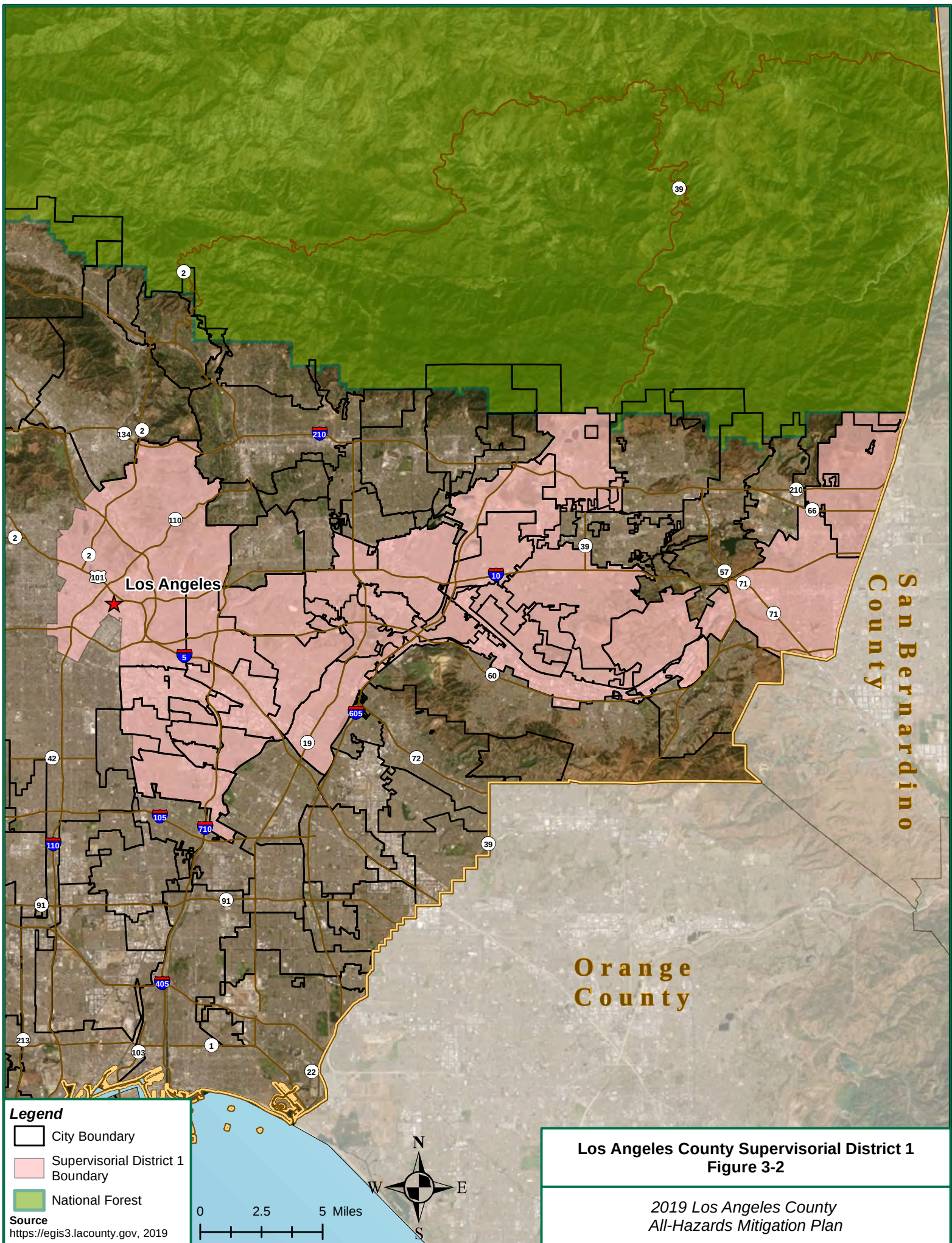
Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
Chatsworth (portion)	Hi Vista
Granada Hills (portion)	Kagel / Lopez Canyons
Hansen Dam (portion)	La Crescenta-Montrose
Lake View Terrace (portion)	La Verne
Mission Hills (portion)	Lake Hughes
Northridge (portion)	Lake Los Angeles
Olive View Hospital (Sylmar)	Lake Manor
Porter Ranch	Leona Valley
Shadow Hills	Littlerock
Sun Valley (portion)	Littlerock/Juniper Hills
Sunland	Littlerock/Pearblossom
Sylmar (portion)	Llano
Tujunga	Monrovia
West Hills (portion)	Newhall
	North Lancaster
	Northeast San Gabriel
	Palmdale
	Pearblossom/Llano
	Placerita Canyon
	Pomona
	Quartz Hill
	Roosevelt
	San Francisquito Canyon/Bouquet Canyon
	San Pasqual
	Sand Canyon
	Saugus
	Saugus/Canyon Country
	South Antelope Valley
	South Edwards
	Southeast Antelope Valley
	Stevenson Ranch
	Sun Village
	Twin Lakes/Oat Mountain

Table 3-6. Supervisorial District 5

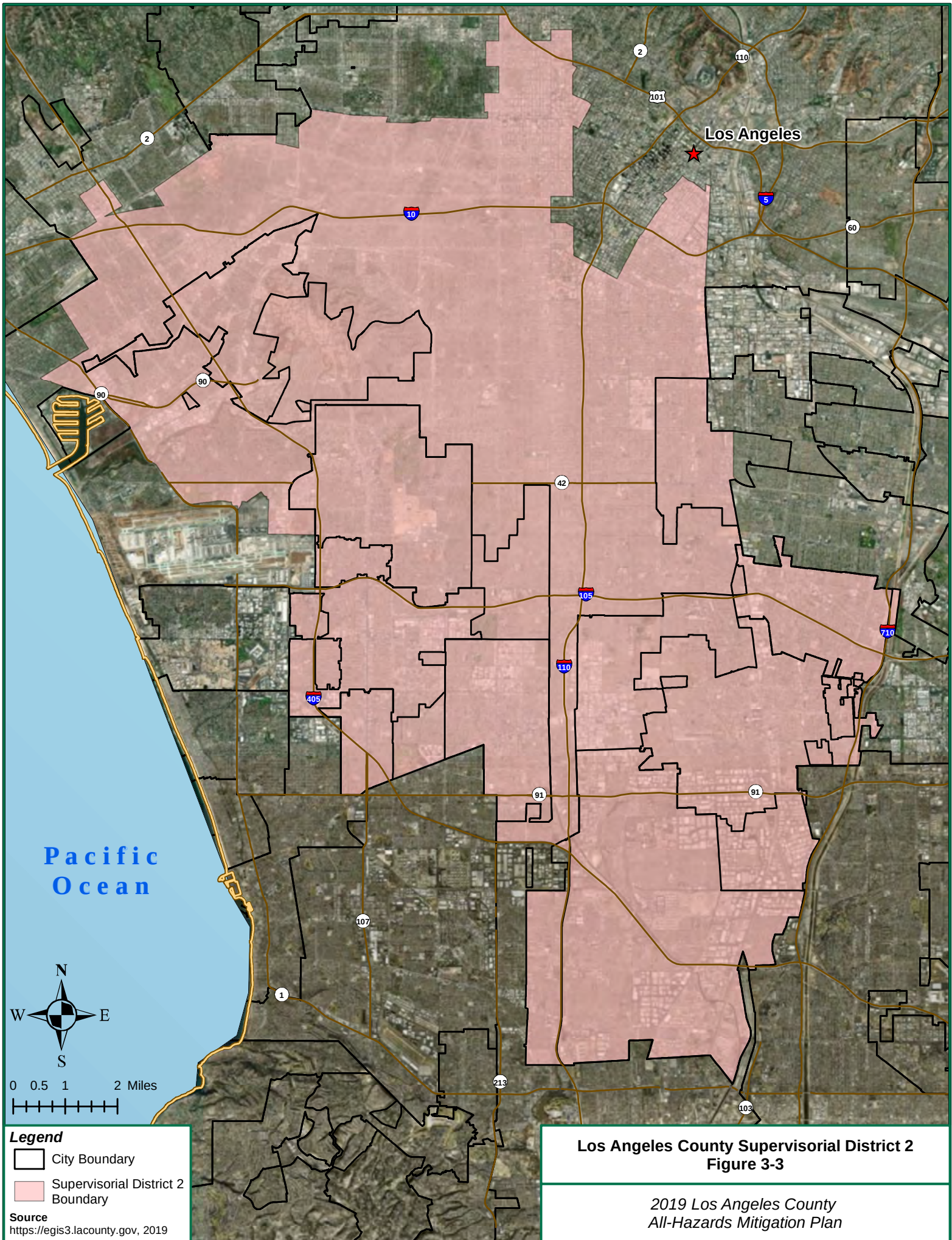
City	County-wide Statistical Area
	Val Verde
	Valencia
	West Antelope Valley
	West Chatsworth
	White Fence Farms





Los Angeles County Supervisorial District 1
Figure 3-2

*2019 Los Angeles County
All-Hazards Mitigation Plan*







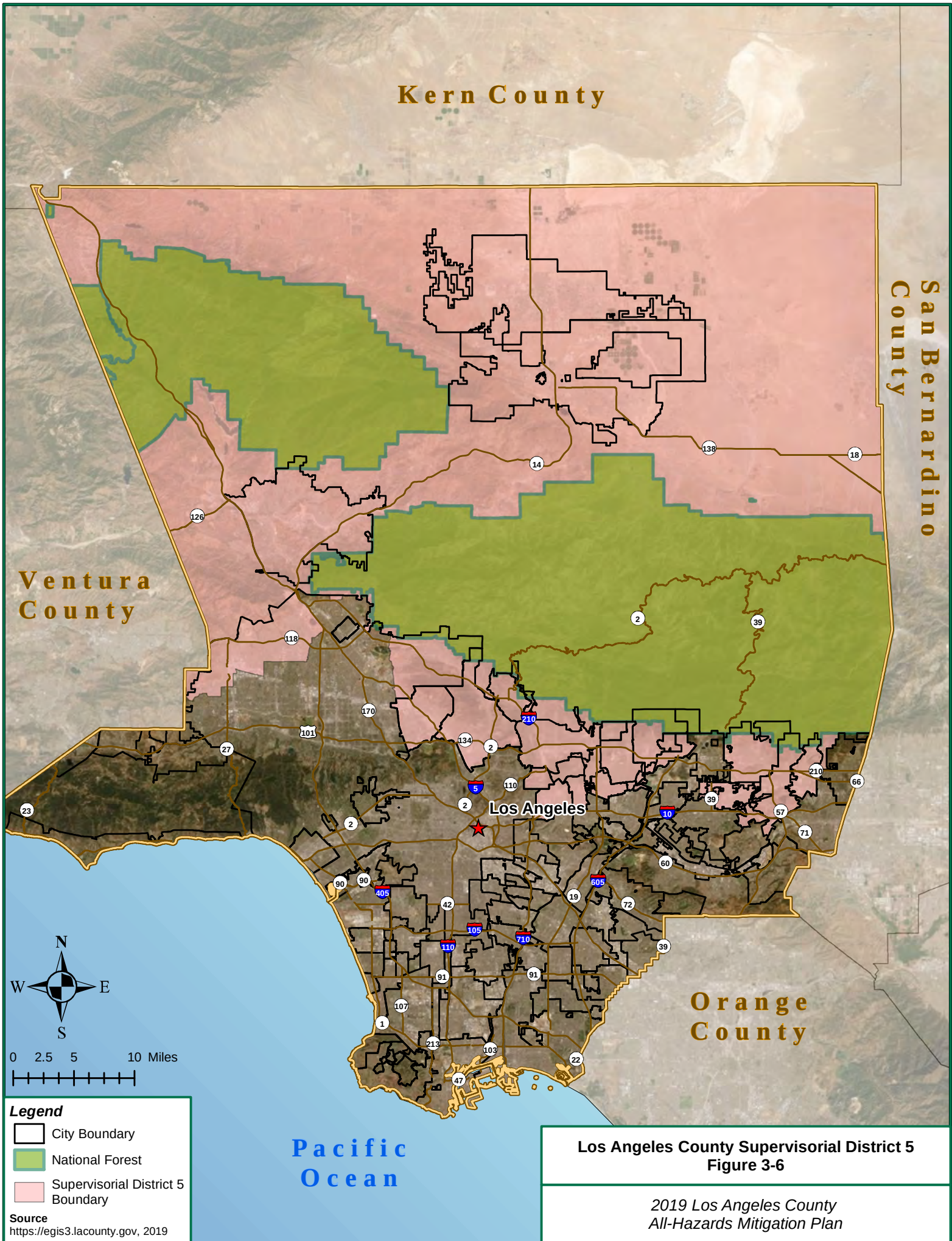
Legend

- City Boundary
- Supervisorial District 4 Boundary

Source
<https://egis3.lacounty.gov>, 2019

**Los Angeles County Supervisorial District 4
Figure 3-5**

*2019 Los Angeles County
All-Hazards Mitigation Plan*



Kern County

San Bernardino
County

Ventura
County

Orange
County

Pacific
Ocean

Los Angeles County Supervisorial District 5
Figure 3-6

2019 Los Angeles County
All-Hazards Mitigation Plan

- Legend**
- City Boundary
 - National Forest
 - Supervisorial District 5 Boundary

Source
<https://egis3.lacounty.gov>, 2019

3.2 POPULATION AND DEVELOPMENT TRENDS

Since the drafting of the 2014 AHMP, United States (U.S.) Census Bureau Intercensal Estimates from July 1, 2015, to July 1, 2018, show the number of people residing in Los Angeles County only grew from 10,097,037 to 10,105,518. While the county experienced population growth of 0.50 percent in 2015 and 0.23 percent in 2016, the county population fell by 0.02 percent in 2017 and 0.13 percent in 2018.

The California Department of Finance noted that the decline in population can be linked in part to a decline in birthrate. Researchers at the University of Southern California Lusk Center for Real Estate also suggest that one of the biggest reasons behind Los Angeles County's growth rate slip is due the lack of housing. Despite the city of Los Angeles adding between 15,000 and 17,000 units of housing each year from 2014 to 2018, housing has become prohibitively unaffordable, which has led many young Los Angeles County residents to move out-of-state or put down roots in nearby Inland Empire counties, where thousands of new jobs in distribution hubs and fulfillment centers have fueled more affordable housing development.

For the 2019 AHMP, population and residential buildings are not included in the risk assessment. As 2020 U.S. Census data become available, this information may be included in plan updates.

3.3 VULNERABLE POPULATIONS

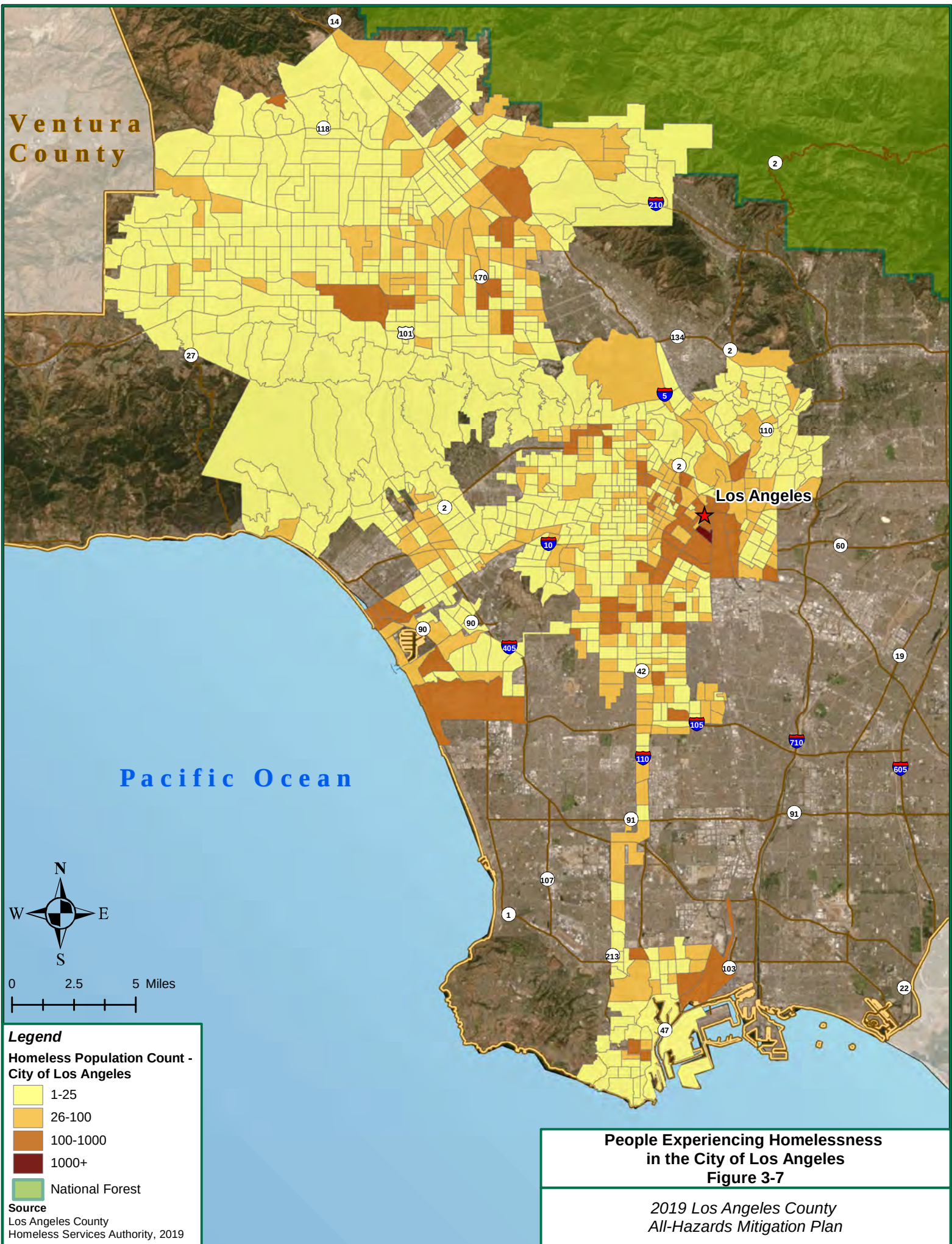
As noted by the Center for Disease Control (CDC), "Everyone must remain safe in an emergency. But for some, it's more difficult." Vulnerable or at-risk groups include people that may have difficulty communicating or accessing medical care, need help maintaining independence, require supervision, and need help accessing transportation.

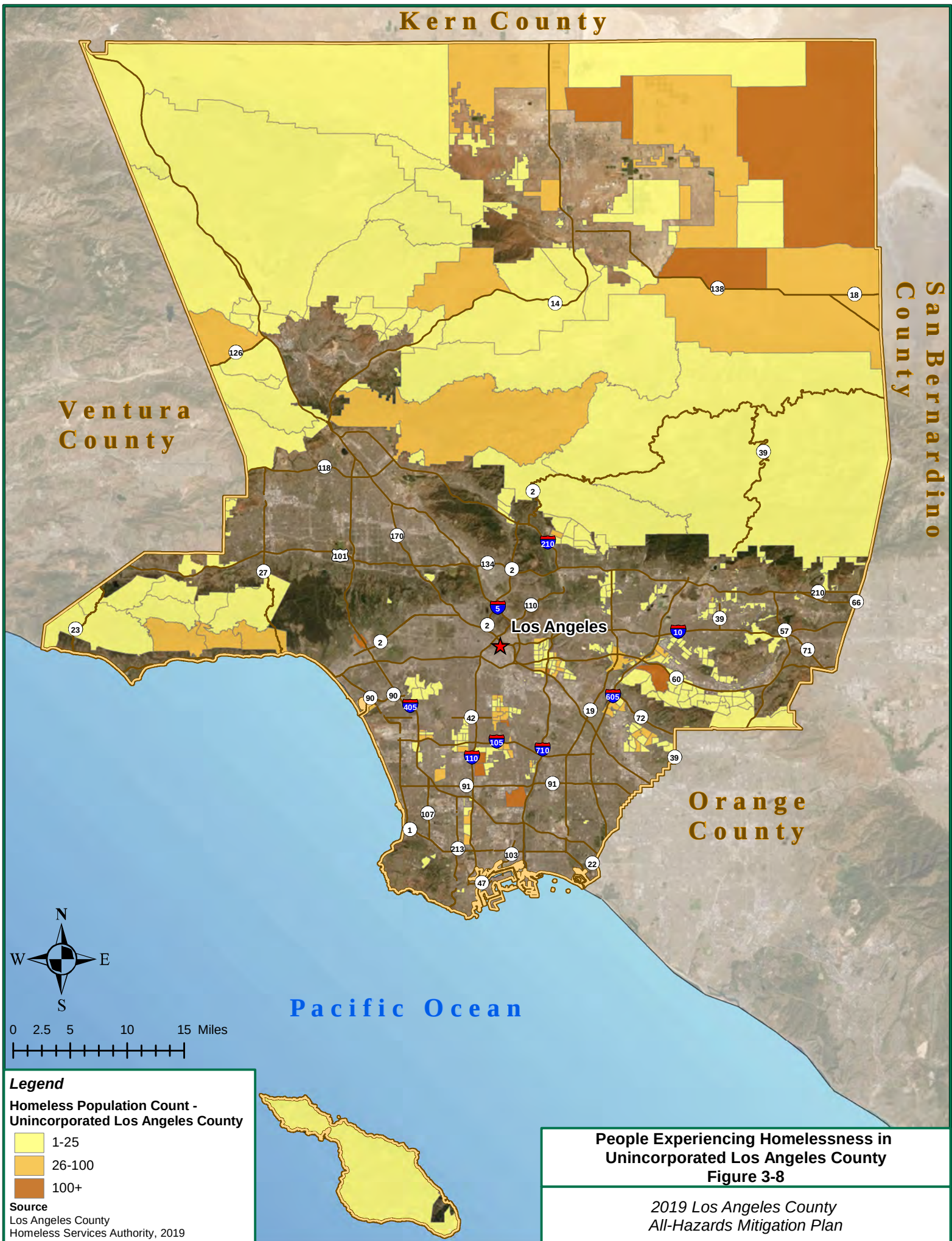
For the 2019 AHMP, vulnerable population groups addressed in the risk assessment include people experiencing homelessness. People experiencing homelessness have become a regional crisis as the number of this vulnerable population group has risen to nearly 60,000 in Los Angeles County alone. **Table 3-7** and **Figures 3-7 and 3-8** show the total point-in-time number of people experiencing homelessness in the city of Los Angeles and Unincorporated Los Angeles County, as captured for the 2019 Greater Los Angeles Homeless Count.

There are several other vulnerable groups at-risk to hazards in Los Angeles County; future updates of the AHMP will expand vulnerable population categories as the 2020 U.S. Census socioeconomic status, household composition and disability, minority status and language, and housing and transportation data becomes available.

Table 3-7. People Experiencing Homelessness

Entity	Total # of People Experiencing Homelessness (Sheltered and Unsheltered)
City of Los Angeles	32,931
Unincorporated Los Angeles County	5,881





3.4 CRITICAL FACILITIES

A critical facility provides services and functions essential to a community, especially during and after a disaster. Common types of critical facilities include: fire stations, police stations, hospitals, schools, water and waste water systems, and utilities. Critical facilities may also include places that can be used for sheltering or staging purposes, such as community centers and libraries. Critical facilities may also include large public gathering spots.

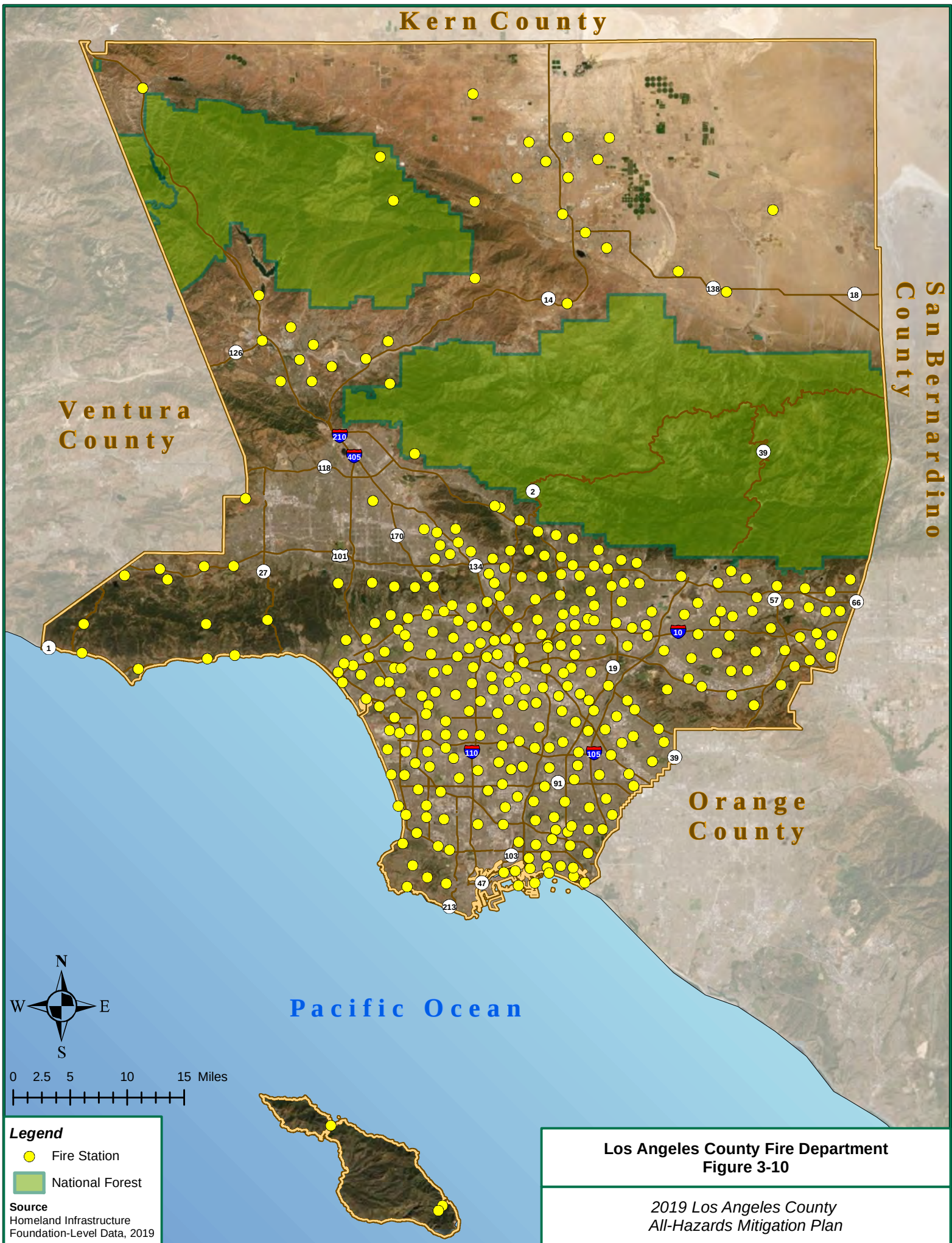
Los Angeles County does not currently maintain a centralized critical facilities database. For the 2019 AHMP, 915 major county-owned and county-related critical facilities were collected from various county department and agencies and also from the U.S. Department of Homeland Security's (DHS) Homeland Infrastructure-Foundation-Level Data site. Critical facility names and addresses were then geocoded to a location and the resulting geographic features were used for the risk assessment. The results of this process are shown in **Table 3-8** and **Figure 3-9** through **Figure 3-19**. Facility-specific information is provided in **Appendix B**. Some departments and agencies have multiple facilities at the same location; hence there are duplications of facility sites.

The County hopes to implement a coordinated data collection and database system for critical facilities; as such, future updates to this plan will likely include an expanded critical facilities list.

Table 3-8. Los Angeles County-Owned and County-Related Critical Facilities

Department / Agency	# of Facilities
Los Angeles County Animal Care & Control	7
Los Angeles County Fire Department	337*
Los Angeles County Health Services	29
Los Angeles County Library	85
LACMA & NHM	4
Los Angeles County Office of Education	37
Los Angeles County - Other (offices)	24
Los Angeles County Parks & Recreation	117
Los Angeles County Public Health	14
Los Angeles County Public Works	230
Los Angeles County Sheriff's Department	31

Note: The fire stations identified for this plan include those located within the 59 cities and all the unincorporated areas that the Los Angeles County Fire Department serves.





Kern County

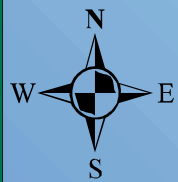
San Bernardino County

Ventura County

Los Angeles

Orange County

Pacific Ocean



0 2.5 5 10 15 Miles

Legend

- Hospital and Clinic
- National Forest

Source
Los Angeles County Department of Human Services, 2019

Los Angeles County Department of Health Services
Figure 3-11

2019 Los Angeles County
All-Hazards Mitigation Plan



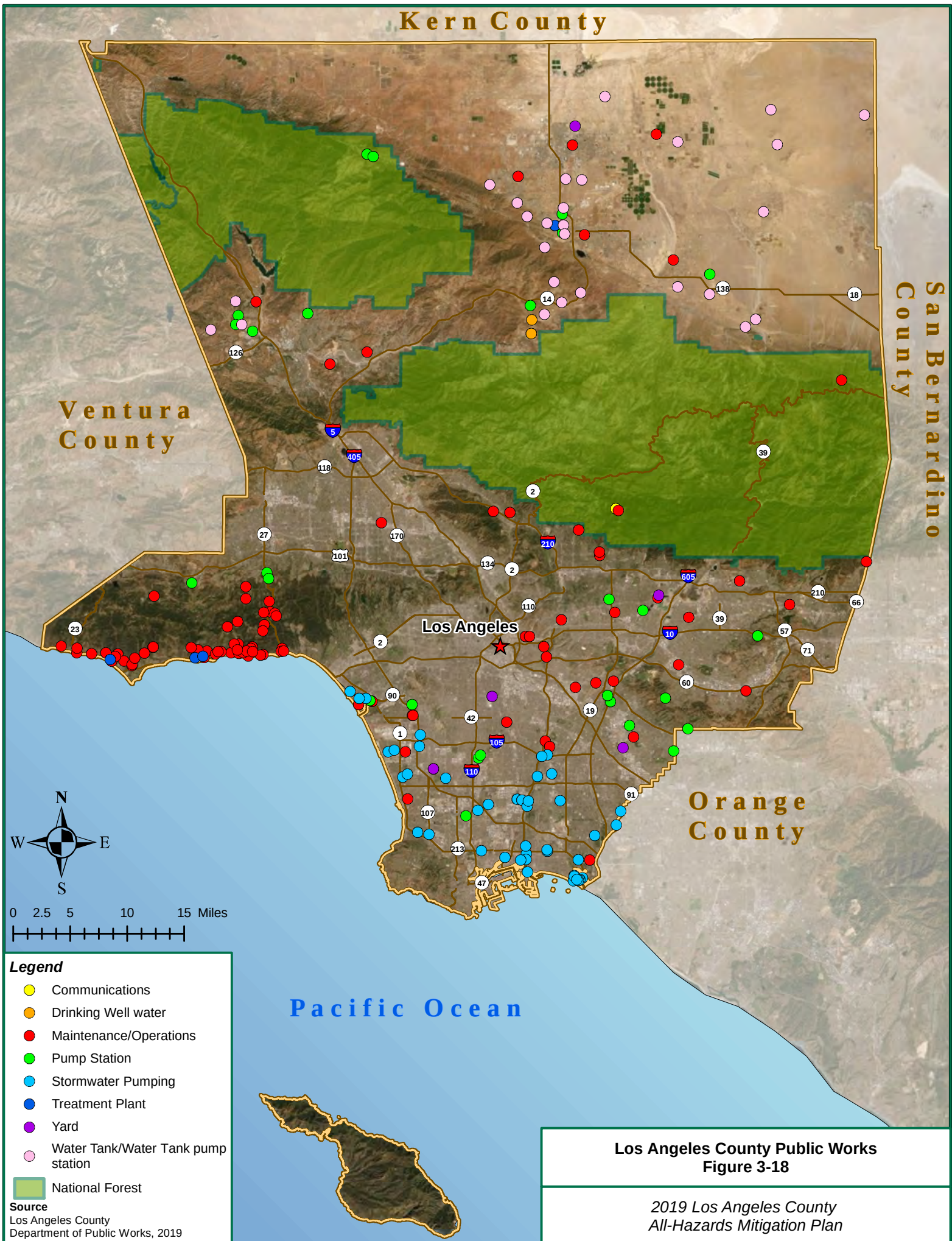














Los Angeles County Sheriff's Department
Figure 3-19

2019 Los Angeles County
All-Hazards Mitigation Plan

4 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Section 4 – Hazard Identification and Risk Assessment addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element B: Hazard Identification and Risk Assessment	
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement § 201.6(c)(2)(ii))	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement § 201.6(c)(2)(i))	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement § 201.6(c)(2)(ii))	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement § 201.6(c)(2)(ii))	

For the 2019 AHMP, the AHMP project manager and consultant revisited the hazards addressed in the 2014 AHMP. It was determined that the primary focus of the 2019 AHMP should be natural hazards and secondary hazards, as a result of a natural hazard. In addition, it was decided that climate change should be included in the plan, as increasing surface temperatures will likely result in more droughts and subsequently the risk of wildfires. Therefore, climate change, dam failure, drought, earthquake, flood, landslide, tsunami, and wildfire are profiled in the 2019 AHMP.

Hazard identification consists of describing the nature of the hazard, disaster history, location, extent/severity, and probability of future events. Hazard identification profiles have been developed for each of the eight hazards addressed in **Section 4.1** through **Section 4.8**. Additionally, impact (i.e., risk assessment) tables have been created for each hazard. Quantitative impact tables were prepared using GIS analysis for climate change (sea level rise), dam failure, earthquake, flood, landslide, tsunami, and wildfire, while a qualitative impact table was prepared for drought. Impacts considered include: land area, vulnerable populations and critical facilities. Overall summary descriptions have been developed as well. NFIP insured structures are discussed in **Table 4-23**. **Appendix C** contains unincorporated area-specific and critical facility-specific impact tables.

According to the *Comprehensive Preparedness Guide (CPG) 201: Threat and Hazard Identification and Risk Assessment Guide—Second Edition* (CPG 201) drought, earthquake, flood, landslide, tsunami, and wildfire are classified natural hazards, while dam failure is classified as a technological hazard (but is often a secondary hazard of other natural hazards). CPG 201 does not classify climate change. As such, the hazards profiled for this AHMP are discussed in alphabetical order and not by CPG 201 classification. **The order does not signify level of risk.**

4.1 CLIMATE CHANGE

Table 4-1. Climate Change Identification Profile

Profile	Description
Nature	Climate change is defined as the average statistics of weather, which includes temperature, precipitation, and seasonal patterns in a particular region. Climate change refers to the long-term and irrevocable shift in these weather-related patterns, either regionally or globally. The Earth and its natural ecosystem are very closely tied to the climate and any permanent climate change will lead to an imbalance in the existing ecosystem, impacting the way people live, the food they grow, their health, the wildlife, the availability of water, and much more. Research indicates that much of this warming is due to human activities, primarily burning fossil fuels and clearing forests, that release carbon dioxide (CO₂) and other gases into the atmosphere, trapping in heat that would otherwise escape into space. Once in the atmosphere, these heat-trapping emissions remain there for many years (for example, CO₂ lasts about 100 years. If left unchecked, by the end of the century, CO₂ concentrations could reach levels three times higher than pre-industrial times. According to most climatologists, the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. Over the next century, increasing atmospheric greenhouse gas concentrations are expected to cause a variety of changes to local climate conditions, including sea level rise and storm surge in coastal areas, reduced mountain snow pack, increased riverine flooding, and more frequent, higher temperatures (leading to extreme heat events and wildfires), particularly inland, decreasing air quality, and extended periods of drought. These effects of climate change are expected to negatively impact water and electricity demand and supplies in Los Angeles County. Decreasing air quality and extreme heat days will degrade public health, as well as and increase wildfire risk. And low-lying water front areas may flood or be underwater from sea level rise.
Location	According to the National Climate Assessment, the entire Pacific coastal region, including Los Angeles County, has been affected by climate change.
History	The history of the scientific discovery of climate change began in the early 19th century, when ice ages and other natural changes in paleoclimate were first suspected and the natural greenhouse effect first identified. In the late 19th century, scientists first argued that human emissions of greenhouse gases could change the climate. Many other theories of climate change were advanced, involving forces from volcanism to solar variation. In the 1960s, the warming effect of carbon dioxide gas became increasingly convincing, although some scientists also pointed out that human activities, in the form of atmospheric aerosols (e.g., "pollution"), could have cooling effects as well. During the 1970s, scientific opinion increasingly favored the warming viewpoint. By the 1990s, as a result of improving fidelity of computer models and observational work confirming the Milankovitch theory of the ice ages, a consensus position formed: greenhouse gases were deeply involved in most climate changes, and human emissions were bringing serious global warming. Since the 1990s, scientific research on climate change has included multiple disciplines and has expanded, significantly increasing our understanding of causal relations, links with historic data, and ability to numerically model climate change. The most recent work has been summarized in the Assessment Reports by the Intergovernmental Panel on Climate Change (IPCC). Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be a change in average weather conditions, or in the distribution of weather around the average conditions (i.e., more or fewer extreme weather events). Climate change is caused by factors that include oceanic processes (such as oceanic circulation), biotic processes, variations in solar radiation received by Earth, plate

Table 4-1. Climate Change Identification Profile

Profile	Description
	tectonics and volcanic eruptions, and human-induced alterations of the natural world; these latter effects are currently causing global warming, and "climate change" is often used to describe human-specific impacts.
Extent / Severity	Over the next century, weather patterns that are considered extreme today are expected to become the norm. The average summer temperature will rise, and in inland areas 100-plus degree Fahrenheit (°F) days will occur more frequently. A temperature change map (Figure 4-1) produced by the California Nevada Climate Applications Program predict that the average temperature in the region is expected to rise between 2.5 and 8°F. Drier conditions will also make wildfires more frequent and intense. The National Oceanic and Atmospheric Administration has produced a sea level rise view that shows the impacts of predicted sea level rise. As shown in Figure 4-2, a sea level rise of just 3 feet above mean higher high tide (approximate year 2050 – 2060) will result in coastal flooding of 2.25 square miles of Los Angeles County and 0.03 square miles of unincorporated areas of Los Angeles County, while a sea level rise of 6 feet above mean higher high tide (approximate year 2100) will result in coastal flooding of 6.13 square miles of Los Angeles County and 0.15 square miles of unincorporated areas of Los Angeles County.
Recurrence Probability	The specific probability of the extent and frequency climate change induced impacts is uncertain and depends on various climate modeling assumptions. While there is some uncertainty about the rate of climate change and the severity and frequency of extreme weather events, the IPCC, in its Fifth Assessment of Climate Change (2014), concluded that: ...warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased...It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

Table 4-2. Climate Change Impact on Land Area

Entity	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	2.25	0.05	6.13	0.13
Unincorporated Los Angeles County	0.03	0.00	0.15	0.00
Supervisory District 1	0.00	0.00	0.00	0.00
Supervisory District 2	0.03	0.02	0.07	0.04
Supervisory District 3	0.14	0.03	0.34	0.08
Supervisory District 4	1.98	0.45	5.58	1.27
Supervisory District 5	0.00	0.00	0.00	0.00

Table 4-3. Climate Change Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	51	0.15	126	0.38
Unincorporated Los Angeles County	0	0.00	2	0.04

Table 4-4. Climate Change Impact on County Critical Facilities

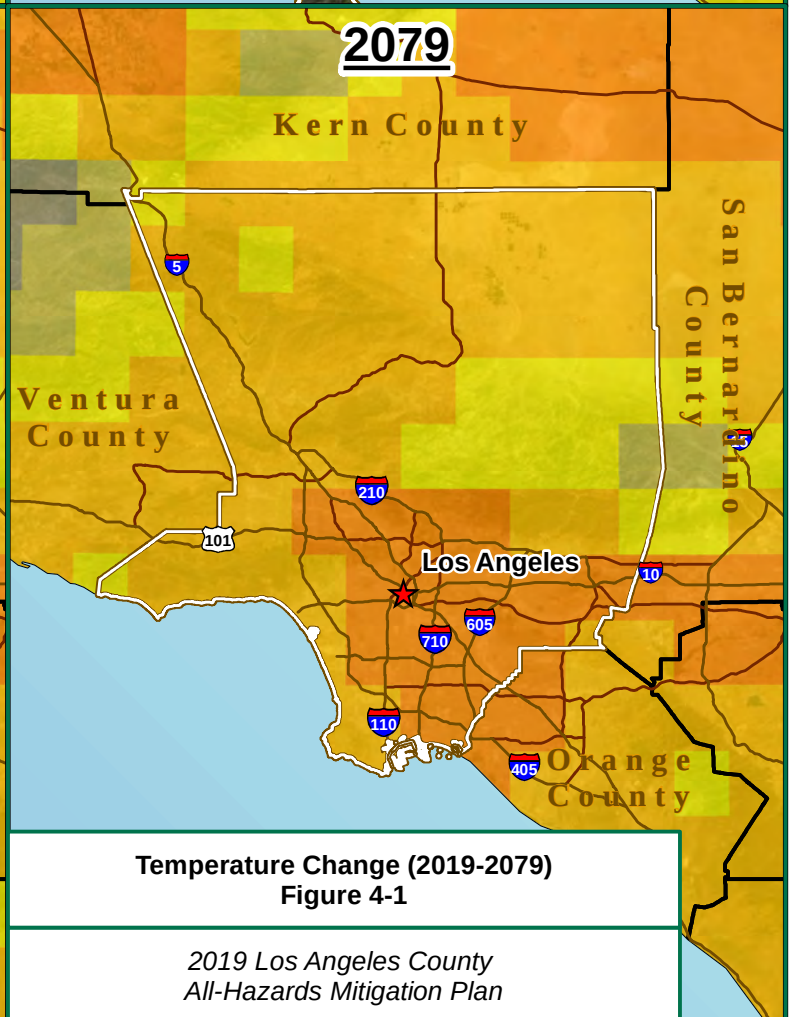
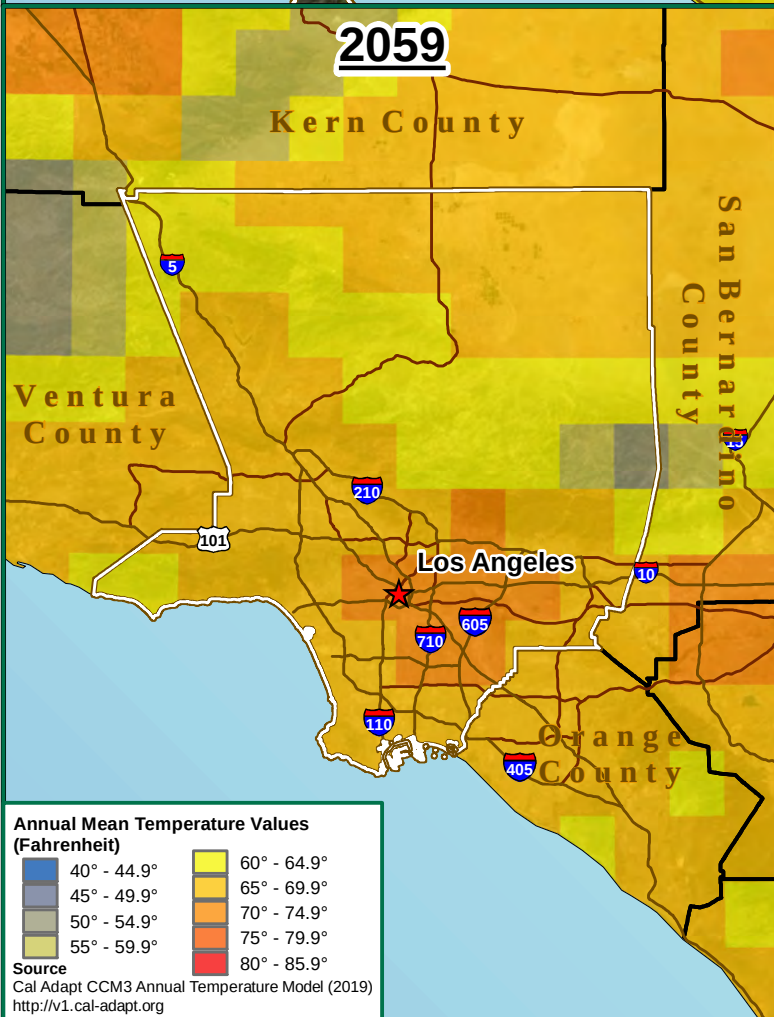
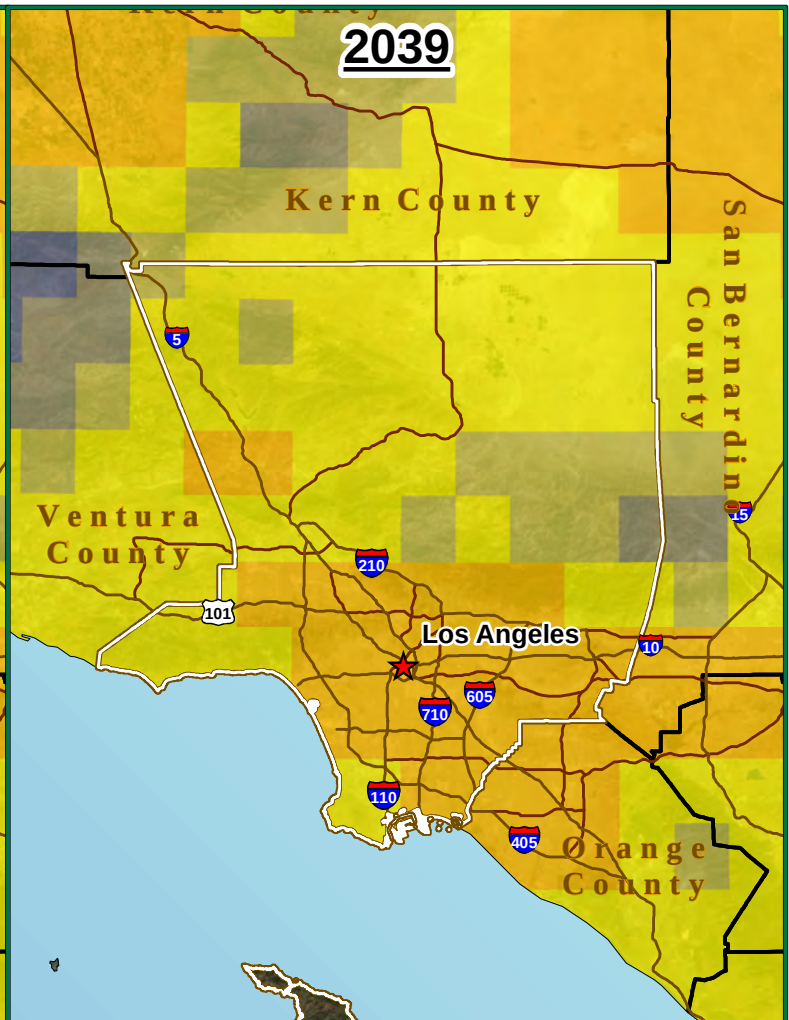
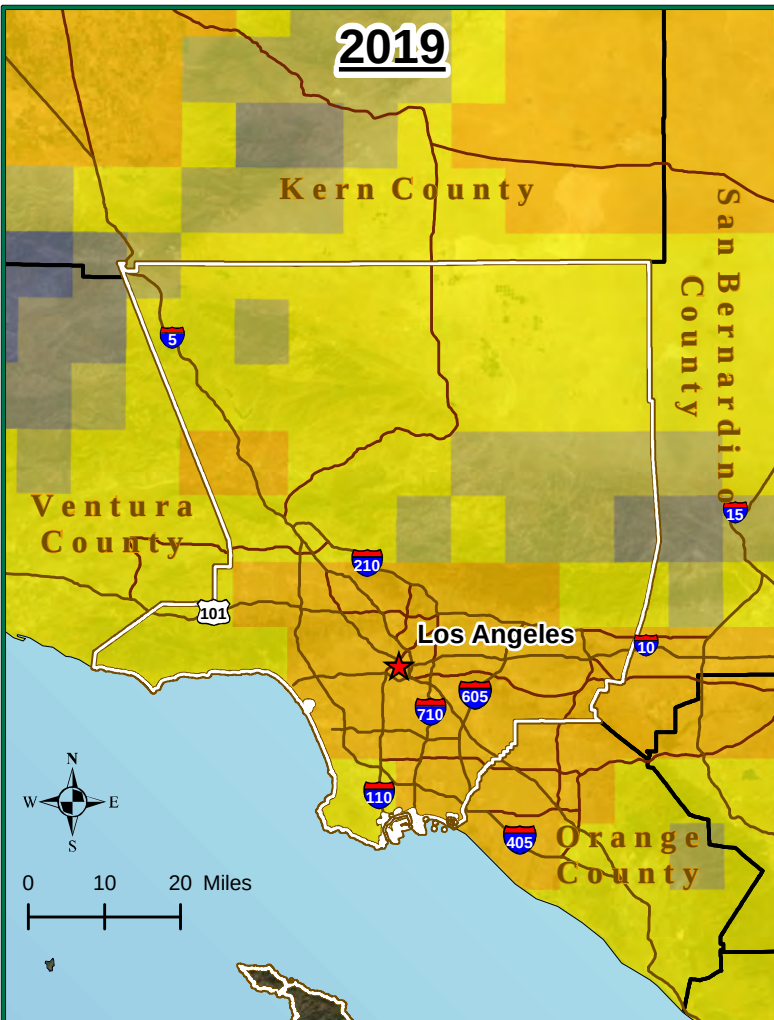
Department/ Agency	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00	0	0.00
Los Angeles County Fire Department	1	0.00	5	1.4
Los Angeles County Health Services	0	0.00	0	0.00
Los Angeles County Library	0	0.00	0	0.00
LACMA & NHM	0	0.00	0	0.00
Los Angeles County Office of Education	0	0.00	0	0.00
Los Angeles County - Other (offices)	0	0.00	0	0.00
Los Angeles County Parks & Recreation	0	0.00	0	0.00
Los Angeles County Public Health	0	0.00	0	0.00
Los Angeles County Public Works	3	1.30	6	2.61
Los Angeles County Sheriff's Department	1	3.23	0	0.00

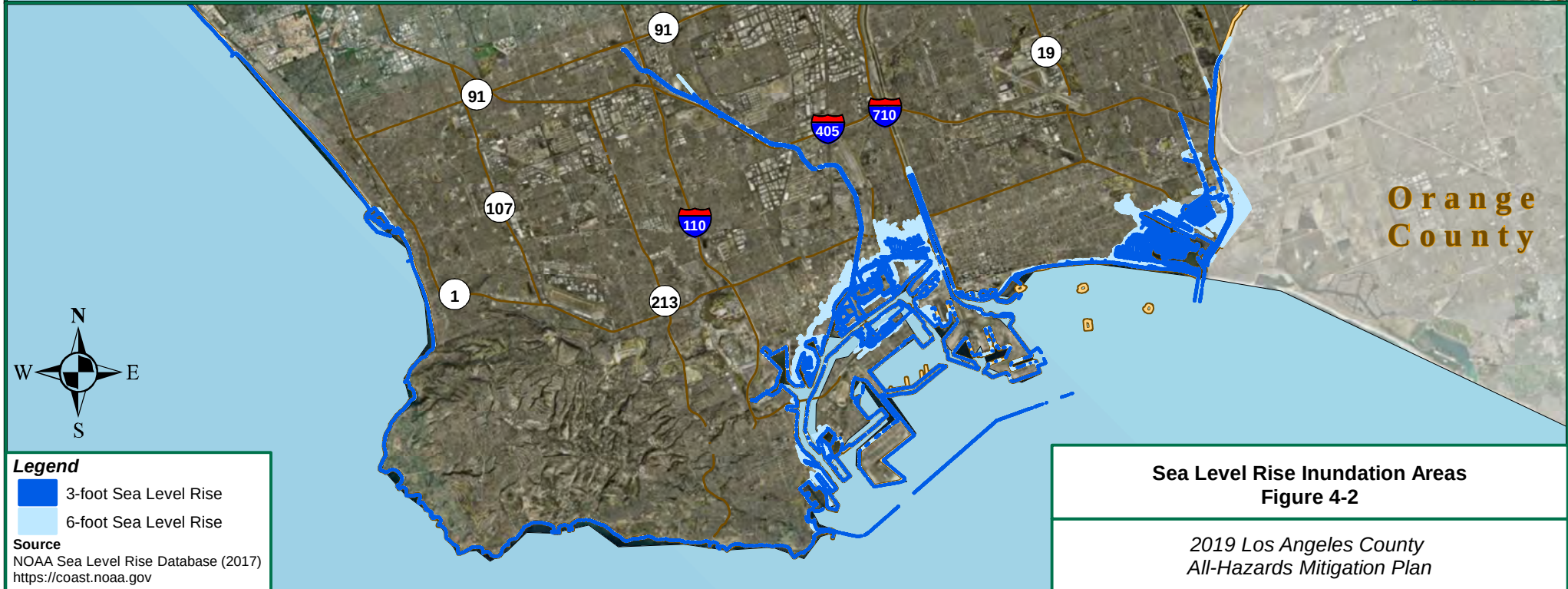
LACMA = Los Angeles County Museum of Art

NHM = Natural History Museum

Table 4-5. Overall Summary of Vulnerability to Climate Change

Climate Change	
Summary	Climate change will affect every person and every area of Los Angeles County. As noted above, the number of extreme heat days will rise, and inland county areas will experience days with temperatures in excess of 100°F more frequently. Extreme heat can trigger a variety of heat stress conditions, such as heat stroke. Higher temperatures can also contribute to the build-up of harmful pollutants and cause respiratory issues. Drier, hotter conditions will also make wildfires more frequent and intense, particularly in the High and Very High Fire Hazard Severity Zones (FHSZ). Wildfires can: burn homes, businesses, and critical facilities; interrupt transportation and utilities; and cause death to people and animals. In addition, mega storms that are linked to climate change will cause severe flooding in cities and form lakes in the Central Valley and Mojave Desert. Along the coast, deadly and destructive storm surges will push farther inland than they once did, which means more frequent nuisance flooding. Los Angeles County is addressing climate change through the implementation of the 2015 Community Climate Action Plan. The plan describes how the County will address the impacts of climate change by reducing greenhouse gas emissions from community activities in the unincorporated areas of Los Angeles County by at least 11% below 2010 levels by 2020. Additionally, in April 2019 the mayor of Los Angeles released the city's Green New Deal, which "sets aggressive goals for the city's sustainable future, tackles the climate emergency with accelerated targets... and sets L.A. on course to be carbon neutral by 2050."





4.2 DAM FAILURE

Table 4-6. Dam Failure Identification Profile

Profile	Description
Nature	Dam failure is the structural collapse of a dam that releases the water stored in the reservoir behind the dam. A dam failure is usually the result of the age of the structure, inadequate spillway capacity used in construction, or structural damage caused by an earthquake or flood. When a dam fails, a large quantity of water is suddenly released with a great potential to cause human casualties, economic loss, and environmental damage. This type of disaster is especially dangerous because it can occur suddenly, providing little warning and evacuation time for the people living downstream. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs as a result of the momentum of the flood caused by the sediment-laden water flooding over the channelbanks and impact debris carried by the flow.
Location	According to the California Department of Water Resource's Division of Safety of Dams (DSOD), there are 90 dams under State jurisdiction in Los Angeles County. A dam breach inundation map shows flooding that could result from a hypothetical failure of a dam or its critical appurtenant structure. In 2017, the California Legislature passed a law requiring all State jurisdictional dam owners, except for owners of low-hazard dams, to develop inundation maps approved by DSOD and emergency action plans approved by Cal OES. At the time of the drafting of this plan in early July 2019, 12 State jurisdictional dams in Los Angeles County had approved dam breach inundation maps, including: • Castaic Lake Dam: an earthen dam with a storage capacity of 323,700 acre-feet in Warm Springs Mountain • Pyramid Dam: an earthen and rock dam with a storage capacity of 178,700 acre-feet in Black Mountain • Chevy Chase 1290: an earthen dam with a storage capacity 17 acre-feet of in Pasadena • Elysian Dam: and earthen dam with a storage capacity of 167 acre-feet in Los Angeles • Lower San Fernando Dam: hydraulic fill dam with a storage capacity of 9,843 acre-feet in San Fernando • Eagle Rock Dam: an earthen dam with a storage capacity of 254 acre-feet in Pasadena • Santa Ynez Canyon Dam: an earthen dam with a storage capacity 356 acre-feet in Topanga • Devils Gate Dam: a gravity dam with a storage capacity of 2,600 acre-feet Pasadena • Palos Verdes Reservoir: an earthen dam with a storage capacity of 1,100 acre-feet in Torrance • Littlerock – Palmdale Dam: a roller-compacted concrete dam with a storage capacity of 4,600 acre-feet in Pacifico Mountain • Harold Reservoir: an earthen dam with a storage capacity of 3,870 acre-feet in Palmdale • Westlake Reservoir: an earthen dam with a storage capacity of 9,200 acre-feet in Westlake Village

Table 4-6. Dam Failure Identification Profile

Profile	Description
History	Los Angeles County was the scene of the worst dam failure in United States history. The St. Francis Dam was built in San Francisquito Canyon, approximately 40 miles northwest of downtown Los Angeles, in 1924. On the night of March 12-13, 1928, the dam catastrophically failed, releasing approximately 12.4 billion gallons of water. At least 411 people were killed. Subsequent investigations determined that the dam failed as a result of defective foundations that had been built upon an unstable rock formation. As a result of the disaster, the State of California increased dam safety legislation and oversight, and created a state Board of Registration for civil engineers to regulate the industry.
Extent / Severity	The Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures (FEMA P-946, July 2013) defines downstream hazards for dam incidents. Downstream hazards are based “solely on the potential downstream impacts to life and property should the dam fail when operating with a full reservoir.” FEMA has developed three categories in increasing severity for downstream hazards: Low, Significant, and High. DSOD adds a fourth category of Extremely High. In Los Angeles County there are 40 dams that are classified as High, with the potential impact expected to cause loss of at least one human life, and 30 dams classified as Extremely High, with the potential impact expected to cause considerable loss of human life or result in an inundation area with a population of 1,000 or more. As noted in Figure 4-3, nine Extremely High hazard dams and three High hazard dams in the county have approved dam breach inundation maps for a total of 45.70 square miles (0.96 %) in Los Angeles County, and a total of 13.37 square miles (0.44 %) in the unincorporated areas of Los Angeles County.
Recurrence Probability	Dams fail for a variety of reasons, including Sub-standard construction materials/techniques, spillway design error, geological instability, poor maintenance, and earthquakes, and therefore recurrence probabilities are unknown. State jurisdiction dams are regulated by the DSOD and each dam undergoes inspection on an annual basis to ensure it is safe, performing as intended, and is not developing issues. However, in 2017, the United States Army Corps of Engineers (USACE) discovered that the Whittier Narrows Dam was structurally unsafe and that an intense storm could prematurely open the dam’s massive spillway and flood the area below from Pico Rivera to Long Beach. The USACE has reclassified the dam as the agency’s highest dam priority nationally because of the risk of “very significant loss of life and economic impacts.” Construction on the dam is expected to start in 2021 and conclude by 2025.

Table 4-7. Dam Failure Impact on Land Area

Entity	Dam Breach Inundation	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	45.70	0.96
Unincorporated Los Angeles County	13.37	0.44
Supervisory District 1	1.40	0.57
Supervisory District 2	0.00	0.00
Supervisory District 3	24.84	5.76
Supervisory District 4	0.67	0.15
Supervisory District 5	18.00	0.64

Table 4-8. Dam Failure Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	Dam Breach Inundation	
	# of Homeless	% of Homeless
City of Los Angeles	1,193	3.62
Unincorporated Los Angeles County	13	0.22

Table 4-9. Dam Failure Impact on County Critical Facilities

Department / Agency	Dam Breach Inundation	
	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	1	14.29
Los Angeles County Fire Department	3	0.89
Los Angeles County Health Services	2	6.90
Los Angeles County Library	1	1.18
LACMA & NHM	0	0.00
Los Angeles County Office of Education	2	5.41
Los Angeles County - Other (offices)	0	0.00
Los Angeles County Parks & Recreation	2	1.71
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	1	0.43
Los Angeles County Sheriff's Department	3	9.68

Table 4-10. Overall Summary of Vulnerability to Dam Failure

Dam Failure	
Summary	There are 90 dams in Los Angeles County under State jurisdiction. Seventy dams are classified as High and Extremely High hazard and failure of these types of dams will cause loss of human life and/or result in an inundation area with a population of 1,000 or more. As of June 2017, all dams except those classified as Low hazard are required by the DSOD to have an Emergency Action Plan (EAP). An EAP identifies incidents that can lead to potential emergency conditions at a dam, identifies the areas that could be affected by the loss of a reservoir and specifies pre-planned actions to be followed to minimize property damage, potential loss of infrastructure and water resources, and potential loss of life due to failure or misoperation of a dam. EAPs also require dam breach inundation maps to be prepared. While the State regulates dams to prevent failure, safeguard life, and protect property, some researchers doubt that the “overall safety of aging federal flood control systems that were not designed with climate change in mind.” They argue that as California experiences more intense storms, the aging dams in the area could fail and/or prematurely open and flood homes, schools, businesses, and roads. In 2016, Climate-Safe Infrastructure Bill (Assembly Bill [AB] 2800) became law and “established the Climate-Safe Infrastructure Working Group to develop recommendations to the California legislature on how to build and design our infrastructure to be safer for Californians in the face of growing climate extremes.” The Working Group’s 2018 report identified nearly 700 High hazard dams in California needing repairs and upgrades.



Table 4-11. Drought Identification Profile

Profile	Description
Nature	Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristics will vary significantly from one region to another. Drought differs from normal aridity, which is a permanent feature of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions. Four common definitions for drought are provided as follows: • Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. • Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels. • Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops. • Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be referred to as a water management drought. A drought's severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and poses difficulties in terms of comprehensive risk assessments. Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.
Location	The occurrence of drought is regional in nature and scope, which holds true for Los Angeles County. As such, when drought occurs it typically affects the entire county.
History	Drought is a cyclic part of the climate of California, occurring in both summer and winter, with an average recurrence interval between 3 and 10 years. Droughts in California over the past 100 years are listed as follows. The most recent drought from 2011 to 2015 was the driest 4-year period on record in California since recordkeeping began in 1895. • 1917-1921, Statewide except for central Sierra Nevada and north coast • 1922-1926, Statewide except for central Sierra Nevada • 1928-1937, Statewide • 1943-1951, Statewide • 1959-1962, Statewide • 1976-1977, Statewide, except for southwestern deserts • 1987-1992, Statewide • 2007-2009, Statewide, particularly the central coast • 2011-2015, Statewide

Table 4-11. Drought Identification Profile

Profile	Description
Extent / Severity	The National Drought Mitigation Center produces drought monitor maps for the United States. It classifies droughts into five categories: D0 is the least severe, with abnormally dry conditions; and D4 is the most severe, with exceptional drought conditions. California, including Los Angeles County, was in some form of drought for 376 consecutive weeks from December 20, 2011 until March 14, 2019. As of August 13, 2019, Los Angeles County remains free of drought.
Recurrence Probability	Researchers for California's Fourth Climate Change Assessment have noted that California has a "highly variable climate" with wet or dry periods that can span years and that are "heavily affected by extreme precipitation events." Furthermore, climate scientists also suggest the possibility of longer and more destructive droughts with climate change. As such, California is likely to experience long-term droughts at least every decade.

Table 4-12. Drought Impact

Drought	
Summary	Severe droughts can impact the region's agriculture, forests, hydropower, groundwater supply, recreation, aquatic ecosystems, as well as isolated communities that have limited water supply.

Table 4-13. Overall Summary of Vulnerability to Drought

Drought	
Summary	Climate scientists predict that Los Angeles County and the rest of southern California will get drier and northern California will get hotter. The resulting loss of snowpack in the Sierra Nevada will mean less water for all Californians – farmers, residents, utilities, and even hatchery fish. However, while drought cannot be controlled, according to the USGS, drought can be managed in two ways: through drought planning and in helping communities make the best day-to-day management decisions while the drought is taking place. During the drafting of this plan update, the Governor of California signed an executive order directing specific State agencies to develop a Water Resilience Portfolio to "ensure safe and dependable water supplies, flood protection and healthy waterways for the state's communities, economy and environment."

4.3 EARTHQUAKE

Table 4-14. Earthquake Identification Profile

Profile	Description
Nature	An earthquake is a sudden motion or trembling caused by a release of strain accumulated in or along the edge of Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and can cause massive damage and extensive casualties in a few seconds. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can amplify ground motions. In addition to ground motion, several secondary natural hazards can occur from earthquakes, such as the following: • Surface Faulting: Surface faulting is the differential movement of two sides of a fault at the Earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures, including railways, highways, pipelines, tunnels and dams. • Liquefaction: Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Liquefaction causes lateral spreads (i.e., horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (i.e., massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (i.e., soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property. • Landslides/Debris Flows: Landslides/debris flows occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. The two most common measures of earthquake intensity used in the United States are the Modified Mercalli Intensity Scale, which measures felt intensity, and peak ground acceleration (PGA), which measures instrumental intensity by quantifying how hard the earth shakes in a given location. Magnitude (M) is measured by the amplitude of the earthquake waves recorded on a seismograph using a logarithmic scale.

Table 4-14. Earthquake Identification Profile

Profile	Description
Location	As in most of southern and coastal California, the potential for earthquake damage exists throughout Los Angeles County because of the number of active faults in and near the county. These faults are shown on the California Geological Survey (CGS) Fault Activity Map of California. Descriptions of the active faults are provided below. The locations of the active and potentially active faults are shown on Figure 4-4. Some of the more significant faults are described below: • Malibu Coast fault system: The Malibu Coast fault system includes the Malibu Coast, Santa Monica, and Hollywood faults. The system begins in the Hollywood area, extends along the southern base of the Santa Monica Mountains, and passes offshore a few miles west of Point Dume. The 1973 Point Mugu earthquake is believed to have originated on this fault system. • Oak Ridge fault system: The Oak Ridge fault system is a steep (65 degrees) southerly dipping reverse fault that extends from the Santa Susana Mountains westward along the southerly side of the Santa Clara River Valley and into the Oxnard Plain. The system is more than 50 miles long on the mainland and may extend an equal or greater distance offshore. Several recorded earthquake epicenters on land and offshore may have been associated with the Oak Ridge fault system. Portions of the system are zoned by the state as active. • Pine Mountain thrust fault and Big Pine fault: These two large faults occur in the mountainous portion of Ventura County north of the Santa Ynez fault; the faults are located 9 and 16 miles north of the city of Ojai, respectively. The Pine Mountain thrust fault is reported to have ruptured the ground surface for 30 miles along its length during the northern Ventura County earthquakes of November 1852. • San Andreas fault: San Andreas is the longest and most significant fault in California. Because of clearly established historical earthquake activity, this fault has been designated as active by the State of California. The last major earthquake on this fault near Ventura County was the Fort Tejon earthquake of 1857, which was estimated at magnitude (M) 8.0 and would have caused considerable damage if there had been structures in the southern part of the county. There is a 59 % chance that an M 6.7 quake or larger will occur on this fault in the next 30 years. • San Cayetano–Red Mountain–Santa Susana fault system: This fault system consists of a major series of north-dipping reverse faults that extend over 150 miles from Santa Barbara County into Los Angeles County. In this system, the San Cayetano fault is the greatest hazard to Ventura County; it is a major, north-dipping reverse fault that extends for 25 miles along the northern portion of the Ventura Basin. The San Fernando earthquake of 1971, described in the previous section, was caused by activity along this fault. • Simi–Santa Rosa fault system: This fault system extends from the Santa Susana Mountains westward along the northern margin of the Simi and Tierra Rejada valleys and along the southern slope and crest of the Las Posas Hills to their westerly termination. • Ventura-Pitas Point fault: The western half of this fault is known as the Pitas Point fault, and the eastern half is known as the Ventura fault. The Pitas Point fault extends offshore into the Pacific Ocean and is roughly 14 miles long. The Ventura fault extends into the communities of Ventura and Sea Cliff and runs roughly parallel to portions of U.S. 101 and State Route 126. The fault is roughly 12 miles long and is a left-reverse fault.

Table 4-14. Earthquake Identification Profile

Profile	Description
History	As shown in Figure 4-5, according to the USGS, 163 earthquakes M 5.0> have been recorded in southern California since 1769. Four of these earthquakes have been larger than M 7.0 including: • San Juan Capistrano Earthquake (M 7.5), December 8, 1812 • Kern County Earthquake (M 7.5), July 21, 1952 • West Ventura Earthquake (M 7.1), December 21, 1812 • Ridgecrest, (M 7.1), July 6, 2019 In Los Angeles County, significant earthquakes over the past 50 years include: • La Habra (M 5.1), March 28, 2014, resulting in a few injuries and \$10 million dollars in damages • Chino Hills (M 5.5), July 29, 2008, resulting in 8 injuries and limited damages • Northridge (M 6.7), January 17, 1994, resulting in 57 deaths, 8,700 injuries and up to \$40 billion dollars in damages. • Sierra Madre (M 5.6), June 28, 199, resulting in 1 death, 100+ injuries and up to \$40 million dollars in damages. • Upland (M 5.7), February 28, 1990, resulting in 30 injuries and \$12.7 million dollars in damages • Whittier (M 5.9), October 1, 1987, resulting in 8 deaths, 200 injuries and \$358 million in damages • San Fernando (M 6.6), February 9, 1971, resulting in 58 – 65 deaths, 200 – 2,000 injuries and up to \$553 million in damages
Extent / Severity	The strength of an earthquake's ground movement can be measured by PGA. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity ($g = 980$ centimeters per second, per second). PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (e.g., 10%, 5%, or 2%) of being exceeded in 50 years. The ground motion values are used for reference in construction design for earthquake resistance and can also be used to assess relative hazard between sites when making economic and safety decisions. In 2008, CGS developed an updated map of earthquake shaking potential for California. The map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes. Regions near major, active faults are shown in red and pink and experience stronger earthquake shaking more frequently. Regions that are distant from known, active faults are shown in orange and yellow and experience lower levels of shaking less frequently. Figure 4-6 indicates the level of low-frequency shaking potential in Los Angeles County (in which local soil conditions have greater effect on low frequency). In Los Angeles County there are 3,041.91 (63.90%) square miles with violent low frequency shaking potential; and 711.01 square miles (14.93%) with extreme low frequency shaking potential. In unincorporated areas of Los Angeles County, there are 1,783.57 (58.65%) square miles with violent low frequency shaking potential; and 527.60 square miles (17.35%) with extreme low frequency shaking potential.

Table 4-14. Earthquake Identification Profile

Profile	Description
Recurrence Probability	Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults are as follows: • Chatsworth fault: M 6.0-6.8, unknown recurrence interval • Hollywood fault: M 5.8-6.5, recurrence interval approximately every 1600 years • Malibu Coast fault: M 6.7, recurrence interval 2,908 years • Newport-Inglewood fault: M 6.0-7.4, unknown recurrence interval • Oak Ridge fault: M 6.9, recurrence interval 299 years • Palos Verdes fault: M 6.0-7.0 or greater, unknown recurrence interval • Red Hill fault (aka Etiwanda Avenue fault): M 6.0-7.0, unknown recurrence interval • Raymond fault: M 6.0-7.0, recurrence interval approximately 4500 years • San Andreas fault: M 6.8-8.0, recurrence interval of 140 years on Mojave segment to 300 years • San Cayetano fault: M 6.5-7.3, unknown recurrence interval • San Fernando fault: M 6.0-6.8, recurrence interval approximately every 200 years • San Jose fault: M 6.0-6.5, unknown recurrence interval • Santa Susana fault system: M 6.6, recurrence interval 138 years • Santa Monica fault: M 6.0-7.0, unknown recurrence interval • Sierra Madre fault: M 6.0-7.0, recurrence interval several thousand years • Simi-Santa Rosa fault: M 6.7, recurrence interval 933 years • Verdugo fault: M 6.0-6.8, unknown recurrence interval • Whittier fault: M 6.0-7.2, unknown recurrence interval

Table 4-15. Seismic Hazard Impact on Land Area

Entity	Violent EQ Shaking		Extreme EQ Shaking	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	3,041.91	63.90	711.01	14.93
Unincorporated Los Angeles County	1,783.57	58.65	527.60	17.35
Supervisory District 1	244.34	99.25	0.00	0.00
Supervisory District 2	161.74	99.94	0.00	0.00
Supervisory District 3	379.41	87.99	41.73	9.68
Supervisory District 4	305.40	69.42	0.00	0.00
Supervisory District 5	1,950.78	69.50	669.26	23.84

EQ = earthquake

Table 4-16. Seismic Hazard Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	Violent EQ Shaking		Extreme EQ Shaking	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	31,037	94.25	1,827	5.55
Unincorporated Los Angeles County	5,328	90.60	361	6.14

EQ = earthquake

Table 4-17. Seismic Hazard Impact on County Critical Facilities

Department / Agency	Violent EQ Shaking		Extreme EQ Shaking	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	6	85.71	1	14.29
Los Angeles County Fire Department	314	93.18	19	5.64
Los Angeles County Health Services	24	82.76	5	17.24
Los Angeles County Library	79	92.94	5	5.88
LACMA & NHM	3	75.00	1	25.00
Los Angeles County Office of Education	32	86.49	5	13.51
Los Angeles County - Other (offices)	24	100.00	0	0.00
Los Angeles County Parks & Recreation	103	88.03	14	11.97
Los Angeles County Public Health	13	92.86	1	7.14
Los Angeles County Public Works	201	87.39	21	9.13
Los Angeles County Sheriff's Department	28	90.32	2	6.45

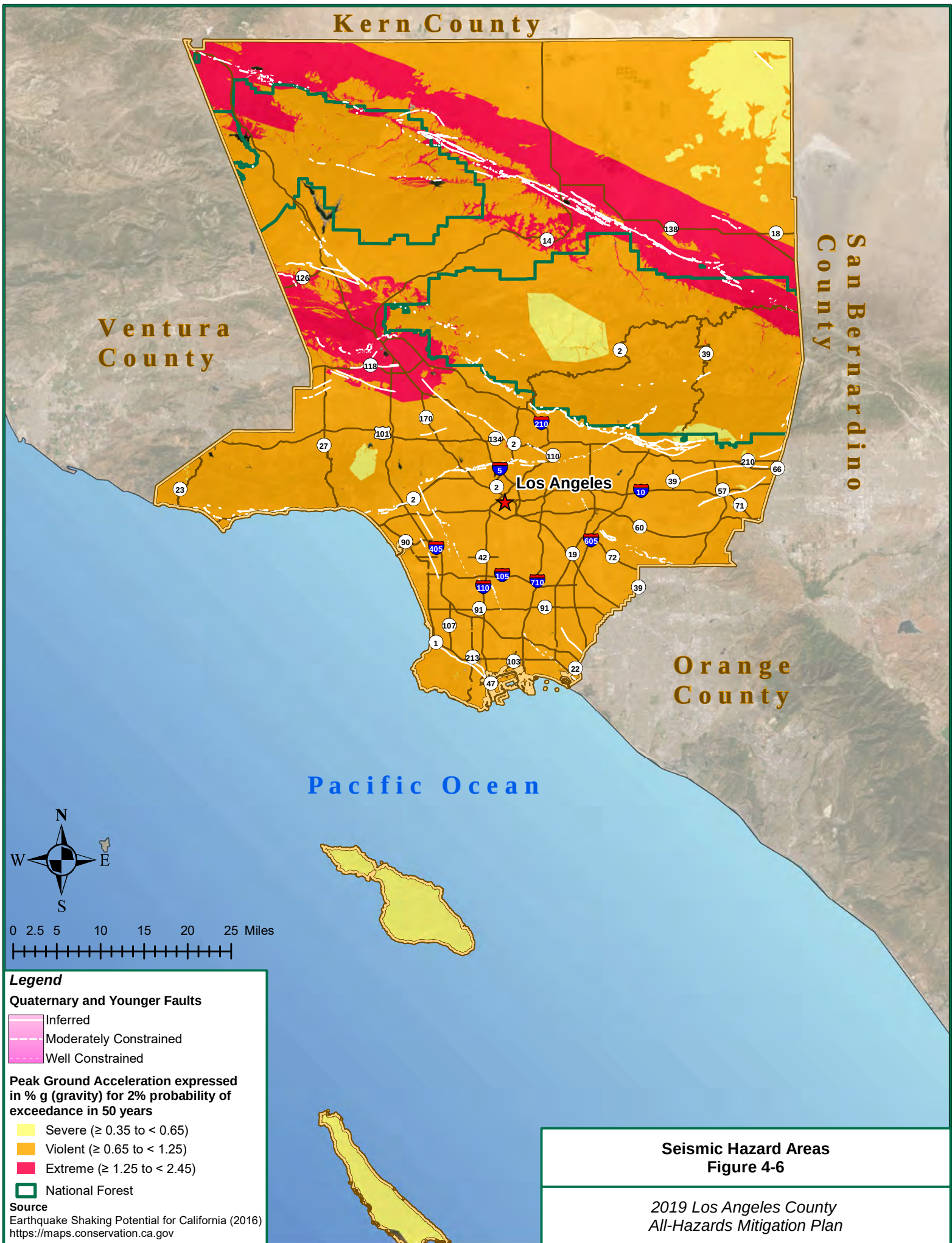
EQ = earthquake

Table 4-18. Overall Summary of Vulnerability to Earthquakes

Earthquake	
Summary	Over 75% of unincorporated Los Angeles County is at risk to violent and extreme perceived shaking from future earthquakes. Violent perceived shaking can produce the potential for heavy damage. According to the USGS, this could mean that well-designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse. In extreme shaking, the USGS notes that some well-built wooden structures could be destroyed, and most masonry and frame structures with foundations could be destroyed. Many people in California are looking to boost seismic regulations through the implementation of Assembly Bill (AB) 1857 and AB 2681. AB 1857 will instruct the California Building Standards Commission to increase minimum mandatory standards for most types of buildings in the state, such as apartments, office buildings, and commercial spaces, but would exempt single-family houses and duplexes, while AB 2681 will require cities and counties to create an inventory of potentially vulnerable buildings.







4.4 FLOOD

Table 4-19. Flood Identification Profile

Profile	Description
Nature	A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. In coastal areas, flooding may occur when high winds or tides result in a surge of seawater into areas that are above the normal high tide line. Secondary hazards from floods can include: • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features. • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects. • Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands. • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed. In areas such as Los Angeles County that do not have extended periods of below-freezing temperatures or significant snowfall, floods usually occur during the season of highest precipitation or during heavy rainfalls after prolonged dry periods. Los Angeles County is dry during the late spring, summer, and early fall, and receives most of its rain during the winter months. The rainfall season extends from November through April, with approximately 95% of the annual rainfall occurring during this period. Los Angeles County averages only 15 inches of precipitation per year; less in along the coast and the dessert, and more in the foothills and mountains.
Location	Los Angeles County has an extensive flood control system (Figure 4-7) that has eliminated much of their flood hazards. However, major flood sources in Los Angeles County still include Ballona Creek, Los Angeles River, Malibu Creek, Pacific Ocean, Rio Hondo River, San Gabriel River and its tributaries, Santa Clara River, Topanga Canyon, and the Pacific Ocean. In the unincorporated areas of Los Angeles County, flooding sources include: • Little Rock and Big Rock Washes: Flooding occurs when the flows reach the valley floor where the channels flatten out. This allows the flows to spread over great distances, inundating the surrounding areas. • Antelope Valley: Flooding occurs when flows from the mountains reach the broad alluvial plan in the Antelope Valley are northerly from the mountains across the broad alluvial plain. During minor storms, much of the flow percolates into the ground. In major storms, flows reach the lake at the northern county limits, where flood flows pond until evaporated. • Foothills of Santa Clarita: Flooding and mudflows occur in the foothill areas during intense rainfall, usually following fires in the upstream watershed. • Coastline: Flooding is caused by waves generated by winter storms. The occurrence of such a storm event in combination with high astronomical tides and strong winds can cause a significant wave runoff and allow storm waves to reach higher than normal elevations along the coastline.

Table 4-19. Flood Identification Profile

Profile	Description
History	The federal government has declared 13 flooding emergencies affecting Los Angeles County, including: • California Flood and Erosion (Disaster Declaration Number [DR]-15), February 5, 1954 • California Flooding (DR-47), December 23, 1955 • California Heavy Rainstorms, Flood (DR-82), April 4, 1958 • California Floods (DR-122), March 6, 1962 • California Severe Storms, Flooding (DR-138), October 24, 1962 • California Severe Storms, Heavy Rains, Flooding (DR-145), February 25, 1963 • California Flooding (DR-270), August 15, 1969 • California Winter Storms Flooding (DR-547), February 15, 1978 • Southern California Winter Storms (DR-615), February 7 and 21, 1980 • Coastal Storms (DR-812), December 21, 1988 • California Winter Storms (DR-935), February 12 and 19, 1992 • California Winter Storms (DR-979), January 7, 1993-February 19, 1993 • California Severe Winter Storms, Flooding, and Mudslides (DR-4305), January 18, 2017-January 23, 2017
Extent / Severity	The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1% in any given year. This flood is also known as the 100-year flood (i.e., base flood). The 100-year flood, as well as the 500-year flood (0.2%), are considered Special Flood Hazard Areas (SFHA) and identified on FEMA's Digit Flood Insurance Rate Maps (DFIRM). The Los Angeles County DFIRM (Figure 4-8) identifies 4.19 square miles (0.09%) with a 1% annual chance of flooding, and 243.32 square miles (5.11%) with a 0.2% annual chance of flooding. In the unincorporated areas of Los Angeles County, there are 1.23 square miles (0.04%) with a 1% annual chance of flooding, and an additional 64.77 square miles (2.13 %) with a 0.2% annual chance of flooding.
Recurrence Probability	Floods can occur at any time but are most common with winter storms packed with subtropical moisture.

Table 4-20. Flood Impact on Land Area

Entity	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	243.32	5.11	4.19	0.09
Unincorporated Los Angeles County	64.77	2.13	1.23	0.04
Supervisory District 1	27.14	11.02	0.90	0.37
Supervisory District 2	19.32	11.94	0.20	0.12
Supervisory District 3	4.38	1.01	1.31	0.30
Supervisory District 4	80.06	18.20	0.32	0.07
Supervisory District 5	112.39	4.00	1.45	0.05

Table 4-21. Flood Impact on Vulnerable Populations – People Experiencing Homelessness

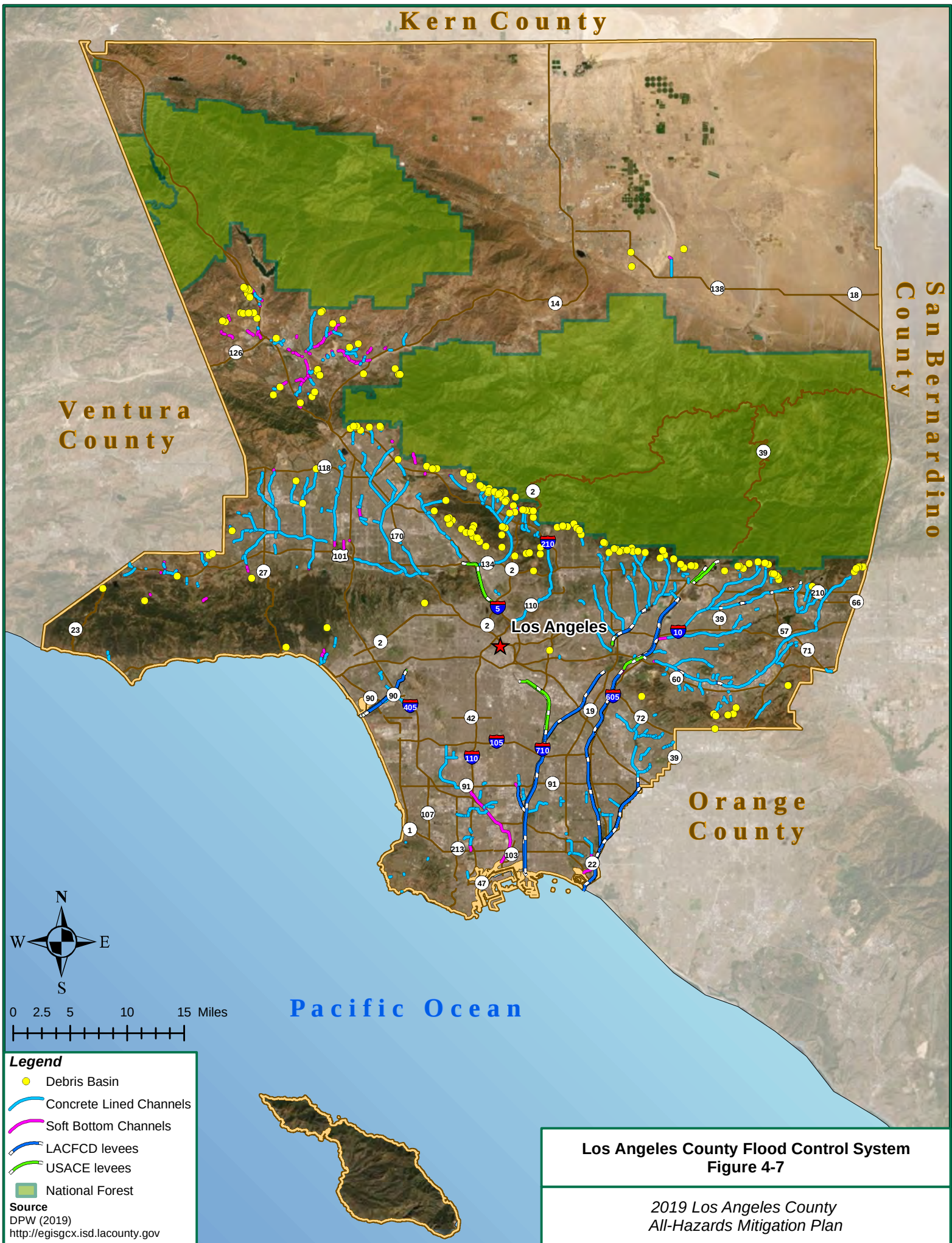
Entity	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	1,601	4.86	87	0.26
Unincorporated Los Angeles County	170	2.88	0	0.00

Table 4-22. Flood Impact on County Critical Facilities

Department / Agency	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	2	28.57	0	0.00
Los Angeles County Fire Department	46	13.65	0	0.00
Los Angeles County Health Services	5	17.24	0	0.00
Los Angeles County Library	15	17.65	0	0.00
LACMA & NHM	0	0.00	0	0.00
Los Angeles County Office of Education	5	13.51	0	0.00
Los Angeles County - Other (offices)	2	8.33	0	0.00
Los Angeles County Parks & Recreation	8	6.84	0	0.00
Los Angeles County Public Health	0	0	0	0.00
Los Angeles County Public Works	41	17.38	1	0.43
Los Angeles County Sheriff's Department	5	16.13	0	0.000

Table 4-23. Overall Summary of Vulnerability to Floods

Flood	
Summary	Los Angeles County has a long history of moderate to severe flooding during major storms. In the Los Angeles basin area, an extensive flood control system has eliminated much of this problem. However, in the less densely populated areas where relatively few flood controls have been constructed, flooding remains a problem. In areas with alluvial fans, flood flows discharge from the mountainous canyons in an uncontrolled manner onto the desert floor, thereby resulting in widespread damage to agricultural land, buildings, and infrastructure. In the foothill areas that experience intense rainfall, mudflows pose a risk to those downstream. Finally, along the coast, waves generated by winter storms in combination with high astronomical tides and strong winds can cause a significant wave runup, resulting in erosion and coastal flooding to low-lying portions of the shoreline. According to the Los Angeles County Public Works, there are 55 Repetitive Loss (RL) properties in 22 RL areas of unincorporated Los Angeles County as of the last submitted 2019 Community Rating System (CRS) Recertification. A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) in any rolling 10-year period, since 1978. Updated location information about RL properties in the unincorporated areas of Los Angeles County were not available during the drafting of this plan. Data from 2011 showed that 26 RL properties were located in the SFHA. At the time, Los Angeles County Public Works stated, “the majority of the repetitive losses are associated with localized urban drainage flood problems, even for properties within a FEMA-designated flood zone.” Los Angeles County Public Works oversees RL mitigation projects.





4.5 LANDSLIDE

Table 4-24. Landslide Identification Profile

Profile	Description
Nature	Landslide is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur because of indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions. Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below: • Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides. • Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides. • Wildfires can remove vegetation from hillsides, significantly increasing runoff and landslide potential. • Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself. • Another type of landslide occurs in areas cut by perennial streams. As floodwaters erode channel banks, rivers have undercut clay-rich sedimentary rocks along their south bank, thereby destabilizing the ground and causing the ground above it to slide.
Location	In 2011, CGS created a deep-seated landslide grip map to show the relative likelihood of deep landslides in California. The map combines landslide inventory, geology, rock strength, slope, average annual rainfall and earthquake shaking potential layers to create classes of landslide susceptibility. As shown in Figure 4-9, the map shows areas of low landslide susceptibility, mainly, the Los Angeles Basin, to areas of high susceptibility, including the Santa Monica Mountains, the San Gabriel Mountains, the Sierra Pelona Mountains, the Baldwin Hills, the Puente Hills, and the Palos Verdes Hills.

Table 4-24. Landslide Identification Profile

Profile	Description
History	Like much of California, Los Angeles County has experienced landslides. Landslides in Los Angeles are generally triggered by intense and/or prolonged rainfall but can also occur after an earthquake. Notable recent landslides in Los Angeles County include: • January 1994, the Northridge earthquake triggered more than 11,000 landslides, with the majority concentrated in the Santa Susana Mountains and the mountains north of the Santa Clara River valley. Most of the triggered landslides were shallow highly disrupted falls and slides. However, the larger disrupted slides were reactivations of previously existing landslides. • March 1995, heavy rains weakened the geologically unstable Pacific Palisades bluffs. A 300-foot section gave way and buried part of Pacific Coast Highway under up to 30 feet of rain-soaked earth, rock, and debris. • March 2005, a slide near Sunset Mesa caused 20,000 cubic yards of debris to cover the Pacific Coast Highway. • January 2018, a hillside in Malibu gave way leaving a house uninhabitable. • December 2018, heavy rain on the Woolsey Fire burned hillsides created debris flows and mudslides in and around Malibu causing several road closures. • January 2019, sections of the Pacific Coast Highway near the Ventura County line were closed due to mudslides.
Extent / Severity	Figure 4-9 shows deep seated landslide susceptibility areas in Los Angeles County. According to the Susceptibility to Deep-Seated Landslides map, there are 750.02 square miles (15.75%) of land in Los Angeles County located in the Classes IX and X. In the unincorporated areas of Los Angeles County, there are 577.63 square miles (18.99%) in this hazard area.
Recurrence Probability	Shallow landslides can occur at any time during the winter but are more likely happen when the ground is nearly saturated. According to the USGS, in Southern California “at least 10 inches of rainfall during the winter is needed to nearly saturate the ground. After this point, a rain burst of 0.2 to 0.25 in in one hour has been observed to trigger abundant shallow landslides.” However, deep-seated landslides generally need deep infiltration of rainfall (which can take weeks or months to occur) to be triggered.

Table 4-25. Landslide Impact on Land Area

Entity	Deep Seated Landslide Class IX and X	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	750.02	15.75
Unincorporated Los Angeles County	577.63	18.99
Supervisory District 1	17.29	7.02
Supervisory District 2	2.73	1.68
Supervisory District 3	114.61	26.58
Supervisory District 4	105.12	23.89
Supervisory District 5	509.31	18.14

Table 4-26. Landslide Impact on Vulnerable Populations – People Experiencing Homelessness

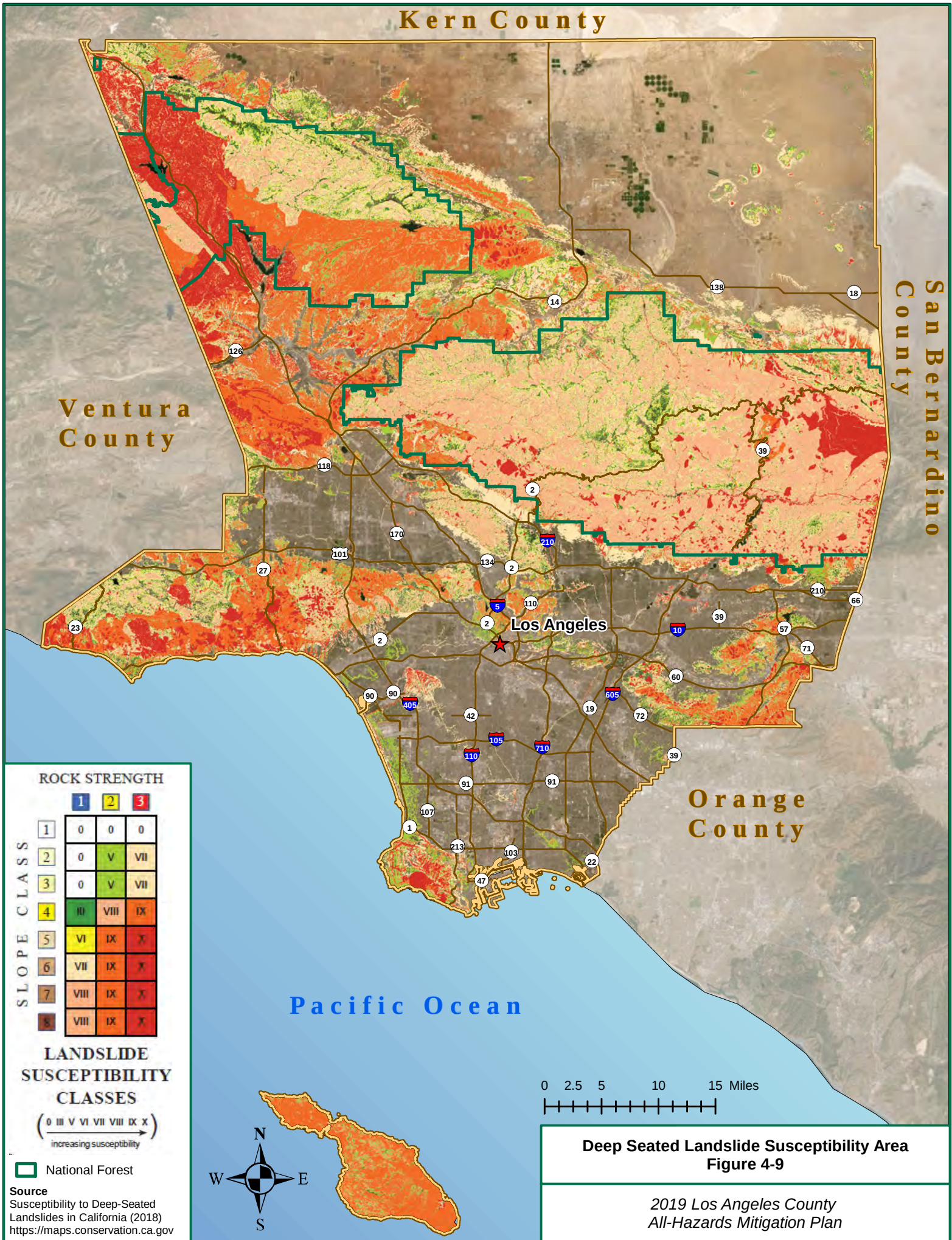
Entity	Deep Seated Landslide Class IX and X	
	# of Homeless	% of Homeless
City of Los Angeles	234	0.71
Unincorporated Los Angeles County	325	5.55

Table 4-27. Landslide Impact on County Critical Facilities

Department / Agency	Deep Seated Landslide Class IX and X	
	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00
Los Angeles County Fire Department	7	2.08
Los Angeles County Health Services	0	0.00
Los Angeles County Library	0	0.00
LACMA & NHM	0	0.00
Los Angeles County Office of Education	1	2.70
Los Angeles County - Other (offices)	0	0.00
Los Angeles County Parks & Recreation	2	1.71
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	37	16.09
Los Angeles County Sheriff's Department	1	3.23

Table 4-28. Overall Summary of Vulnerability to Landslides

Landslide	
Summary	Areas prone to landslide include existing old landslides, base of slopes, base of minor drainage hollows, base or top of an old fill slope, base or top of a steep cut slope, and developed hillsides where leach field septic systems are used. In Los Angeles County, the majority of landslide-prone areas include the Santa Monica Mountains, the San Gabriel Mountains, the Sierra Pelona Mountains, the Baldwin Hills, the Puente Hills, and the Palos Verdes Hills. Landslides may: cause injury or death to those trapped; break utility lines; block/damage roadways; damage foundations, chimneys, or surrounding land; and lead to flash flooding and additional landsliding. In Los Angeles County, landslide risks are mitigated through the Hillside Management Area Ordinance & Hillside Design Guidelines (Table 5-3).



4.6 TSUNAMI

Table 4-29. Tsunami Identification Profile

Profile	Description
Nature	A tsunami is a series of traveling ocean waves of extremely long length, generated by disturbances associated primarily with earthquakes occurring below or near the ocean floor. Subduction zone earthquakes at plate boundaries often cause tsunamis. However, tsunamis can also be generated by underwater landslides or volcanic eruptions, the collapse of volcanic edifices, and—in very rare instances—large meteorite impacts in the ocean. In the deep ocean, a tsunami may have a length from wave crest to wave crest of 100 miles or more, but a wave height of only a few feet or less. Thus, the wave period can be up to several hours, and wavelengths can exceed several hundred miles. Therefore, tsunamis are unlike typical wind-generated swells on the ocean, which might have a period of about 10 seconds and a wavelength of up to 300 feet. Tsunamis cannot be felt aboard ships and they cannot be seen from the air or the open ocean. In deep water, the waves may reach speeds exceeding 700 miles per hour. Tsunamis arrive as a series of successive crests (high water levels) and troughs (low water levels). These successive crests and troughs can occur anywhere from 5 to 90 minutes apart; however, they usually occur 10 to 45 minutes apart. Tsunamis not only affect beaches that are open to the ocean, but also bay mouths, tidal flats, and the shores of large coastal rivers. Tsunami waves can also diffract around land masses. Because tsunamis are asymmetrical, the waves may be much stronger in one direction than another, depending on the nature of the source and the surrounding geography. However, tsunamis do propagate outward from their source, so coasts in the shadow of affected land masses are safer.
Location	Figure 4-10 shows tsunami evacuation area based on Maximum Phase as described in the California Tsunami Evacuation Playbook. This map illustrates coastal land areas that can become submerged due to tsunami run-up. The area of land subject to inundation is a factor of: • Distance of shoreline from the tsunami-generating event • Magnitude of the earthquake causing the event; duration and period of waves • Run-up elevations • Tidal level at time of occurrence • Location along shore and direction of shore in respect to propagated waves • Topography of the seabed In Los Angeles County, areas at risk to the maximum tsunami run up include the ports of Long Beach and Los Angeles, Catalina Island, and areas in the cities of Los Angeles, Long Beach, Manhattan Beach, Redondo Beach, Hermosa Beach, El Segundo, Palos Verdes, Santa Monica, and Malibu. In the unincorporated areas of Los Angeles County, the five coastal zones (i.e., Marin Del Rey, Santa Catalina Island, Santa Monica Mountains, San Clemente Island, and Ballona Wetlands Area A) are subject to inundation.

Table 4-29. Tsunami Identification Profile

Profile	Description
History	Between 1923 and 2011, 11 major tsunami events occurred in Los Angeles County, including: • April 13, 1923, a M 7.2 earthquake in Kamchatka caused a tsunami in Los Angeles. • August 30, 1930, a probable meteotsunami (i.e., a tsunami of meteorological origin) with a 10-foot run-up amplitude hit Santa Monica. • April 1, 1946, a M 8.8 earthquake in the Aleutian Islands caused tsunamis with run-up amplitudes ranging from 1 to 6 feet in Catalina Island, Los Angeles, and Long Beach, breaking ships from their moorings. • November 4, 1952, a M 9.0 earthquake in Kamchatka caused tsunamis with run-up amplitudes ranging from 1 to 2 feet in Santa Monica, Los Angeles, and Long Beach. • March 9, 1957, a M 8.6 earthquake in the Aleutian Islands caused tsunamis with run-up amplitudes ranging from 1 to 2 feet in Santa Monica, Los Angeles, and Long Beach. • May 22, 1960, a M 9.5 earthquake in Chile caused tsunamis with run-up amplitudes ranging from 2 to 5 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica. One person died, 800 small craft were unmoored, 200 boats were damaged, and 40 boats were sunk. The tsunamis resulting in \$1 million dollars in damages. • March 28, 1964, a M 9.2 earthquake in Alaska caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica. One longshoreman was killed, 100 boats were unmoored, and 7 boats were sunk. The tsunamis caused approximately \$350 thousand dollars in damages. • November 29, 1975, a M 7.1 earthquake in Hawaii caused a tsunami with a run-up amplitude of 4 feet in Catalina Island, damaging docks and boats. • September 29, 2009, a M 8.0 earthquake in Samoa caused a tsunami with a 1-foot run-up amplitude in Los Angeles. • February 27, 2010, a M 8.8 earthquake in Chile caused tsunamis with run-up amplitudes ranging from 1 to 3 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica, causing minor damage to docks and boats. • March 11, 2011, a M 9.0 earthquake in Japan caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Catalina Island, Los Angeles, Long Beach, Redondo Beach, and Santa Monica, damaging docks and boats.
Extent / Severity	Figure 4-10 shows the maximum considered tsunami runup from a number of extreme tsunami sources. There are 43.35 square miles (0.91%) in Los Angeles County located in this hazard area. In the unincorporated areas of Los Angeles County there are 2.07 square miles (0.07%) at risk to a maximum tsunami runup.
Recurrence Probability	Based on the history of tsunami run-ups in the region and the history of earthquakes in the Pacific Rim, another tsunami event is likely to occur, although the extent and probability is unknown.

Table 4-30. Tsunami Impact on Land Area

Entity	Maximum Tsunami Inundation Area	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	43.35	0.91
Unincorporated Los Angeles County	2.07	0.07
Supervisory District 1	0.00	0.00
Supervisory District 2	0.12	0.08
Supervisory District 3	2.65	0.61
Supervisory District 4	18.00	4.09
Supervisory District 5	0.00	0.00

Table 4-31. Tsunami Impact on Vulnerable Populations – People Experiencing Homelessness

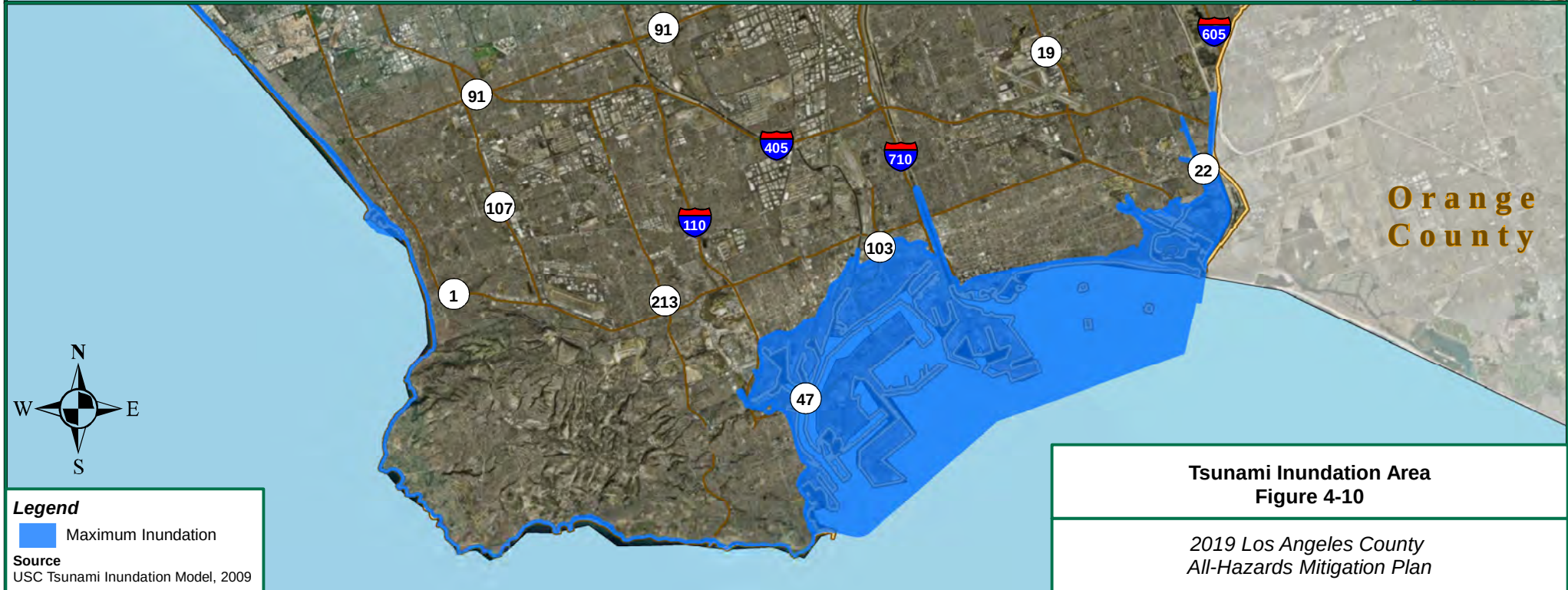
Entity	Maximum Tsunami Inundation Area	
	# of Homeless	% of Homeless
City of Los Angeles	622	1.89
Unincorporated Los Angeles County	20	0.34

Table 4-32. Tsunami Impact on County Critical Facilities

Department / Agency	Maximum Tsunami Inundation Area	
	# of Facilities	% of Square Facilities
Los Angeles County Animal Care & Control	0	0.00
Los Angeles County Fire Department	14	4.15
Los Angeles County Health Services	0	0.00
Los Angeles County Library	1	1.18
LACMA & NHM	0	0.00
Los Angeles County Office of Education	0	0.00
Los Angeles County - Other (offices)	1	4.17
Los Angeles County Parks & Recreation	0	0.00
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	15	6.52
Los Angeles County Sheriff's Department	1	3.23

Table 4-33. Overall Summary of Vulnerability to Tsunamis

Tsunami	
Summary	In Southern California, an earthquake could trigger an underwater avalanche or submarine landslide in the Santa Monica Bay and produce a tsunami that could inundate low-lying areas of Los Angeles County. In fact, according to researchers a locally generated tsunami could bring water as high as 5 feet in Marina del Rey, 7 feet in Manhattan Beach, 8 feet at the ports, and 11 feet in Redondo Beach. Such a tsunami could flood homes and destroy many small boats in nearby harbors, thereby creating dangerous debris. Researchers warn that California needs to be better prepared for tsunamis and while new deep-sea sensors have helped in tsunami detection, they are better suited for far-away tsunamis rather than local tsunamis. California OES and CGS lead Tsunami Preparedness Week in California annually. During this week, governmental agencies, such as Los Angeles County OEM, and community organizations, participate in exercises, test warning systems and response plans, and host community events to promote tsunami awareness.



4.7 WILDFIRE

Table 4-34. Wildfire Identification Profile

Profile	Description
Nature	Wildfires spread by consuming flammable vegetation. This fire type often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark arresting muffles) or by natural events such as lightning. Wildfires often occur in forests or other highly vegetated areas. In addition, wildfires can be classified as forest, urban, interface or intermix fires, and prescribed burns. The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas: • Topography describes slope increases, which influences wildfire spread rate increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridge tops may mark the end of wildfire spread since fire spreads more slowly or may even be unable to spread downhill. • Fuel is the type and condition of vegetation that plays a significant role in wildfire spread occurrence. Certain plant types are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available as fire fuel (referred to as the “fuel load”). The living-to-dead plant matter ratio is also important. Certain climate changes may increase wildfire risk significantly during prolonged drought periods, as both living and dead plant matter moisture content decreases. Both the horizontal and vertical fuel load continuity is also an important factor. • Weather is the most variable factor affecting wildfire behavior. Temperature, humidity, wind, and lightning can affect ignition opportunities and fire spread rate. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. Climate change increases fire to vegetation ignition susceptibility due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildfire occurrence and easier containment. Wildfire frequency and severity sometimes result from other hazard impacts, such as lightning, drought, and infestations (e.g., damage caused by spruce-bark beetle infestations). If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildfires may severely affect livestock and pets. Such events may require emergency water/food, evacuation, and shelter. Indirect wildfire effects can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and exacerbate river and stream siltation; thereby increasing flood potential, harming aquatic life, and degrading water quality. Vegetation-stripped lands are more susceptible to increased debris flow hazards.
Location	Public Resources Code 4201 4204 and Government Code 51175 89 directed the California Department of Forestry and Fire Protection (Cal FIRE) to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These FHSZ are represented as very high, high, or moderate. Specifically, the maps were created using data and models describing development patterns, potential fuels over a 30- to 50-year time horizon, expected fire behavior, and expected burn probabilities. The maps are divided into local responsibility areas (LRAs) and state responsibility areas (SRAs). LRAs generally include cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by Cal FIRE under contract to the local government. SRA is a

Table 4-34. Wildfire Identification Profile

Profile	Description
	legal term defining the area where the state has financial responsibility for wildfire protection. The Los Angeles County Fire Department is one of six contract counties, which has executed a contract with the State of California to provide wildland fire protection on SRA. Figure 4-11 displays the areas of Los Angeles County most susceptible to wildfires and indicates areas of local or state responsibility. Very high FHSZs are generally located in mountainous or hillside areas, including the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills.
History	As shown in Figure 4-12, wildfires are a common occurrence in Los Angeles County. Some of the county's most destructive fires have occurred since 2000, including: • The Grand Prix Fire started on October 21, 2003 and burned a total of 50,618 acres between Claremont and Lytle Creek. The fire destroyed 136 homes and was ruled "accidental but human-initiated." • The Simi Fire started on October 25, 2003 and burned a total of 107,570 acres between Simi Hills and southeastern Simi Valley, in eastern Ventura County and western Los Angeles County, California. It destroyed 37 homes and 278 out buildings. The cause of the fire remains unknown. • The Day Fire started on October 30, 2006 and burned a total of 161,816 acres. The fire primarily burned the Los Padres National Forest. The cause of the fire was human-ignited debris. • The Ranch Fire started on October 20, 2007 and burned a total of 58,410 acres near Townsend Peak in the Angeles National Forest. The cause of the fire was equipment. • The Station Fire started on September 22, 2009 and burned a total of 160,883 acres in the Angeles National Forest. The Station Fire is the largest recorded fire in Los Angeles County. It destroyed 89 residences and another 120 buildings of significance. Two firefighters were killed. The cause of the fire was arson. • The Woolsey Fire started November 8, 2018 and burned a total of 96,949 acres in Los Angeles and Ventura counties including Thousand Oaks, Agoura Hills, Calabasas, the Santa Monica Mountains, Malibu, and West Hills. A total of 1,643 structures were destroyed and 3 people were killed.
Extent / Severity	As shown on the Cal FIRE FHSZ maps, in Los Angeles County, there are 386.06 square miles (8.11%) located in the very high LRA FHSZ, 625.01 square miles (13.13%) in the very high SRA FHSZ, and 132.77 square miles (2.79%) in the high SRA FHSZ. In the Unincorporated Los Angeles County, this includes: 23.53 square miles (0.77%) of very high LRA FHSZ; 610.94 square miles (20.09%) of very high SRA FHSZ; and 132.06 square miles (4.34%) of high SRA FHSZ.
Recurrence Probability	The climate in Los Angeles County is characterized as Mediterranean dry-summer featuring cool, wet winters and warm, dry summers. High moisture levels during the winter rainy season significantly increase the growth of plants. However, the vegetation is dried during the long, hot summers, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn. In addition, the presence of chaparral, a drought-resistant variety of vegetation that is dependent on occasional wildfires, is expected in Mediterranean dry-summer climates. The history of plant succession in Los Angeles County is important in predicting fire susceptibility. For several years after a fire has occurred, easily flammable herbaceous species thrive and increase the likelihood of new fires. When woody species become re-established, they contribute to a lower overall level of fire susceptibility for approximately 10 years. However, after this period, the slow aging plant

Table 4-34. Wildfire Identification Profile

Profile	Description
	community becomes ever more likely to burn because of increased levels of dead plant material and lowered plant moisture levels. Additionally, a local meteorological phenomenon, known as the Santa Ana winds, contributes to the high incidence of wildfires in Los Angeles County. These winds originate during the autumn months in the hot, dry interior deserts to the north and east of Los Angeles County. They often sweep west into the county, bringing extremely dry air and high wind speeds that further desiccate plant communities during the period of the year when the constituent species have very low moisture content. The effect of these winds on existing fires is particularly dangerous; the winds can greatly increase the rate at which fires spread. Based on the conditions described above and the history of occurrence in the past, future events are very likely to occur. In the past, fires burning more than 1,000 acres have occurred about every 1 to 3 years. The extent of future events will depend on specific conditions at the time of the fire.

Table 4-35. Wildfire Impact on Land Area

Entity	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	386.06	8.11	132.77	2.79	625.01	13.13
Unincorporated Los Angeles County	23.54	0.77	132.06	4.34	610.94	20.09
Supervisory District 1	31.42	12.76	0.00	0.00	1.13	0.46
Supervisory District 2	3.25	2.01	0.00	0.00	0.00	0.00
Supervisory District 3	140.58	32.60	0.01	0.00	92.18	21.38
Supervisory District 4	45.78	10.41	1.11	0.25	86.61	19.69
Supervisory District 5	164.90	5.87	131.65	4.69	444.99	15.85

Table 4-36. Wildfire Impact on Vulnerable Populations – People Experiencing Homelessness

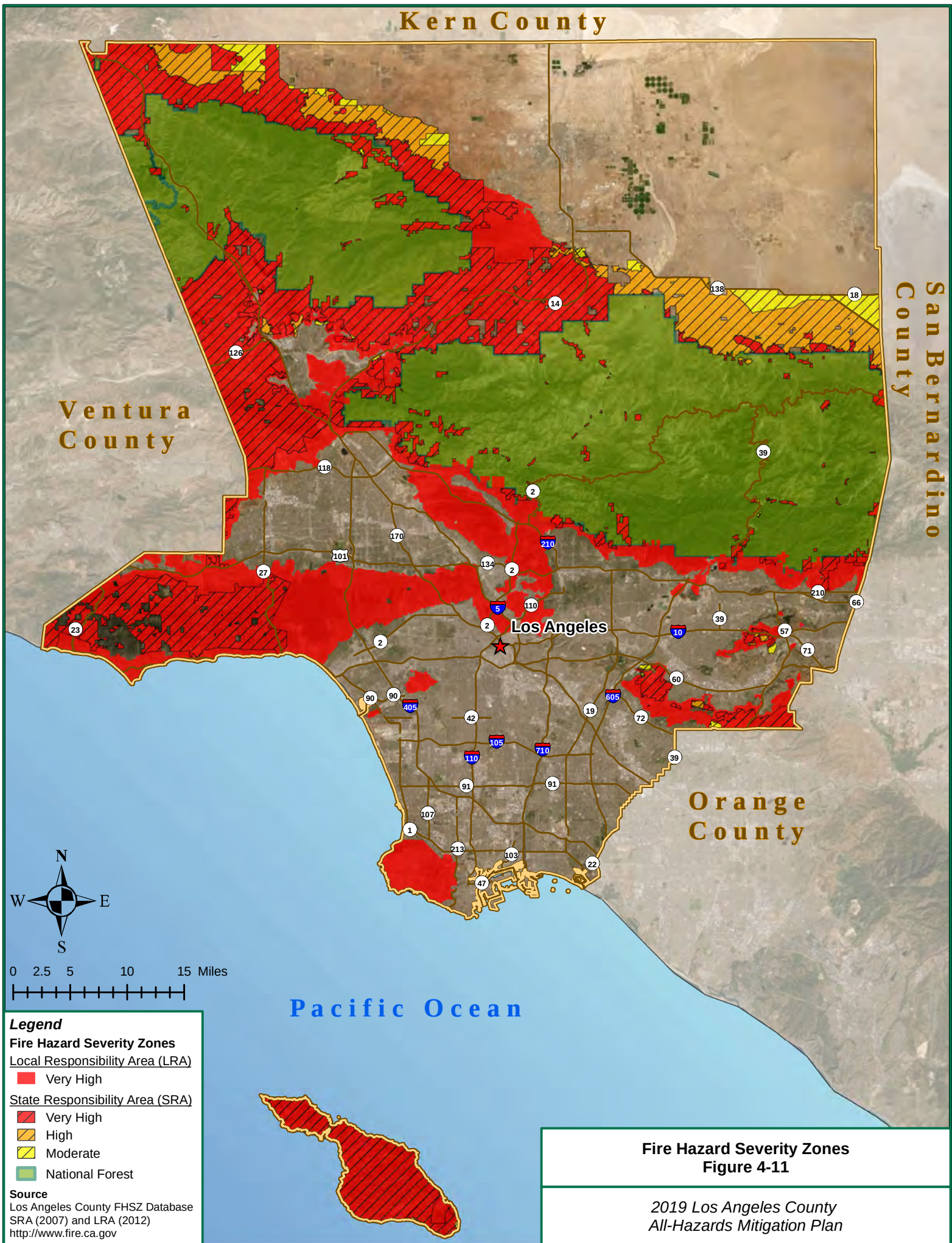
Entity	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	1,291	3.92	0	0.00	0	0.00
Unincorporated Los Angeles County	88	1.49	58	0.99	465	7.91

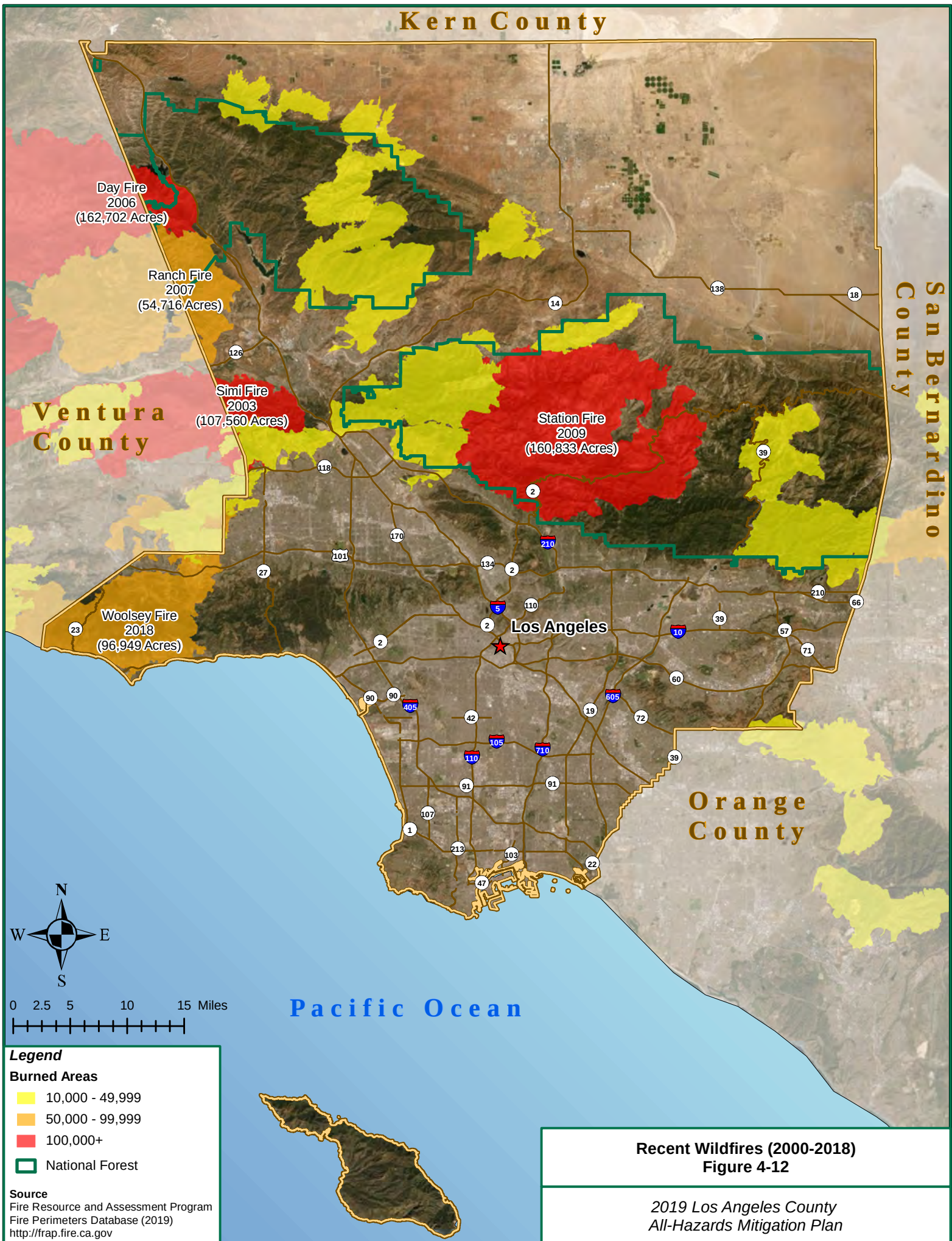
Table 4-37. Wildfire Impact on County Critical Facilities

Department / Agency	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	1	14.29	0	0.00	1	14.29
Los Angeles County Fire Department	39	11.57	1	0.30	14	4.15
Los Angeles County Health Services	1	3.45	0	0.00	0	0.00
Los Angeles County Library	7	8.24	1	1.18	2	2.35
LACMA & NHM	1	25.00	0	0.00	0	0.00
Los Angeles County Office of Education	3	8.11	0	0.00	3	8.11
Los Angeles County - Other (offices)	0	0.00	0	0.00	0	0.00
Los Angeles County Parks & Recreation	13	11.11	1	0.85	12	10.26
Los Angeles County Public Health	52	22.61	4	1.74	41	17.83
Los Angeles County Public Works	0	0.00	0	0.00	0	0.00
Los Angeles County Sheriff's Department	3	9.68	1	3.23	3	9.68

Table 4-38. Overall Summary of Vulnerability to Wildfires

Wildfire	
Summary	Wildfires are not only capable of burning down vegetation, homes, critical facilities, and infrastructure, but they can also cause loss of life to humans and animals, soil erosion, debris flows, air pollution, serious health problems, and restriction of access to recreational areas. The areas in Los Angeles County that are most susceptible to wildfires are generally located in mountainous or hillside areas, including the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills. However, the areas that pose greatest risk to people are generally along the wildland-urban interface (WUI) or intermix. These areas are the transition zones between wildlands and human development and often where areas of housing and vegetation commingle. According to researchers at the United States Forest Service, fires in the WUI areas have not deterred redevelopment. In fact, according to the same researchers, there is a push to return the area to “normal” as soon as possible. California has the strictest fire regulations in the country, which supersede any type of local regulations. However, the rules do not apply to existing homes built before 1991, with the average home in California built decades prior. And unlike earthquakes and floods, there is not a retrofit type of program to encourage homeowners to bring their homes up to current fire requirements.





5 MITIGATION STRATEGY

Section 5 – Mitigation Strategy addresses Element C of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element C: Mitigation Strategy
C1. Does the Plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement § 201.6(c)(3)) C2. Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement § 201.6(c)(3)(i)) C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement § 201.6(c)(3)(i)) C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement § 201.6(c)(3)(ii)) C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement § 201.6(c)(3)(iv)); (Requirement § 201.6(c)(3)(iii)) C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement § 201.6(c)(4)(ii))

5.1 AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES

Los Angeles County’s existing authorities, policies, programs and resources available for hazard mitigation are listed in **Table 5-1** through **Table 5-3**. These tables have been updated since the 2014 AHMP to reflect any changes in human, technical, financial, legal, and regulatory resources.

Table 5-1 Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department / Agency	Principal Activities Related to Hazard Mitigation
Planner(s), engineer(s) and technical staff with knowledge of land development, land management practices, and human-caused and natural hazards.	Los Angeles County Department of Regional Planning	Develops and maintains the Los Angeles County 2035 General Plan, including the safety element. Develops area plans based on the Los Angeles County 2035 General Plan, to provide more specific guidance for the development of more specific areas. Reviews private development projects and proposed capital improvements projects and other physical projects involving property for consistency and conformity with the Los Angeles County 2035 General Plan. Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Engineer(s), Building Inspectors/Code Enforcement Officers or other professional(s), and technical staff trained in construction requirements	Los Angeles County Public Works	Oversees the effective, efficient, fair, and safe enforcement of the 2017 County of Los Angeles Building Code.
Engineers, construction project managers, and supporting technical staff	Los Angeles County Public Works	Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff	Los Angeles County Public Works	Maintains and operates of a wide range of local equipment and facilities and assists members of the public. This includes providing sufficient clean fresh water, reliable sewer services, street maintenance, storm drainage systems, street cleaning, street lights and traffic signals.
Floodplain Administrator	Los Angeles County Public Works	Enforces the floodplain management ordinance, ensures that new development proposals do not increase flood risk, and that new developments are not located below the 100-year flood level. In addition, the floodplain administrator is responsible for planning and managing flood risk reduction projects throughout the county.
Emergency Manager	Los Angeles County Chief Executive Office – Office of Emergency Management	Maintains and updates the Los Angeles County Operational Area Emergency Response Plan for the unincorporated areas of the county. In addition, coordinates local response and relief activities in the Emergency Operation Center, and works closely with local, state, and federal partners to support planning and training and to provide information and coordinate assistance.

Table 5-1 Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department / Agency	Principal Activities Related to Hazard Mitigation
Procurement Services Manager	Internal Services Department	Provides a full range of municipal financial services, administers several licensing measures, and functions as the county's procurement services manager.
Comptroller	Los Angeles County Auditor - Controller	Provides financial services including grant financial services.
District Attorney	Los Angeles County District Attorney	Provides legal services for the county.
Fire Chief	Los Angeles County Fire Department	Provides fire protection services including response, fire prevention, and mitigation activities for the county.
Sheriff	Los Angeles County Sheriff Department	Provides law enforcement services in the county.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
General Fund	Chief Executive Office	Program operations and specific projects.	Variable.
General Obligation Bonds	Los Angeles County Auditor-Controller	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include but are not limited to: libraries, hospitals, parks, public safety facilities, and cultural and educational facilities.	Variable.
Special Tax and Revenue Bonds	Comptroller	Revenue bonds are used to finance capital projects that: 1) have an identified budgetary stream for repayment (e.g., specified fees, tax receipts); 2) generate project revenue but rely on a broader pledge of general fund revenues to reduce borrowing costs; or 3) finance the acquisition and installation of equipment for the local jurisdiction's general governmental purposes.	Variable.
Vegetation Management Program	Cal FIRE	Cost-sharing program between Cal FIRE and private land owners, which focuses on the use of prescribed fire, mechanical, biological, and chemical means addressing wildland fire fuel hazards and other resource management issues on SRA and LRA lands	Project-specific.
Wildfire Emergency and Mitigation Funds	Cal FIRE	Administers funding from the FEMA, Bureau of Land Management, and U.S. Forest Service for certain types of wildfire emergency and mitigation funding	Project-specific.
California Residential Mitigation Program	California Earthquake Authority	Created by the California Earthquake Authority and the Governor's Office of Emergency Services, Earthquake Brace + Bolt: Funds to Strengthen Your Foundation is the first incentive program offered by the California Residential Mitigation Program.	Project-specific.
Public Health Emergency Preparedness Cooperative Agreement.	Center for Disease Control	Funds are intended to upgrade state and local public health jurisdictions' preparedness and response to bioterrorism, outbreaks of infectious diseases, and other public health threats and emergencies.	Grant award based on specific projects as they are identified.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
Hazard Mitigation Grant Program	FEMA	Supports pre- and post-disaster mitigation plans and projects. Available to California communities after a presidentially declared disaster has occurred in California, administered by Cal OES.	Grant award based on specific projects as they are identified.
Pre-Disaster Mitigation grant program	FEMA	Supports pre-disaster mitigation plans and projects. Available on an annual basis as a nationally competitive grant, administered by Cal OES.	Grant award based on specific projects as they are identified.
Flood Mitigation Assistance grant program	FEMA	Mitigates repetitively flooded structures and infrastructure. Available on an annual basis, distributed to California communities, administered by Cal OES.	Grant award based on specific projects as they are identified.
Homeland Security Preparedness Technical Assistance Program	FEMA/DHS	Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (i.e., prevention, protection, response, recovery) and homeland security program management.	Grant award based on specific projects as they are identified.
Assistance to Firefighters Grant Program	FEMA/U.S. Fire Administration	Provides equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. Available to fire departments and nonaffiliated emergency medical services providers.	Grant awards based on specific projects as they are identified.
Land and Water Conservation Funds	U.S. Department of the Interior	Supports the protection of federal public lands and waters and voluntary conservation on private land.	Project-specific.
Community Action for a Renewed Environment	U.S. Environmental Protection Agency (EPA)	Through financial and technical assistance offers an innovative way for a community to organize and take action to reduce toxic pollution (e.g., stormwater) in its local environment. Through this program, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them.	Grant award based on specific projects as they are identified.
Clean Water State Revolving Fund	U.S. EPA	A loan program that provides low-cost financing to eligible entities on state and tribal lands for water quality projects, including all types of non-point source, watershed protection or restoration, estuary management projects, and more traditional municipal wastewater treatment projects.	Variable.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
Community Block Grant Program Entitlement Communities Grants	U.S. Department of Housing and Urban Development	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes.	Grant award based on specific projects as they are identified.

Table 5-3. Legal and Regulatory Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management	Potential to Affect Development
Los Angeles County 2035 General Plan (2015)	Describes hazard areas and lists goals and policies to reduce the potential risk of death, injuries, and economic damage resulting from natural and human-caused hazards.	Seismic and geotechnical, flood and inundation hazards, and fire hazards.	Mitigation, Preparedness, Response	Yes
Comprehensive Floodplain Management Plan (2016)	Reviews existing floodplain management programs in the county and recommends enhancements to them through 35 mitigation actions.	Flood	Mitigation	Yes
Los Angeles County Fire Department 2018 Strategic Fire Plan	Identifies and prioritizes pre-fire and post-fire management strategies and tactics meant to reduce the loss of values at risk in Los Angeles County.	Wildfire	Preparedness, Mitigation	Yes
Greater Los Angeles County Region Integrated Regional Water Management Plan (2014)	Identifies a comprehensive set of solutions to achieve the several objectives over the 25-year planning horizon including reducing flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches and adapting to and mitigate against climate change vulnerabilities.	Flood, Climate Change	Mitigation	Yes
Unincorporated County Community Climate Action Plan 2020 (2015)	Provides a roadmap for successfully implementing greenhouse gas reduction measures in the County. It is a component of the General Plan Air Quality Element, the Community Climate Action Plan actions are closely tied to many of the goals, policies, and programs of the General Plan, as well as to several other existing programs in the County.	Climate Change	Mitigation	Yes
County of Los Angeles Local Coastal Programs	Requires coastal cities and counties to establish coastal resource conservation and development programs.	Climate change, flood	Prevention, Mitigation	Yes
Los Angeles County Floodplain Management Ordinance	Promotes the public health, safety, and general welfare. Additionally, aims to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land in flood prone, mudslide (i.e., mudflow) or flood related erosion areas.	Flood	Mitigation	Yes

Table 5-3. Legal and Regulatory Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management	Potential to Affect Development
Hillside Management Area Ordinance & Hillside Design Guidelines	Required for development in Hillside Management Areas, which are defined as areas with 25% or greater natural slopes. The guidelines include specific and measurable design techniques that can be applied to residential, commercial, industrial, and other types of projects.	Landslide	Mitigation	Yes
Los Angeles County Fuel Modification Code	Requires the review aspects such as structure location and type of construction, topography, slope, amount and arrangement of vegetation, and overall site settings for a new structure or an addition that is equal to or greater than 50% of the existing square footage. The objective of this approval plan process is to create defensible space necessary for effective fire protection of homes in the FHSZs.	Wildfire	Preparedness, Mitigation	Yes
California Fire Plan	Requires the County of Los Angeles Fire Plan Unit to implement the California Fire Plan, a statewide framework for minimizing costs and losses from wildland fires. The Fire Plan Unit uses a GIS platform to identify high hazard/high value areas and communities at risk in the wildland-urban interface.	Wildfire	Preparedness, Mitigation	Yes
Los Angeles County Brush Clearance Program	Legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. These measures create “Defensible Space” for effective fire protection of property, life, and the environment. The Brush Clearance Program is a joint effort between the County of Los Angeles Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard, and Pest Abatement Bureau (Weed Abatement Division).	Wildfire	Mitigation	No

5.2 NFIP PARTICIPATION

The NFIP aims to reduce the impact of flooding to residential and non-residential buildings. It does so by providing insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. Los Angeles County entered the NFIP in 1980, and the first Los Angeles County DFIRM was issued on December 2, 1980. The Los Angeles County Public Works enforces the county's floodplain management ordinance and participate in FEMA's Community Assisted Visits, which occur on a 3- to 5-year cycle. According to Los Angeles County Public Works, as of September 30, 2018, there are 1,553 floodplain policies in force in the unincorporated areas of Los Angeles County.

Los Angeles County also participates in the CRS program. The CRS program is a voluntary program for communities that engage in community floodplain management activities, which exceed the minimum NFIP standards. CRS communities benefit from reduced insurance rates and improved floodplain management programs. Los Angeles County is currently a Class 7 CRS community; therefore, homeowners who live in the SFHA can receive a 5 to 15 percent discount on their flood insurance policy.

5.3 MITIGATION GOALS

Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide vision. For the 2019 AHMP, the overarching goal is for Los Angeles County to be a disaster resilient community. A disaster resilient community is able to prepare for, respond to, and recover from adverse hazards and disasters. According to laresilience.org, "in the resilience framework, less emphasis is placed on traditional, individually-focused preparedness efforts... building community resilience is really about making communities stronger."

5.4 POTENTIAL MITIGATION ACTIONS AND PROJECTS

Mitigation actions and projects help achieve the goals of the AHMP. For the 2019 AHMP, potential mitigation actions to be considered are listed below in **Table 5-4** and include the following hazard mitigation categories: education and awareness; natural systems protection; structure and infrastructure projects; preparedness and response; and local plans and regulations. This list addresses every hazard profiled in this plan and is based on the plan's risk assessment as well as lessons learned from recent disasters. It was developed using: FEMA success stories and best management practices; FEMA job aids; local and regional plans and reports; and input from subject matter experts and pertinent Los Angeles County departments and agencies.

Table 5-4. Potential Mitigation Actions and Projects

Red Flag Warning Public Outreach	
Project Description	Create an online and offline public outreach campaign for Red Flag Warnings. Include information about: what is a Red Flag Warning; what land may be closed; and what individuals should do to be prepared as well as what activities should be avoided. Tailor outreach material to various target groups, including people experiencing homelessness, the elderly, the young, and non-English speaking residents.

Table 5-4. Potential Mitigation Actions and Projects

Type of Project	Education and Awareness Programs
Hazard(s) Mitigated	Wildfire
Project Source	Red Flag Working Group, LA County Homeless Initiatives
Pros	Education can help reduce the risk of human-caused fires Public outreach is generally low-cost Public outreach to homeless individuals can help built rapport with county agencies
Cons	Maybe difficult to reach some target groups
Vegetation Management Program	
Project Description	Continue to implement the County's Vegetation Management Program. The Los Angeles County Fire Department Vegetation Management Unit works closely with the Fire Plan Unit and the Air and Wildland Division's Prescribed Fire Office to implement projects. The Vegetation Management Unit provides the State and County with required paperwork for prescribed burning, mechanical, biological and chemical treatment methods used in project areas.
Type of Project	Natural Systems Protection
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department
Pros	Program has been implemented in Los Angeles County for the last 40 years and are generally cost effective Can be used selectively to treat the most vulnerable areas
Cons	Often requires ongoing maintenance Can cause soil disturbance and increase sedimentation and erosion Prescribed fire and chemical application methods require close supervision
Fireproof Coating of Critical Assets	
Project Description	Fireproof coat critical facilities in Very High FHSZs which will allow structures to extend their strength in the event of a fire.
Type of Project	Structure and Infrastructure Projects
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Public Works
Pros	Generally cost-effective and non-toxic
Cons	None
Auxiliary Power for Critical Facilities	
Project Description	Determine which critical facilities need and do not have auxiliary power in order to remain functional during de-energization or "Public Safety Power Shut-Offs" and/or general loss of power and install auxiliary power systems. Auxiliary power systems may include back-up generators, local Solar Photovoltaic plus storage, and microgrids.
Type of Project	Structure and Infrastructure Projects
Hazard(s) Mitigated	Wildfire specifically, but also applies to all hazards

Table 5-4. Potential Mitigation Actions and Projects

Project Source	Los Angeles County Public Works
Pros	Provides emergency power to keep critical facilities operational and functional
Cons	Diesel generators can be expensive to operate and contribute to air pollution
Earthquake-Resistant Ductile Iron Pipes Replacement	
Project Description	Continue to replace aging critical pipes in extreme or violent shaking hazard areas and Class IX and X landslide hazard areas to improve seismic reliability/safeguard critical water distribution lines against the potential destructive impacts of large-scale earthquakes and accompanying landslides. Los Angeles County Public Works completed its' first earthquake-resistant ductile iron pipe replacement pilot program in 2013.
Type of Project	Structural and Infrastructure Projects
Hazard(s) Mitigated	Landslides, Earthquakes
Project Source	Los Angeles County Public Works
Pros	Improves water reliability Restores those without service more rapidly
Cons	None
Watershed Ecosystem Restoration	
Project Description	Modernize existing flood control retention facilities to improve flood protection, water quality and ecological health. Potential projects include: Arroyo Seco and Compton Creek.
Type of Project	Natural Systems Protection
Hazard(s) Mitigated	Climate Change, Flood, Tsunami
Project Source	County of Loss Angeles Repetitive Property Loss Area Analysis Progress Report (2017 – 2018), OurWaterLA
Pros	Reduces the risk of flooding to the surrounding neighborhoods Provides new recreational space and safety amenities
Cons	Additional studies needed to determine best approaches
Green Streets	
Project Description	Implement the Green Street Master Plan with the goal of identifying 110 feasible sites. A green street is a stormwater management approach that incorporates vegetation, soil, and engineered systems (e.g., permeable pavements) to slow, filter, and cleanse stormwater runoff from impervious surfaces. In addition to the traditional green street approach, incorporate “complete streets” design strategies to provide more room for emergency response vehicles and create defensible space in plaza areas and around buildings.
Type of Project	Natural Systems Protection, Preparedness and Response
Hazard(s) Mitigated	Stormwater/Flood, Climate Change
Project Source	Los Angeles County Public Works, U.S. EPA
Pros	Protects water quality in rivers and streams by removing pollutants

Table 5-4. Potential Mitigation Actions and Projects

	Replenishes groundwater supplies Absorbs carbon Improves air quality and neighborhood aesthetics Improves pedestrian and bicycle safety
Cons	Requires selected site suitability to do utility conflicts, and geotechnical and environmental characteristics
Coordinated Data Collection and Database Systems	
Project Description	Create coordinated data collection and database system in which intake and assessment information can be entered in real time and can support multiple users at the same time. Components can include critical facilities and vulnerable populations.
Type of Project	Preparedness and Response
Hazard(s) Mitigated	All hazards
Project Source	Los Angeles County OEM
Pros	Coordinated systems
Cons	Different data collection needs may require parallel databases
Brush Clearance Program	
Project Description	Expand the County's Brush Clearance Program to include a grant fundable mitigation component for qualified low-income and/or elderly homeowners that have properties that are found to be non-compliant. Instead of warning property owners and imposing infractions for inadequate fire hazard reduction, Los Angeles County will work with the homeowner to develop and implement a fire reduction plan.
Type of Project	Natural Systems Protection, Preparedness and Response
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department
Pros	Proactive, not reactive approach to working with homeowners to reducing wildfire fuel hazards
Cons	Often requires ongoing maintenance
Wildland Urban-Interface Ordinance	
Project Description	Codifying development standards to guide development in the WUI areas that face a severe threat of wildfires.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Wildfire
Project Source	Draft Safety Element Update for Los Angeles County 2035 General Plan, Los Angeles County Sustainability Plan
Pros	Additional review of development in WUIs will enable best practices are incorporated in the project design.
Cons	Additional regulations may be perceived as too burdensome by property owners.

Table 5-4. Potential Mitigation Actions and Projects

Urban Forest Management Plan	
Project Description	Create Urban Forest Management Plan for Los Angeles County with a well-defined scope that includes a comprehensive tree inventory, assessment of tree health, identification of shade-poor neighborhoods, cost-benefit analysis of tree vs shade-structure interventions, urban forest financing plan, and a plan for sustainable management.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Climate Change, Drought
Project Source	Los Angeles County Sustainability Plan (Los Angeles County Chief Sustainability Office), A Greater L.A. Climate Action Framework (L.A. Regional Collaborative for Climate Action and Sustainability), and Los Angeles County 2035 General Plan
Pros	Extreme heat is the greatest health threat to Los Angeles County residents. Providing shade will help mitigate the effects of extreme heat in disadvantaged neighborhoods. Residents from these communities may not have private vehicles and encounter problems traveling to cooling centers; they may also have limited access to air conditioning.
Cons	The inability of residents to pay for water to establish newly planted trees may hinder the establishment of an urban forest. County-wide water conservation measures during times of drought may also conflict with efforts to establish and maintain an urban forest. In such situations, shade structures may fulfill the same needs.
Community Wildfire Protection Plans	
Project Description	Continue to work with communities to develop Community Wildfire Protection Plans (CWPP). CWPPs enable communities to plan how they will reduce the risk of wildfire by identifying strategic sites and methods for fuel reduction projects across the landscape and jurisdictional boundaries.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department 2018 Strategic Fire Plan
Pros	Opportunity to establish a localized definition and boundary for the WUI. Priority funding is often given to projects and treatment areas identified in a CWPP.
Cons	May be difficult to get collaboration from stakeholders.

5.5 MITIGATION ACTION PLANS

A mitigation action plan is a prioritized list of proposed mitigation projects and actions that a community hopes to implement to reduce its' risks and vulnerabilities. The 2019 AHMP mitigation action plan, as shown in **Table 5-5 and Table 5-6**, is prioritized into Tier 1 and Tier 2 activities:

- Tier 1 activities are essential to remedy or prevent a major health/safety hazard. They meet FEMA HMA grant criteria, including project eligibility, benefit-cost, and performance period.
- Tier 2 activities are important in building a culture and practice of disaster resilience that will prevent new risks. They do not necessarily require and/or meet FEMA HMA grant criteria (but may qualify for other state and federal funds).

Table 5-5. Tier 1 Mitigation Action Plan

Project Name	Implementation Details
Red Flag Warning Public Outreach	Department/Agency: LAHSA, Los Angeles County OEM, Los Angeles County Fire Department, and Los Angeles County Sheriff's Department Potential Funding Source: FEMA grants Performance Period: 6 months development, implementation prior to every summer/fall
Vegetation Management Program	Department/Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing
Fireproof Coating of Critical Facilities	Department/Agency: Los Angeles County Public Works, Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: 1-3 years
Auxiliary Power for Critical Facilities	Department/Agency: Los Angeles County Public Works Potential Funding Source: FEMA grants Performance Period: Ongoing
Earthquake-Resistant Ductile Iron Pipes Replacement	Department/Agency: Los Angeles County Public Works Potential Funding Source: FEMA grants Performance Period: Ongoing
Brush Clearance Program	Department/Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing
Community Wildfire Protection Plans	Department / Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing

Table 5-6. Tier 2 Mitigation Action Plan

Project Name	Implementation Details
Watershed Ecosystem Restoration	Department/Agency: Los Angeles County Public Works Potential Funding Source: U.S. EPA, U.S. Department of Interior grants Performance Period: 3-5 years
Green Streets	Department/Agency: Los Angeles County Public Works Potential Funding Source: U.S. EPA grants Performance Period: 3-5 years
Coordinated Data Collection & Database Systems	Department/Agency: Los Angeles County OEM Potential Funding Source: County funds Performance Period: 1-2 years, Ongoing
Wildland Urban-Interface Ordinance	Department/Agency: Los Angeles County Department of Regional Planning, Los Angeles County Fire Department Potential Funding Source: County funds Performance Period: 6 months – 1 year
Urban Forest Management Plan	Department/Agency: Los Angeles County Department of Regional Planning, Los Angeles County Fire Department Potential Funding Source: County funds Performance Period: 1-2 years

5.6 PLAN INTEGRATION

The AHMP project manager will be the lead in working with Los Angeles County departments and agencies to ensure that elements of the 2019 AHMP are incorporated into other relevant county planning documents as they are created or updated.

As such, the AHMP project manager will work with:

- The Los Angeles County Public Works to incorporate the flood risk assessment and flood mitigation actions into the county's Comprehensive Floodplain Management Plan. The Comprehensive Floodplain Management Plan is currently being updated and is expected to be completed in 2021.
- The Los Angeles County Department of Regional Planning to ensure that the 2019 AHMP's hazard profiles and mitigation projects and actions align with those addressed in the General Plan's Safety Element. The Safety Element is currently being updated and is expected to be completed in 2021.
- The Los Angeles County OEM to ensure that the hazard profiles are included in the Los Angeles County Threat and Hazard Identification Risk Assessment and the Los Angeles County Operational Area Emergency Response Plans and Annexes as they are updated.

6 PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

Section 4 – Plan Review, Evaluation, and Implementation addresses Element D of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element D: Plan Review, Evaluation, and Implementation
D1. Was the plan revised to reflect changes in development? (Requirement § 201.6(d)(3))
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement § 201.6(d)(3))
D3. Was the plan revised to reflect changes in priorities? Requirement § 201.6(d)(3))

6.1 CHANGES IN DEVELOPMENT

As noted in **Section 3.2**, the slowing population growth is in part due to the lack of housing. Most economists agree that building new housing is key to addressing the state’s housing crisis. During the drafting of the 2019 AHMP, nearly 28,000 units were under construction in Los Angeles County. In the city of Los Angeles, developers have targeted properties in older neighborhoods, rather than undeveloped land in the city’s outskirts. However, as the State of California pushes for greater growth in order to meet the governor’s goal of 3.5 million new units by 2025, there is growing concern that without land-use restrictions, new development will occur in fire-prone and other hazard areas of the county. These concerns are addressed within the 2019 AHMP mitigation strategy.

6.2 PROGRESS IN LOCAL MITIGATION EFFORTS

The 2014 AHMP Mitigation Actions Matrix was reviewed by each of the coordinating agencies identified on the matrix in order to determine mitigation action status. Mitigation actions that were identified as not having been implemented or deferred were considered for **Table 5-4**. Mitigation actions that were identified as completed are shown in **Table 6-1**.

In addition, the consultant reviewed the County of Los Angeles Floodplain Management Plan 2018 Progress Report to determine mitigation action status. Flood mitigation actions that were listed as “no progress” were considered for **Table 5-4**. Relevant flood mitigation actions that were listed as “project complete” are shown in **Table 6-1**.

Table 6-1. Completed Local Mitigation Efforts

Coordinating Agency	Project Description
Los Angeles County Department of Coroner	Purchased equipment to set up an off-site mobile morgue. This equipment was incorporated into the business continuity plan in case the main facility is unusable and would help to avoid unnecessary exposure of employees or the public to biological, radiological, or chemical agents.
Los Angeles County Department of Regional Planning	Updated building codes on January 1, 2017.

Table 6-1. Completed Local Mitigation Efforts

Coordinating Agency	Project Description
Los Angeles County Public Works	Continue the seismic upgrade to improve water reliability through earthquake-resistant pipe installation. The work took place on Reseda Boulevard from Roscoe to Strathern; Etiwanda Avenue from Roscoe to Strathern; Cantara Street from Reseda to Etiwanda; and Strathern Street from Reseda to Etiwanda.
Los Angeles County Public Works	In October 2017, the Los Angeles County Public Works mailed 3,551 copies of "Are You Prepared for A Flood?" brochure to property owners and residents in Special Flood Hazard Areas, County Floodways, and possible gaps in floodplain mapping (i.e., areas with possible flood hazards that are not on FEMA or County maps). The County of Los Angeles' National Flood Insurance Program (NFIP) website links were checked and updated. Previously, brochures were distributed to the Malibu, Rosemead, and Castaic Public Libraries. Brochures were distributed to additional public libraries closer to the floodplains including Topanga, Altadena, Duarte, and San Dimas.
Los Angeles County Public Works	In addition to the outreach efforts mentioned in Initiative No. 1 above, the Los Angeles County Public Works mailed 226 copies of CDs containing County of Los Angeles and FEMA publications to all property owners and residents in RL properties and properties in the RL areas.
Los Angeles County Public Works	In December 2017, the Los Angeles County Public Works mailed a letter and outreach materials to owners of critical facilities located in FEMA's-designated Special Flood Hazard Areas. Critical facilities that received outreach materials include schools, hospitals, fire stations, and health care facilities.
Los Angeles County Public Works	County of Los Angeles Office of Emergency Management, Fire Department, Sheriff's Department, and Public Works' Disaster Service Group participated in emergency preparedness events such as Los Angeles County's Preparation throughout this reporting period. Participants at the fair provided attendees with information and resources for preparation, such as the "Are You Prepared for a Flood?", "ALERT LA COUNTY" brochure, "Homeowner's Guide for Flood, Debris, and Erosion Control," and the "Emergency Survival Guide."

6.3 CHANGES IN PRIORITIES

The 2014 AHMP's Mitigation Action Matrix was prioritized using a number ranking system to determine a project's priority. For the 2019 AHMP, mitigation actions were prioritized into two separate groups, which both helped achieve meeting the goal of disaster resiliency. As noted in **Section 5.3**, resilient communities are able to minimize any disaster, making the return to normal life as soon and as effortless as possible. As such, the first part (i.e., first priority) of this goal is to ensure that life-safety needs are addressed as soon as possible. The second part (i.e., second priority) is to implement plans, policies, and programs to reduce current risks and prevent new/future ones.

7 PLAN ADOPTION

Section 6 – Plan Adoption addresses Element E of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element E: Plan Adoption	
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	

7.1 FORMAL ADOPTION

[To be completed] The 2019 AHMP was formally adopted by the Los Angeles County Board of Supervisors via resolution on [To be completed]. A scanned copy of the resolution is included as **Figure 7-2**. It will also be kept on file with Los Angeles County OEM and additional be sent to Cal OES and FEMA.

ADOPTION RESOLUTION

APPENDIX A – PLANNING PROCESS

From: Stephanie Kim

Sent: Tuesday, August 20, 2019 2:44 PM

To: XXX@monosheriff.org; XXX@ocsd.org; XXX@rivco.org; XXX@ontarioca.gov; XXX@inyocounty.us; XXX@co.imperial.ca.us; XXX@laquintaca.gov; XXX@sbcoem.org; XXX@mono.ca.gov; XXX@lcf.ca.gov; XXX@sa.ocgov.com; XXX@rivco.org; XXX@cbc-city.org; XXX@inyocounty.us; XXX@cityofbishop.com; XXX@sandiego.gov; XXX@rivco.org; XXX@octa.net; XXX@sbc-sd.org; XXX@sandiego.gov; XXX@octa.net; XXX@rcoe.us; XXX@dgs.ca.gov; XXX@sbc-sd.org; XXX@lawa.org; XXX@rivco.org; XXX@lausd.net; XXX@inyocounty.us; XXX@octa.net; XXX@ranchomirageca.gov; XXX@rivco.org; XXX@inyocounty.us; XXX@sbccd.edu; XXX@morongo-n-sn.gov; XXX@noaa.gov; XXX@cityofredlands.org; XXX@morongo-n-sn.gov; XXX@coachella.org; XXX@ocsd.org; XXX@sbc-sd.org; XXX@cityoftemecula.org; XXX@santabarbaraca.gov; XXX@mwdh2o.com; XXX@sbc-sd.org; XXX@kerncountyfire.org

Cc: XXX@ceooem.lacounty.gov

Subject: Los Angeles County Hazard Mitigation Plan Update

Dear Stakeholders,

We are reaching out to let you know that the Los Angeles County Office of Emergency Management is in the process of updating its' All-Hazards Mitigation Plan. I'm attaching our public outreach flyer for your information. We will send out an additional email when our draft plan goes out to public comment later this fall. If you have any questions or would like to be part of the plan update process, please contact me!

Emily Montanez

emontanez@ceooem.lacounty.gov

(323) 980-2813

Stephanie Kim
Academic Intern
LA County CEO Office of Emergency Management

2019 County of Los Angeles All-Hazards Mitigation Plan



The Los Angeles County Office of Emergency Management is updating the County's All-Hazards Mitigation Plan! Over the next few months, we will re-assess risks posed by natural disasters and review and revise existing strategies as well as develop new ones to protect life and property future events.

Natural disasters addressed in our plan include: climate change, dam failure, drought, flood, earthquake, landslide, tsunami, and wildfire.

Once our plan is completed and approved by FEMA, the County will be re-eligible to apply for and receive certain types of non-emergency disaster assistance, including funding for mitigation projects identified in our plan.

To learn more about hazard mitigation planning, please visit: <https://www.fema.gov/hazard-mitigation-planning>.

To learn more about our plan and/or participate in our planning process, please visit our website lacounty.gov/emergency or our Twitter account @ReadyLACounty.



Plan de Mitigación para Todos los Peligros del Condado de Los Ángeles 2019



¡La Oficina de Manejo de Emergencias del Condado de Los Ángeles está actualizando el Plan de Mitigación para Todos los Peligros del Condado! En los próximos meses, reevaluaremos los riesgos debidos a los desastres naturales y repasaremos y revisaremos las estrategias existentes, y también desarrollaremos otras nuevas para proteger vidas y propiedades antes de que ocurran incidentes futuros.

Los riesgos discutidos en nuestro plan incluyen: cambios climáticos, falla de presas, sequías, inundaciones, terremotos, deslizamientos de tierra, tsunamis e incendios forestales.

Una vez que FEMA complete y apruebe nuestro plan, el Condado volverá a ser elegible para solicitar y recibir ciertos tipos de asistencia por desastre que no sea de emergencia, incluyendo la financiación para proyectos de mitigación identificados en nuestro plan.

Para obtener más información sobre la planificación de mitigación de riesgos, por favor visite: <https://www.fema.gov/hazard-mitigation-planning>.

Para obtener más información sobre nuestro plan y / o participar en nuestro proceso de planificación, visite nuestro sitio web lacounty.gov/emergency o nuestra cuenta de Twitter @ReadyLACounty.





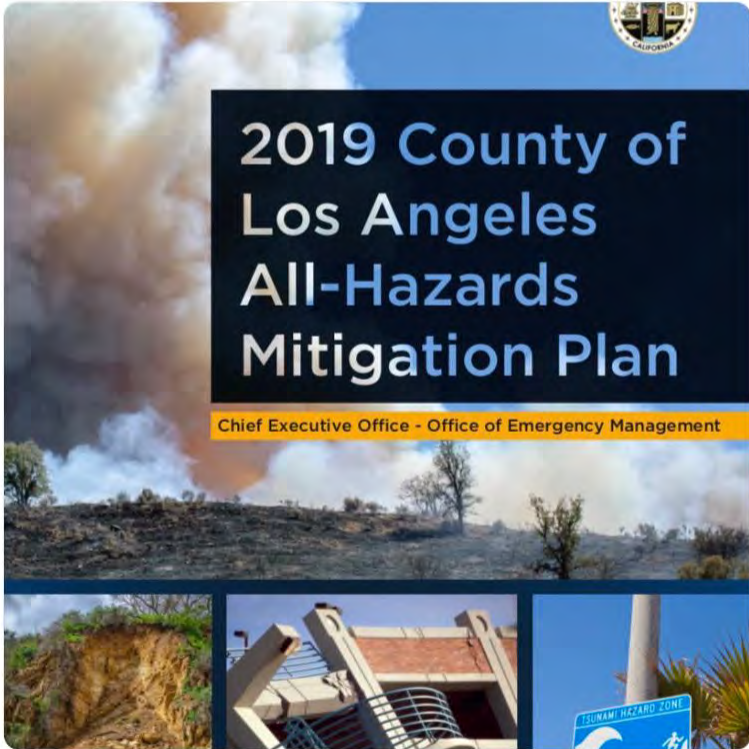
Ready Los Angeles County
@ReadyLACounty

Official Account of the Los Angeles County
Office of Emergency Management for disaster
& preparedness information. Please note
change @LACOOEM to @ReadyLACounty

Los Angeles County
LACOA.org
Joined January 2012

 **Ready Los Angeles County**
@ReadyLACounty [Follow](#)

We are updating the County of Los Angeles All-Hazards Mitigation Plan in order to help protect life and property from future disaster events. To learn more about our plan, please follow our Twitter account @ReadyLACounty.



12:03 PM - 6 Aug 2019

2 Retweets 4 Likes

2 4



Ready Los Angeles County

@ReadyLACounty

Official Account of the Los Angeles County Office of Emergency Management for disaster & preparedness information. Please note change @LACOOEM to @ReadyLACounty

📍 Los Angeles County

🌐 LACOA.org

📅 Joined January 2012



Ready Los Angeles County

@ReadyLACounty

Follow



Our updated All-Hazards Mitigation Plan will address climate change, dam failure, drought, flood, earthquake, landslide, tsunami, and wildfire. What natural hazard concerns you the most?



11:36 AM - 21 Aug 2019

2 Retweets 1 Like



↻ 2

❤ 1



© 2019 Twitter About Help Center Terms
Privacy policy Cookies Ads info



Tweet

**Ready Los Angeles County**

@ReadyLACounty

A hazard mitigation plan is required to be eligible for certain types of disaster assistance. To learn more about hazard mitigation planning, please visit: fema.gov/hazard-mitigat...



Local Mitigation Planning Handbook

March 2013



FEMA



2019 AHMP - Annual Review Worksheet

HMP Section	Questions	Yes	No	Comments
PLANNING PROCESS	Has your County department/agency (or other type of organization) done any public outreach activities regarding the AHMP or a mitigation project? If yes, please describe.			
	Has your County department/agency (or other type of organization) integrated any of the AHMP's elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Los Angeles County? If so, what are they?			
RISK ASSESSMENT	Does your County department/agency have any new critical assets that should be included in the 2024 AHMP risk assessment?			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Should new mitigation actions be added?			

2019 AHMP - Annual Review Worksheet

HMP Section	Questions	Yes	No	Comments
PLANNING PROCESS	Has your County department/agency (or other type of organization) done any public outreach activities regarding the AHMP or a mitigation project? If yes, please describe.			
	Has your County department/agency (or other type of organization) integrated any of the AHMP's elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Los Angeles County? If so, what are they?			
RISK ASSESSMENT	Does your County department/agency have any new critical assets that should be included in the 2024 AHMP risk assessment?			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Should new mitigation actions be added?			

2019 AHMP - Mitigation Project Progress Report			
Progress Report Period From (date):		To (date):	
Project Title:			
Project ID:			
Description of Project:			
Implementing Department/Agency:			
Supporting Department/Agencies:			
Contact Name:			
Contact E-mail:			
Contact Number:			
Grant/Finance Administrator:			
Total Project Cost:			
Anticipated Cost Overrun/Underrun:			
Date of Project Approval:			
Project Start Date:			
Anticipated Completion Date:			
Summary of Progress of Project for this Reporting Period			
1. What was accomplished during this reporting period?			
2. What obstacles, problems, or delays did the project encounter, if any?			
3. How were the problems resolved?			

APPENDIX B – COMMUNITY PROFILE

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Animal Care & Control	Agoura Animal Care Center
Animal Care & Control	Baldwin Park Animal Care Center
Animal Care & Control	Carson Animal Care Center
Animal Care & Control	Castaic Animal Care Center (Castaic)
Animal Care & Control	Downey Animal Care Center
Animal Care & Control	Lancaster County Animal Care Center
Animal Care & Control	Palmdale Animal Care Center
Fire Department	Bob Hope Airport Fire Department
Fire Department	City of Alhambra Fire Department - Training Facility
Fire Department	City of Alhambra Fire Department Station 71 - Headquarters
Fire Department	City of Alhambra Fire Department Station 72 - Southeast District
Fire Department	City of Alhambra Fire Department Station 73 - Northwest
Fire Department	City of Alhambra Fire Department Station 74 - Southwest
Fire Department	City of Arcadia Fire Department Station 105
Fire Department	City of Arcadia Fire Department Station 106 - Headquarters
Fire Department	City of Arcadia Fire Department Station 107
Fire Department	City of Avalon Fire Department
Fire Department	City of Beverly Hills Fire Department Station 1 - Headquarters
Fire Department	City of Beverly Hills Fire Department Station 2
Fire Department	City of Beverly Hills Fire Department Station 3
Fire Department	City of Burbank Fire Department Station 11 - Headquarters
Fire Department	City of Burbank Fire Department Station 12
Fire Department	City of Burbank Fire Department Station 13
Fire Department	City of Burbank Fire Department Station 14
Fire Department	City of Burbank Fire Department Station 15
Fire Department	City of Burbank Fire Department Station 16
Fire Department	City of Compton Fire Department Station 1 - Headquarters
Fire Department	City of Compton Fire Department Station 2
Fire Department	City of Compton Fire Department Station 3
Fire Department	City of Compton Fire Department Station 4
Fire Department	City of Downey Fire Department Station 1 - Headquarters
Fire Department	City of Downey Fire Department Station 2
Fire Department	City of Downey Fire Department Station 3
Fire Department	City of Downey Fire Department Station 4
Fire Department	City of Glendale Fire Department Station 21
Fire Department	City of Glendale Fire Department Station 22
Fire Department	City of Glendale Fire Department Station 23
Fire Department	City of Glendale Fire Department Station 24
Fire Department	City of Glendale Fire Department Station 25
Fire Department	City of Glendale Fire Department Station 26
Fire Department	City of Glendale Fire Department Station 27
Fire Department	City of Glendale Fire Department Station 28
Fire Department	City of Long Beach Fire Department - Beach Operations
Fire Department	City of Long Beach Fire Department - Headquarters
Fire Department	City of Long Beach Fire Department Station 1
Fire Department	City of Long Beach Fire Department Station 10
Fire Department	City of Long Beach Fire Department Station 11
Fire Department	City of Long Beach Fire Department Station 12
Fire Department	City of Long Beach Fire Department Station 13
Fire Department	City of Long Beach Fire Department Station 14
Fire Department	City of Long Beach Fire Department Station 15
Fire Department	City of Long Beach Fire Department Station 16
Fire Department	City of Long Beach Fire Department Station 17
Fire Department	City of Long Beach Fire Department Station 18
Fire Department	City of Long Beach Fire Department Station 19

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	City of Los Angeles Fire Department Station 65
Fire Department	City of Los Angeles Fire Department Station 66
Fire Department	City of Los Angeles Fire Department Station 67
Fire Department	City of Los Angeles Fire Department Station 68
Fire Department	City of Los Angeles Fire Department Station 7
Fire Department	City of Los Angeles Fire Department Station 71
Fire Department	City of Los Angeles Fire Department Station 76
Fire Department	City of Los Angeles Fire Department Station 80
Fire Department	City of Los Angeles Fire Department Station 82
Fire Department	City of Los Angeles Fire Department Station 9
Fire Department	City of Los Angeles Fire Department Station 92
Fire Department	City of Los Angeles Fire Department Station 94
Fire Department	City of Los Angeles Fire Department Station 95
Fire Department	City of Los Angeles Fire Department Station 97
Fire Department	City of Los Angeles Fire Department Station 99
Fire Department	City of Monterey Park Fire Department Station 61 - Headquarters
Fire Department	City of Monterey Park Fire Department Station 62
Fire Department	City of Monterey Park Fire Department Station 63
Fire Department	City of Santa Fe Springs Fire Department Station 1 - Headquarters
Fire Department	City of Santa Fe Springs Fire Department Station 2
Fire Department	City of Santa Fe Springs Fire Department Station 3
Fire Department	City of Santa Fe Springs Fire Department Station 4
Fire Department	City of Santa Monica Fire Department - Training Facility
Fire Department	City of Santa Monica Fire Department Station 1 - Headquarters
Fire Department	City of Santa Monica Fire Department Station 2
Fire Department	City of Santa Monica Fire Department Station 3
Fire Department	City of Santa Monica Fire Department Station 5
Fire Department	City of Vernon Fire Department Station 2
Fire Department	City of Vernon Fire Department Station 3
Fire Department	City of Vernon Fire Department Station 4
Fire Department	City of West Covina Fire Department Station 1
Fire Department	City of West Covina Fire Department Station 2
Fire Department	City of West Covina Fire Department Station 3
Fire Department	City of West Covina Fire Department Station 4
Fire Department	City of West Covina Fire Department Station 5
Fire Department	Culver City Fire Department Station 1 - Headquarters
Fire Department	Culver City Fire Department Station 2
Fire Department	Culver City Fire Department Station 3
Fire Department	La Verne Fire Department Station 1 - Headquarters
Fire Department	La Verne Fire Department Station 2
Fire Department	Los Angeles County Fire Department - HQ/Heliport/Training Facility
Fire Department	Los Angeles County Fire Department Station 1
Fire Department	Los Angeles County Fire Department Station 10
Fire Department	Los Angeles County Fire Department Station 101
Fire Department	Los Angeles County Fire Department Station 102
Fire Department	Los Angeles County Fire Department Station 103
Fire Department	Los Angeles County Fire Department Station 104
Fire Department	Los Angeles County Fire Department Station 105
Fire Department	Los Angeles County Fire Department Station 106
Fire Department	Los Angeles County Fire Department Station 107
Fire Department	Los Angeles County Fire Department Station 11
Fire Department	Los Angeles County Fire Department Station 110
Fire Department	Los Angeles County Fire Department Station 111
Fire Department	Los Angeles County Fire Department Station 112
Fire Department	Los Angeles County Fire Department Station 114

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	San Gabriel Fire Department Station 1 - Headquarters
Fire Department	San Gabriel Fire Department Station 2
Fire Department	San Marino Fire Department
Fire Department	Sierra Madre Volunteer Fire Department
Fire Department	South Pasadena Fire Department
Fire Department	The City of El Segundo Fire Department Station 1 - Headquarters
Fire Department	The City of El Segundo Fire Department Station 2
Fire Department	Torrance Fire Department Fire Station 1 - Headquarters
Fire Department	Torrance Fire Department Fire Station 2
Fire Department	Torrance Fire Department Fire Station 3
Fire Department	Torrance Fire Department Fire Station 4
Fire Department	Torrance Fire Department Fire Station 5
Fire Department	Torrance Fire Department Fire Station 6
Fire Department	Vernon Fire Department
Health Services	Antelope Valley Health Center
Health Services	Bellflower Health Center
Health Services	Central Public Health Center
Health Services	Curtis R. Tucker Health Center
Health Services	Dollarhide Health Center
Health Services	East Los Angeles Health Center
Health Services	East San Gabriel Valley Health Center
Health Services	Edward R. Roybal Comprehensive Health Center
Health Services	El Monte Comprehensive Health Center
Health Services	Glendale Health Center
Health Services	H. Claude Hudson Comprehensive Health Center
Health Services	Harbor-UCLA Medical Center
Health Services	High Desert Regional Health Center
Health Services	Hubert H. Humphrey Comprehensive Health Center
Health Services	La Puente Health Center
Health Services	LAC + USC Medical Center
Health Services	Lake Los Angeles Community Clinic
Health Services	Littlerock Community Clinic
Health Services	Long Beach Comprehensive Health Center
Health Services	Martin Luther King, Jr. Outpatient Center
Health Services	Mid Valley Comprehensive Health Center
Health Services	Olive View-UCLA Medical Center
Health Services	Rancho Los Amigos National Rehabilitation Center
Health Services	San Fernando Health Center
Health Services	South Valley Health Center
Health Services	Torrance Health Center
Health Services	Vaughn School Based Health Center
Health Services	West Valley Health Center
Health Services	Wilmington Health Center
Library	A C Bilbrew Library
Library	Acton Agua Dulce Library
Library	Agoura Hills Library
Library	Alondra Library
Library	Angelo M. Iacoboni Library
Library	Anthony Quinn Library
Library	Artesia Library
Library	Avalon Library
Library	Baldwin Park Library
Library	Bell Gardens Library
Library	Bell Library
Library	Carson Library

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Library	Castaic Library
Library	Charter Oak Library
Library	Chet Holifield Library
Library	City Terrace Library
Library	Claremont Helen Renwick Library
Library	Clifton M. Brakensiek Library
Library	Compton Library
Library	Cudahy Library
Library	Culver City Julian Dixon Library
Library	Diamond Bar Library
Library	Dr. Martin Luther King, Jr. Library
Library	Duarte Library
Library	East Los Angeles Library
Library	East Rancho Dominguez Library
Library	El Camino Real Library
Library	El Monte Library
Library	Florence Express Library
Library	Gardena Mayme Dear Library
Library	George Nye Jr. Library
Library	Graham Library
Library	Hacienda Heights Library
Library	Hawaiian Gardens Library
Library	Hawthorne Library
Library	Hermosa Beach Library
Library	Hollydale Library
Library	Huntington Park Library
Library	La Canada Flintridge Library
Library	La Crescenta Library
Library	La Mirada Library
Library	La Puente Library
Library	La Verne Library
Library	Lake Los Angeles Library
Library	Lancaster Library
Library	Lawndale Library
Library	Leland R. Weaver Library
Library	Lennox Library
Library	Littlerock Library
Library	Live Oak Library
Library	Lloyd Taber-Marina del Rey Library
Library	Lomita Library
Library	Los Nietos Library
Library	Lynwood Library
Library	Malibu Library
Library	Manhattan Beach Library
Library	Masao W. Satow Library
Library	Maywood Cesar Chavez Library
Library	Montebello Library
Library	Norwalk Library
Library	Norwood Library
Library	Paramount Library
Library	Pico Rivera Library
Library	Quartz Hill Library
Library	Rivera Library
Library	Rosemead Library
Library	Rowland Heights Library

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Library	San Dimas Library
Library	San Fernando Library
Library	San Gabriel Library
Library	Sorensen Library
Library	South El Monte Library
Library	South Whittier Library
Library	Stevenson Ranch Library
Library	Sunkist Library
Library	Temple City Library
Library	Topanga Library
Library	View Park Bebe Moore Campbell Library
Library	Walnut Library
Library	West Covina Library
Library	West Hollywood Library
Library	Westlake Village Library
Library	Willowbrook Library
Library	Wiseburn Library
Library	Woodcrest Library
Los Angeles County Museum of Arts & Museum of Natural History	La Brea Tar pits
Los Angeles County Museum of Arts & Museum of Natural History	Los Angeles County Museum of Art
Los Angeles County Museum of Arts & Museum of Natural History	Natural History Museum
Los Angeles County Museum of Arts & Museum of Natural History	William S. Hart Museum
Office of Education	Afflerbaugh-Paige Camp
Office of Education	Alma Fuerte Public
Office of Education	Animo City of Champions Charter High
Office of Education	Aspire Antonio Maria Lugo Academy
Office of Education	Aspire Ollin University Preparatory Academy
Office of Education	Central Juvenile Hall
Office of Education	Da Vinci RISE High
Office of Education	Environmental Charter Middle
Office of Education	Environmental Charter Middle - Inglewood
Office of Education	Intellectual Virtues Academy
Office of Education	International Polytechnic High
Office of Education	Jardin de la Infancia
Office of Education	Kirby, Dorothy Camp
Office of Education	L.A. County High School for the Arts
Office of Education	LA's Promise Charter High #1
Office of Education	LA's Promise Charter Middle #1
Office of Education	Lashon Academy
Office of Education	Los Angeles County Special Education
Office of Education	Los Angeles International Charter High
Office of Education	Los Padrinos Juvenile Hall
Office of Education	Magnolia Science Academy
Office of Education	Magnolia Science Academy 2
Office of Education	Magnolia Science Academy 3
Office of Education	Magnolia Science Academy 5
Office of Education	McNair Camp
Office of Education	Nidorf, Barry J.
Office of Education	North Valley Military Institute College Preparatory Academy
Office of Education	Odyssey Charter
Office of Education	Onizuka Camp

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Office of Education	Optimist Charter
Office of Education	Phoenix Academy Residential Education Center
Office of Education	Renaissance County Community
Office of Education	Road to Success Academy at Campus Kilpatrick
Office of Education	Rockey, Glenn Camp
Office of Education	Scott, Joseph Camp
Office of Education	Soleil Academy Charter
Office of Education	Valiente College Preparatory Charter
Other (Office)	1000 S. Fremont Ave.
Other (Office)	1055 Wilshire Blvd.
Other (Office)	1100 North Eastern Ave.
Other (Office)	1104 N. Mission Rd.
Other (Office)	12300 Lower Azusa Rd.
Other (Office)	12400 Imperial Highway
Other (Office)	12860 Crossroads Parkway South
Other (Office)	1320 North Eastern Ave.
Other (Office)	13837 Fiji Way
Other (Office)	1816 S. Figueroa
Other (Office)	210 W. Temple St.
Other (Office)	211 W. Temple St.
Other (Office)	313 N Figueroa St.
Other (Office)	3175 West Sixth St.
Other (Office)	320 West Temple St.
Other (Office)	425 Shatto Place
Other (Office)	550 South Vermont Ave.
Other (Office)	5770 S. Eastern Ave.
Other (Office)	5898 Cherry Ave.
Other (Office)	5905 Wilshire Blvd.
Other (Office)	700 W. Main St.
Other (Office)	7400 East Imperial Highway
Other (Office)	900 South Fremont Ave.
Other (Office)	Kenneth Hahn Hall of Administration
Parks & Recreation	Acton Park
Parks & Recreation	Adventure Park
Parks & Recreation	Adventure Park
Parks & Recreation	Allen J. Martin Park
Parks & Recreation	Alondra Community Regional Park
Parks & Recreation	Alondra Community Regional Park
Parks & Recreation	Amelia Mayberry Park
Parks & Recreation	Amelia Mayberry Park
Parks & Recreation	Amigo Park
Parks & Recreation	Arcadia Community Regional Park
Parks & Recreation	Arcadia Community Regional Park
Parks & Recreation	Athens Park
Parks & Recreation	Athens Park
Parks & Recreation	Bassett Park
Parks & Recreation	Bassett Park
Parks & Recreation	Bassett Park
Parks & Recreation	Belvedere Community Regional Park
Parks & Recreation	Belvedere Community Regional Park
Parks & Recreation	Bodger Park
Parks & Recreation	Carolyn Rosas Park
Parks & Recreation	Castaic Regional Sports Complex
Parks & Recreation	Castaic Regional Sports Complex
Parks & Recreation	Charles S. Farnsworth Park

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charter Oak Park
Parks & Recreation	City Terrace Park
Parks & Recreation	City Terrace Park
Parks & Recreation	Col. Leon H. Washington Park
Parks & Recreation	Col. Leon H. Washington Park
Parks & Recreation	Crescenta Valley Community Regional Park
Parks & Recreation	Crescenta Valley Community Regional Park
Parks & Recreation	Dalton Park
Parks & Recreation	Del Aire Park
Parks & Recreation	Del Aire Park
Parks & Recreation	Devil's Punchbowl Natural Area and Nature Center
Parks & Recreation	Dexter Park
Parks & Recreation	Dexter Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	Enterprise Park
Parks & Recreation	Eugene A. Obregon Park
Parks & Recreation	Eugene A. Obregon Park
Parks & Recreation	Franklin D. Roosevelt Park
Parks & Recreation	Franklin D. Roosevelt Park
Parks & Recreation	George Lane Park
Parks & Recreation	George Lane Park
Parks & Recreation	George Washington Carver Park
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Helen Keller Park
Parks & Recreation	Hollywood Bowl
Parks & Recreation	Jackie Robinson Park
Parks & Recreation	Jackie Robinson Park
Parks & Recreation	Jesse Owens Community Regional Park
Parks & Recreation	Jesse Owens Community Regional Park
Parks & Recreation	John Anson Ford Amphitheatre
Parks & Recreation	John Anson Ford Amphitheatre
Parks & Recreation	Kenneth Hahn State Recreation Area
Parks & Recreation	Ladera Park
Parks & Recreation	Ladera Park
Parks & Recreation	Ladera Park
Parks & Recreation	Lennox Park
Parks & Recreation	Lennox Park
Parks & Recreation	Lennox Park
Parks & Recreation	Loma Alta Park
Parks & Recreation	Loma Alta Park
Parks & Recreation	Los Angeles County Arboretum and Botanic Garden
Parks & Recreation	Manzanita Park

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Parks & Recreation	Mary M. Bethune Park
Parks & Recreation	Mary M. Bethune Park
Parks & Recreation	Mona Park
Parks & Recreation	Mona Park
Parks & Recreation	Pamela County Park
Parks & Recreation	Pamela County Park
Parks & Recreation	Pathfinder Community Regional Park
Parks & Recreation	Pearblossom County Park
Parks & Recreation	Peter F Schabarum Regional County Park
Parks & Recreation	Rimgrove Park
Parks & Recreation	Rowland Heights Park
Parks & Recreation	Roy Campanella Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	San Angelo Park
Parks & Recreation	San Fernando Recreation Park and Aquatic Center
Parks & Recreation	Saybrook Park
Parks & Recreation	Sorensen Park
Parks & Recreation	South Coast Botanic Garden
Parks & Recreation	Stephen Sorensen Park
Parks & Recreation	Sunshine Park
Parks & Recreation	Ted Watkins Memorial Park
Parks & Recreation	Ted Watkins Memorial Park
Parks & Recreation	Tesoro Adobe Historic Park
Parks & Recreation	Val Verde Community Regional Park
Parks & Recreation	Val Verde Community Regional Park
Parks & Recreation	Valleydale Park
Parks & Recreation	Valleydale Park
Parks & Recreation	Vasquez Rocks Natural Area and Nature Center
Parks & Recreation	Veterans Memorial Community Regional Park
Parks & Recreation	Victoria Community Regional Park
Parks & Recreation	Victoria Community Regional Park
Parks & Recreation	Walnut Nature Park
Parks & Recreation	Whittier Narrows Recreation Area
Parks & Recreation	William S. Hart Regional Park
Parks & Recreation	William Steinmetz Park
Parks & Recreation	William Steinmetz Park
Parks & Recreation	William Steinmetz Park
Public Health	Antelope Valley Health Center
Public Health	Central Public Health Center
Public Health	Curtis R. Tucker Health Center
Public Health	Glendale Health Center
Public Health	Hollywood/Wilshire Public Health Center
Public Health	Martin Luther King, Jr. Center for Public Health
Public Health	Monrovia Public Health Center
Public Health	North Hollywood Public Health Center
Public Health	Pacoima Public Health Center
Public Health	Pomona Public Health Center
Public Health	Ruth-Temple Public Health Center
Public Health	Simms/Mann Health and Wellness Center
Public Health	Torrance Public Health Center
Public Health	Whittier Public Health Center
Public Works	Big Dalton Dam
Public Works	Big Tujunga Dam

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	Brackett Field Airport
Public Works	Cogswell Dam
Public Works	Compton/Woodley Airport
Public Works	Devil's Gate Dam
Public Works	Eaton Wash Dam
Public Works	General Wm. J. Fox Airfield
Public Works	Live Oak Dam
Public Works	Morris Dam
Public Works	Pacoima Dam
Public Works	Puddingstone Dam
Public Works	Puddingstone Diversion Dam
Public Works	PW Headquarters Building
Public Works	PW ITD – Mount Wilson Radio Antenna Tower
Public Works	PW ITD – Mount Wilson Radio Facility Bldg.
Public Works	PW OSD - Eaton Yard – Maintenance Office
Public Works	PW RMD – 518-B Maintenance Yard
Public Works	PW RMD – Baldwin Park Maintenance Yard
Public Works	PW RMD - Div 446 Maintenance Yard
Public Works	PW RMD – Div. #116 Maintenance Yard
Public Works	PW RMD – Div. #141/241 Maintenance Yard
Public Works	PW RMD – Div. #142 Maintenance Yard
Public Works	PW RMD – Div. #232 Maintenance Yard
Public Works	PW RMD – Div. #336 Maint. Yd.
Public Works	PW RMD – Div. #339/539 Agoura Maintenance Yard
Public Works	PW RMD – Div. #417 Maintenance Yard
Public Works	PW RMD – Div. #446 Sub Maintenance Yard
Public Works	PW RMD – Div. #518 Maintenance Yard
Public Works	PW RMD – Div. #519 Maintenance Yard
Public Works	PW RMD – Div. #523 Maintenance Yard
Public Works	PW RMD – Div. #524 Maintenance Yard
Public Works	PW RMD – Div. #526 Maint. Yd.
Public Works	PW RMD – Div. #551 Maintenance Yard
Public Works	PW RMD – Div. #555 Maintenance Yard
Public Works	PW RMD – Div. #558 Maint. Yard
Public Works	PW RMD – Div. #558a Jackson Lake Maintenance Yd.
Public Works	PW RMD – Div. #559b Maintenance Yard
Public Works	PW RMD - Lower Central Yard – Division Administration
Public Works	PW RMD – Maint. District 3 Yard
Public Works	PW RMD – Maintenance District No.4 Yard
Public Works	PW RMD – Palmdale Maintenance Dist. No. 5 Bldg. Yard
Public Works	PW RMD - Upper Central Yard
Public Works	PW RMD – Van Pelt Bridge Maintenance Yard
Public Works	PW SMD - 132ND Street
Public Works	PW SMD - 213TH Street
Public Works	PW SMD - AGAVE
Public Works	PW SMD - Balfour
Public Works	PW SMD - Bradhurst
Public Works	PW SMD - Broadway
Public Works	PW SMD - CAPALLERO
Public Works	PW SMD - Centinela
Public Works	PW SMD – Central Yard
Public Works	PW SMD - Commerce Center Drive
Public Works	PW SMD - Davids Road
Public Works	PW SMD – East Yard
Public Works	PW SMD - Heatherfield

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SMD – Lake Hughes
Public Works	PW SMD - Lake Hughes - Newvale
Public Works	PW SMD - Lake Hughes - Trail K
Public Works	PW SMD - Lawndale
Public Works	PW SMD - LOWRIDGE
Public Works	PW SMD – Malibu Mesa WWTP
Public Works	PW SMD – Malibu TP
Public Works	PW SMD - Marina Del Rey
Public Works	PW SMD - Maybrook
Public Works	PW SMD - Muscatel
Public Works	PW SMD – North Yard
Public Works	PW SMD - Painter
Public Works	PW SMD – South Yard
Public Works	PW SMD - Surrey Drive
Public Works	PW SMD - Trancas WWTP
Public Works	PW SMD - TYLER
Public Works	PW SMD - Ulmus
Public Works	PW SMD - Viewridge
Public Works	PW SWMD - 120th St. Pump Station
Public Works	PW SWMD - 17th St Pump Station
Public Works	PW SWMD – 83rd St. Maintenance Yard
Public Works	PW SWMD - Alameda Street 3B Pump Station
Public Works	PW SWMD - Alameda Street 3C Pump Station
Public Works	PW SWMD - Alamitos Bay Pump Station
Public Works	PW SWMD – Alamitos Maintenance Yard
Public Works	PW SWMD - Alondra Pump Station
Public Works	PW SWMD - Anaheim St. Pump Station
Public Works	PW SWMD - Appian Way Pump Station
Public Works	PW SWMD - Arena Pump Station
Public Works	PW SWMD - Avalon Pump Station
Public Works	PW SWMD - Belmont Pump Station
Public Works	PW SWMD - Boone Olive Pump Station
Public Works	PW SWMD - Century Frwy Pump Station
Public Works	PW SWMD - Cerritos Pump Station
Public Works	PW SWMD - Claretta Pump Station
Public Works	PW SWMD - Compton Creek Pump Station #1
Public Works	PW SWMD - Compton Creek Pump Station #2
Public Works	PW SWMD - Cordova Walk Pump Station
Public Works	PW SWMD - Dominger Pump Station
Public Works	PW SWMD - Dominguez Pump Station
Public Works	PW SWMD - Doris Pump Station
Public Works	PW SWMD - East Toledo Pump Station
Public Works	PW SWMD – Eaton Maintenance Yard
Public Works	PW SWMD - El Dorado Pump Station
Public Works	PW SWMD - El Segundo Pump Station
Public Works	PW SWMD – El Segundo Yard
Public Works	PW SWMD - Electric Ave Pump Station
Public Works	PW SWMD - Garnet Avenue Pump Station
Public Works	PW SWMD - Hamilton Bowl South Pump Station
Public Works	PW SWMD - Hamilton Bowl West Pump Station
Public Works	PW SWMD - Hill St. Pump Station
Public Works	PW SWMD – Imperial Yard
Public Works	PW SWMD - Johnson Pump Station
Public Works	PW SWMD - Lakewood Pump Station
Public Works	PW SWMD - Lennox Blvd Pump Station

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SWMD – Longden Yard
Public Works	PW SWMD - Los Altos Pump Station
Public Works	PW SWMD - Lynwood Pump Station
Public Works	PW SWMD - Manhattan Beach Pump Station
Public Works	PW SWMD - Market St. Pump Station
Public Works	PW SWMD - Naples Pump Station
Public Works	PW SWMD - Oxford Pump Station
Public Works	PW SWMD - Paramount Pump Station
Public Works	PW SWMD – Pickens Yard
Public Works	PW SWMD - Redondo Beach Blvd Pump Station
Public Works	PW SWMD – Redondo Yard Office
Public Works	PW SWMD – Rio Hondo Yard
Public Works	PW SWMD – Riverview Maintenance Yard
Public Works	PW SWMD – Rubio Yard
Public Works	PW SWMD – San Dimas Maintenance Yard
Public Works	PW SWMD – Santa Clara Flood Maintenance Yard
Public Works	PW SWMD – Saticoy Yard
Public Works	PW SWMD - Seaside Pump Station
Public Works	PW SWMD - Walteria Lake Pump Station
Public Works	PW SWMD - West Long Beach Pump Station
Public Works	PW SWMD - West Neapolitan Pump Station
Public Works	PW SWMD - West Toledo Pump Station
Public Works	PW SWMD - Wilmington Unit 2 Pump Station
Public Works	PW WWD - 116th street pump station
Public Works	PW WWD - 116th street Tank
Public Works	PW WWD - 168th and G Pump station
Public Works	PW WWD - 27 Tank
Public Works	PW WWD - 37-1 Well
Public Works	PW WWD - 37-3 Well
Public Works	PW WWD - 37-4 Well
Public Works	PW WWD - 39 Tank
Public Works	PW WWD - Adobe Tank
Public Works	PW WWD - Anaverde Tanks and pump station
Public Works	PW WWD - Bev martin tank and Pump Station
Public Works	PW WWD - Blue Rock Tank
Public Works	PW WWD - Butte's Tank
Public Works	PW WWD - City Ranch Tanks
Public Works	PW WWD - Crown Valley Pump station
Public Works	PW WWD - Cuyama Tank
Public Works	PW WWD - Ft. Tejon Tank
Public Works	PW WWD - Hasley Pump Station
Public Works	PW WWD - Hasley Tank
Public Works	PW WWD - Joshua Ranch Tank
Public Works	PW WWD - Kohl's tank
Public Works	PW WWD - Los Valles Pump station and Well
Public Works	PW WWD - M & 7th west Tank site
Public Works	PW WWD - McCennery Tank
Public Works	PW WWD - North Tank
Public Works	PW WWD - Old timers tank and pump station
Public Works	PW WWD - P-10 Pump station
Public Works	PW WWD - Q-9 Tanks
Public Works	PW WWD - Rancho Vista tanks
Public Works	PW WWD - South Tank
Public Works	PW WWD - Tierra Subida Pump Station
Public Works	PW WWD - Tierra Subida Tanks

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW WWD - Vincent Pump station
Public Works	PW WWD #04 – M/5e Water Tank
Public Works	PW WWD #04 – North Administration Building
Public Works	PW WWD #04-M8/75w Water Tank
Public Works	PW WWD #29 - 20858 Regulating Station
Public Works	PW WWD #29 - Big Rock 1010 Tank
Public Works	PW WWD #29 - Big Rock 1200 Tank
Public Works	PW WWD #29 - Big Rock 900 Pump Station
Public Works	PW WWD #29 - Broad Beach Regulating Station
Public Works	PW WWD #29 - Carbon Mesa Tank
Public Works	PW WWD #29 - Entrada Pump Station
Public Works	PW WWD #29 - Entrada Tank
Public Works	PW WWD #29 - Fernwood Tank
Public Works	PW WWD #29 - Guernsey Regulating Station
Public Works	PW WWD #29 - Heather Cliff Regulating Station
Public Works	PW WWD #29 - Horizon Tank
Public Works	PW WWD #29 - Hume Tank
Public Works	PW WWD #29 - La Chusa Feeder Regulating Station
Public Works	PW WWD #29 - La Costa
Public Works	PW WWD #29 - La Costa Regulating Station
Public Works	PW WWD #29 – LADWP Emergency Mindanao Connection
Public Works	PW WWD #29 - Las Flores Pump Station
Public Works	PW WWD #29 - Las Flores Tank
Public Works	PW WWD #29 - Latigo Tank
Public Works	PW WWD #29 - Lower Big Rock 195 Pump Station
Public Works	PW WWD #29 - Lower Busch Pump Station
Public Works	PW WWD #29 - LVMWD , Saddle Peak Interconnection
Public Works	PW WWD #29 - LVMWD, Hume Connection
Public Works	PW WWD #29 - LVMWD, Latigo Connection
Public Works	PW WWD #29 - Malibu Beach Pump Station
Public Works	PW WWD #29 - Malibu Knolls Tank
Public Works	PW WWD #29 - New Summit Tank
Public Works	PW WWD #29 - Nicholas Beach Tank
Public Works	PW WWD #29 - Old Summit Tank
Public Works	PW WWD #29 - Owen Pump Station
Public Works	PW WWD #29 - Pepperdine 545 Pump Station
Public Works	PW WWD #29 - Pepperdine 812 Tank
Public Works	PW WWD #29 - Pepperdine 907 Tank
Public Works	PW WWD #29 - Philip Tank
Public Works	PW WWD #29 - Point Dume Pump Station and Tank
Public Works	PW WWD #29 - Portshead Tank
Public Works	PW WWD #29 - Saddle Peak Tank
Public Works	PW WWD #29 - Santa Maria Tank
Public Works	PW WWD #29 - Serra Pump Station
Public Works	PW WWD #29 - Sumac Ridge Tank
Public Works	PW WWD #29 - Sweetwater Hydro Pump Station
Public Works	PW WWD #29 - Sweetwater Mesa Tank
Public Works	PW WWD #29 - Topanga Beach Pump Station
Public Works	PW WWD #29 - Topanga Beach Tank
Public Works	PW WWD #29 - Topanga Forks Tank
Public Works	PW WWD #29 - Topanga Oaks Tank
Public Works	PW WWD #29 - Topanga Park Pump Station
Public Works	PW WWD #29 - Trancas Tank
Public Works	PW WWD #29 - Upper Big Rock 730 Pump Station
Public Works	PW WWD #29 - Upper Encinal Tank

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW WWD #29 - Winding Wy Tank
Public Works	PW WWD #29 LADWP Emergency Via Dolce Connection
Public Works	San Dimas Dam
Public Works	San Gabriel Dam
Public Works	San Gabriel Valley Airport
Public Works	Santa Anita Dam
Public Works	Thompson Creek Dam
Public Works	Whiteman Airport
Sheriff's Department	Altadena Sheriff's Station
Sheriff's Department	Avalon Sheriff's Station
Sheriff's Department	Carson Sheriff's Station
Sheriff's Department	Century Regional Detention Facility
Sheriff's Department	Century Sheriff's Station
Sheriff's Department	Cerritos Sheriff's Station
Sheriff's Department	Compton Sheriff's Station
Sheriff's Department	Crescenta Valley Sheriff's Station
Sheriff's Department	East Los Angeles Sheriff's Station
Sheriff's Department	Industry Sheriff's Station
Sheriff's Department	Inmate Reception Center
Sheriff's Department	Lakewood Sheriff's Station
Sheriff's Department	Lancaster Sheriff's Station
Sheriff's Department	Lomita Sheriff's Station
Sheriff's Department	Malibu/Lost Hills Sheriff's Station
Sheriff's Department	Marina Del Rey Sheriff's Station
Sheriff's Department	Men's Central Jail
Sheriff's Department	North County Correctional Facility
Sheriff's Department	Norwalk Sheriff's Station
Sheriff's Department	Palmdale Sheriff's Station
Sheriff's Department	Pico Rivera Sheriff's Station
Sheriff's Department	Pitchess Detention Center East Facility
Sheriff's Department	Pitchess Detention Center North Facility
Sheriff's Department	Pitchess Detention Center South Facility
Sheriff's Department	San Dimas Sheriff's Station
Sheriff's Department	Santa Clarita Valley Sheriff's Station
Sheriff's Department	South Los Angeles Sheriff's Station
Sheriff's Department	Temple Sheriff's Station
Sheriff's Department	Twin Towers Correctional Facility
Sheriff's Department	Walnut/Diamond Bar Sheriff's Station
Sheriff's Department	West Hollywood Sheriff's Station

APPENDIX C – RISK ASSESSMENT

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Avocado Heights	1				1				1				
Bandini Islands	1				1				1				
Bassett	1				1		1		1				
Charter Oak	1				1		1		1		1		
East Los Angeles	1				1				1				
El Monte	1				1								
North Whittier	1				1				1				
Padua Hills	1				1				1		1		
Pellissier Village	1				1				1				
San Jose Hills	1				1		1		1				
South El Monte	1				1								
South San Gabriel	1				1				1				
Valinda	1				1		1		1				
Walnut	1				1				1				
West Puente Valley	1				1		1						
Whittier Narrows	1				1		1		1				
Athens Village	2				1				1				
Athens-Westmont	2				1				1				
Del Rey	2	1	1		1			1	1				
Hawthorne	2				1								
Ladera Heights	2				1		1		1		1		
Rosewood	2				1								
Rosewood/East Gardena	2				1								
Rosewood/West Rancho Dominguez	2				1								

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
View Park/Windsor Hills	2				1				1		1		
West Rancho Dominguez	2				1								
Willowbrook	2				1		1		1				
Wiseburn	2				1								
Franklin Canyon	3				1		1		1		1		
Miracle Mile	3				1		1						
Santa Monica Mountains	3	1	1	1	1		1	1	1	1	1	1	1
Universal City	3				1				1		1		
West LA	3				1				1				
Westhills	3				1				1		1		1
Cerritos	4				1		1						
East La Mirada	4				1		1		1				
East Whittier	4				1								
Harbor Gateway	4				1								
La Habra Heights	4				1				1				
La Rambla	4				1				1				
Lakewood	4				1		1		1				
Long Beach	4				1		1						
Palos Verdes Peninsula	4				1				1		1		
San Clemente Island	4								1				
Santa Catalina Island	4								1	1	1	1	1
South Whittier	4				1		1		1				
Westfield/Academy Hills	4				1				1		1		
Acton	5				1	1			1		1		1

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Agua Dulce	5				1	1			1		1	1	1
Altadena	5				1		1		1		1	1	1
Anaverde	5			1	1	1			1			1	1
Bouquet Canyon	5				1	1	1		1		1		1
Bradbury	5				1				1		1		
Canyon Country	5				1				1		1	1	1
Castaic	5			1	1	1	1	1	1		1	1	1
Del Sur	5				1	1	1		1				
Desert View Highlands	5					1							
East Covina	5				1				1				
East Lancaster	5			1	1		1						
East Pasadena	5				1				1		1		1
Elizabeth Lake	5				1	1			1			1	1
Hi Vista	5				1				1				
La Crescenta-Montrose	5				1				1		1		1
Lake Hughes	5				1	1			1				1
Lake Los Angeles	5				1	1			1				
Lake Manor	5				1				1		1		1
Leona Valley	5				1	1	1		1		1	1	1
Littlerock	5			1		1	1		1			1	
Littlerock/Juniper Hills	5			1	1	1	1		1			1	1
Littlerock/Pearblossom	5			1	1	1	1		1			1	
Llano	5				1	1			1			1	1
Monrovia	5				1								
Newhall	5					1			1		1		1
North Lancaster	5				1		1		1				
Northeast San Gabriel	5				1				1				

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Palmdale	5			1	1	1	1						
Pearblossom/Llano	5				1	1	1		1			1	
Placerita Canyon	5				1	1			1		1		1
Quartz Hill	5				1	1	1		1				
Roosevelt	5				1		1						
San Francisquito Canyon/Bouquet Canyon	5				1	1			1		1		1
San Pasqual	5				1								
Sand Canyon	5				1	1			1		1		1
Saugus	5				1				1		1		1
Saugus/Canyon Country	5				1				1				1
South Antelope Valley	5			1	1	1			1			1	1
South Edwards	5				1		1	1	1				
Southeast Antelope Valley	5			1	1	1			1			1	1
Stevenson Ranch	5			1	1	1			1		1	1	1
Sun Village	5			1	1	1	1		1				
Twin Lakes/Oat Mountain	5				1	1			1		1		1
Val Verde	5			1	1	1			1		1	1	1
Valencia	5				1				1		1	1	1
West Antelope Valley	5				1	1	1	1	1		1	1	1
West Chatsworth	5				1				1		1		1
White Fence Farms	5					1	1						
Florence-Firestone	1 and 2				1								
Walnut Park	1 and 2				1								
Hacienda Heights	1 and 4				1		1		1		1	1	1

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Rowland Heights	1 and 4				1				1		1	1	1
Sunrise Village	1 and 4				1		1		1				
West Whittier/Los Nietos	1 and 4				1		1		1				
Whittier	1 and 4				1		1		1		1	1	1
Arcadia	1 and 5				1				1				
Azusa	1 and 5				1				1		1		1
Claremont	1 and 5				1				1		1		1
Covina	1 and 5				1		1		1		1	1	1
Covina (Charter Oak)	1 and 5				1				1				
Duarte	1 and 5				1				1				
Glendora	1 and 5				1		1		1		1		1
La Verne	1 and 5				1				1		1		1
Pomona	1 and 5				1				1		1	1	1
Lynwood	1, 2, and 4				1		1		1				
Angeles National Forest	1, 3, and 5			1	1	1	1	1	1		1	1	1
Del Aire	2 and 4				1				1				
East Rancho Dominguez	2 and 4				1		1		1				
El Camino Village	2 and 4				1				1				
Lennox	2 and 4				1				1				
Rancho Dominguez	2 and 4				1		1		1				
West Carson	2 and 4				1		1		1				
Marina del Rey	2, 3, and 4	1	1		1		1	1	1	1			
Kagel/Lopez Canyons	3 and 5				1	1	1		1		1		1

Table C-2: Animal Care & Control Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Agoura Animal Care Center				1						1		
Baldwin Park Animal Care Center				1								
Carson Animal Care Center				1								
Castaic Animal Care Center (Castaic)			1	1								1
Downey Animal Care Center				1		1						
Lancaster County Animal Care Center				1								
Palmdale Animal Care Center					1	1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Bob Hope Airport Fire Department				1								
City of Alhambra Fire Department - Training Facility				1								
City of Alhambra Fire Department Station 71 - Headquarters				1								
City of Alhambra Fire Department Station 72 - Southeast District				1								
City of Alhambra Fire Department Station 73 - Northwest				1								
City of Alhambra Fire Department Station 74 - Southwest				1								
City of Arcadia Fire Department Station 105				1								
City of Arcadia Fire Department Station 106 - Headquarters				1								
City of Arcadia Fire Department Station 107				1								
City of Avalon Fire Department										1		
City of Beverly Hills Fire Department Station 1 - Headquarters				1								
City of Beverly Hills Fire Department Station 2				1						1		
City of Beverly Hills Fire Department Station 3				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Burbank Fire Department Station 11 - Headquarters				1								
City of Burbank Fire Department Station 12				1								
City of Burbank Fire Department Station 13				1								
City of Burbank Fire Department Station 14				1								
City of Burbank Fire Department Station 15				1								
City of Burbank Fire Department Station 16				1						1		
City of Compton Fire Department Station 1 - Headquarters				1		1						
City of Compton Fire Department Station 2				1		1						
City of Compton Fire Department Station 3				1								
City of Compton Fire Department Station 4				1								
City of Downey Fire Department Station 1 - Headquarters				1		1						
City of Downey Fire Department Station 2				1		1						
City of Downey Fire Department Station 3				1		1						
City of Downey Fire Department Station 4				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Glendale Fire Department Station 21				1								
City of Glendale Fire Department Station 22				1								
City of Glendale Fire Department Station 23				1						1		
City of Glendale Fire Department Station 24				1						1		
City of Glendale Fire Department Station 25				1								
City of Glendale Fire Department Station 26				1								
City of Glendale Fire Department Station 27				1								
City of Glendale Fire Department Station 28				1								
City of Long Beach Fire Department - Beach Operations				1					1			
City of Long Beach Fire Department - Headquarters				1								
City of Long Beach Fire Department Station 1				1								
City of Long Beach Fire Department Station 10				1								
City of Long Beach Fire Department Station 11				1		1						
City of Long Beach Fire Department Station 12				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Long Beach Fire Department Station 13				1		1						
City of Long Beach Fire Department Station 14		1		1					1			
City of Long Beach Fire Department Station 15				1					1			
City of Long Beach Fire Department Station 16				1								
City of Long Beach Fire Department Station 17				1								
City of Long Beach Fire Department Station 18				1		1						
City of Long Beach Fire Department Station 19				1		1						
City of Long Beach Fire Department Station 2				1								
City of Long Beach Fire Department Station 20		1		1					1			
City of Long Beach Fire Department Station 21		1		1		1			1			
City of Long Beach Fire Department Station 22				1		1						
City of Long Beach Fire Department Station 24				1					1			
City of Long Beach Fire Department Station 3				1								
City of Long Beach Fire Department Station 4				1								
City of Long Beach Fire Department Station 5				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Long Beach Fire Department Station 6				1					1			
City of Long Beach Fire Department Station 7				1		1						
City of Long Beach Fire Department Station 8	1	1		1					1			
City of Long Beach Fire Department Station 9				1								
City of Los Angeles Fire Department Station 1				1								
City of Los Angeles Fire Department Station 10				1								
City of Los Angeles Fire Department Station 108				1						1		
City of Los Angeles Fire Department Station 109				1						1		
City of Los Angeles Fire Department Station 11				1								
City of Los Angeles Fire Department Station 12				1								
City of Los Angeles Fire Department Station 13				1								
City of Los Angeles Fire Department Station 14				1								
City of Los Angeles Fire Department Station 15				1								
City of Los Angeles Fire Department Station 16				1								
City of Los Angeles Fire Department Station 17				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 19				1						1		
City of Los Angeles Fire Department Station 2				1								
City of Los Angeles Fire Department Station 20				1								
City of Los Angeles Fire Department Station 21				1								
City of Los Angeles Fire Department Station 25				1								
City of Los Angeles Fire Department Station 26				1								
City of Los Angeles Fire Department Station 27				1								
City of Los Angeles Fire Department Station 29				1		1						
City of Los Angeles Fire Department Station 3				1								
City of Los Angeles Fire Department Station 33				1								
City of Los Angeles Fire Department Station 34				1								
City of Los Angeles Fire Department Station 35				1								
City of Los Angeles Fire Department Station 37				1								
City of Los Angeles Fire Department Station 4				1								
City of Los Angeles Fire Department Station 41				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 42				1								
City of Los Angeles Fire Department Station 43				1								
City of Los Angeles Fire Department Station 44				1								
City of Los Angeles Fire Department Station 46				1								
City of Los Angeles Fire Department Station 47				1						1		
City of Los Angeles Fire Department Station 5				1								
City of Los Angeles Fire Department Station 50				1								
City of Los Angeles Fire Department Station 51				1								
City of Los Angeles Fire Department Station 52				1								
City of Los Angeles Fire Department Station 56				1						1		
City of Los Angeles Fire Department Station 57				1								
City of Los Angeles Fire Department Station 58				1								
City of Los Angeles Fire Department Station 59				1								
City of Los Angeles Fire Department Station 6				1								
City of Los Angeles Fire Department Station 61				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 62				1								
City of Los Angeles Fire Department Station 64				1								
City of Los Angeles Fire Department Station 65				1								
City of Los Angeles Fire Department Station 66				1								
City of Los Angeles Fire Department Station 67				1								
City of Los Angeles Fire Department Station 68				1								
City of Los Angeles Fire Department Station 7					1							
City of Los Angeles Fire Department Station 71				1								
City of Los Angeles Fire Department Station 76				1						1		
City of Los Angeles Fire Department Station 80				1								
City of Los Angeles Fire Department Station 82				1								
City of Los Angeles Fire Department Station 9				1								
City of Los Angeles Fire Department Station 92				1								
City of Los Angeles Fire Department Station 94				1								
City of Los Angeles Fire Department Station 95				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 97				1						1		
City of Los Angeles Fire Department Station 99				1						1		
City of Monterey Park Fire Department Station 61 - Headquarters				1								
City of Monterey Park Fire Department Station 62				1								
City of Monterey Park Fire Department Station 63				1								
City of Santa Fe Springs Fire Department Station 1 - Headquarters				1								
City of Santa Fe Springs Fire Department Station 2				1								
City of Santa Fe Springs Fire Department Station 3				1								
City of Santa Fe Springs Fire Department Station 4				1		1						
City of Santa Monica Fire Department - Training Facility				1								
City of Santa Monica Fire Department Station 1 - Headquarters				1								
City of Santa Monica Fire Department Station 2				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Santa Monica Fire Department Station 3				1								
City of Santa Monica Fire Department Station 5				1								
City of Vernon Fire Department Station 2				1								
City of Vernon Fire Department Station 3				1								
City of Vernon Fire Department Station 4				1								
City of West Covina Fire Department Station 1				1		1						
City of West Covina Fire Department Station 2				1		1						
City of West Covina Fire Department Station 3				1		1						
City of West Covina Fire Department Station 4				1		1				1		
City of West Covina Fire Department Station 5				1								
Culver City Fire Department Station 1 - Headquarters				1								
Culver City Fire Department Station 2				1								
Culver City Fire Department Station 3				1								
La Verne Fire Department Station 1 - Headquarters				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Verne Fire Department Station 2				1								
Los Angeles County Fire Department - Hq/Heliport/Training Facility				1								
Los Angeles County Fire Department Station 1				1								
Los Angeles County Fire Department Station 10				1		1						
Los Angeles County Fire Department Station 101				1								
Los Angeles County Fire Department Station 102				1								
Los Angeles County Fire Department Station 103				1		1						
Los Angeles County Fire Department Station 104				1						1		
Los Angeles County Fire Department Station 105				1		1						
Los Angeles County Fire Department Station 106				1				1		1		
Los Angeles County Fire Department Station 107					1							
Los Angeles County Fire Department Station 11				1								
Los Angeles County Fire Department Station 110				1					1			
Los Angeles County Fire Department Station 111				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 112				1		1						
Los Angeles County Fire Department Station 114												
Los Angeles County Fire Department Station 115				1		1						
Los Angeles County Fire Department Station 116				1								
Los Angeles County Fire Department Station 117				1		1						
Los Angeles County Fire Department Station 118				1								
Los Angeles County Fire Department Station 119				1				1				
Los Angeles County Fire Department Station 12				1								
Los Angeles County Fire Department Station 120				1								
Los Angeles County Fire Department Station 121				1				1				
Los Angeles County Fire Department Station 122				1								
Los Angeles County Fire Department Station 123					1					1		
Los Angeles County Fire Department Station 124				1				1				
Los Angeles County Fire Department Station 125				1						1		
Los Angeles County Fire Department Station 126					1							

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 127				1		1						
Los Angeles County Fire Department Station 129					1							
Los Angeles County Fire Department Station 130				1		1						
Los Angeles County Fire Department Station 131					1							
Los Angeles County Fire Department Station 132				1				1		1		
Los Angeles County Fire Department Station 134					1							
Los Angeles County Fire Department Station 135				1		1						
Los Angeles County Fire Department Station 14				1								
Los Angeles County Fire Department Station 140					1							1
Los Angeles County Fire Department Station 141				1				1				
Los Angeles County Fire Department Station 144			1	1						1		
Los Angeles County Fire Department Station 145				1								
Los Angeles County Fire Department Station 146				1								
Los Angeles County Fire Department Station 147				1								
Los Angeles County Fire Department Station 148				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 149			1	1						1		
Los Angeles County Fire Department Station 15				1								
Los Angeles County Fire Department Station 151				1								
Los Angeles County Fire Department Station 152				1								
Los Angeles County Fire Department Station 153				1								
Los Angeles County Fire Department Station 154				1								
Los Angeles County Fire Department Station 155												1
Los Angeles County Fire Department Station 156				1				1				1
Los Angeles County Fire Department Station 157					1	1						1
Los Angeles County Fire Department Station 158				1								
Los Angeles County Fire Department Station 159				1								
Los Angeles County Fire Department Station 16				1								
Los Angeles County Fire Department Station 160				1								
Los Angeles County Fire Department Station 161				1								
Los Angeles County Fire Department Station 162				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 163				1								
Los Angeles County Fire Department Station 164				1								
Los Angeles County Fire Department Station 165				1								
Los Angeles County Fire Department Station 166				1								
Los Angeles County Fire Department Station 167				1								
Los Angeles County Fire Department Station 168				1								
Los Angeles County Fire Department Station 169				1								
Los Angeles County Fire Department Station 17				1								
Los Angeles County Fire Department Station 170				1								
Los Angeles County Fire Department Station 171				1								
Los Angeles County Fire Department Station 172				1								
Los Angeles County Fire Department Station 173				1								
Los Angeles County Fire Department Station 18				1								
Los Angeles County Fire Department Station 181				1								
Los Angeles County Fire Department Station 182				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 183				1								
Los Angeles County Fire Department Station 184				1								
Los Angeles County Fire Department Station 185				1								
Los Angeles County Fire Department Station 186				1								
Los Angeles County Fire Department Station 187				1								
Los Angeles County Fire Department Station 188				1								
Los Angeles County Fire Department Station 19				1						1		
Los Angeles County Fire Department Station 2				1						1		
Los Angeles County Fire Department Station 20				1								
Los Angeles County Fire Department Station 21				1								
Los Angeles County Fire Department Station 22				1								
Los Angeles County Fire Department Station 23				1		1						
Los Angeles County Fire Department Station 24					1							
Los Angeles County Fire Department Station 25				1		1						
Los Angeles County Fire Department Station 26				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 27				1								
Los Angeles County Fire Department Station 28				1								
Los Angeles County Fire Department Station 29				1								
Los Angeles County Fire Department Station 3				1								
Los Angeles County Fire Department Station 30				1		1						
Los Angeles County Fire Department Station 31				1		1						
Los Angeles County Fire Department Station 32				1								
Los Angeles County Fire Department Station 33				1		1						
Los Angeles County Fire Department Station 34				1		1						
Los Angeles County Fire Department Station 35				1								
Los Angeles County Fire Department Station 36				1								
Los Angeles County Fire Department Station 37					1	1						
Los Angeles County Fire Department Station 38				1								
Los Angeles County Fire Department Station 39				1								
Los Angeles County Fire Department Station 4				1								

Table C-3: Fire Department Facility Hazard Impacts

[illegible]

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 56				1						1		
Los Angeles County Fire Department Station 57				1		1						
Los Angeles County Fire Department Station 58				1								
Los Angeles County Fire Department Station 59				1								
Los Angeles County Fire Department Station 6				1								
Los Angeles County Fire Department Station 60				1								
Los Angeles County Fire Department Station 61				1								
Los Angeles County Fire Department Station 62				1						1		
Los Angeles County Fire Department Station 63				1								
Los Angeles County Fire Department Station 64				1								
Los Angeles County Fire Department Station 65				1								1
Los Angeles County Fire Department Station 66				1								
Los Angeles County Fire Department Station 67				1								1
Los Angeles County Fire Department Station 68				1						1		
Los Angeles County Fire Department Station 69				1								1

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 7				1								
Los Angeles County Fire Department Station 70				1						1		
Los Angeles County Fire Department Station 71				1						1		
Los Angeles County Fire Department Station 72				1								1
Los Angeles County Fire Department Station 73					1							
Los Angeles County Fire Department Station 74					1							1
Los Angeles County Fire Department Station 75				1						1		
Los Angeles County Fire Department Station 76			1	1							1	
Los Angeles County Fire Department Station 77					1							1
Los Angeles County Fire Department Station 78					1							1
Los Angeles County Fire Department Station 79					1							
Los Angeles County Fire Department Station 8				1								
Los Angeles County Fire Department Station 80					1							1
Los Angeles County Fire Department Station 81				1								1
Los Angeles County Fire Department Station 82				1						1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 83				1						1		
Los Angeles County Fire Department Station 84					1	1						
Los Angeles County Fire Department Station 85				1								
Los Angeles County Fire Department Station 86				1								
Los Angeles County Fire Department Station 87				1								
Los Angeles County Fire Department Station 88				1					1	1		
Los Angeles County Fire Department Station 89				1								
Los Angeles County Fire Department Station 90				1								
Los Angeles County Fire Department Station 91				1								1
Los Angeles County Fire Department Station 92					1							
Los Angeles County Fire Department Station 94				1		1						
Los Angeles County Fire Department Station 95				1								
Los Angeles County Fire Department Station 96				1								
Los Angeles County Fire Department Station 97				1						1		
Los Angeles County Fire Department Station 98				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 99				1						1		
Manhattan Beach Fire Department Station 1 - Headquarters				1								
Manhattan Beach Fire Department Station 2				1								
Montebello Fire Department Station 1 - Headquarters				1								
Montebello Fire Department Station 2				1								
Montebello Fire Department Station 3				1								
Pasadena Fire Department Station 31				1								
Pasadena Fire Department Station 32				1								
Pasadena Fire Department Station 33				1								
Pasadena Fire Department Station 34				1								
Pasadena Fire Department Station 36				1								
Pasadena Fire Department Station 37				1								
Pasadena Fire Department Station 38				1						1		
Pasadena Fire Department Station 39				1						1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Redondo Beach Fire Department Station 1 - Headquarters				1								
Redondo Beach Fire Department Station 2				1								
Redondo Beach Fire Department Station 3		1		1					1			
San Gabriel Fire Department Station 1 - Headquarters				1								
San Gabriel Fire Department Station 2				1								
San Marino Fire Department				1								
Sierra Madre Volunteer Fire Department				1								
South Pasadena Fire Department				1								
The City of El Segundo Fire Department Station 1 - Headquarters				1								
The City of El Segundo Fire Department Station 2				1								
Torrance Fire Department Fire Station 1 - Headquarters				1								
Torrance Fire Department Fire Station 2				1								
Torrance Fire Department Fire Station 3				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Torrance Fire Department Fire Station 4				1								
Torrance Fire Department Fire Station 5				1								
Torrance Fire Department Fire Station 6				1								
Vernon Fire Department				1								

Table C-4: Health Services Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Antelope Valley Health Center				1								
Bellflower Health Center				1		1						
Central Public Health Center				1								
Curtis R. Tucker Health Center				1								
Dollarhide Health Center				1		1						
East Los Angeles Health Center				1								
East San Gabriel Valley Health Center				1								
Edward R. Roybal Comprehensive Health Center				1								
El Monte Comprehensive Health Center				1								
Glendale Health Center				1								
H. Claude Hudson Comprehensive Health Center				1								
Harbor-UCLA Medical Center				1								
High Desert Regional Health Center				1								
Hubert H. Humphrey Comprehensive Health Center				1								
La Puente Health Center				1								
LAC + USC Medical Center				1								

Table C-4: Health Services Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Lake Los Angeles Community Clinic				1								
Littlerock Community Clinic					1	1						
Long Beach Comprehensive Health Center				1								
Martin Luther King, Jr. Outpatient Center				1								
Mid Valley Comprehensive Health Center			1	1								
Olive View-UCLA Medical Center					1					1		
Rancho Los Amigos National Rehabilitation Center				1		1						
San Fernando Health Center					1							
South Valley Health Center			1		1	1						
Torrance Health Center				1								
Vaughn School Based Health Center					1							
West Valley Health Center				1								
Wilmington Health Center				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
A C Bilbrew Library				1								
Acton Agua Dulce Library					1							1
Agoura Hills Library				1						1		
Alondra Library				1		1						
Angelo M. Iacoboni Library				1		1						
Anthony Quinn Library				1								
Artesia Library				1		1						
Avalon Library										1		
Baldwin Park Library				1								
Bell Gardens Library				1								
Bell Library				1								
Carson Library				1								
Castaic Library				1						1		
Charter Oak Library				1								
Chet Holifield Library				1								
City Terrace Library				1								
Claremont Helen Renwick Library				1								
Clifton M. Brakensiek Library				1		1						
Compton Library				1		1						
Cudahy Library				1		1						

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Culver City Julian Dixon Library				1								
Diamond Bar Library				1								
Dr. Martin Luther King, Jr. Library				1								
Duarte Library				1								
East Los Angeles Library				1								
East Rancho Dominguez Library				1		1						
El Camino Real Library				1								
El Monte Library				1								
Florence Express Library				1								
Gardena Mayme Dear Library				1								
George Nye Jr. Library				1		1						
Graham Library				1								
Hacienda Heights Library				1								
Hawaiian Gardens Library				1		1						
Hawthorne Library				1								
Hermosa Beach Library				1								
Hollydale Library				1		1						
Huntington Park Library				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Canada Flintridge Library				1						1		
La Crescenta Library				1								
La Mirada Library				1								
La Puente Library				1								
La Verne Library				1								
Lake Los Angeles Library				1								
Lancaster Library				1		1						
Lawndale Library				1								
Leland R. Weaver Library				1								
Lennox Library				1								
Littlerock Library					1						1	
Live Oak Library				1								
Lloyd Taber- Marina del Rey Library				1					1			
Lomita Library				1								
Los Nietos Library				1								
Lynwood Library				1								
Malibu Library			1	1						1		
Manhattan Beach Library				1								
Masao W. Satow Library				1								
Maywood Cesar Chavez Library				1								
Montebello Library				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Norwalk Library				1								
Norwood Library				1								
Paramount Library				1		1						
Pico Rivera Library				1		1						
Quartz Hill Library					1							
Rivera Library				1		1						
Rosemead Library				1								
Rowland Heights Library				1								
San Dimas Library				1								
San Fernando Library					1							
San Gabriel Library				1								
Sorensen Library				1								
South El Monte Library				1								
South Whittier Library				1								
Stevenson Ranch Library					1					1		
Sunkist Library				1								
Temple City Library				1								
Topanga Library				1								1
View Park Bebe Moore Campbell Library				1								
Walnut Library				1								
West Covina Library				1		1						

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
West Hollywood Library				1								
Westlake Village Library				1						1		
Willowbrook Library				1								
Wiseburn Library				1								
Woodcrest Library				1								

Table C-6: LACMA+MNH Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Brea Tarpits				1								
Los Angeles County Museum of Art				1								
Natural History Museum				1								
William S. Hart Museum					1					1		

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Afflerbaugh-Paige Camp				1								1
Alma Fuerte Public				1								
Animo City of Champions Charter High				1								
Aspire Antonio Maria Lugo Academy				1								
Aspire Ollin University Preparatory Academy				1								
Central Juvenile Hall				1								
Da Vinci RISE High				1								
Environmental Charter Middle				1								
Environmental Charter Middle - Inglewood				1								
Intellectual Virtues Academy				1								
International Polytechnic High				1								
Jardin de la Infancia				1								
Kirby, Dorothy Camp				1								
L.A. County High School for the Arts				1								
LA's Promise Charter High #1				1								
LA's Promise Charter Middle #1				1		1						
Lashon Academy			1	1								
Los Angeles County Special Education				1		1						

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles International Charter High				1						1		
Los Padrinos Juvenile Hall				1		1						
Magnolia Science Academy			1	1								
Magnolia Science Academy 2				1								
Magnolia Science Academy 3				1		1						
Magnolia Science Academy 5				1								
McNair Camp					1							
Nidorf, Barry J.					1							
North Valley Military Institute College Preparatory Academy					1							
Odyssey Charter				1								
Onizuka Camp					1							
Optimist Charter				1						1		
Phoenix Academy Residential Education Center					1							
Renaissance County Community				1								
Road to Success Academy at Campus Kilpatrick				1								1
Rockey, Glenn Camp				1				1		1		
Scott, Joseph Camp				1								1
Soleil Academy Charter				1		1						
Valiente College				1								

Table C-7: Office of Education Hazard Impacts[illegible]

Table C-7: Other (Office) Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
1000 S. Fremont Ave.				1								
1055 Wilshire Blvd.				1								
1100 North Eastern Ave.				1								
1104 N. Mission Rd.				1								
12300 Lower Azusa Rd.				1								
12400 Imperial Highway				1								
12860 Crossroads Parkway South				1								
1320 North Eastern Ave.				1								
13837 Fiji Way				1					1			
1816 S. Figueroa				1								
210 W. Temple St.				1								
211 W. Temple St.				1								
313 N Figueroa St.				1								
3175 West Sixth St.				1								
320 West Temple St.				1								
425 Shatto Place				1								
550 South Vermont Ave.				1								
5770 S. Eastern Ave.				1								

Table C-7: Other (Office) Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
5898 Cherry Ave.				1		1						
5905 Wilshire Blvd.				1								
700 W. Main St.				1								
7400 East Imperial Highway				1		1						
900 South Fremont Ave.				1								
Kenneth Hahn Hall of Administration				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Acton Park				1								1
Adventure Park				1								
Adventure Park				1								
Allen J. Martin Park				1								
Alondra Community Regional Park				1								
Alondra Community Regional Park				1								
Amelia Mayberry Park				1								
Amelia Mayberry Park				1								
Amigo Park				1		1						
Arcadia Community Regional Park				1								
Arcadia Community Regional Park				1								
Athens Park				1								
Athens Park				1								
Bassett Park				1								
Bassett Park				1								
Bassett Park				1								
Belvedere Community Regional Park				1								
Belvedere Community Regional Park				1								
Bodger Park				1								
Carolyn Rosas Park				1								
Castaic Regional Sports Complex			1	1								1
Castaic Regional Sports Complex			1	1								1

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Charles S. Farnsworth Park				1						1		
Charles S. Farnsworth Park				1								
Charles S. Farnsworth Park				1								
Charles S. Farnsworth Park				1								
Charter Oak Park				1								
City Terrace Park				1								
City Terrace Park				1								
Col. Leon H. Washington Park				1								
Col. Leon H. Washington Park				1								
Crescenta Valley Community Regional Park				1						1		
Crescenta Valley Community Regional Park				1						1		
Dalton Park				1								
Del Aire Park				1								
Del Aire Park				1								
Devil's Punchbowl Natural Area and Nature Center					1						1	
Dexter Park					1			1				1
Dexter Park					1			1				1
Don Knabe Community Regional Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Don Knabe Community Regional Park				1								
Don Knabe Community Regional Park				1								
East Rancho Dominguez Park				1		1						
East Rancho Dominguez Park				1		1						
East Rancho Dominguez Park				1		1						
El Cariso Community Regional Park					1							
El Cariso Community Regional Park					1							
El Cariso Community Regional Park					1							
Enterprise Park				1								
Eugene A. Obregon Park				1								
Eugene A. Obregon Park				1								
Franklin D. Roosevelt Park				1								
Franklin D. Roosevelt Park				1								
George Lane Park					1	1						
George Lane Park					1	1						
George Washington Carver Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Hacienda Heights Community and Rec Center				1								
Hacienda Heights Community and Rec Center				1								
Hacienda Heights Community and Rec Center				1								
Helen Keller Park				1								
Hollywood Bowl				1						1		
Jackie Robinson Park					1	1						
Jackie Robinson Park					1	1						
Jesse Owens Community Regional Park				1								
Jesse Owens Community Regional Park				1								
John Anson Ford Amphitheatre				1						1		
John Anson Ford Amphitheatre				1						1		
Kenneth Hahn State Recreation Area				1						1		
Ladera Park				1								
Ladera Park				1								
Ladera Park				1								
Lennox Park				1								
Lennox Park				1								
Lennox Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Loma Alta Park				1								1
Loma Alta Park				1								1
Los Angeles County Arboretum and Botanic Garden				1								
Manzanita Park				1								
Mary M. Bethune Park				1								
Mary M. Bethune Park				1								
Mona Park				1								
Mona Park				1								
Pamela County Park				1								
Pamela County Park				1								
Pathfinder Community Regional Park				1						1		1
Pearblossom County Park					1							
Peter F Schabarum Regional County Park				1						1		
Rimgrove Park				1								
Rowland Heights Park				1								
Roy Campanella Park				1								
Ruben F Salazar Park				1								
Ruben F Salazar Park				1								
Ruben F Salazar Park				1								
San Angelo Park				1								
San Fernando Recreation Park and Aquatic Center					1							
Saybrook Park				1								
Sorensen Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
South Coast Botanic Garden				1						1		
Stephen Sorensen Park				1								
Sunshine Park				1								
Ted Watkins Memorial Park				1								
Ted Watkins Memorial Park				1								
Tesoro Adobe Historic Park				1						1		1
Val Verde Community Regional Park				1								1
Val Verde Community Regional Park				1								1
Valleydale Park				1								
Valleydale Park				1								
Vasquez Rocks Natural Area and Nature Center				1								1
Veterans Memorial Community Regional Park					1					1		
Victoria Community Regional Park				1								
Victoria Community Regional Park				1								
Walnut Nature Park				1								
Whittier Narrows Recreation Area				1								
William S. Hart Regional Park					1					1		
William Steinmetz Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
William Steinmetz Park				1								
William Steinmetz Park				1								

Table C-9: Public Health Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Antelope Valley Health Center				1								
Central Public Health Center				1								
Curtis R. Tucker Health Center				1								
Glendale Health Center				1								
Hollywood/Wilshire Public Health Center				1								
Martin Luther King, Jr. Center for Public Health				1								
Monrovia Public Health Center				1								
North Hollywood Public Health Center				1								
Pacoima Public Health Center					1							
Pomona Public Health Center				1								
Ruth-Temple Public Health Center				1								
Simms/Mann Health and Wellness Center				1								
Torrance Public Health Center				1								
Whittier Public Health Center				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Brckett Field Airport				1								
Compton/Woodley Airport				1								
San Gabriel Valley Airport				1								
General Wm. J. Fox Airfield				1								
Whiteman Airport					1							
Big Dalton Dam								1		1		
Big Tujunga Dam				1				1				
Cogswell Dam				1				1				
Devil's Gate Dam				1						1		
Eaton Wash Dam				1								
Live Oak Dam				1								1
Morris Dam				1				1				1
Pacoima Dam								1				1
Puddingstone Dam				1								
Puddingstone Diversion Dam				1								
San Dimas Dam				1								1
San Gabriel Dam				1								
Santa Anita Dam				1				1				
Thompson Creek Dam				1						1		
PW ITD – Mount Wilson Radio Antenna Tower				1								
PW ITD – Mount Wilson Radio Facility Bldg.				1								
PW WWD - 37-1 Well				1								1
PW WWD - 37-3 Well				1								1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - 37-4 Well				1								1
PW Headquarters Building				1								
PW RMD – Div. #116 Maintenance Yard				1								
PW RMD – Div. #142 Maintenance Yard				1								
PW RMD – Div. #417 Maintenance Yard				1								
PW RMD – Baldwin Park Maintenance Yard				1								
PW RMD - Lower Central Yard – Division Administration				1								
PW RMD - Upper Central Yard				1								
PW RMD – Van Pelt Bridge Maintenance Yard				1								
PW SWMD – Imperial Yard				1		1						
PW SWMD – Longden Yard				1								
PW SWMD – Rio Hondo Yard				1								
PW SWMD – Riverview Maintenance Yard				1		1						
PW RMD – Div. #141/241 Maintenance Yard				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW RMD – Div. #232 Maintenance Yard				1								
PW RMD – Maint. District 3 Yard				1								
PW SWMD – 83rd St. Maintenance Yard				1								
PW RMD – Div. #336 Maint. Yd.				1						1		
PW RMD – Div. #339/539 Agoura Maintenance Yard				1								1
PW SWMD – Saticoy Yard				1			1					
PW WWD #29 - 20858 Regulating Station				1		1				1		
PW WWD #29 - Big Rock 900 Pump Station				1				1				1
PW WWD #29 - Big Rock 1010 Tank				1				1				1
PW WWD #29 - Big Rock 1200 Tank				1				1				1
PW WWD #29 - Broad Beach Regulating Station				1				1		1		
PW WWD #29 - Carbon Mesa Tank				1						1		
PW WWD #29 - Entrada Pump Station				1				1				1
PW WWD #29 - Entrada Tank				1				1				1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Fernwood Tank				1				1				1
PW WWD #29 - Guernsey Regulating Station				1						1		
PW WWD #29 - Heather Cliff Regulating Station				1						1		
PW WWD #29 - Horizon Tank				1						1		
PW WWD #29 - Hume Tank				1								1
PW WWD #29 - La Chusa Feeder Regulating Station				1						1		
PW WWD #29 - La Costa				1						1		
PW WWD #29 - La Costa Regulating Station				1				1		1		
PW WWD #29 - Las Flores Pump Station				1						1		
PW WWD #29 - Las Flores Tank				1						1		
PW WWD #29 - Latigo Tank				1				1				1
PW WWD #29 - Lower Big Rock 195 Pump Station				1				1		1		
PW WWD #29 - LVMWD, Hume Connection				1				1				1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - LVMWD, Latigo Connection				1				1				1
PW WWD #29 - LVMWD , Saddle Peak Interconnection				1								1
PW WWD #29 - Lower Busch Pump Station				1						1		
PW WWD #29 - Malibu Beach Pump Station				1						1		
PW WWD #29 - Malibu Knolls Tank				1						1		
PW WWD #29 - New Summit Tank				1								1
PW WWD #29 - Nicholas Beach Tank				1				1		1		
PW WWD #29 - Old Summit Tank				1						1		
PW WWD #29 - Owen Pump Station				1								1
PW WWD #29 - Pepperdine 545 Pump Station				1						1		
PW WWD #29 - Pepperdine 812 Tank				1								1
PW WWD #29 - Pepperdine 907 Tank				1				1				1
PW WWD #29 - Philip Tank				1						1		

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Point Dume Pump Station and Tank				1						1		
PW WWD #29 - Portshead Tank				1								
PW WWD #29 - Saddle Peak Tank				1				1				1
PW WWD #29 - Santa Maria Tank				1						1		
PW WWD #29 - Serra Pump Station				1						1		
PW WWD #29 - Sumac Ridge Tank				1						1		
PW WWD #29 - Sweetwater Hydro Pump Station				1						1		
PW WWD #29 - Sweetwater Mesa Tank				1				1		1		
PW WWD #29 - Topanga Beach Pump Station				1				1				1
PW WWD #29 - Topanga Beach Tank				1						1		
PW WWD #29 - Topanga Forks Tank				1				1				1
PW WWD #29 - Topanga Oaks Tank				1				1				1
PW WWD #29 - Topanga Park Pump Station				1								1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Trancas Tank				1						1		
PW WWD #29 - Upper Big Rock 730 Pump Station				1				1		1		
PW WWD #29 - Upper Encinal Tank				1				1		1		
PW WWD #29 - Winding Wy Tank				1				1				1
PW RMD - Div 446 Maintenance Yard				1		1						
PW RMD – Div. #446 Sub Maintenance Yard				1								
PW RMD – Maintenance District No.4 Yard				1		1						
PW SWMD – Alamitos Maintenance Yard				1		1						
PW SWMD – El Segundo Yard				1								
PW SWMD – Redondo Yard Office				1								
PW WWD #29 LADWP Emergency Via Dolce Connection				1		1			1			
PW WWD #29 – LADWP Emergency Mindanao Connection				1								
PW OSD - Eaton Yard – Maintenance Office				1				1				

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW RMD – 518-B Maintenance Yard				1						1		
PW RMD – Div. #523 Maintenance Yard				1						1		
PW RMD – Div. #524 Maintenance Yard				1						1		
PW RMD – Div. #518 Maintenance Yard				1								
PW RMD – Div. #519 Maintenance Yard				1								
PW RMD – Div. #526 Maint. Yd.			1	1		1				1		
PW RMD – Div. #551 Maintenance Yard					1	1						
PW RMD – Div. #555 Maintenance Yard				1								
PW RMD – Div. #558 Maint. Yard					1							
PW RMD – Div. #558a Jackson Lake Maintenance Yd.					1							
PW RMD – Div. #559b Maintenance Yard				1								
PW RMD – Palmdale Maintenance Dist. No. 5 Bldg. Yard					1	1						
PW SWMD – Eaton Maintenance Yard				1								
PW SWMD – Pickens Yard				1						1		

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD – Rubio Yard				1						1		
PW SWMD – Santa Clara Flood Maintenance Yard				1						1		
PW WWD #04 – North Administration Building				1		1						
PW SWMD – San Dimas Maintenance Yard				1								
PW SMD - Balfour				1		1						
PW SMD - Bradhurst				1		1						
PW SMD - Broadway				1								
PW SMD - Muscatel				1								
PW SMD - Painter				1								
PW SMD - Surrey Drive				1				1		1		
PW SMD - 132ND STREET				1								
PW SMD - Centinela				1								
PW SMD - Davids Road				1						1		
PW SMD - Ulmus				1				1		1		
PW SMD - Viewridge				1				1		1		
PW SMD - 213TH STREET				1								
PW SMD - AGAVE				1								
PW SMD - HEATHERFIELD				1				1		1		
PW SMD - MAYBROOK				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - 116th street pump station					1							
PW WWD - P-10 Pump station					1							
PW WWD - Tierra Subida Pump Station				1								
PW SMD - CAPALLERO				1								1
PW SMD - COMMERCE CENTER DRIVE				1				1				
PW SMD - LAKE HUGHES - NEWVALE					1							1
PW SMD - LAKE HUGHES - TRAIL K					1							1
PW SMD - LOWRIDGE				1						1		
PW SMD - MARINA DEL REY				1					1			
PW SMD - TYLER				1								
PW WWD - Crown Valley Pump station				1								1
PW WWD - Hasley Pump Station				1								1
PW SWMD - 120th St. Pump Station				1								
PW SWMD - Alameda Street 3B Pump Station				1		1						
PW SWMD - Alameda Street 3C Pump Station				1		1						

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - Avalon Pump Station				1		1						
PW SWMD - Compton Creek Pump Station #1				1		1						
PW SWMD - Compton Creek Pump Station #2				1		1						
PW SWMD - Dominger Pump Station				1		1						
PW SWMD - Lennox Blvd Pump Station				1								
PW SWMD - Oxford Pump Station				1					1			
PW SWMD - Redondo Beach Blvd Pump Station				1								
PW SWMD - Boone Olive Pump Station				1		1			1			
PW SWMD - Electric Ave Pump Station				1								
PW SWMD - 17th St Pump Station				1								
PW SWMD - Alamitos Bay Pump Station		1		1					1			
PW SWMD - Alondra Pump Station				1		1						
PW SWMD - Anaheim St. Pump Station		1		1		1			1			

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - Appian Way Pump Station		1		1		1			1			
PW SWMD - Arena Pump Station				1								
PW SWMD - Belmont Pump Station	1	1		1					1			
PW SWMD - Century Frwy Pump Station				1		1						
PW SWMD - Cerritos Pump Station				1		1						
PW SWMD - Claretta Pump Station				1		1						
PW SWMD - Cordova Walk Pump Station									1			
PW SWMD - Dominguez Pump Station				1		1						
PW SWMD - Doris Pump Station				1								
PW SWMD - East Toledo Pump Station									1			
PW SWMD - El Dorado Pump Station				1		1						
PW SWMD - El Segundo Pump Station				1								
PW SWMD - Garnet Avenue Pump Station				1		1						
PW SWMD - Hamilton Bowl South Pump Station				1		1						
PW SWMD - Hamilton Bowl West				1		1						

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Pump Station												
PW SWMD - Hill St. Pump Station				1		1						
PW SWMD - Johnson Pump Station				1								
PW SWMD - Lakewood Pump Station				1		1						
PW SWMD - Los Altos Pump Station				1								
PW SWMD - Lynwood Pump Station				1		1						
PW SWMD - Manhattan Beach Pump Station				1								
PW SWMD - Market St. Pump Station				1		1						
PW SWMD - Naples Pump Station									1			
PW SWMD - Paramount Pump Station				1		1						
PW SWMD - Seaside Pump Station				1		1			1			
PW SWMD - Waltheria Lake Pump Station				1								
PW SWMD - West Long Beach Pump Station	1	1		1					1			
PW SWMD - West Neapolitan Pump Station	1	1		1					1			

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - West Toledo Pump Station									1			
PW SWMD - Wilmington Unit 2 Pump Station				1								
PW SMD – Malibu Mesa WWTP				1						1		
PW SMD – Malibu TP				1						1		
PW SMD - Trancas WWTP				1		1				1		
PW SMD – LAKE HUGHES					1							
PW WWD - 27 Tank					1						1	
PW WWD - 39 Tank					1						1	
PW WWD - 116th street Tank				1							1	
PW WWD - Adobe Tank												
PW WWD - Blue Rock Tank				1								
PW WWD - Butte's Tank												
PW WWD - City Ranch Tanks					1							
PW WWD - Ft. Tejon Tank					1						1	
PW WWD - Joshua Ranch Tank				1						1		
PW WWD - Kohl's tank					1	1						
PW WWD - M & 7th west Tank site					1							

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - Q-9 Tanks					1							
PW WWD - Rancho Vista tanks				1				1		1		
PW WWD - Tierra Subida Tanks				1								
PW WWD #04 – M/5e Water Tank					1							
PW WWD #04- M8/75w Water Tank					1							
PW WWD - Cuyama Tank				1				1				1
PW WWD - Hasley Tank				1								1
PW WWD - North Tank				1								1
PW WWD - McCenney Tank					1			1				1
PW WWD - South Tank				1								1
PW WWD - 168th and G Pump station				1								
PW WWD - Anaverde Tanks and pump station				1						1		
PW WWD - Old timers tank and pump station				1								
PW WWD - Los Valles Pump station and Well				1								1
PW WWD - Vincent Pump station					1							1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - Bev martin tank and Pump Station				1		1						
PW SMD – East Yard				1								
PW SMD - Lawndale				1								
PW SMD – South Yard				1								
PW SMD – Central Yard				1								
PW SMD – North Yard				1		1						

Table C-11: Sheriff's Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Altadena Sheriff's Station				1								
Avalon Sheriff's Station										1		
Carson Sheriff's Station				1		1						
Century Regional Detention Facility				1								
Century Sheriff's Station				1								
Cerritos Sheriff's Station				1								
Compton Sheriff's Station				1		1						
Crescenta Valley Sheriff's Station				1						1		
East Los Angeles Sheriff's Station				1								
Industry Sheriff's Station				1								
Inmate Reception Center				1								
Lakewood Sheriff's Station				1		1						
Lancaster Sheriff's Station				1		1						
Lomita Sheriff's Station				1								
Malibu/Lost Hills Sheriff's Station				1						1		
Marina Del Rey Sheriff's Station				1					1			
Men's Central Jail				1								
North County Correctional Facility			1	1							1	
Norwalk Sheriff's Station				1								
Palmdale Sheriff's Station					1							
Pico Rivera Sheriff's Station				1		1						
Pitchess Detention Center East Facility				1				1				1

Table C-11: Sheriff's Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Pitchess Detention Center North Facility			1	1								1
Pitchess Detention Center South Facility			1	1								1
San Dimas Sheriff's Station				1								
Santa Clarita Valley Sheriff's Station					1							
South Los Angeles Sheriff's Station				1								
Temple Sheriff's Station				1								
Twin Towers Correctional Facility				1								
Walnut/Diamond Bar Sheriff's Station				1								
West Hollywood Sheriff's Station				1								



Appendix E: CVWD Board Resolutions Adopting 2020 UWMP & WSCP

Crescenta Valley Water District 2020 Urban Water Management Plan

RESOLUTION NO. 767

**RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESCENTA VALLEY WATER DISTRICT
ADOPTING A WATER SHORTAGE CONTINGENCY PLAN**

WHEREAS, the Crescenta Valley Water District was established for the purpose of providing adequate and reliable potable water to its inhabitants at a reasonable cost; and

WHEREAS, the groundwater supply in the Verdugo Basin is utilized as the primary source of water for District customers; and

WHEREAS, consecutive years of below normal precipitation in the watersheds of the Verdugo Basin can severely reduce the groundwater production capacity in the Verdugo Basin and hence the water supply available to the District; and

WHEREAS, the District's imported water supply connections with the Foothill Municipal Water District, which provides a supplemental source of water for District customers, are limited in size and capacity and are being subjected to increased demands; and

WHEREAS, the District's imported water supply may be subject to a reduced water allotment from the Foothill Municipal Water District should the Metropolitan Water District of Southern California put into effect their approved allocation plan; and

WHEREAS, conservation of water by District customers will help relieve the problems caused by the shortage in supply and the increase in energy costs; and

WHEREAS, the District, through its public information program, should advise and alert its customers to the serious nature of any drought situation and the need for a reduction in demand by customers; and

WHEREAS, the Water Shortage Contingency Plan which is required for inclusion in a Department of Water Resources (DWR) compliant 2020 UWMP; and

WHEREAS, based on the DWR requirements included in the DWR 2020 UWMP Guidebook, describes water supply shortage condition caused by drought or loss of water supply wells, the Board of Directors of the Crescenta Valley Water District hereby approves a six (6) level WSCP that enables the Board of Directors to declare that a water shortage condition or emergency prevails within the water service area of the Crescenta Valley Water District should be reduced by up to 50% or more with effective response measures; and

WHEREAS, the District has the power and authority, under Section 375 of the California Water Code, to adopt water conservation measures for activities within its service area; and

WHEREAS, given the current conditions, the District finds it necessary and beneficial to undertake a phased water conservation program; and

NOW, THEREFORE, BE IT RESOLVED, that the Crescenta Valley Water District Board of Directors Adopts Resolution 767, Water Shortage Contingency Plan

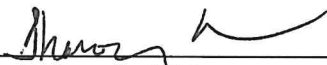
BE IT FURTHER RESOLVED, that the Crescenta Valley Water District finds that a program of voluntary measures to reduce consumption will assist in achieving the goal of conserving the water supply without causing unnecessary adverse economic consequences.

PASSED, APPROVED, AND ADOPTED at a Regular Meeting of the Board of Directors of Crescenta Valley Water District held on June 8, 2021, Resolution No. 767 was adopted by the following vote:

AYES:	Director Raghavachary Director Bodnar Director Erickson Director Putnam Director Tejeda
--------------	--

NOES:	None
--------------	-------------

ABSENT:	None
----------------	-------------



President, Board of Directors
Crescenta Valley Water District

ATTEST:



Secretary of the Board of Directors

STATE OF CALIFORNIA)
)
COUNTY OF LOS ANGELES) ss.

I, JAMES LEE, Secretary of the Crescenta Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy Resolution No. 767 of the Board of Directors of Crescenta Valley Water District adopted at a Regular Meeting held on June 8, 2021 and that the same has not been amended or repealed.



Secretary of the Board of Directors of
Crescenta Valley Water District

DATED: June 8 ,2021

(S E A L)



Appendix F: Two-Week & One-Week Notification of Public Hearing

Crescenta Valley Water District 2020 Urban Water Management Plan

CORRECTED

NOTICE OF PUBLIC HEARING CRESCENTA VALLEY WATER DISTRICT URBAN WATER MANAGEMENT PLAN UPDATE

Notice is hereby given, that the District's Draft Urban Water
Management Plan is available for public review.

The Urban Water Management Planning Act requires urban water suppliers, such as CVWD, to prepare a management plan of its current and future water resources so as to continue to provide its customers with an adequate and reliable water supply.

The District is inviting public review and comment on the 2020 Urban Water Management Plan (UWMP). The public can make comments through June 22nd, 2021 by 4:30 p.m. in writing to CVWD, 2700 Foothill Blvd, La Crescenta, CA 91214 or by email to ccolby@cvwd.com.

A public hearing on the draft 2020 UWMP will be held June 22nd, 2021, at 7:00 p.m.

Join Zoom Meeting
<https://us02web.zoom.us/j/85666292780>

Meeting ID: 856 6629 2780

Dial by your location
+1 669 900 6833 US (San Jose)

All public comments will be reviewed before the Board of Directors considers the draft 2020 UWMP for adoption at its June 22nd, 2021 meeting.

Copies of the draft 2020 UWMP are available for review on the District's website at www.cvwd.com, or at the District's main office. Customers may also request an electronic copy by email to ccolby@cvwd.com.



4415 Briggs Avenue, Montrose

3 + 3 pool | 2452 sq. ft. | built 1980 | lot 10,524 | 156 sq ft storage behind garage | 520 sq. ft. attic storage | \$1,185,000

Nestled at the end of **flag lot**, this **secluded custom home** just hit the market in Montrose. The first floor is highlighted by an open concept **designer kitchen with stainless appliances, farm sink, and double Thermador ovens**. The **oversized eating area is warmed by a fireplace** and offers ample storage. Upstairs are three bedrooms and two bathrooms. The primary suite boasts full bath, balcony and walk in closet.

Entertain in style in your private backyard with patio, **jacuzzi and sparkling pool**. Additional features include, Nest, pavers and hardwood floors, energy efficient double pane windows and doors, pull down attic storage, and detached garage with storage room.



Phyllis Harb

Realtor® | DRE# 008487500

(818) 790-7325

PhyllisHarbandco.com

www.HarbandCo.com



GLOBAL
LUXURY



HALLMARK
REALTY

Don't Miss Next Week's Q&A – Phyllis discusses “What is a professional fiduciary?”

SQUIRREL *from Cover*

had happened two years ago when Edison upgraded overhead power lines in the area, so the utility was even more sensitive to the needs of the community.

The earlier shutdown was “coincidentally caused by a squirrel at 6 p.m. and was not part of the planned outage for later in the night.

“Crews were dispatched to fix the damage first before proceeding with the planned work,” Assistant City Manager John Takhtalian wrote in an email, explaining what happened. “Coincidentally, a squirrel chewed through wires causing a transformer to explode at Broadview, near Market, and our crews were called out to a fire at 5:30 p.m., about a block away from the planned outage area.”

“It had nothing to do with the planned outage,” Haroutunian emphasized. “We would never go before the time we announced – we sent out two postcards and emails to make sure people knew exactly what we were planning. We make every effort to work with local businesses, especially now.”

While some power to the area affected by the transformer explosion was restored at 7:43 p.m., the 3500 block of North Verdugo was dark until just after 11 p.m.

“Power was up to Honolulu Avenue way before 6 a.m.,” the utility’s spokesperson said.

“Mr. Collins’ restaurant was not part of the planned outage; that’s why he didn’t get a notice about it. He’s not fed from the vault we were working on. His outage was from the squirrel.”

The planned outage affected the north side of the 2301-2335 block of Honolulu Avenue and 3807 and 3809 Ocean View Boulevard.

“We don’t just say we sent out an email. Sometimes we even go door-to-door to let people know as the business owner might have gotten the notice. That night, we updated our social media pages to ask for patience and even noted the addresses of what was out. We try our best to keep people updated,” Haroutunian added.

The squirrel died.

MEMORIAL DAY *from Cover*

was to the flagpole that sits at the top of a hill near the cement slab that was once the area where funerals were held. With the flagpole repairs completed Durst said it was time to hold the event.

“I wanted to do something for Memorial Day,” he said.

Durst had previously spoken with Lloyd Hitt, a veteran of the Korean War, about a man named Richard White with whom Hitt had served. Richard did not make it back home.

“I thought about Richard many times after [our talk],” Durst said.

Richard White was born in El Paso, Texas in 1935. His remains were returned there after he was killed in Korea.

Hitt did not know where Richard was buried so Durst began a search that led him to a military cemetery in Texas. He was able to contact a representative at that cemetery and she virtually joined the Memorial Day ceremony. Hitt was given the phone and spoke as if directly to Richard.

Hitt told Richard of his life as he continued in the U.S. Army. He became a leader in S-2 Unit, which is the unit that manages security. He spoke of Pork Chop Hill, an area in the Korean peninsula where there were extended battles and where they both served.

“We always got along,” Hitt said as he was talking to “Richard.” “You used to tell me about your family.”

He spoke about a letter he had written to Richard after his death, long after Hitt had returned to the states. Richard remained in Hitt’s heart over the years.

“It seems a lifetime since we spoke for the last time on that morning of July 10 of ’53 and I have never forgotten,” the letter begins.

“You gave me the cot next to yours and then made me your assistant gunner. Your quiet confidence gave me confidence.”

President Harry Truman’s Executive Order 9981 ordered the integration of the military, and the Korean War was one of the first times the military units were integrated. Richard was Black, and Hitt said that, in 1950s America, Black, White and Hispanic neighborhoods were separate. He had not known any Black people but for him integration was positive.

“I never saw any fights,” he said. “In boot camp we were integrated. A lot of our officers were Black.”

Richard had taken Hitt under his wing from the moment he arrived in Korea.

“Richard had a lot of experience. He had been there at least six months before me,” Hitt recalled.

“The machine gun bunker was small but you made it like home with your rosary hanging and your stationary propped up. I often think of our long nights in our bunker,” he wrote.

The tripod for the unit’s 30-caliber gun had been damaged and Richard told Hitt to keep an eye out for one.

“Later at the top of Pork Chop Hill I spotted a tripod on the side of the road. As I went to retrieve it two mortar rounds came in and I hit the dirt,” he said.

Hitt took shrapnel to his arm and shoulder. A medic ordered him to the medical bunker.

“I should have been next to you that night, feeding your machine gun; instead I was in the hospital. I should have been there to support you when a direct hit on your gun position destroyed you

that night,” he wrote.

That was the night Richard had been killed – July 13, 1953, just a few days prior to the signing of the Korean Armistice Agreement and just two days shy of his 18th birthday.

Hitt finished his letter: “Richard, I will always remember you and have not forgotten your sacrifice. Perhaps one day we can relive old times. Your friend, Private Bill [Lloyd] Hitt.”

Durst continues to raise funds for the cemetery repairs. For those interested, there are a few ways to help this project, which is in need of funds and support. People can help by donating money. Checks can be made out and mailed to Little Landers Historical Society, P.O. Box 203, Tujunga, California 91043. Please write VHC (Verdugo Hills Cemetery) 100 in the check memo.

People can also help by volunteering. The second Saturday of every month from 9 a.m. to 3 p.m. is a cleanup day at the Verdugo Hills Cemetery. The next one is Saturday, June 12. Parking is limited so carpooling is advised. The VHC is located at 7000 Parsons Trail Road in Tujunga.

More Memorial Day commemorations will be featured in the June 10 issue of the CV Weekly.

The
Chiropractic
Place

NEW
CLIENT
SPECIAL!

Dr. Brian Miller D.C. and the friendly team at The Chiropractic Place in Montrose provide chiropractic, nutrition and natural healing arts to target your unique needs. Whether you are suffering from back pain, neck pain, headaches or even just plain old muscular tightness and tension, you can benefit from the services offered at The Chiropractic Place:



- Chiropractic Care
- Lifestyle Advice
- Nutritional Counseling
- Advanced Lab Testing

You may need pain relief after suffering from an accident, experiencing an injury, or have a specific condition such as carpal tunnel syndrome, migraines, or neuropathy; even if you just want to improve your overall health, Dr. Miller can help you achieve your wellness goals!

Free consultation!

Dr. Brian Miller D.C.
The Chiropractic Place

2235 Honolulu Avenue, Montrose, CA 91020
(818) 249-2300

CORRECTED

NOTICE OF PUBLIC HEARING
CRESCENTA VALLEY WATER DISTRICT URBAN WATER
MANAGEMENT PLAN UPDATE

Notice is hereby given, that the District’s Draft Urban Water Management Plan is available for public review.

The Urban Water Management Planning Act requires urban water suppliers, such as CVWD, to prepare a management plan of its current and future water resources so as to continue to provide its customers with an adequate and reliable water supply.

The District is inviting public review and comment on the 2020 Urban Water Management Plan (UWMP). The public can make comments through June 22nd, 2021 by 4:30 p.m. in writing to CVWD, 2700 Foothill Blvd, La Crescenta, CA 91214 or by email to ccolby@cvwd.com.

A public hearing on the draft 2020 UWMP will be held June 22nd, 2021, at 7:00 p.m.

Join Zoom Meeting
https://us02web.zoom.us/j/85666292780

Meeting ID: 856 6629 2780

Dial by your location
+1 669 900 6833 US (San Jose)

All public comments will be reviewed before the Board of Directors considers the draft 2020 UWMP for adoption at its June 22nd, 2021 meeting.

Copies of the draft 2020 UWMP are available for review on the District’s website at www.cvwd.com, or at the District’s main office. Customers may also request an electronic copy by email to ccolby@cvwd.com.



Appendix G: 60-Day Notification of Public Hearing

Crescenta Valley Water District 2020 Urban Water Management Plan



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214

Phone (818) 248-3925 Fax (818) 248-1659

Directors

Judy L. Tejeda
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam
Sharon Raghavachary

Officers

Nemesciano Ochoa, P.E.
General Manager
James Lee
Director of Finance & Administration

March 09, 2021

Amy J. Bodek
Headquarters - Regional Planning
320 West Temple Street, 13th Floor
Los Angeles, California 90012

Subject: 2020 Crescenta Valley Water District Urban Water Management Plan

This letter serves as formal 60-day notice to inform all affected agencies that the Crescenta Valley Water District (District) is intending to review and update its 2015 Urban Water Management Plan and Water Shortage Plan, pursuant to California State Water Code Section 10610-10610.4. A public hearing for the District's Urban Water Management Plan and revised Water Shortage Plan is scheduled to take place on or after June 8, 2021 at the District's main office- 2700 Foothill Blvd., La Crescenta, CA 91214.

Another notice will be sent two weeks prior to the actual public hearing date. Please contact Christy Colby at ccolby@cvwd.com or 818-236-4110 for more information.

Sincerely,

Christy J. Colby



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

Directors

Judy L. Tejada
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam
Sharon Raghavachary

Officers

Nemesiano Ochoa, P.E.
General Manager
James Lee
Director of Finance & Administration

March 09, 2021

Susan Koleda
City of La Canada-Flintridge
Planning Dept.
1327 Foothill Blvd.
La Canada, CA 91011

Subject: 2020 Crescenta Valley Water District Urban Water Management Plan

This letter serves as formal 60-day notice to inform all affected agencies that the Crescenta Valley Water District (District) is intending to review and update its 2015 Urban Water Management Plan pursuant to California State Water Code Section 10610-10610.4. A public hearing for the District's Urban Water Management Plan is scheduled to take place on or after June 8, 2021 at the District's main office- 2700 Foothill Blvd., La Crescenta, CA 91214.

Another notice will be sent two weeks prior to the actual public hearing date. Please contact Christy Colby at ccolby@cvwd.com or 818-236-4110 for more information.

Sincerely,

Christy J. Colby



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

Directors

Judy L. Tejada
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam
Sharon Raghavachary

Officers

Nemesciano Ochoa, P.E.
General Manager
James Lee
Director of Finance & Administration

March 09, 2021

Bradley Calvert
City of Glendale
Assistant Director of Community Development
141 N. Glendale Avenue
Glendale, CA 91206

Subject: 2020 Crescenta Valley Water District Urban Water Management Plan

This letter serves as formal 60-day notice to inform all affected agencies that the Crescenta Valley Water District (District) is intending to review and update its 2015 Urban Water Management Plan pursuant to California State Water Code Section 10610-10610.4. A public hearing for the District's Urban Water Management Plan is scheduled to take place on or after June 8, 2021 at the District's main office- 2700 Foothill Blvd., La Crescenta, CA 91214.

Another notice will be sent two weeks prior to the actual public hearing date. Please contact Christy Colby at ccolby@cvwd.com or 818-236-4110 for more information.

Sincerely,

Christy J. Colby



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

Directors

Judy L. Tejeda
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam
Sharon Raghavachary

Officers

Nemesiano Ochoa, P.E.
General Manager
James Lee
Director of Finance & Administration

March 09, 2021

Nina Jazamadarian
General Manager
Foothill Municipal Water District
4536 Hampton Road
La Canada, CA 91011

Subject: 2020 Crescenta Valley Water District Urban Water Management Plan

This letter serves as formal 60-day notice to inform all affected agencies that the Crescenta Valley Water District (District) is intending to review and update its 2015 Urban Water Management Plan pursuant to California State Water Code Section 10610-10610.4. A public hearing for the District's Urban Water Management Plan is scheduled to take place on or after June 8, 2021 at the District's main office- 2700 Foothill Blvd., La Crescenta, CA 91214.

Another notice will be sent two weeks prior to the actual public hearing date. Please contact Christy Colby at ccolby@cvwd.com or 818-236-4110 for more information.

Sincerely,

Christy J. Colby



Appendix H: WUE Tool 2020 Population

Crescenta Valley Water District 2020 Urban Water Management Plan

WUEdata - Crescenta Valley Community Water District

Please print this page to a PDF and include as part of your UWMP submittal.

Confirmation Information

Generated By	Water Supplier Name	Confirmation #	Generated On
Phong Tran	Crescenta Valley Community Water District	5912641227	2/25/2021 3:27:36 PM

Boundary Information

Census Year	Boundary Filename	Internal Boundary ID
1990	No Boundary Selected	N/A
2000	No Boundary Selected	N/A
2010	CVWD Service Boundary Polygon 05-11-2016.kml	1098
1990	No Boundary Selected	N/A
2000	No Boundary Selected	N/A
2010	CVWD Service Boundary Polygon 05-11-2016.kml	1098
1990	No Boundary Selected	N/A
2000	No Boundary Selected	N/A
2010	CVWD Service Boundary Polygon 05-11-2016.kml	1098

Baseline Period Ranges

10 to 15-year baseline period

Number of years in baseline period:

Year beginning baseline period range:

Year ending baseline period range¹: 2005

5-year baseline period

Year beginning baseline period range:

Year ending baseline period range²: 2007

¹ The ending year must be between December 31, 2004 and December 31, 2010.

² The ending year must be between December 31, 2007 and December 31, 2010.

Persons-Per-SF Connection and Persons-Per-MF/GQ Connection

Year	Census Block Group Level	Census Block Level			# SF Connections	# MF/GQ Connections	Persons per SF Connection	Persons per MF/GQ Connection
	% Population in SF Housing	Service Area Population	Population in SF Housing (calculated)	Population in MF/GQ Housing (calculated)				
1990	N/A	0	N/A	N/A			3.41	12.69
1991	-	-	-	-	-	-	3.41	12.69
1992	-	-	-	-	-	-	3.41	12.69
1993	-	-	-	-	-	-	3.41	12.69
1994	-	-	-	-	-	-	3.41	12.69
1995	-	-	-	-	-	-	3.41	12.69
1996	-	-	-	-	-	-	3.41	12.69
1997	-	-	-	-	-	-	3.41	12.69
1998	-	-	-	-	-	-	3.41	12.69
1999	-	-	-	-	-	-	3.41	12.69
2000	N/A	0	N/A	N/A			3.41	12.69
2001	-	-	-	-	-	-	3.41	12.69
2002	-	-	-	-	-	-	3.41	12.69
2003	-	-	-	-	-	-	3.41	12.69
2004	-	-	-	-	-	-	3.41	12.69
2005	-	-	-	-	-	-	3.41	12.69
2006	-	-	-	-	-	-	3.41	12.69
2007	-	-	-	-	-	-	3.41	12.69
2008	-	-	-	-	-	-	3.41	12.69
2009	-	-	-	-	-	-	3.41	12.69
2010	72.29%	32,469	23,473	8,996	6879	709	3.41	12.69
2011	-	-	-	-	-	-	3.41	12.69
2012	-	-	-	-	-	-	3.41	12.69
2013	-	-	-	-	-	-	3.41	12.69
2014	-	-	-	-	-	-	3.41	12.69
2015	-	-	-	-	-	-	3.41	12.69
2020	-	-	-	-	-	-	3.41 *	12.69 *

Population Using Persons-Per-SF Connection and Persons-Per-MF/GQ Connection

Year		# SF Connections	# MF/GQ Connections	Persons per SF Connection	Persons per MF/GQ Connection	SF Population	MF/GQ Population	Total Population
10 to 15 Year Baseline Population Calculations								
Year 1	1996			3.41	12.69			
Year 2	1997			3.41	12.69			
Year 3	1998			3.41	12.69			
Year 4	1999			3.41	12.69			
Year 5	2000			3.41	12.69			
Year 6	2001			3.41	12.69			
Year 7	2002			3.41	12.69			
Year 8	2003			3.41	12.69			
Year 9	2004			3.41	12.69			
Year 10	2005			3.41	12.69			
5 Year Baseline Population Calculations								
Year 1	2003			3.41	12.69			
Year 2	2004			3.41	12.69			
Year 3	2005			3.41	12.69			
Year 4	2006			3.41	12.69			
Year 5	2007			3.41	12.69			
2020 Compliance Year Population Calculations								
2020		6955	688	3.41 *	12.69 *	23,732	8,730	32,462

[Hide Print Confirmation](#)

QUESTIONS / ISSUES? CONTACT THE WUEdata HELP DESK
 MWELo QUESTIONS / ISSUES? CONTACT THE MWELo HELP DESK



Appendix I: DWR Data Tables & UWMP Checklist

Crescenta Valley Water District 2020 Urban Water Management Plan

CVWD DWR SUBMITTAL TABLES
2020 URBAN WATER MANAGEMENT PLAN

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
Add additional rows as needed			
1910028	Crescenta Valley Water District	8,225	4,216
TOTAL		8,225	4,216
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES:			

Submittal Table 2-2: Plan Identification		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance <i>if applicable</i> (select from drop down list)
☒	Individual UWMP	
	☐ Water Supplier is also a member of a RUWMP	
	☐ Water Supplier is also a member of a Regional Alliance	
☐	Regional Urban Water Management Plan (RUWMP)	
NOTES:		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☒	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☒	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.	
NOTES:	

Submittal Table 2-4 Retail: Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
<i>Add additional rows as needed</i>
Foothill Municipal Water District
NOTES:

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045(opt)
	32,462	32,974	33,494	34,022	34,558	35,103
NOTES:						

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable ¹ Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume ²
Add additional rows as needed			
Single Family		Drinking Water	2,490
Multi-Family		Drinking Water	836
Commercial	w/ Institutional	Drinking Water	279
Landscape		Drinking Water	234
Losses		Drinking Water	376
TOTAL			4,216
¹ Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. ² Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES:			

Submittal Table 4-2 Retail: Use for Potable and Non-Potable¹ Water - Projected

Use Type	Additional Description (as needed)	Projected Water Use ² <i>Report To the Extent that Records are Available</i>				
<u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family		2,350	2,387	2,425	2,463	2,502
Multi-Family		789	802	814	827	840
Commercial	w/ Institutional	263	267	271	276	280
Landscape		221	225	228	232	235
Losses		355	361	366	372	378
TOTAL		3,979	4,041	4,105	4,170	4,236

¹ Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES:

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)

	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i>	4,216	3,979	4,041	4,105	4,170	4,236
Recycled Water Demand ¹ <i>From Table 6-4</i>	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage ²						
TOTAL WATER USE	4,216	3,979	4,041	4,105	4,170	4,236

¹ Recycled water demand fields will be blank until Table 6-4 is complete

² Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier **may** deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.

NOTES:

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss ^{1,2}
01/2016	332
01/2017	357
01/2018	155
01/2019	335
01/2020	376
¹ Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet. ² Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.	
NOTES:	

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i>	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i>	Yes
NOTES:	

Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form

Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1996	2005	161	142
5 Year	2003	2007	159	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 5-2: 2020 Compliance
From SB X7-7 2020 Compliance Form

Retail Supplier or Regional Alliance Only

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* (Adjusted if applicable)		
116	0	0	142	Y

**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type Drop Down List May use each category multiple times	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Add additional rows as needed						
Alluvial Basin	Verdugo Basin	1968	1699	1655	1964	2075
TOTAL		1,968	1,699	1,655	1,964	2,075
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020

☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2020 service area covered by wastewater collection system <i>(optional)</i>					
	Percentage of 2020 service area population covered by wastewater collection system <i>(optional)</i>					
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i>
CVWD	Estimated	3,373	Los Angeles County Sanitation District	Los Angeles-Glendale Water Reclamation Plant	No	
Total Wastewater Collected from Service Area in 2020:		3,373				
* <i>Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 .</i>						
NOTES: Estimated 80% of Total Water Consumption						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020											
☒ No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.											
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) ²	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area? <i>Drop down list</i>	Treatment Level <i>Drop down list</i>	2020 volumes ¹				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
Total							0	0	0	0	0

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

² If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility>

NOTES:

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area										
☒ Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.										
Name of Supplier Producing (Treating) the Recycled Water:										
Name of Supplier Operating the Recycled Water Distribution System:										
Supplemental Water Added in 2020 (volume) <i>Include units</i>										
Source of 2020 Supplemental Water										
Beneficial Use Type <i>Insert additional rows if needed.</i>	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units ¹</i>	General Description of 2020 Uses	Level of Treatment <i>Drop down list</i>	2020 ¹	2025 ¹	2030 ¹	2035 ¹	2040 ¹	2045 ¹ (opt)
Agricultural irrigation										
Landscape irrigation (exc golf courses)										
Golf course irrigation										
Commercial use										
Industrial use										
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
Total:					0	0	0	0	0	0
2020 Internal Reuse										

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES:

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☒	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.	
Beneficial Use Type	2015 Projection for 2020 ¹	2020 Actual Use ¹
<i>Insert additional rows as needed.</i>		
Agricultural irrigation		
Landscape irrigation (exc golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	0	0
¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.		
NOTE:		

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use

☒	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
<i>Add additional rows as needed</i>			
Total			0
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES:			

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☒	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Section 7	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Supplier* <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Supplier Name</i>				
<i>Add additional rows as needed</i>						
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality <i>Drop Down List</i>	Total Right or Safe Yield* (optional)
<i>Add additional rows as needed</i>				
Purchased or Imported Water	from FMWD	2,141	Drinking Water	2,154
Groundwater (not desalinated)	CVWD Wells	1,933	Drinking Water	3,294
Groundwater (not desalinated)	Well #16 (Glendale)	142	Drinking Water	500
Total		4,216		5,948
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.				
NOTES:				

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☐	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	2015-2020		100%
Single-Dry Year	2013-2015		100%
Consecutive Dry Years 1st Year	2011		100%
Consecutive Dry Years 2nd Year	2012		100%
Consecutive Dry Years 3rd Year	2013		100%
Consecutive Dry Years 4th Year	2014		100%
Consecutive Dry Years 5th Year	2015		100%
<i>Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.</i>			
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: See Section 3.9.4, page 3-28			

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals (autofill from Table 6-9)	5,748	5,748	5,748	5,748	5,748
Demand totals (autofill from Table 4-3)	3,979	4,041	4,105	4,170	4,236
Difference	1,769	1,707	1,643	1,578	1,512

NOTES:

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	5,748	5,748	5,748	5,748	5,748
Demand totals*	4,412	4,481	4,552	4,624	4,697
Difference	1,336	1,267	1,196	1,124	1,051

***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,531	4,603	4,676	4,749	4,824
	Difference	1,217	1,145	1,072	999	924
Second year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,781	4,857	4,933	5,011	5,090
	Difference	967	891	815	737	658
Third year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,836	4,912	4,989	5,068	5,148
	Difference	912	836	759	680	600
Fourth year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,565	4,637	4,710	4,785	4,860
	Difference	1,183	1,111	1,038	963	888
Fifth year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	3,789	3,849	3,910	3,972	4,034
	Difference	1,959	1,899	1,838	1,776	1,714
Sixth year (optional)	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0

***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	3,929
Total Supplies	5,741
Surplus/Shortfall w/o WSCP Action	1,812
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	1,812
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	3,942
Total Supplies	5,745
Surplus/Shortfall w/o WSCP Action	1,803
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	1,803
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	3,954
Total Supplies	5,748
Surplus/Shortfall w/o WSCP Action	1,794
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	1,794
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	3,966
Total Supplies	5,748
Surplus/Shortfall w/o WSCP Action	1,782
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	1,782
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	3,979
Total Supplies	5,748
Surplus/Shortfall w/o WSCP Action	1,769
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	1,769
Resulting % Use Reduction from WSCP action	0%

Submittal Table 8-1**Water Shortage Contingency Plan Levels**

Shortage Level	Percent Shortage Range	Shortage Response Actions <i>(Narrative description)</i>
1	Up to 10%	Phase 1 - Color Code "Blue" – Normal Water Conservation Alert: FMWD can meet all Member Agency demands. Voluntary water conservation applies.
2	Up to 20%	Phase 2 - Color Code "Green" – Increased Voluntary Water Conservation Alert: Some supplies have been impacted, and customers should increase efforts to conserve.
3	Up to 30%	Phase 3 - Color Code "Yellow" – Extraordinary Water Conservation Alert: MWD is withdrawing water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers.
4	Up to 40%	Phase 4 - Color Code "Orange" – Rationing Water Conservation Alert: MWD has implemented its allocation plan to its member agencies. Thus, supplies are limited.
5	Up to 50%	Phase 5 - Color Code "Red" – Critical Water Conservation Alert: Water supplies are reduced drastically.
6	>50%	Phase 6 - Color Code "Purple" – Emergency Water Conservation Alert: Water supplies are only available for health and safety needs.

NOTES: See Section 5.4.3, page 5-15

Submittal Table 8-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions Drop down list <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only</i> <i>Drop Down List</i>
Add additional rows as needed				
NOTES:				

Submittal Table 8-3: Supply Augmentation and Other Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
<i>Add additional rows as needed</i>			
NOTES:			

Submittal Table 10-1 Retail: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
La Canada Flintridge	☒	☒
Glendale	☒	☒
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Los Angeles County	☒	☒
NOTES:		

CVWD ENERGY USE TABLES

2020 URBAN WATER MANAGEMENT PLAN

Urban Water Supplier: Crescenta Valley Water District

Water Delivery Product (If delivering more than one type of product use Table O-1C)

Retail Potable Deliveries

Table O-1B: Recommended Energy Reporting - Total Utility Approach				
Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control		
End Date	12/31/2020			
☐ Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
Water Volume Units Used	AF	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (volume unit)		4216		4216
Energy Consumed (kWh)		4297984		4297984
Energy Intensity (kWh/vol. converted to MG)		3128.6	#DIV/0!	3128.6
Quantity of Self-Generated Renewable Energy kWh				
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data) 				
Data Quality Narrative: Volume shown is based on total water volume delivered. All water volumes are metered. Energy consumption is based on all water related facilities within CVWD's service area as well as Well #16 from GWP. Energy data is metered and obtained from SCE and GWP.				
Narrative: Energy Intensity is based on the total energy consumption and total water volume. Energy and volumes for each of the processes within CVWD's system is unavailable.				

CVWD SBx7-7 VERIFICATION FORM
2020 URBAN WATER MANAGEMENT PLAN

SB X7-7 Table 0: Units of Measure Used in UWMP*
(select one from the drop down list)

Acre Feet

**The unit of measure must be consistent with Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	5,311	Acre Feet
	2008 total volume of delivered recycled water	-	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period ^{1, 2}	10	Years
	Year beginning baseline period range	1996	
	Year ending baseline period range ³	2005	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range ⁴	2007	

¹ If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.

² The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

³ The ending year must be between December 31, 2004 and December 31, 2010.

⁴ The ending year must be between December 31, 2007 and December 31, 2010.

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	1. Department of Finance (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	2. Persons-per-Connection Method
☒	3. DWR Population Tool
☐	4. Other DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		Population
10 to 15 Year Baseline Population		
Year 1	1996	30,390
Year 2	1997	30,475
Year 3	1998	30,560
Year 4	1999	30,645
Year 5	2000	30,731
Year 6	2001	30,817
Year 7	2002	30,903
Year 8	2003	30,989
Year 9	2004	31,075
Year 10	2005	31,162
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	30,989
Year 2	2004	31,075
Year 3	2005	31,162
Year 4	2006	31,249
Year 5	2007	31,336
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year <i>Fm SB X7-7 Table 3</i>		Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	Deductions					Acre Feet
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>	Annual Gross Water Use
10 to 15 Year Baseline - Gross Water Use								
Year 1	1996	5,277			-		-	5,277
Year 2	1997	5,497			-		-	5,497
Year 3	1998	5,076			-		-	5,076
Year 4	1999	5,608			-		-	5,608
Year 5	2000	5,717			-		-	5,717
Year 6	2001	5,635			-		-	5,635
Year 7	2002	5,792			-		-	5,792
Year 8	2003	5,724			-		-	5,724
Year 9	2004	5,726			-		-	5,726
Year 10	2005	5,327			-		-	5,327
Year 11	0	-			-		-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								5,538
5 Year Baseline - Gross Water Use								
Year 1	2003	5,724			-		-	5,724
Year 2	2004	5,726			-		-	5,726
Year 3	2005	5,327			-		-	5,327
Year 4	2006	5,463			-		-	5,463
Year 5	2007	5,525			-		-	5,525
5 year baseline average gross water use								5,553
* Units of measure (AF, MG, or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.								
NOTES:								

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source		Groundwater & Imported		
This water source is:				
☒	The supplier's own water source			
☒	A purchased or imported source			
Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System¹	Meter Error Adjustment² <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System	
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1996	5,277		5,277
Year 2	1997	5,497		5,497
Year 3	1998	5,076		5,076
Year 4	1999	5,608		5,608
Year 5	2000	5,717		5,717
Year 6	2001	5,635		5,635
Year 7	2002	5,792		5,792
Year 8	2003	5,724		5,724
Year 9	2004	5,726		5,726
Year 10	2005	5,327		5,327
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	5,724		5,724
Year 2	2004	5,726		5,726
Year 3	2005	5,327		5,327
Year 4	2006	5,463		5,463
Year 5	2007	5,525		5,525
¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.				
² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document				
NOTES:				

SB X7-7 Table 5: Baseline Gallons Per Capita Per Day (GPCD)

Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1996	30,390	5,277	155
Year 2	1997	30,475	5,497	161
Year 3	1998	30,560	5,076	148
Year 4	1999	30,645	5,608	163
Year 5	2000	30,731	5,717	166
Year 6	2001	30,817	5,635	163
Year 7	2002	30,903	5,792	167
Year 8	2003	30,989	5,724	165
Year 9	2004	31,075	5,726	165
Year 10	2005	31,162	5,327	153
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				161
5 Year Baseline GPCD				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2003	30,989	5,724	165
Year 2	2004	31,075	5,726	165
Year 3	2005	31,162	5,327	153
Year 4	2006	31,249	5,463	156
Year 5	2007	31,336	5,525	157
5 Year Average Baseline GPCD				159
NOTES:				

SB X7-7 Table 6: Baseline GPCD*Summary From Table SB X7-7 Table 5*

10-15 Year Baseline GPCD	161
5 Year Baseline GPCD	159

NOTES:

SB X7-7 Table 7: 2020 Target Method*Select Only One*

Target Method		Supporting Tables
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D
☒	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator <i>Located in the WUE Data Portal at wuedata.water.ca.gov Resources button</i>

NOTES:

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☒	100%	South Coast	149	142
☐		Colorado River	211	200
2020 Target (If more than one region is selected, this value is calculated.)				142
NOTES:				

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target					
5 Year Baseline GPCD From SB X7-7 Table 5	Maximum 2020 Target ¹	Calculated 2020 Target ²			Confirmed 2020 Target ⁴
		As calculated by supplier in this SB X7-7 Verification Form	Special Situations ³		
			Prorated 2020 Target	Population Weighted Average 2020 Target	
159	151	142			142
¹ Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.					
² Calculated 2020 Target is the target calculated by the Supplier based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target. Supplier may only enter one calculated target.					
³ Prorated targets and population weighted target are allowed for special situations only. These situations are described in Appendix P, Section P.3					
⁴ Confirmed Target is the lesser of the Calculated 2020 Target (C5, D5, or E5) or the Maximum 2020 Target (Cell B5)					
NOTES:					

CVWD SBx7-7 COMPLIANCE FORM
2020 URBAN WATER MANAGEMENT PLAN

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP**(select one from the drop down list)*

Acre Feet

**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*

NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate**Method Used to Determine 2020 Population**

(may check more than one)

☐**1. Department of Finance (DOF) or
American Community Survey (ACS)**☐**2. Persons-per-Connection Method**☒**3. DWR Population Tool**☐**4. Other**
DWR recommends pre-review

NOTES:

SB X7-7 Table 3: 2020 Service Area Population**2020 Compliance Year Population****2020**

32,462

NOTES:

SB X7-7 Table 4: 2020 Gross Water Use

Compliance Year 2020	2020 Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	2020 Deductions					2020 Gross Water Use
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use*	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>	
	4,216			-		-	4,216

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment
 Complete one table for each source.

Name of Source		Groundwater	
This water source is (check one) :			
☒	The supplier's own water source		
☐	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² <i>Optional</i> (+/-)	Corrected Volume Entering Distribution System
	2,075	-	2,075

¹ **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

² **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment
 Complete one table for each source.

Complete one table for each source.			
Name of Source		Foothill Municipal Water District	
This water source is (check one):			
☐	The supplier's own water source		
☒	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² <i>Optional</i> (+/-)	Corrected Volume Entering Distribution System
	2,141		2,141

¹ **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

² **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES:

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)

2020 Gross Water <i>Fm SB X7-7 Table 4</i>	2020 Population <i>Fm SB X7-7 Table 3</i>	2020 GPCD
4,216	32,462	116

NOTES:

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD ¹	Optional Adjustments to 2020 GPCD					2020 Confirmed Target GPCD ^{1, 2}	Did Supplier Achieve Targeted Reduction for 2020?
	Enter "0" if Adjustment Not Used			TOTAL Adjustments ¹	Adjusted 2020 GPCD ¹ <i>(Adjusted if applicable)</i>		
	Extraordinary Events ¹	Weather Normalization ¹	Economic Adjustment ¹				
116	-	-	-	-	116	142	YES

¹ All values are reported in GPCD

² **2020 Confirmed Target GPCD** is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.

NOTES:

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Executive Summary
x		Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Executive Summary
x	x	Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	N/A
x	x	Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 8.2
x	x	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Section 8.2
x		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Section 3.7
x	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	N/A
x	x	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Section 1.6
x	x	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 2.2.1
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 2.2.2, Table 2.1
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 2.2.2
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Section 2.2.2, Table 2.1
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 2.2.3
x	x	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 2.3.2 Table 2.3 Section 2.6.1, Table 2.10
x	x	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 2.3.3, Table 2.4
x	x	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	Section 2.6.1
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 2.6
x	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 2.3.3, Table 2.4
x	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 2.6.2
x	x	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 5.2.2
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Section 2.4.5 and 2.4.6
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 2.4.7
x	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	N/A
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	N/A, no adjustments made
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 2.4.7 Appendix I
x		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 2.4.7 Appendix I
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 3.9.4 Section 5.2.1, Tables 5.1, 5.2, and 5.3
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System Supplies	Section 3.9.4 Section 5.2.1, Tables 5.1, 5.2, and 5.3
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Section 3.2 and 3.3
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	
x	x	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Section 3.9.4 Section 5.2.1, Tables 5.1, 5.2, and 5.3
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 3.3
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 3.3
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Section 3.3
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Appendix A
x	x	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	N/A
x	x	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years.	System Supplies	Section 3.3, and Section 3.5.2
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 3.7, Table 3.7
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 7.4
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.2.1
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.3
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.4
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.4
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.4
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 7.6
x	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.2
x	x	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Section 3.9
x	x	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Supplies, Energy Intensity	Section 3.10.3 Appendix I
x	x	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability.	Water Supply Reliability Assessment	Section 3.4
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 5.4.3 Section 7.3
x	x	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 3.9.4
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 5.2.2
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 5.2.2
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 5.2.2
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 3.9.4, Tables 3.15 - 3.19
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 3.6

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Section 5
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Section 5.2.1
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Section 5.3
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Section 5.3
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Section 5.3
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Section 5.4.3
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Section 5.4.3
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Section 5.4
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Section 5.4.5
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Section 5.5
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Section 5.4.4
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Section 5.4.5
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Section 5.4.7
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Section 5.5
x	x	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Section 5.5
x		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Section 5.6
x		Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Section 5.7
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Section 5.7
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Section 5.5
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 5.8
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 5.8, Tables 5.13 and 5.14
x		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Section 5.8
x		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Section 5.9
x		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Section 5.10
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 5.11
x	x	Section 8.12	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Section 5.11
	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	N/A
x		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Section 4.2
x		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Section 8.1.1
x		Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 8.1.1 Appendix G
x	x	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2 Appendix E
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.1
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2 Appendix E
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 8.3
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 8.3
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A, CVWD not regulated by PUC
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 8.1.1, Table 8.2



CRESCENTA VALLEY WATER DISTRICT
2700