



2020

URBAN WATER MANAGEMENT PLAN

RUBIO CAÑON LAND AND WATER ASSOCIATION



**JUNE 2021
FINAL**



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JUNE 2021 FINAL

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ACRONYMS

Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
Basin	Raymond Groundwater Basin
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
Board	Metropolitan Water District of Southern California's Board of Directors
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
CII	Commercial/Industrial/Institutional
CIMIS	California Irrigation Management Information System
COG	Council of Governments
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
DBPs	Disinfection Byproducts
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
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
LAGWRP	Los Angeles/Glendale Water Reclamation Plant
LAWC	Lincoln Avenue Water Company



JPL	Jet Propulsion Laboratory
LRSP	Local, Reliable Water Supply Program
MAF	million acre-feet
MCL	Maximum Contaminant Level
MGD	million gallons per day
MOU	Memorandum of Understanding
MWD	Metropolitan Water District of Southern California
MWELO	Model Water Efficient Landscape Ordinance
NASA	National Aeronautics and Space Administration
NDMA	N-nitrosodimethylamine
PPCPs	Pharmaceuticals and Personal Care Products
PWP	Pasadena Water and Power
QSA	Quantification Settlement Agreement
RCLWA	Rubio Cañon Land and Water Association
RHNA	Regional Housing Needs Assessment
SBx7-7	Senate Bill x7-7
SCAG	Southern California Association of Governments
SDP	Seawater Desalination Program
SWP	State Water Project
TDS	Total Dissolved Solid
ULFT	Ultra-Low-Flow Toilet
UWMP	Urban Water Management Plan
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 Rubio Cañon Land and Water Association (RCLWA) Urban Water Management Plan (UWMP). The UWMP has been prepared consistent with the requirements under Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act). The 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 of water annually" to prepare, adopt, and file an UWMP with the California Department of Water Resources (DWR) every five years. 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

RCLWA provides water to a population of 9,215 people throughout its service area. RCLWA receives its water from three main sources: imported water from Foothill Municipal Water District (FMWD), water extracted from the Raymond Groundwater basin, and surface water from Rubio Canyon, which is treated at a conventional treatment plant. It is from these three sources that RCLWA provides potable drinking water.

WATER DEMAND

Currently, the total water demand for customers served by RCLWA is approximately 2,175 acre-feet annually of potable water.



RCLWA has selected to comply with **Option 1** of the SBx7-7 compliance options. Under Compliance Option 1, RCLWA's 2015 interim water use target is 208 gallons per capita per day (GPCD) and the 2020 final water use target is 185 GPCD.

With a service population of 9,215 and water demand of 2,175 AF, the calculated per capita use for 2020 is **211** GPCD. As a result, RCLWA was unable to achieve its 2020 target. This was due to the COVID-19 pandemic where residents were mandated to work from home to prevent the spread. As a result, water demands significantly increased. Prior to 2020, RCLWA was on track to meet their target with an average water demand of 1,850 AFY.

WATER SOURCES AND SUPPLIES

RCLWA's primary source of supply is groundwater extracted from the Monk Hill Subbasin of the adjudicated Raymond Basin. RCLWA also obtains surface water from the Rubio Canyon. The balance of its supply is imported water, supplied by Metropolitan Water District of Southern California (MWD) via FMWD. RCLWA has connections with the City of Pasadena and Las Flores Water Company. These connections present opportunities for transfers, wheeling, and emergency supply. The RCLWA distribution system is gravity fed, with pump fed reservoirs at the upper elevation of a pressure zone. A one-day to three-day interruption due to power or water supply failure can easily be handled. There never has been supply interruption either within recent memory or documented in the RCLWA archives. The sources of imported water supplies include the Colorado River and the State Water Project (SWP).

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.

Currently, RCLWA uses local water sources from groundwater within the Raymond Basin and Surface Water from the Rubio Canyon. In the event that local production cannot supply 100 percent of the demand, RCLWA supplements the remaining demand with imported water from MWD via FMWD.

The completion of MWD's 2020 Integrated Water Resources Plan will be completed after the submission of RCLWA's 2020 UWMP. MWD's 2015 Integrated Water Resources Plan (IRP) update describes the core water resource strategy that will be used to meet full-service demands (non-interruptible agricultural and replenishment supplies) at the retail level under all foreseeable hydrologic conditions from 2025 through 2045.



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. As for groundwater supplies, the Basin remained stable and production rights remained the same throughout the recent drought. RCLWA 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 3.16** to **Table 3.22**. RCLWA 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, RCLWA 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 in **Section 5**; however, RCLWA continues to promote water saving measures to its consumers to ensure reliability of its supplies.

FUTURE WATER SUPPLY PROJECTS

Working with FMWD and other water agencies in this area, RCLWA participates in the FMWD Conjunctive Use Program. This program, which began in 2003, enables the storage of 9,000 AF of MWD's supplied surplus water in the Monk Hill sub unit of the Raymond Basin. Upon MWD's call, up to 3,000 AF per year of this stored water can be extracted when needed.

RCLWA participates in this program as a member of the Raymond Basin Management Board. The overall goals are to enhance local recharge and bring a secondary source of untreated replenishment water into the basin.

CHALLENGES AHEAD AND STRATEGIES FOR MANAGING RELIABILITY RISKS

RCLWA faces challenges in the near future regarding water supply include:

- Over the last decade, drastic changes in annual hydrologic conditions 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 MWD.

RCLWA's strategies for managing these reliability risks include:

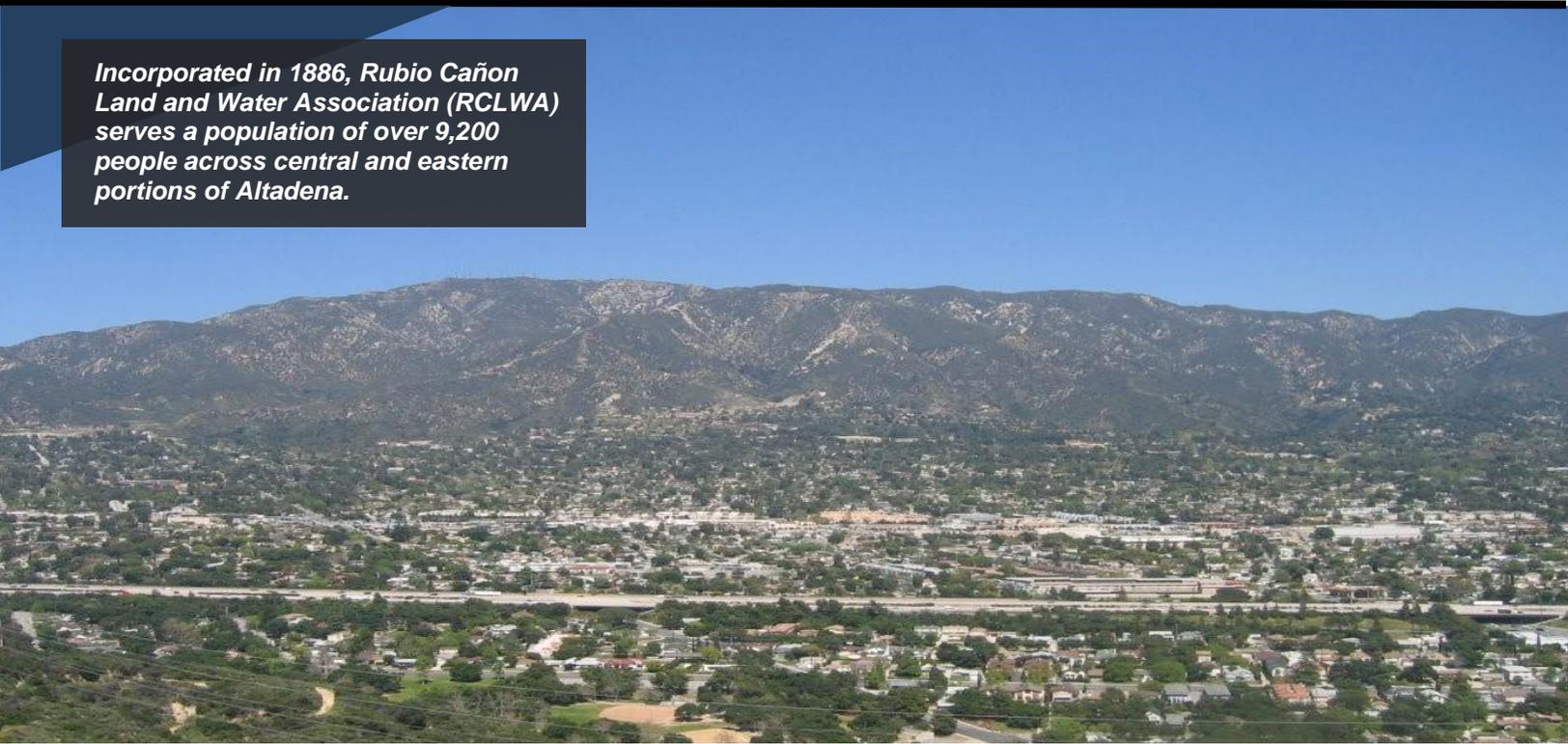
- Continuing a progressive and effective water conservation program.
- Supplementing water supplies through water transfers and exchanges.
- Replacing deteriorating water infrastructure through a proactive capital improvement



program, which will reduce water main leaks and conserve water.

- Implementing shortage response actions under the WSCP to conserve limited supplies.

Incorporated in 1886, Rubio Cañon Land and Water Association (RCLWA) serves a population of over 9,200 people across central and eastern portions of Altadena.



SECTION 1: INTRODUCTION

RUBIO CAÑÓN LAND AND WATER ASSOCIATION | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 1

INTRODUCTION

1.1 URBAN WATER MANAGEMENT PLAN PURPOSE & SUMMARY

This is the 2020 Urban Water Management Plan (UWMP) for Rubio Cañon Land and Water Association (RCLWA). This plan has been prepared in compliance with the Urban Water Management Planning Act (Act), which has been codified at 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 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 (DWR) every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. (See generally Wat. Code § 10631).



Figure 1.1: UWMPs Comply with State Water Code



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 (SBx7-7). The requirements of this bill states 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 are no 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 provide an assessment of the water resource needs of RCLWA. Specifically, this document will provide water supply planning for a 25-year planning period in 5-year increments and effectively revises RCLWA’s 2015 UWMP.

The 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. 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 RCLWA.

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 is 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 from the 2020 UWMP.

Wholesale water suppliers, including RCLWA'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 RCLWA achieve the 20x2020 goal. FMWD works with RCLWA to promote water use efficiency within its service area. FMWD's main role on behalf of RCLWA is to administer various conservation programs, including Metropolitan Water District of Southern California's (MWD) rebate programs. Before conservation program budgets are approved by the FMWD's Board of Directors, they are vetted with RCLWA and other retail agencies.



Figure 1.2: SBx7-7 Aims to Protect Water Sources, Including the Bay-Delta Pictured Above



1.4.3 FORMAT OF THE REPORT

The sections and information contained in this 2020 UWMP correspond to the items in the Act and other amendments to the Water Code, as follows:

Section 1 - Introduction	This section describes the UWMP Act, RCLWA's planning and coordination process, the history of RCLWA'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 RCLWA’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 RCLWA's water supplies and how RCLWA handles those supplies. This section also discusses the quality of RCLWA's water sources, including a discussion on the treatment and testing of water.
Section 4 – Conservation Measures	This section addresses RCLWA’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 RCLWA's contingency planning in the event of a water supply interruption, such as a drought or catastrophe. This section also discusses RCLWA’s Board adopted Conservation Plan and MWD’s 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 RCLWA'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 RCLWA, used to prepare this 2020 UWMP.

1.5 AGENCY OVERVIEW

RCLWA was incorporated in 1886 by early settlers in order to take water from the San Gabriel Mountains and supply it to Altadena. RCLWA is a nonprofit mutual water company, and serves the central and eastern portions of Altadena, an unincorporated area of LA County. Currently, RCLWA provides water to over 9,215 people through 3,131



service connections. RCLWA's service area is mostly built-out with no plans for new development.

RCLWA has a 5-person Board of Directors who participate in the management of the Association. The current members of the Board of Directors are:

- *Dr. Janet Fahey – Board President*
- *James W. Graunke – Vice President*
- *John Vrsalovich – Secretary-Treasurer*
- *Wallace Weaver – Board Director*
- *Jay T. Mohr – Board Director*

RCLWA's mission statement is: "*To provide shareholders within its service area with adequate and reliable supplies of high quality water to meet present and future needs in an environmentally and economically responsible way.*"

1.6 SERVICE AREA AND FACILITIES

1.6.1 SERVICE AREA DESCRIPTION

RCLWA's provides water service to the central and eastern sections of Altadena, which is an unincorporated area of Los Angeles bordering the City of Pasadena. The service area is bounded on the west by the Lincoln Avenue Water Company, on the south and east by the City of Pasadena, on the northwest by the Las Flores Water Company, and on the north by the San Gabriel Mountains.

Most of RCLWA's shareholder/customer services are single-family residential or small apartments/condominiums. Its local water sources are production from wells in the adjudicated Monk Hill Basin of the Raymond Groundwater Basin and treated runoff from Rubio Canyon in the San Gabriel Mountains. These supplies are supplemented with imported water from MWD through FMWD, the regional wholesaler. **Figure 1.4** shows RCLWA's service boundaries.



Figure 1.3: A portion of RCLWA's Service Area



1.6.2 RCLWA'S WATER FACILITIES

RCLWA provides potable drinking water from three sources: imported water from FMWD, local groundwater from wells, and a conventional treatment plant that treats canyon water. Imported water is obtained from the FMWD, a wholesaler and member agency of MWD. In a typical year, during the months of November through April, RCLWA does not operate its wells and, therefore, imports water almost exclusively during this period. Throughout the remaining months of the year, RCLWA operates its wells as the primary source of water. Some years, however, RCLWA may operate its wells all year-round if a water lease agreement is in effect. RCLWA also acquires surface water from Rubio Canyon. The canyon water is supplied through a shallow shaft well (Well #3), the Rubio stream, and a tunnel called Carter Tunnel. This water is then treated at RCLWA's treatment plant to produce a potable supply.

RCLWA is committed to protecting statewide water sources by working on achieving its water use targets and reducing water demand. RCLWA's water demand is mostly residential with some commercial and no industrial.



SECTION 2: WATER DEMANDS

RUBIO CAÑÓN LAND AND WATER ASSOCIATION | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 2

WATER DEMAND

2.1 OVERVIEW

Water use within RCLWA's service area includes residential potable use, commercial use, 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 RCLWA's service area is largely residential, changes in residential plumbing fixtures and customer usage habits can significantly affect water usage. RCLWA is able to meet its demands with a blend of groundwater, surface water, and imported water.

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

2.2 FACTORS AFFECTING DEMAND

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

2.2.1 CLIMATE CHARACTERISTICS

RCLWA services a portion of Altadena. Altadena has a Mediterranean climate with mild and dry summers, and cool winters. The region is subject to wide variations in annual precipitation, and also experiences periodic wild fires. The average annual rainfall is 24.6 inches per year. This translates to a region with low rainfall, prone to droughts. This type of climate is shown similarly throughout Southern California. **Figure 2.1** shows the historical average rainfall for RCLWA from 1951 to 2015.

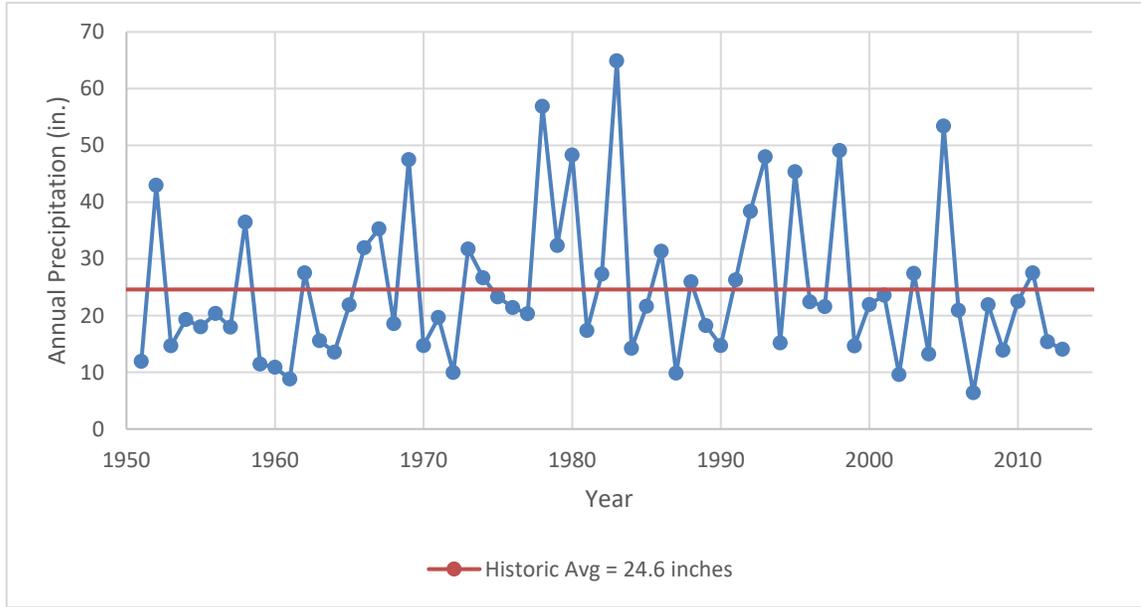


Figure 2.1: Historic Rainfall for RCLWA

The sources of RCLWA’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 RCLWA and Southern California.

Climate fluctuations not only can increase or decrease demand, but can also directly affect RCLWA's ability to meet demand, since reduced precipitation and snowfall means less groundwater replenishment. When faced with reduced groundwater supplies, RCLWA will look to FMWD for supplemental supplies



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, RCLWA is already planning ahead to ensure long lasting reliability of its source for their customers.



2.2.2 DEMOGRAPHICS

RCLWA serves a population of 9,215 people. The population within RCLWA’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 population projections 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	9,215	9,360	9,508	9,658	9,810	9,965

The service area populations for RCLWA was determined using the DWR Population Tool (“WUE”) that 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



Figure 2.3: Land Use in RCLWA’s Service Area

count on service connections would provide the current service population. Future service population can be projected based on the average growth factor.

The DWR Population Tool shows that the population within RCLWA service boundaries is decreasing over time. Using the depreciating population rate obtained from the tool will not represent the future service population estimates for RCLWA. According to the U.S. Census data, Altadena population shows an increase in from 2000 to 2020. In addition, the population tool was applied for the development of Lincoln Avenue Water Company (LAWC) and the tool also shows an increasing population as well. LAWC services the northwest portion of Altadena and the population characteristics should be as similar to those of RCLWA. The population growth rate for LAWC was 0.3 percent annually and it was applied to RCLWA to project future population.

RCLWA 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.



2.2.3 LAND USE

Undeveloped land suitable for future building is nearly non-existent in the RCLWA service area. There have been no major developments which have significantly changed the population density and/or water use and currently none are proposed; however, there is a possibility for growth from very small redevelopment projects.

2.2.4 LEGISLATION

The passage of SBx7-7, discussed in **Section 2.4**, has increase efforts to reduce the use of potable supplies in the future. As a retailer, RCLWA 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) per Governor Brown’s Executive Order B-29-15. MWELo promotes efficient landscapes in new developments and retrofitted landscapes.

The revised MWELo increases water 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 that can be covered in turf. It also required reporting 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 RCLWA’S SERVICE AREA

The knowledge of an agency’s water consumption by type of use or by customer class is key to developing the agency’s water use profile which identifies when, where, and how much water is used, and by whom within the water 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 RCLWA’s water consumption by customer type in 2015 to 2020. The customer classes are categorized as follows: single-family residential, multi-family residential, commercial/industrial/institutional (CII), dedicated landscape,



and agriculture. Other water uses consist of fire service usage, sales to other agencies, and so forth. Non-revenue water is discussed later in this section.

2.3.1 HISTORIC WATER DEMAND

Water demands within the RCLWA's service area over the past six years are met by groundwater from the local basin, surface water in the local area, and imported water from FMWD. Annual water use since 2015 has ranged from about 1,744 AF to 2,229 AF 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	1,722	1,731	1,945	2,017	1,833	2,175

2.3.2 WATER USE STATISTICS

RCLWA maintains records of water consumption and bills its customers on a monthly basis for its water service. Residential water use accounts for approximately 90 percent of RCLWA's water demands. The other 10 percent is attributed to commercial and small business users. RCLWA does not provide any sales to industrial, institutional and governmental or

Table 2.3: 2015 & 2020 Service Accounts by Sector

Sector	2015	2020
Single-Family Residential	3,044	2,778
Multi-Family Residential	60	215
Commercial/Institutional	24	117
Industrial	0	0
Landscape Irrigation	9	18
Other	3	3
Total Connections:	3,140	3,131

landscape users, except as incidental to residential use. It does not sell water to other agencies, agricultural users, or for use in saline water intrusion barriers. The total number of service connections and water consumption is shown in **Tables 2.3** and **2.4**, respectively. RCLWA does not sell water to other agencies except in case of emergencies.



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	1,725
Multi-Family		Drinking Water	168
Commercial	w/ Institutional	Drinking Water	126
Landscape		Drinking Water	24
Losses		Drinking Water	132
TOTAL			2,175

2.3.3 NON-REVENUE WATER (INCLUDING "WATER LOSSES")

RCLWA’s distribution system water losses are the physical water losses from the distribution system up to the point of customer consumption. A portion of the amount is due to water losses resulting from pressure testing, main flushing, leaks ruptures and meter inaccuracies. This can be seen in the negative losses (theoretical gains) as shown in **Table 2.5**. Water losses is calculated based on the water system balance methodology developed by the American Water Works Association (AWWA) through water loss audit forms. These forms are required to be validated and submitted to DWR on an annual basis. Note that RCLWA has completed and validated their water loss audit forms for 2016 to 2019. The water loss for 2020 is an estimate based on the difference between supply and consumer consumption.

Table 2.5: 2016 - 2020 Water Losses (DWR Table 4-4)

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss (AF)
01/2016	91.409
01/2017	114.281
01/2018	86.200
01/2019	29.221
01/2020	132.000

2.4 WATER CONSERVATION ACT

2.4.1 SBX7-7 BACKGROUND

Due to reductions of water in the San Joaquin Delta, the 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 2020 and 2015 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



Figure 2.4: RCLWA Water Conservation Efforts Include Drought Tolerant Landscape

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 still has 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 will make a retail agency ineligible for grants and loans from the State needed to attain water self-sufficiency by 2020; however, if an agency that is not in compliance documents a plan and obtains funding approval to come into compliance, then could become eligible for grants or loans.

Wholesale water suppliers, including FMWD, are required to include in their UWMPs discussions of programs they intend to implement to support water demand reduction goals for RCLWA. Although wholesale water suppliers are not required to determine baseline



daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, programs that the wholesale supplier implements may support the retail water suppliers to attain their goals and targets

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** on the following page. Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. RCLWA 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**.

SBx7-7 recognizes different hydrologic regions and allows for conservation targets to be set based partly on regional targets.

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. Regions with more affluence, such as Beverly Hills, typically consume more water and therefore have higher per capita water use numbers. 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 2.6** 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 2.6: 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: <ul style="list-style-type: none"> ○ Residential indoor water use of 55 GPCD ○ Landscape water use equivalent to 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: <ul style="list-style-type: none"> ○ Total Savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings

2.4.4 RCLWA'S COMPLIANCE OPTION SELECTION

To satisfy the provisions of SBx7-7, RCLWA previously established a per capita water use target for the year 2020 as well as an interim target (2015) in its 2010 UWMP. DWR provided guidelines for determining these targets in its *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (released 2010; revised in 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 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.

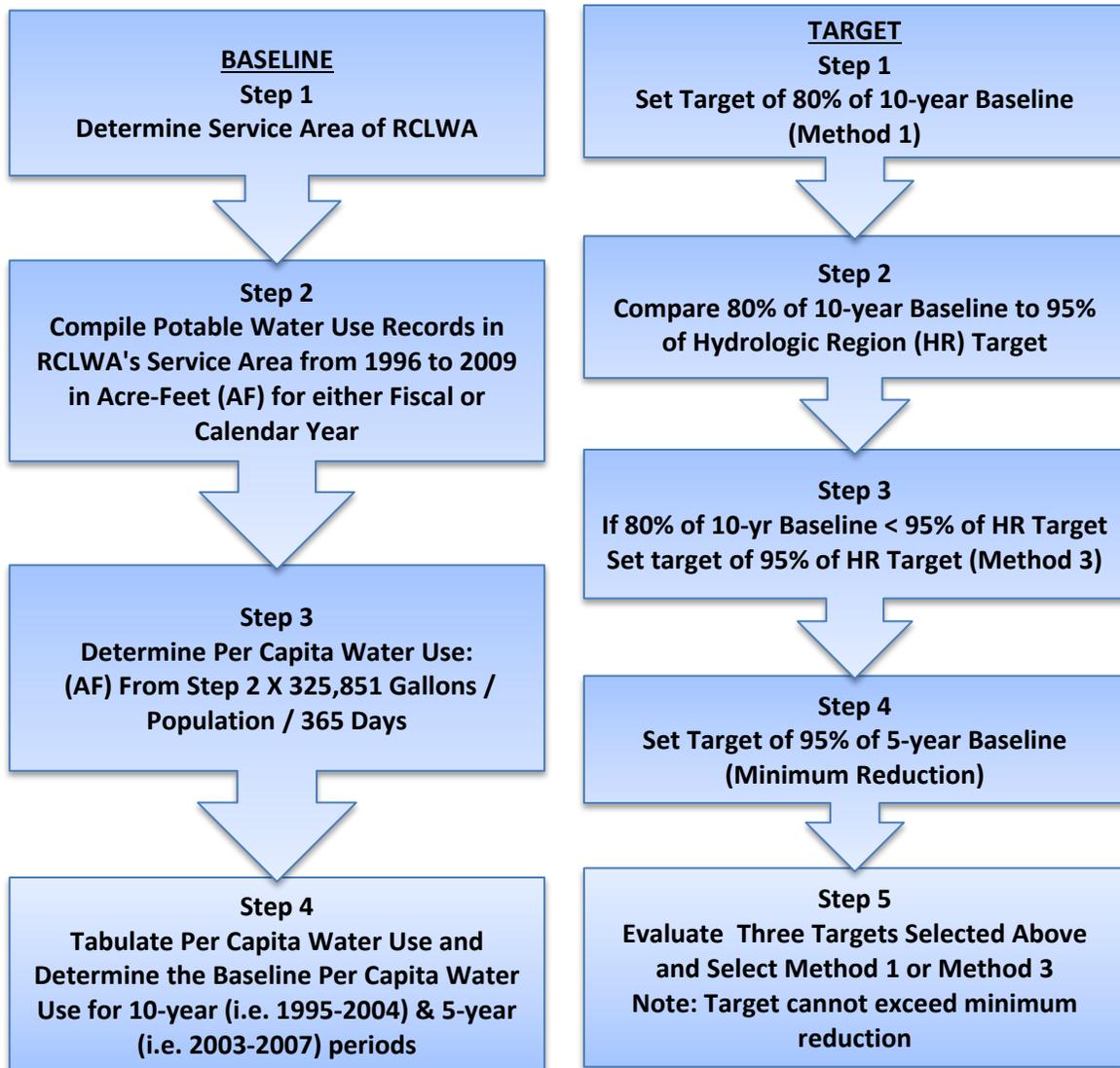


Figure 2.7: Procedure for Determining Baseline and Per Capita Water Use

While each retail agency is 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 RCLWA to determine its water use targets for Compliance Options 2 and 4 since RCLWA 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 gallons per capita per day (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

While reviewing the baseline calculations performed for the 2010 UWMP, it was observed that the service area populations for 1999 to 2008 were not obtained from the U.S. Census. According to Methodology 2: Service Area Population of DWR's *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*, if a water supplier did not use Census data to calculate baseline population in the 2010 UWMP, the water supplier must recalculate the values for the 2015 UWMP using Census data. Therefore, RCLWA has revised their baseline water use and SBx7-7 targets for the 2015 UWMP.

Since RCLWA does not use recycled water, a 10-year instead of a 15-year rolling average was calculated. RCLWA's baseline water use is **231.4 GPCD**, which was obtained from the 10-year period July 1, 1998 to June 30, 2008.

Table 2.7 provides the base period ranges used to calculate the baseline water use for RCLWA as well as the service area population and annual water use data, which includes unaccounted for water, 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 RCLWA, it will need to meet the minimum water use target of 5 percent reduction from a five-year baseline as calculated.

2.4.6 SBx7-7 WATER USE TARGETS

In its 2010 UWMP, RCLWA has selected **Option 1**. Under Compliance Option 1, the simple 20 percent reduction from the baseline, RCLWA's 2015 interim water use target was 208 GPCD; the 2020 final water use target is **185 GPCD** as summarized in **Table 2.8**.



Table 2.7: Past GPCD Water Use

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
1999	9,642	2,464	228
2000	9,604	2,528	235
2001	9,568	2,421	226
2002	9,531	2,572	241
2003	9,495	2,397	225
2004	9,459	2,497	236
2005	9,423	2,292	217
2006	9,387	2,438	232
2007	9,351	2,569	245
2008	9,316	2,391	229
10-Year Average (1999-2008) Base Daily per Capita Water Use:			231
5-Year Average (2004-2008) Base Daily per Capita Water Use:			232

Table 2.8: Preferred Compliance Option and Water Use Targets

Option 1	Baseline	2015 Target	2020 Target
Simple 20 percent Reduction from Baseline	231	208	185

Table 2.9 shows RCLWA’s GPCD since 2015. In 2015, RCLWA achieved its interim 2015 target with a GPCD of 170; however, for 2020, RCLWA did not achieve its 2020 target by having a GPCD of 211 (2020 target was 185).

Table 2.9: Past 5-year GPCD Water Use

Calendar Year	Service Area Population	Gross Water Use (Acre-Feet)	Daily Per Capita Water Use (GPCD)
2015	9,182	1,744	170
2016	9,189	1,731	168
2017	9,195	1,945	189
2018	9,202	2,017	196
2019	9,208	1,833	178
2020	9,215	2,175	211



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

2.4.7 WATER DEMAND IMPACTS FROM COVID-19 PANDEMIC

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, the County of Los Angeles 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, Executive Order N-33-20 (“Safer at Home, Stay at Home” order) and a Public Health Order directed all Californians to stay home with the exception of going to an essential job or to shop for essential needs. This also required most Californians to work remotely from home.

This order, including the COVID-19 event in general, resulted in a significant increase to water demands for various water agencies, including RCLWA. As shown in **Table 2.9**, the gross water use in 2020 is significantly higher than the past year’s averages. In 2020, the water usage was 2,175 AF, whereas the average from 2015 to 2019 was 1,850 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. **Table 2.10** shows RCLWA not in compliance with their SBx7-7 2020 Target.



Table 2.10: RCLWA 2020 Compliance (DWR Table 5-2)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD		
211	0	211	185	NO

Although RCLWA did not achieve its 2020 water use reduction target, the prior years indicate that RCLWA was on track to meet their target goal. **Table 2.11** summarizes the water use comparisons between 2015 to 2019 average demands with 2020 demands. As previously mentioned, the average water use from 2015 to 2019 was 1,850 AF. The water usage in 2020 exceeded the average by 325 AF. Furthermore, the biggest increases from average came from single and multi-family usages where demand increased by 206 AF and 73 AF, respectively. This was a result of the COVID-19 pandemic as the majority of residents were forced to work from home.

Table 2.11: Water Demand Comparison for 2015 - 2019 Average and 2020 Demand (AF)

Use Type	2015 – 2019 Average Demand	2020 Demand	Difference
Single Family	1,519	1,725	+206
Multi-Family	95	168	+73
Commercial & Institutional	153	126	-27
Landscape	19	24	+5
Losses	63	132	+69
Total	1,850	2,175	+325

In addition, it is evident that RCLWA was on track to meet its 2020 target if the COVID-19 pandemic did not occur. Under this assumption, RCLWA’s water usage would average more closely to 1,850 AF. With the 2020 population of 9,215, RCLWA’s projected 2020 GPCD would be 179. This GPCD would allow RCLWA to achieve its 2020 target.

2.5 WATER USE REDUCTION PLAN

2.5.1 ON-GOING WATER CONSERVATION EFFORTS

In order to meet the SBx7-7 targets, RCLWA 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 its regional wholesaler, FWMD (via MWD).



FMWD helps its retail agencies with water use efficiency in its service area. FMWD's goal is to administer conservation programs, including MWD's rebate programs for its retail agencies. Before conservation program budgets are approved by the FMWD's Board, they are vetted with RCLWA and other member 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 RCLWA area. Through FMWD, RCLWA also offers landscaping contests, rain barrel rebate program, and public outreach, including MWD's California Friendly Landscape Program, in its effort to promote landscape water use efficiency.

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 gave an executive order in April 2015 which 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 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.

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.
- **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.

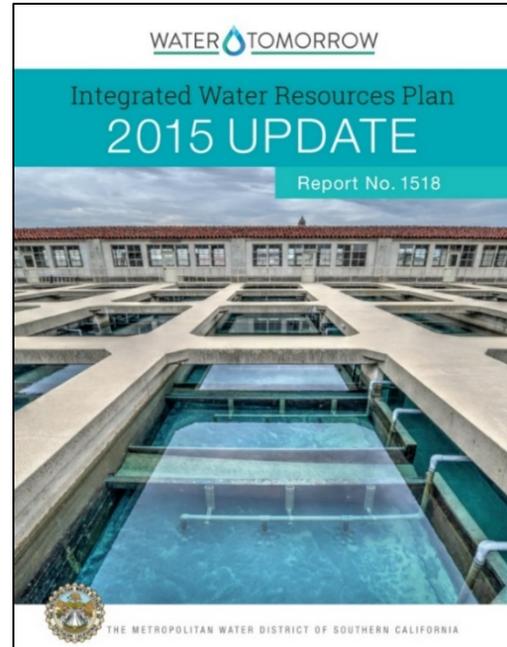


Figure 2.9: MWD’s 2015 Integrated Water Resources Plan

- **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 currently in the process of updating its IRP once again. The 2020 IRP is expected to be completed sometime in 2021.

2.6 DEMAND PROJECTIONS

2.6.1 25 YEAR PROJECTIONS

One of the main objectives of this UWMP is to provide RCLWA’s future water demand outlook. **Tables 2.12** and **2.13** project future demands based on water sector over the next 25 years. Demand projections were determined using 180 GPCD, based on average water demand from 2015 to 2019 (2020 excluded from average due to unusual increase in demand) and projection population growth. Per capita consumption rates should be expected to remain under 180 GPCD and trend further below that rate to continue water



conservation efforts to combat climate change. It is important to note that RCLWA does not use recycled water within its service boundaries. This is further discussed in **Section 6**.

Table 2.12: RCLWA'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		1,497	1,520	1,544	1,569	1,593
Multi-Family		146	148	150	153	155
Commercial	w/ Institutional	110	111	113	115	117
Landscape		21	21	21	22	22
Losses		114	116	118	120	122
TOTAL		1,887	1,917	1,947	1,978	2,009

Table 2.13: RCLWA Total Water Demands (AF) (DWR Table 4-3 Retail)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	2,175	1,887	1,917	1,947	1,978	2,009
Recycled Water Demand	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage	0	0	0	0	0	0
TOTAL WATER USE	2,175	1,887	1,917	1,947	1,978	2,009

2.6.2 LOW-INCOME HOUSEHOLD PROJECTIONS

One significant change to the UWMP Act since 2005 is the requirement that retail water suppliers 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 of the County of Los Angeles’ median income or less.

In order to identify the low-income housing projections within its service area, DWR recommends that retail suppliers rely on the Regional Housing Needs Assessment (RHNA) or Regional Housing Needs Plan information developed by the Local Council of Governments (COG), in coordination with the California Department of Housing and Community Development.



The RHNA process quantifies the need for housing by income group within each jurisdiction during specific planning period and is used in Housing Element and General Plan updates. COGs are required by the State Housing Law to determine the existing and projected regional housing needs for persons at all income levels. The RHNA is to prioritize local resource allocation and to help decide how to address existing and future housing needs.

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.

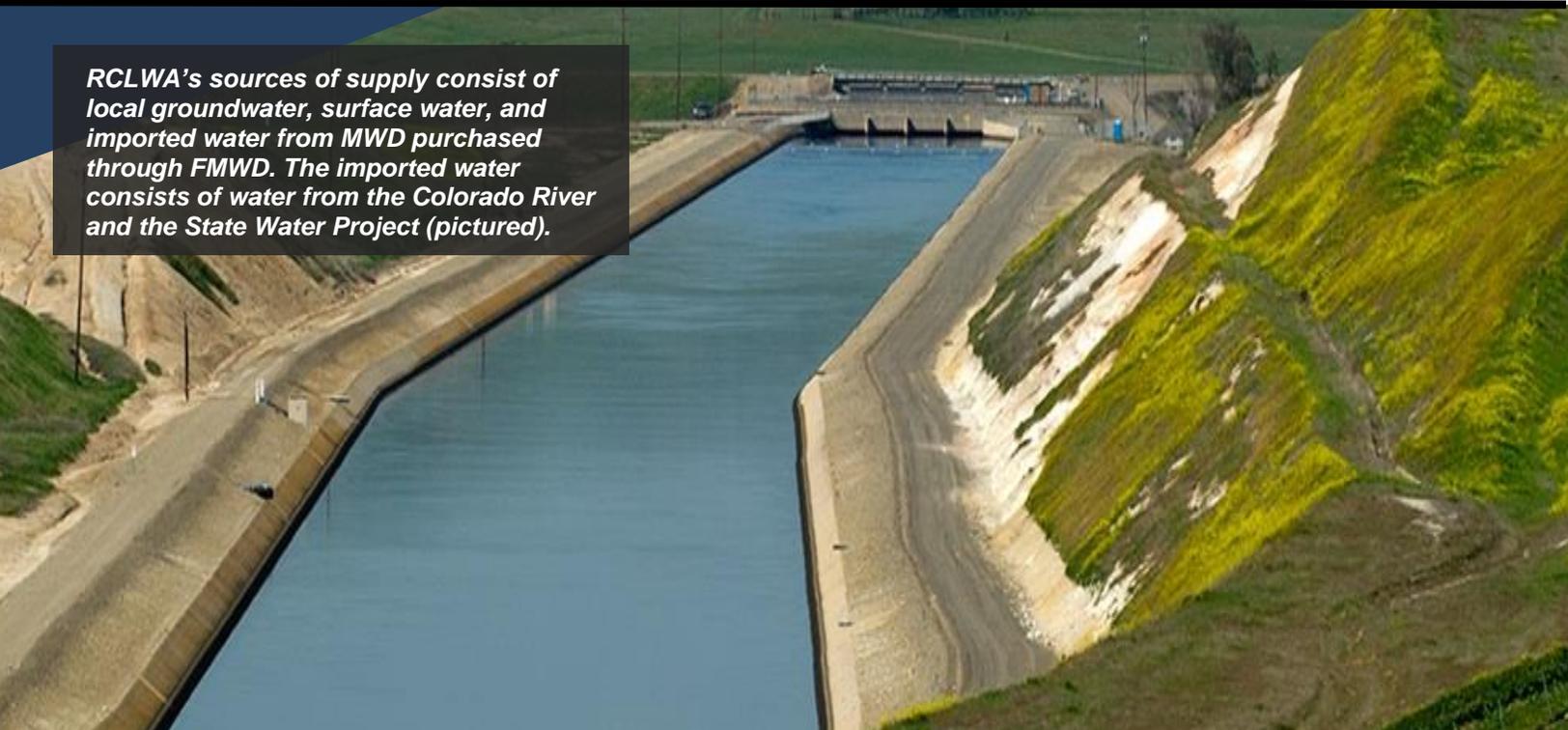
Therefore, from inference, it is estimated that approximately 6.7 percent of the projected residential water demands within RCLWA’s service area will be for housing needed for low-income households as shown in **Table 2.14**. Breakdown of demand for by sectors is not available; however, the majority of customers are residential single-family residents.

Table 2.14: Projected Water Demands for Housing Needed for Low Income Households (AF)

Water use Sector		2025	2030	2035	2040	2045
Single Family	Normal Demand	1,497	1,520	1,544	1,569	1,593
	Low-Income Demand	100	102	103	105	107
Multi-Family	Normal Demand	146	148	150	153	155
	Low-Income Demand	10	10	10	10	10
Total	Normal Demand	1,643	1,668	1,694	1,722	1,748
	Low-Income Demand	110	112	113	115	117



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RCLWA's sources of supply consist of local groundwater, surface water, and imported water from MWD purchased through FMWD. The imported water consists of water from the Colorado River and the State Water Project (pictured).

SECTION 3: WATER SOURCES & SUPPLY RELIABILITY

RUBIO CAÑÓN LAND AND WATER ASSOCIATION | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 3

WATER SOURCES & SUPPLY RELIABILITY

3.1 OVERVIEW

RCLWA's water supplies consist of groundwater produced from the Monk Hill Subbasin of the Raymond Basin (Basin), imported water purchased from FMWD, and treated surface water from Rubio Canyon. Between the months of November through April, the wells are not in operation. Water is imported almost exclusively during this period because imported water is readily available from FMWD during the winter months. For the remaining months, groundwater wells are the primary source of potable drinking water.

The sources of imported water supplies include the Colorado River Aqueduct (CRA) and the State Water Project (SWP). The surface water from Rubio Canyon is supplied through a shallow shaft (Well #3), the Rubio stream, and Carter Tunnel. This water is collected, treated, delivered to the canyon reservoir and then goes directly to the gravity-fed distribution system to our shareholders. 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.

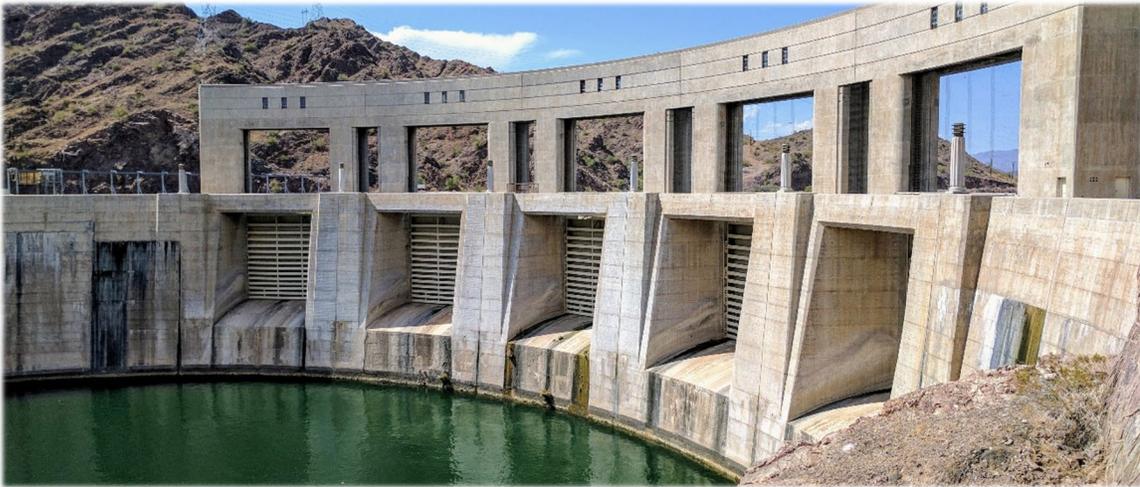


Figure 3.1: Parker Dam at Colorado River

BAY-DELTA

In addition to the Colorado River, the Sacramento-San Joaquin River Delta provides 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.



Figure 3.2: Sacramento-San Joaquin Delta



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 imported water, MWD uses 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 is known as the Colorado River Aqueduct (CRA). The CRA was constructed as a first order of business shortly after MWD's incorporation in 1928. The CRA is 242 miles long and carries water from the Colorado River to Lake Matthews and is managed by MWD.

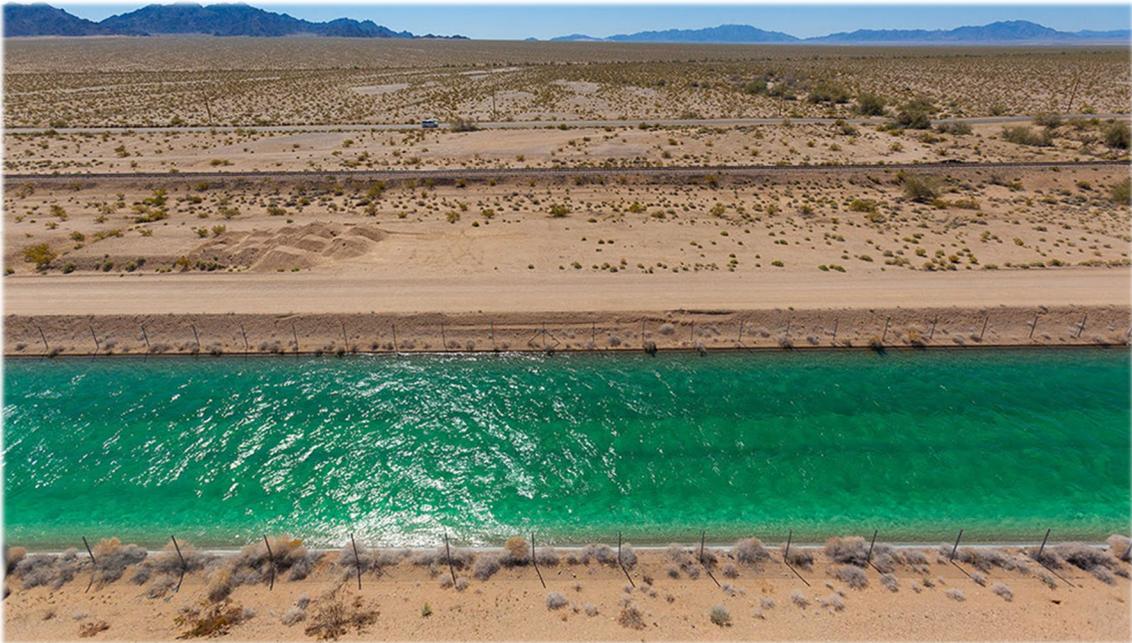


Figure 3.3: Colorado River Aqueduct

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.

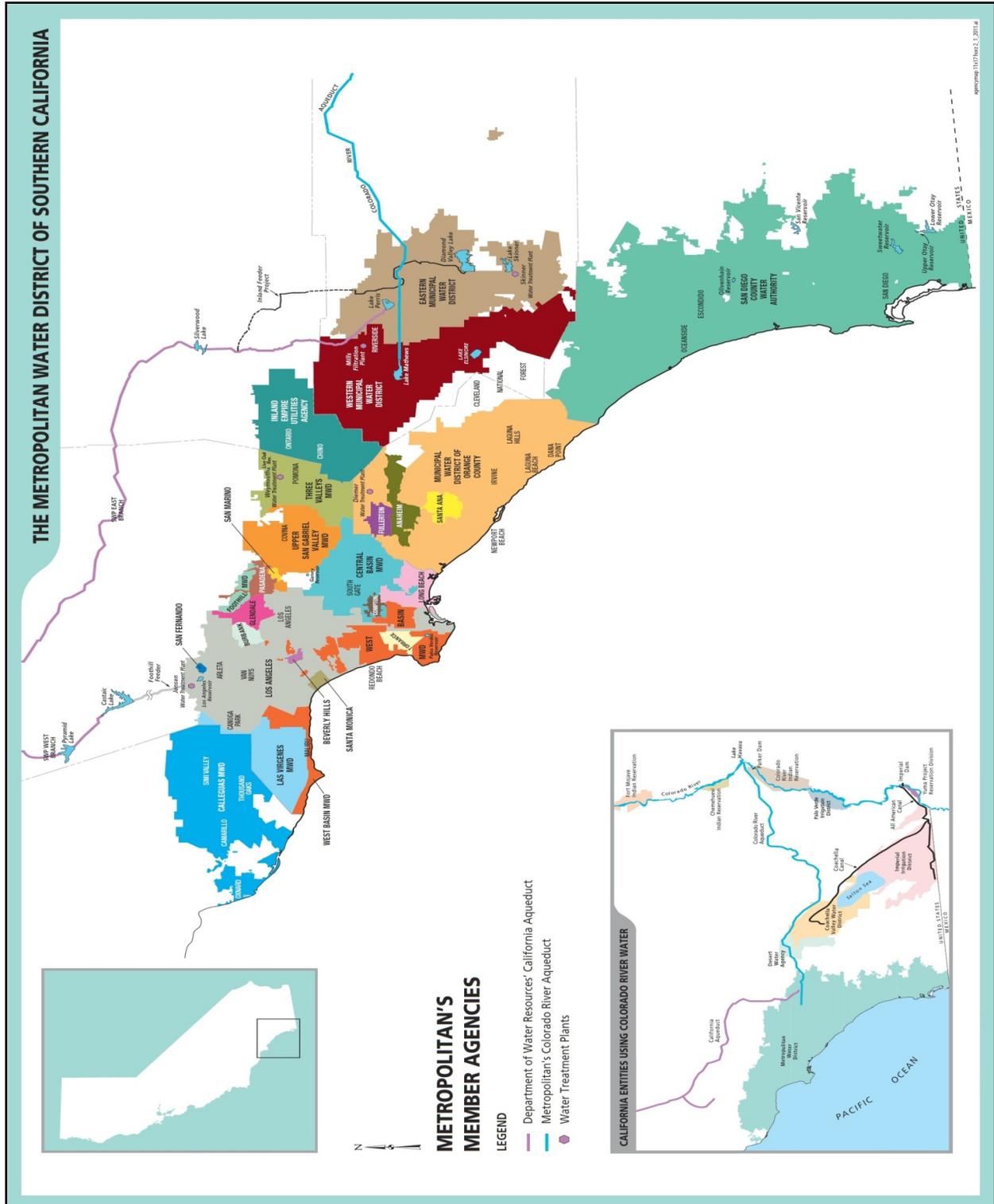


Figure 3.4: California Aqueduct or “SWP”

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 that are vital to the State. The major aqueducts in California are shown in **Figure 3.5** on the following page.



Figure 3.5: Aqueduct Systems in California



3.3 GROUNDWATER

Local potable water is produced from wells and treated runoff from the mountains. RCLWA is fortunate in that it has a relatively large allowable amount of groundwater that it may pump from the Monk Hill Subbasin of its adjudicated source, the Raymond Groundwater Basin (Basin). A copy of the judgment is included in this UWMP as **Appendix F**. The Basin, shown in **Figures 3.7** and **3.8**, is located in the northwest part of the San Gabriel Valley, in eastern Los Angeles County, and was considered a part of the San Gabriel Valley Groundwater Basin (4-13) in DWR Bulletin 118-75 and Bulletin 118-80. The Raymond Basin includes the water-bearing sediments bounded by the contact with consolidated basement rocks of the San Gabriel Mountains on the north and the San Rafael Hills on the southwest. The west boundary is delineated by a drainage divide at Pickens Canyon Wash, and the southeast boundary is the Raymond fault. The average precipitation over the basin is about 22 inches.

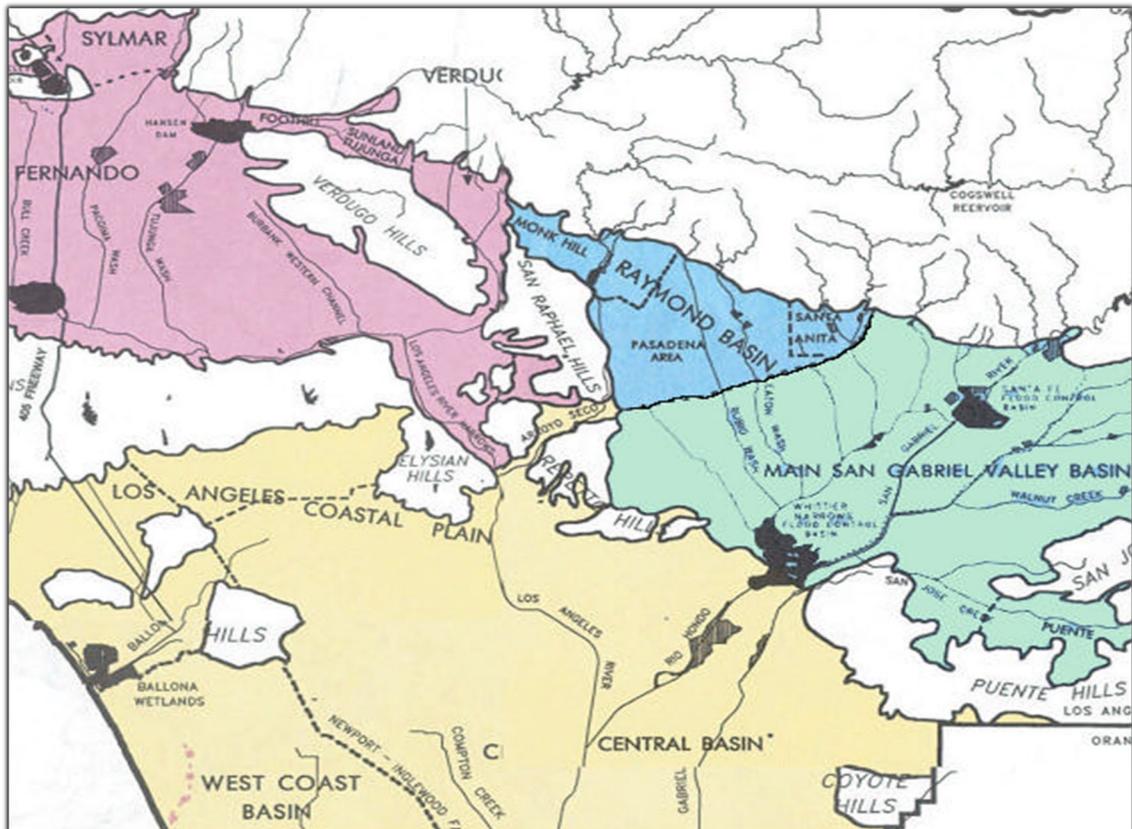


Figure 3.7: Local Groundwater Basins

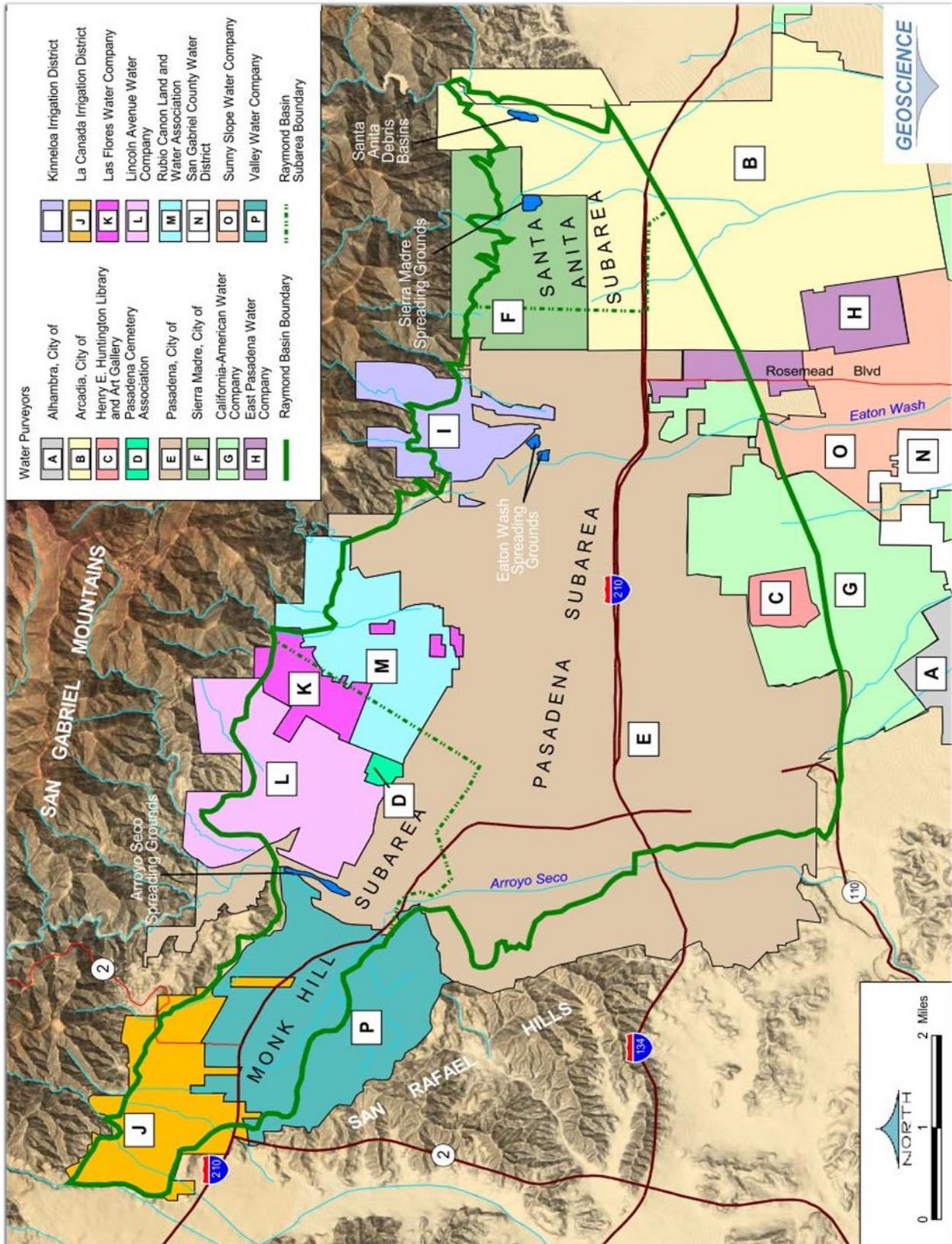


Figure 3.8: Raymond Basin (Outlined in Solid Green)

Natural recharge to the basin is mainly from direct percolation of precipitation and percolation of ephemeral streamflow from the San Gabriel Mountains in the north. The principal streams bringing surface inflow are the Arroyo Seco, Eaton Creek and Santa Anita Creek. Some stream runoff is diverted into spreading grounds, and some is impounded behind small dams allowing the water to infiltrate and contribute to groundwater recharge of the basin. An unknown amount of underflow enters the basin from the San Gabriel Mountains through fracture systems.

Water levels in the Raymond Basin have varied through time but are managed to stay within limits of a long-time mean elevation. Hydrographs show the range of fluctuation in water level over the last 20 years to be about 50 to 60 feet in the northwest, 80 feet in the central, 30 feet in the south, and 140 feet in the northeast portions of the basin. Most hydrographs show 1999 water levels within about 30 feet of their long-time mean elevations.

The total storage capacity of the basin was calculated at 1,450,000 AF applying specific yield values ranging from 3 to 35 percent to all aquifer material from 20 feet below the surface to the base of sediments. This value is based on a surface area of 26,200 acres, an average thickness of about 550 feet, and an average specific yield of about 10 percent. No estimates of available storage have been made recently in the basin, although a 1971 DWR study estimated the available stored water to be 1 MAF in 1970, leaving about 450,000 AF of storage space available.

3.4 SURFACE WATER

RCLWA has rights to all water supplies from Rubio Canyon. The canyon water is supplied through a shallow shaft well (Well #3), the Rubio stream, and the Carter Tunnel. This water is collected and treated at the RCLWA's Ames Treatment Plant (via conventional water treatment units) to remove contaminants and produce potable drinking water. From the treatment plant, the treated water is delivered to the Canyon Reservoir and then goes directly to the gravity-fed distribution system to RCLWA's shareholders (water customers).



Figure 3.9: Surface Water from Rubio Canyon is treated at RCLWA's Ames Treatment Plant

3.5 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, RCLWA provides annual Water Quality Reports to its customers. The quality of water delivered to the customers is directly related to the quality of the supply sources from which RCLWA obtains its water.



Figure 3.10: Health Standards Protect Drinking Water

To ensure quality of its water, RCLWA is concerned with a number of threats 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 that may occur if contaminants are ingested at unsafe levels over many years.

The three main sources of RCLWA's water supply are groundwater from the Raymond Basin, surface water from Rubio Canyon, and imported water purchased from FMWD via MWD. Since MWD draws the majority of its water from the CRA and the SWP, the quality of RCLWA's water supply is closely related to the quality of these two sources.

3.5.1 IMPORTED WATER QUALITY

MWD is responsible for providing water of a high quality throughout its service area. The water that MWD delivers 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 waters. MWD's supplies originate primarily from the CRA and from the SWP. A blend of these two sources, proportional to each year's availability of the source, is then treated and delivered throughout MWD's service area.

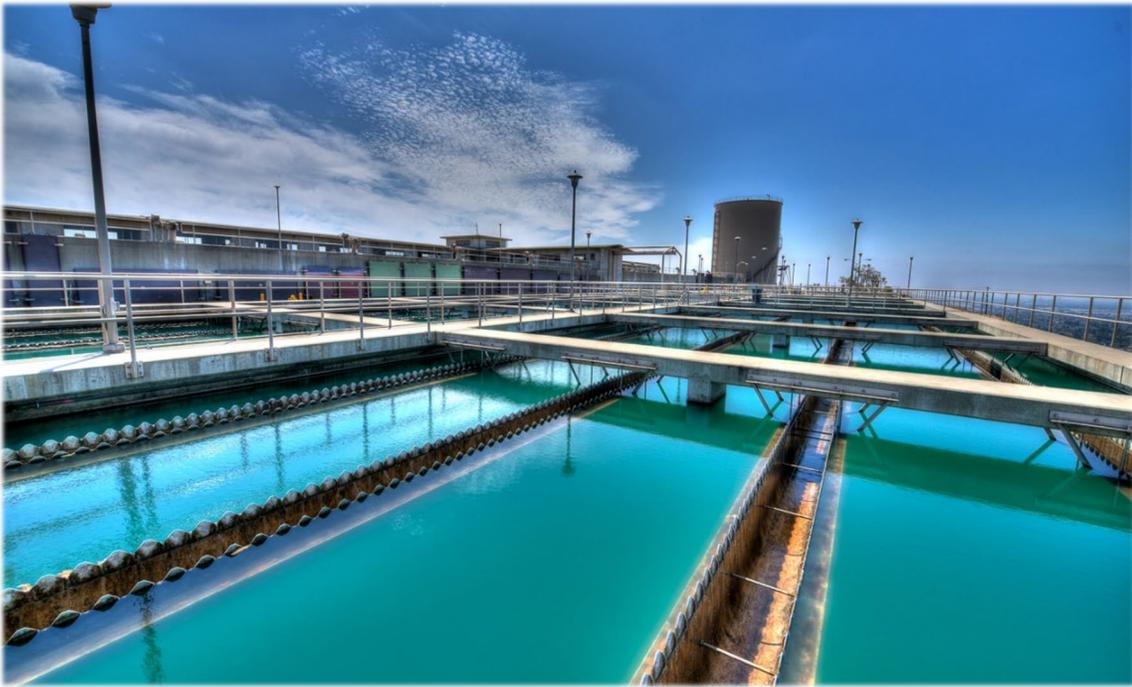


Figure 3.11: MWD's Weymouth Treatment Plant Provides a Safe Supply of Water

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 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.

While unforeseeable water quality issues could alter reliability, MWD's current strategies ensure the deliverability of high quality water. As a result of MWD's efforts, MWD's 2020 UWMP indicates that none of the water quality challenges described above will impact the reliability of its supplies during the next 25 years.



Figure 3.12: Native Rock adds to the Salinity of the Colorado River Water Supplies

3.5.2 GROUNDWATER QUALITY

RCLWA's water system is and has been in compliance with all the water quality standards of the State Water Resources Control Board's Division of Drinking Water (DDW).

LAWC has been working with the National Aeronautics and Space Administration (NASA) with maintaining water quality standards since 1990s. NASA recognizes the chemical contamination originated from the Jet Propulsion Laboratory (JPL) that raises significant issues regarding groundwater quality. As a result, NASA has created the Groundwater Cleanup Program in conjunction with NASA's cleanup responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Currently, NASA's JPL have two treatment facilities and one currently in construction to aid in the chemical cleanup.

RCLWA and LAWC share the same groundwater source from the Raymond Basin. It is crucial for NASA's ambitious goal for groundwater cleanup to occur to allow clean water access to local water agencies that uses the Raymond Basin as a supply source.

Table 3.1 shows the impact in AFY that water quality would have on supply.



Table 3.1: Water Quality – Current and Projected Water Supply Impacts (AF)

Wholesaler Source	2020	2025	2030	2035	2040	2045
Imported	0	0	0	0	0	0
Local	0	0	0	0	0	0

3.6 CURRENT WATER SUPPLY

3.6.1 IMPORTED WATER PURCHASES

Currently, RCLWA does not rely on imported water wholesaled by MWD through FMWD. MWD’s principal sources of water originate from the Colorado River via the Colorado River Aqueduct and the Lake Oroville watershed in Northern California through the SWP. This water is treated at MWD’s Weymouth Treatment Plant.

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

Table 3.2: Amount of Water Imported in 2015 – 2020 (AF)

Wholesaler Source	2015	2016	2017	2018	2019	2020
FMWD	0	0	0	0	0	0
% of Total Water Supply	0%	0%	0%	0%	0%	0%

Currently, RCLWA operates independently using local water sources and only request imports from MWD via FMWD only on an emergency basis.

3.6.2 GROUNDWATER PRODUCTION

The Raymond Basin was adjudicated in 1944. This adjudication established a management that uses a fixed safe-yield operation of 1,221 AFY. This is supplemented by a spread credit of



80 percent of the measured water that is not input to the Ames Treatment Plant and flows into the spreading basins. All water that flows into the spreading basin is metered with an allowable extraction based on Raymond Basin Management Board percolation calculation.

Table 3.3 shows RCLWA's recent groundwater production from the Basin in the past seven years from 2015 to 2020. RCLWA is able to pump over their adjudicated right due to pumping leases with City of Pasadena, storage credits, and carryovers. Current lease agreement with the City of Pasadena equates to 600 AFY.

Table 3.3: Amount of Groundwater Pumped in 2015 – 2020 (AF)

Basin Name(s)	2015	2016	2017	2018	2019	2020
Raymond Basin GW	1,634	1,663	1,819	1,953	1,619	2,028
% of Total Water Supply	95%	96%	94%	97%	88%	93%

3.6.3 SURFACE WATER PRODUCTION

Treated surface water from Rubio Canyon has supplied RCLWA with an average of 118 AFY (around 7 percent of total supplies) over the past 6 years. **Table 3.4** below shows the amount of surface water supplied by RCLWA to its customers each year for the past seven years.

Table 3.4: Amount of Surface Water Delivered in 2015 - 2020 (AF)

Surface Water Source	2015	2016	2017	2018	2019	2020
Rubio Canyon	88	68	126	64	214	146
% of Total Water Supply	5%	4%	6%	3%	12%	7%

3.6.4 SUMMARY OF WATER SUPPLIES

Table 3.5 shows RCLWA's water supplies and max total right / safe yield in 2020. As shown, RCLWA does not use 100 percent of their full supply capabilities to meet their demands.



Table 3.5: RCLWA Water Supplies in 2020 (AF) (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Purchased or Imported Water	from FMWD	0	Drinking Water
Groundwater (not desalinated)	Raymond Basin	2,028.5	Drinking Water
Surface Water (not desalinated)	Rubio Canyon	146.3	Drinking Water
Total		2,174.8	

3.7 PROJECTED CLIMATE CHANGE IMPACTS

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 uses 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. Using the extended drought scenario tool on Cal-Adapt provided projections on impacts on RCLWA 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.

3.7.1 TEMPERATURE

Under an extended drought period scenario from 2023 to 2042, maximum and minimum temperatures are anticipated to increase as shown in **Figures 3.13** and **3.14**, 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 3.6**.

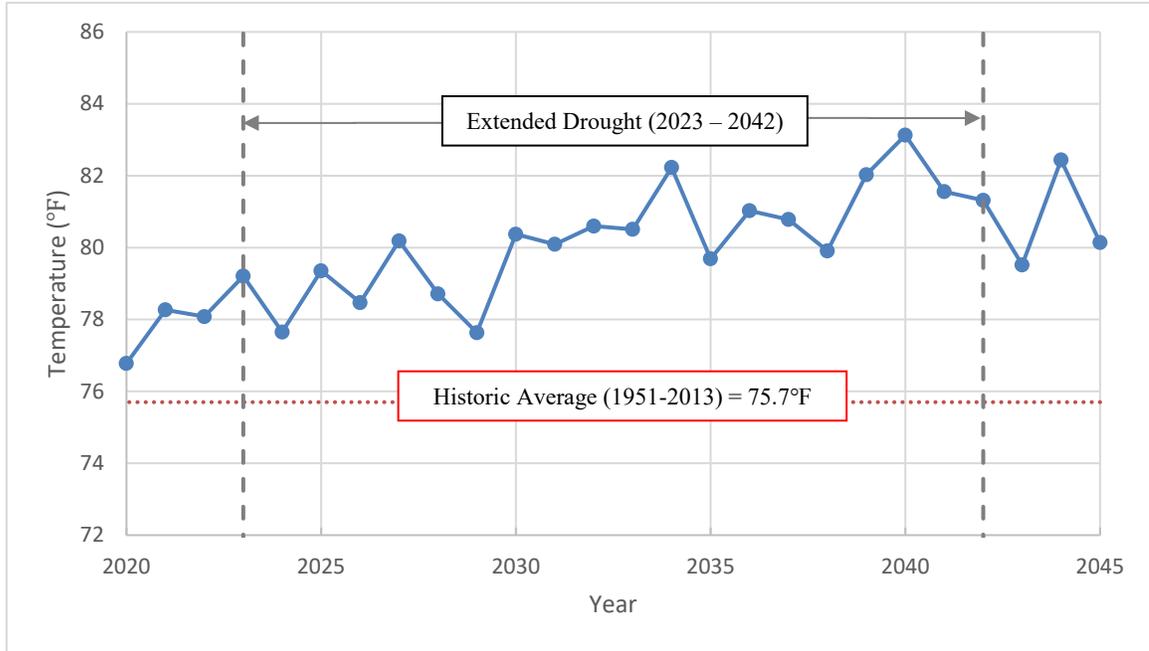


Figure 3.13: Extended Drought Scenario - Maximum Daily Average Temperatures

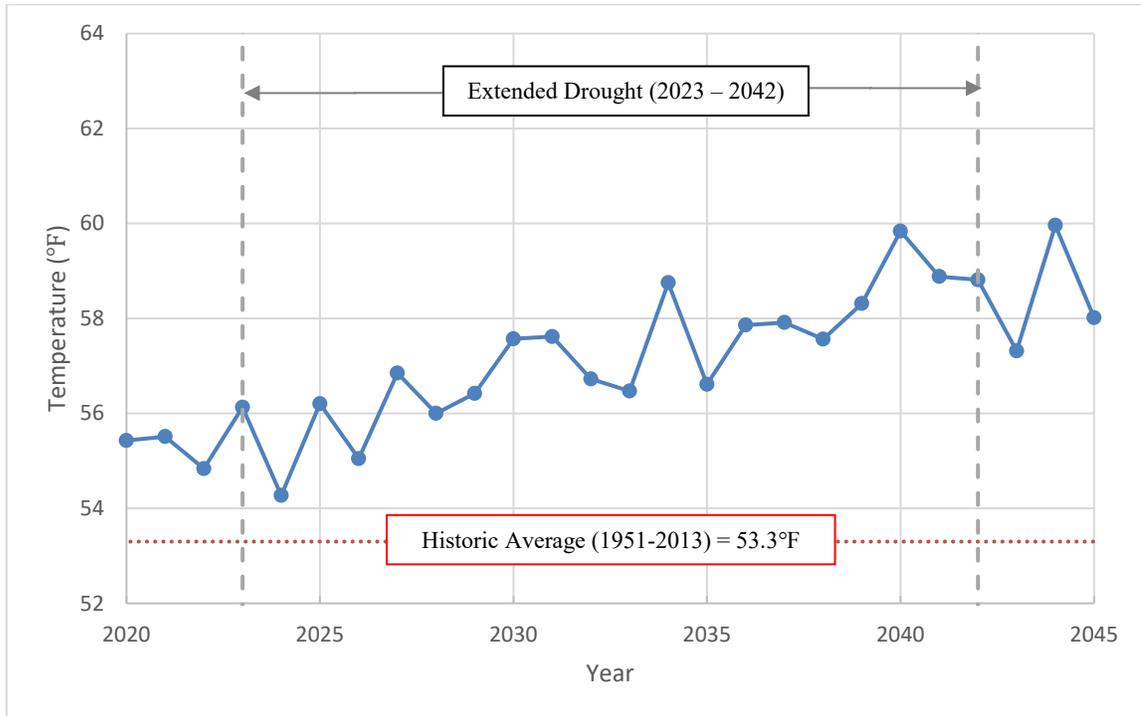


Figure 3.14: Extended Drought Scenario - Minimum Daily Average Temperatures

Table 3.6: Comparison Between Historic and Projected Min/Max Temperatures Under Extended Drought Scenario (2023 – 2042)

	Temperatures (°F)	
	Minimum	Maximum
Historic (1951-2013)	53.3	75.7
Projected (2023-2042)	57.1	79.9
Difference	+3.8	+4.2

3.7.2 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 3.15**. This is also relating to reduced stormwater runoffs in a similar trend to precipitation as shown in **Figure 3.16**; however, the scenario projected several periods of significantly above average rainfall and runoff volume. **Table 3.7** 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.

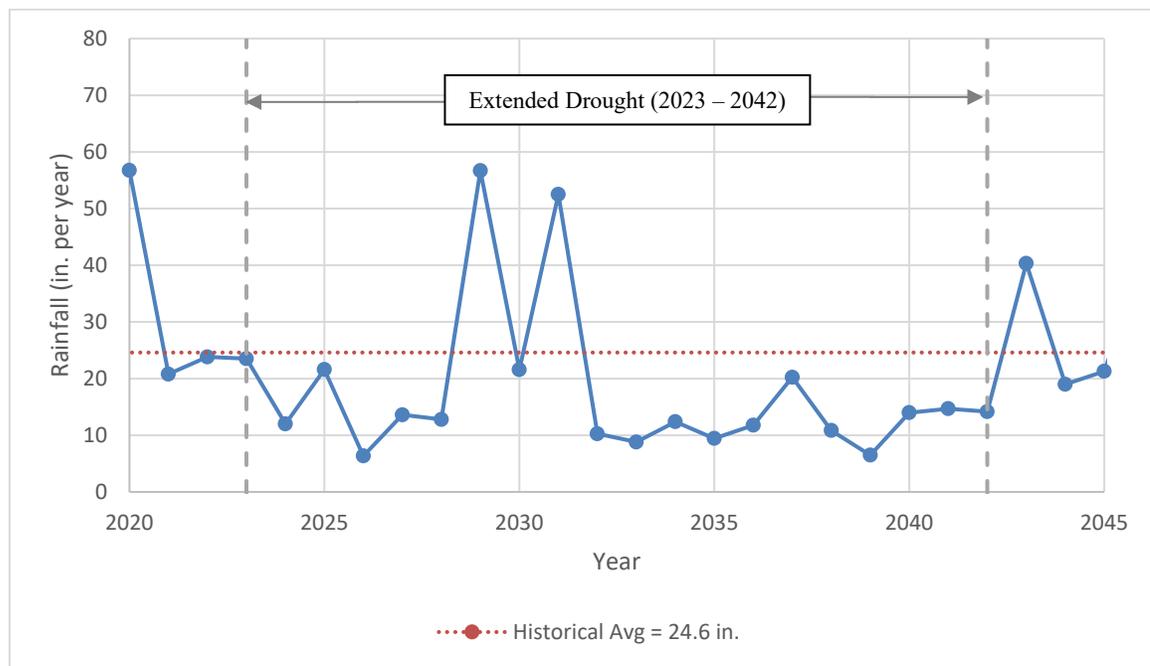


Figure 3.15: Extended Drought Scenario – Projected Annual Rainfall

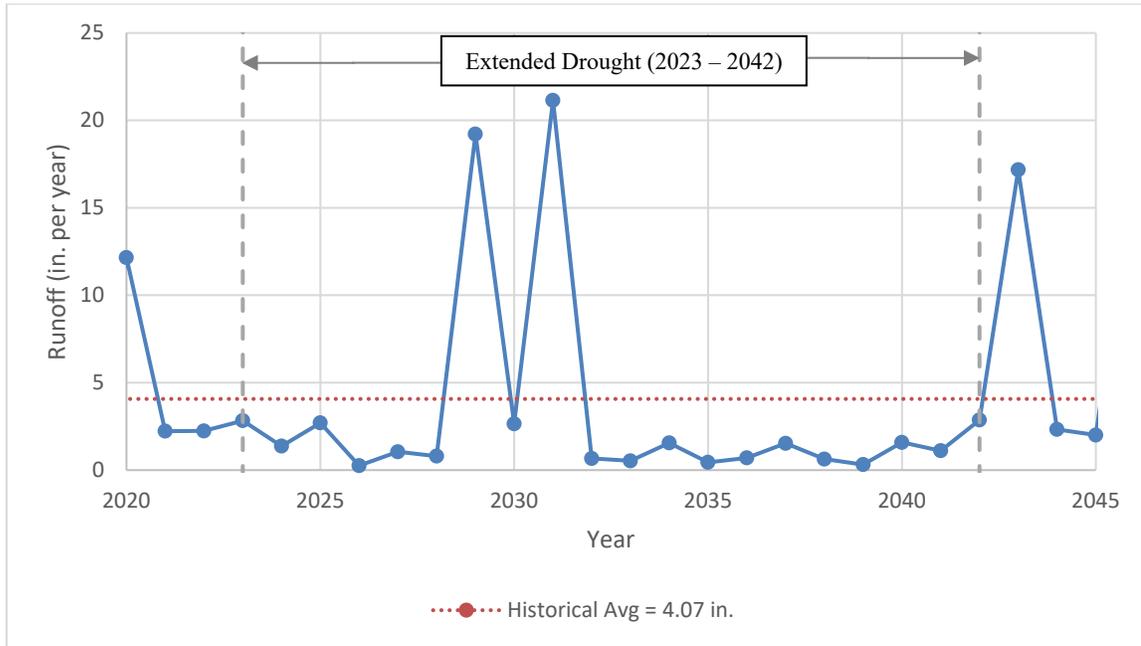


Figure 3.16: Extended Drought Scenario – Projected Annual Runoff

Table 3.7: Comparison Between Historic and Projected Rainfall & Runoff Under Extended Drought Scenario (2023 – 2042)

	Rainfall (in/yr)	Runoff (in/yr)
Historic (1951-2013)	24.6	4.07
Projected (2023-2042)	20.9	4.26
Difference	-3.7	+0.19

3.7.3 CLIMATE CHANGE IMPACTS TO RCLWA’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 3.8** 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 3.8: 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 RCLWA’s supplies as shown in **Figure 3.17** and **3.18**. Surface water supplies plummeted during the drought while reliance on groundwater significantly increased; however, periods of above average rain seasons are observed in surface water supplies as those periods would result in increased output in surface water supplies.

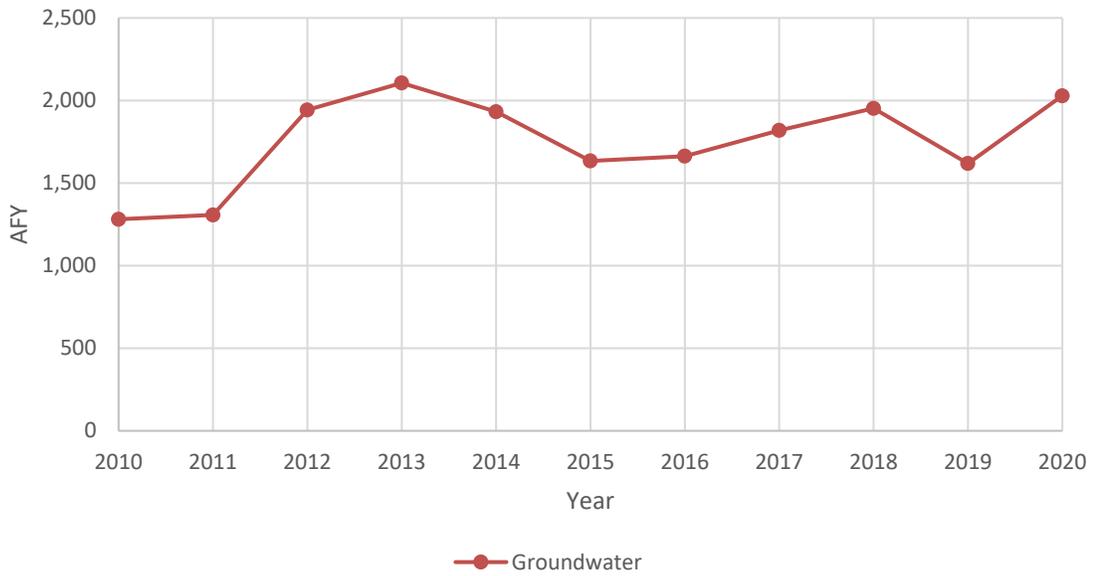


Figure 3.17: RCLWA Groundwater Supply

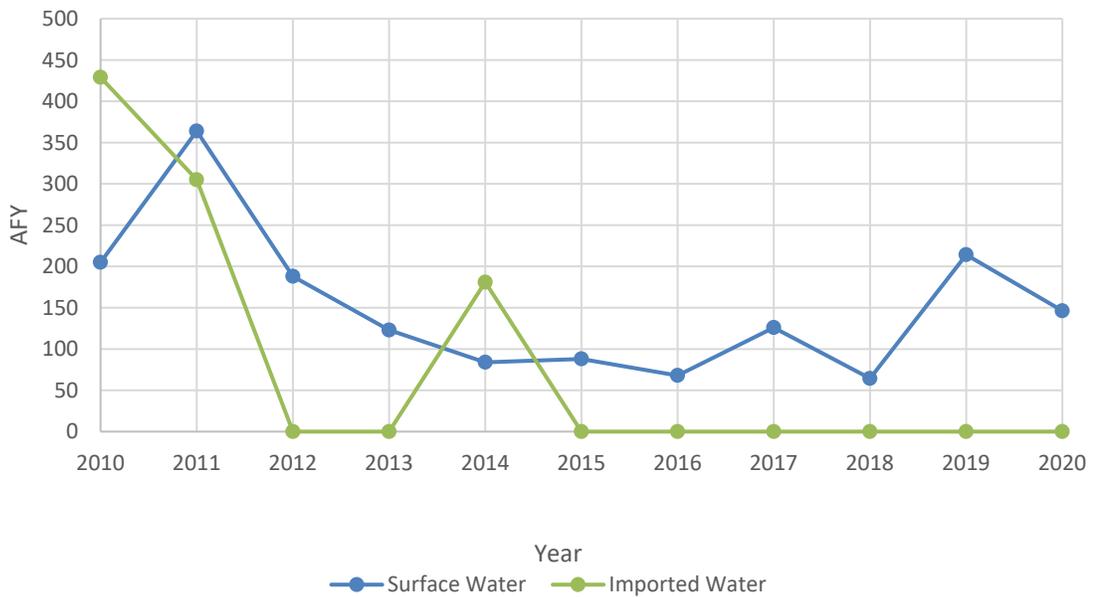


Figure 3.18: RCLWA Surface & Imported Water Supply

3.8 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, RCLWA’s wholesale supplier, infers 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 that identifies and quantifies the existing and planned sources of water available from the wholesale agency. **Table 3.9** indicates the wholesaler’s water availability projections by source for the next 25 years as provided to RCLWA by FMWD.

GROUNDWATER SUPPLY PROJECTIONS

Table 3.9 shows the amount of groundwater projected to be pumped from the Basin by RCLWA in the next 25 years. RCLWA’s adjudicated right for the Basin is 1,221 AFY; however, RCLWA may pump more than its adjudicated right to meet its customers’ demand. This is possible due to lease agreements with City of Pasadena which equates to an additional 600 AFY of groundwater.

SURFACE WATER SUPPLY PROJECTIONS

Surface water is dependent on the climate that the region is experiencing. As shown in **Table 3.4** and **Figure 3.18**, there is no clear trend on the amount of surface water that can be treated and used into the system. Due to the recent drought, there has been a decrease of 76 percent in surface water since 2011. **Table 3.9** shows the projections of surface water production for the next 25 years.

Table 3.9: Projected Water Supply Availability (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	500	500	500	500	500
Groundwater (not desalinated)	Raymond Basin	1,821	1,821	1,821	1,821	1,821
Surface water (not desalinated)	Rubio Canyon	118	118	118	118	118
Total		2,439	2,439	2,439	2,439	2,439



3.9 SUPPLY VS DEMAND

3.9.1 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 per year, 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) was signed, which facilitated the transfer of water from agricultural agencies to urban uses. This historic agreement provides California the means to implement transfers and supply programs that 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 was 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 uses 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. **Figure 19** below shows the total SWP annual delivery of water to contractors from 2009 to 2018. As shows, deliveries can be as low as 475,000 AF to a high of 3.1 MAF. 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.

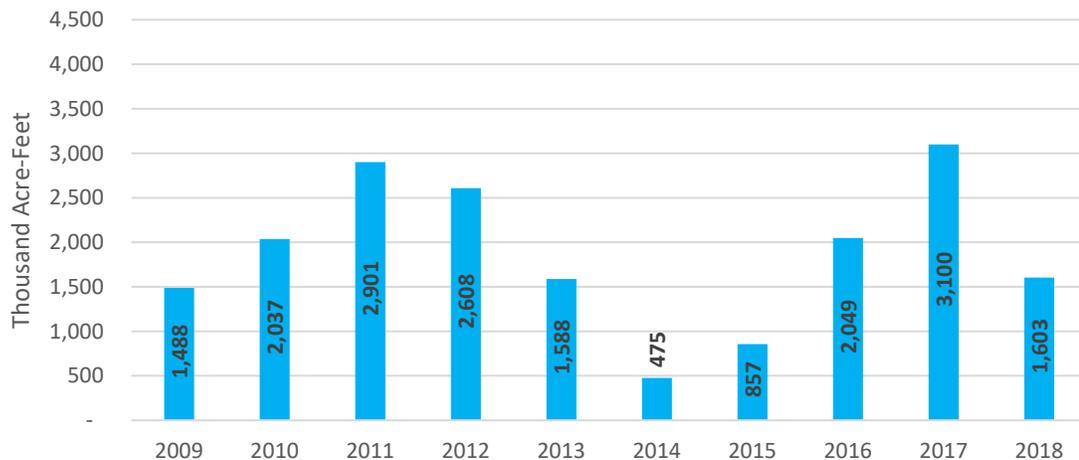


Figure 3.19: SWP Table A Deliveries (2009 - 2018)

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.

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 3.9** 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.

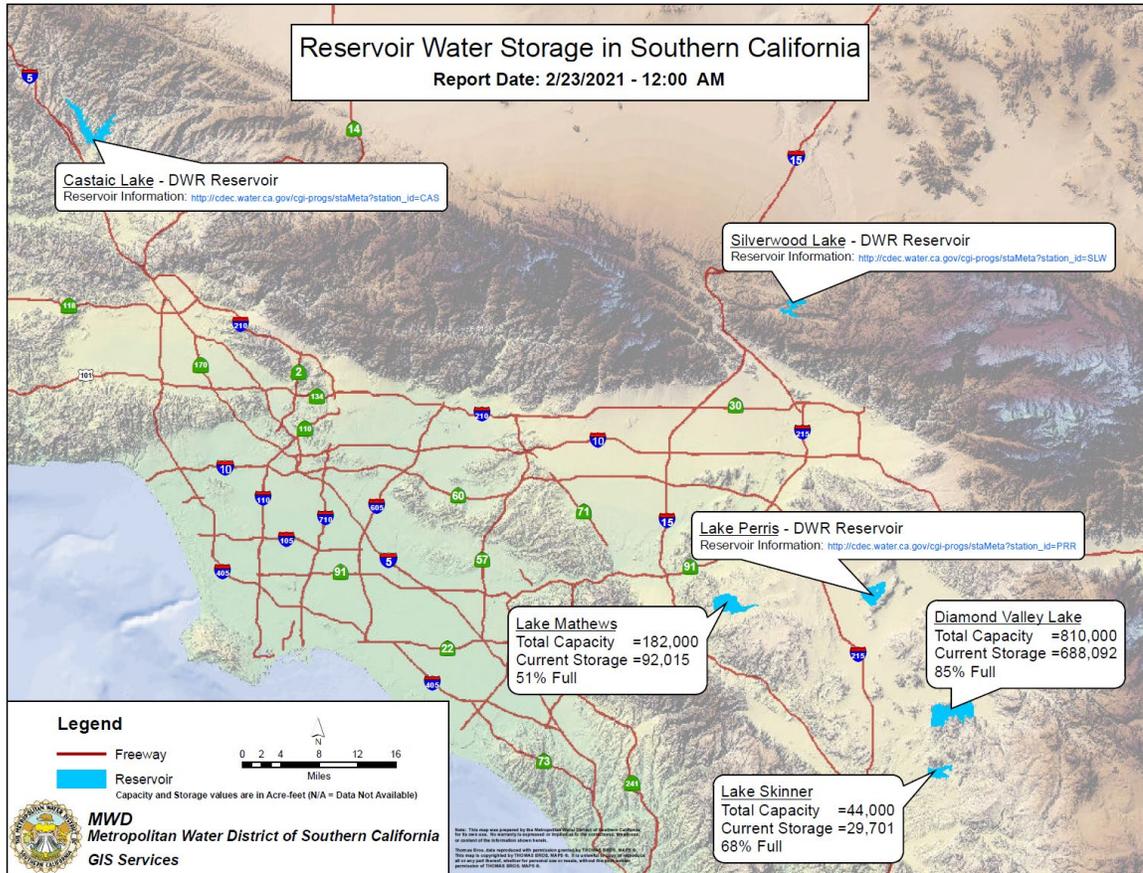


Figure 3.20: MWD Reservoir Levels (Feb. 2021)

3.9.2 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 analyses are illustrated in **Tables 3.10** and **3.11**, which corresponds to Tables 2-1 to 2-6 in MWD’s 2020 UWMP. These tables show 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 3.10: 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 3.11: 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%



3.10 RCLWA’S SUPPLY RELIABILITY

3.10.1 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. RCLWA depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies.

3.10.2 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 starting 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 water resource strategy that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2020 through 2040. The foundation of MWD’s resource strategy for achieving regional water supply reliability has been to develop and implement water resources 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 3.12** 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

Table 3.12: 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
	Year 2	1989
	Year 3	1990
	Year 4	1991
	Year 5	1992



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.

3.10.3 FACTORS CONTRIBUTING TO RCLWA'S 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 that 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 MWD supplies. One such challenge was settled in 2013 upholding the validity of the QSA.

Water Quality – Water imported from the CRA contains a high level 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 total dissolved solids (TDS) secondary drinking water standard. 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 in the Delta.

Legal, environmental, and water quality issues may have impacts on MWD supplies. It is believed, however, that some climatic factors would have more of an impact than others.



Climatic conditions have been projected based on historical patterns; however severe pattern changes may occur in the future. **Table 3.13** shows the factors that may affect inconsistency of supply. These and other factors are addressed in greater detail in MWD’s 2020 UWMP.

Table 3.13: Factors Which May Affect Inconsistency of Supply

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

3.10.4 RCLWA’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 180 GPCD in accordance with SBx7-7 requirements. During times of drought, however, demand will increase at a time when supply will decrease. **Table 3.14** outlines the various base years and demand increases to project during single and multiple dry drought periods. **Table 3.15** outlines the various base years and supply availability to project during single and multiple dry drought periods. **Tables 3.16 to 3.22**, shown on the following pages, provide an analysis of RCLWA’s supply and demand projections.

Based on the data contained in **Tables 3.16 to 3.22**, RCLWA 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, RCLWA’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 3.14: RCLWA Demand during Normal, Single & Multiple Dry Years

	Base Year	Percent Increases	
Average Year	2018-2019	100%	
Single Dry Year	2013-2015	107%	
Multiple Dry Years	Year 1	2011	103%
	Year 2	2012	111%
	Year 3	2013	116%
	Year 4	2014	114%
	Year 5	2015	91%

Table 3.15: RCLWA Supply Availability during Normal, Single & Multiple Dry Years

	Base Year	Percent Increases	
Average Year	2015-2020	100%	
Single Dry Year	2013-2015	98%	
Multiple Dry Years	Year 1	2012	99%
	Year 2	2013	99%
	Year 3	2014	99%
	Year 4	2015	99%
	Year 5	2016	99%



Table 3.16: RCLWA's Water Supply Availability & Demand Projections - Normal Water Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		9,360	9,508	9,658	9,810	9,965
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	118	118	118	118	118
	Total Supply	2,439	2,439	2,439	2,439	2,439
Demand	Total Normal Demand	1,887	1,917	1,947	1,978	2,009
	% of 2015-2020 Avg. Demand	99.1%	100.7%	102.3%	103.9%	105.5%
Supply/Demand Comparison	Supply/ Demand Difference	552	522	492	461	430
	Supply/Demand (%)	129.2%	127.2%	125.3%	123.3%	121.4%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above.
2. Imported Water Supply represents projected supply available to RCLWA.
3. Groundwater Supplies based on the RCLWA's maximum well pumping yield of 1,221 AF and 600 AF from lease agreements with City of Pasadena.
4. Surface Water based on average production from 2015 and 2020.

*This Table not intended to be a projection of RCLWA's actual groundwater production.

*This Table is not intended to be a projection of RCLWA's actual demand. Demand of 180 GPCD is based on SBx7-7 limits. Actual demand may be above or below the SBx7-7 limit of 180 GPCD in accordance with water usage needs in RCLWA's service area.



Table 3.17: RCLWA’s Water Supply Availability & Demand Projections - Single Dry Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		9,360	9,508	9,658	9,810	9,965
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	64	64	64	64	64
	Total Supply	2,385	2,385	2,385	2,385	2,385
	Normal Year Supply	2,439	2,439	2,439	2,439	2,439
	% of Normal Year	97.8%	97.8%	97.8%	97.8%	97.8%
Demand	Total Dry Demand	2,016	2,048	2,080	2,113	2,147
	Normal Year Demand	1,887	1,917	1,947	1,978	2,009
	% of Normal Year	106.8%	106.8%	106.8%	106.8%	106.8%
Supply/Demand Comparison	Supply/Demand Difference	369	337	305	272	238
	Supply/Demand (%)	118.3%	116.4%	114.6%	112.9%	111.1%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above and by single dry year increases of 106.8%.
2. All other items similarly derived in Table 3.16.
3. Surface Water single dry projection based on lowest production between 2010 to 2020 (64 AF).

*See notes below Table 3.16 for explanation of groundwater supply / overall demand.



Table 3.18: RCLWA's Water Supply Availability & Demand Projections - Multiple Dry Years (2021 - 2025) (AF)

		2021	2022	2023	2024	2025
Water Service Area Population		9,244	9,273	9,302	9,331	9,360
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	98	98	98	98	98
	Total Supply	2,419	2,419	2,419	2,419	2,419
	Normal Year Supply	2,439	2,439	2,439	2,439	2,439
	% of Normal Year	99.2%	99.2%	99.2%	99.2%	99.2%
Demand	Total Dry Demand	1,913	2,070	2,172	2,147	1,710
	Normal Year Demand	1,864	1,870	1,875	1,881	1,887
	% of Normal Year	102.7%	110.7%	115.8%	114.1%	90.6%
Supply/Demand Comparison	Supply/Demand Difference	506	349	247	272	709
	Supply/Demand (%)	126.4%	116.9%	111.4%	112.7%	141.5%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above and by multiple dry year increases of 102.7%, 110.7%, 115.8%, 114.1%, and 90.6%.
2. All other items similarly derived in Table 3.16.
3. Surface Water multiple dry year projections based on lowest five consecutive year average production from 2013 to 2017.

*See notes below Table 3.16 for explanation of groundwater supply / overall demand.



Table 3.19: RCLWA’s Water Supply Availability & Demand Projections - Multiple Dry Years (2026 - 2030) (AF)

		2026	2027	2028	2029	2030
Water Service Area Population		9,390	9,419	9,449	9,478	9,508
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	98	98	98	98	98
	Total Supply	2,419	2,419	2,419	2,419	2,419
	Normal Year Supply	2,439	2,439	2,439	2,439	2,439
	% of Normal Year	99.2%	99.2%	99.2%	99.2%	99.2%
Demand	Total Dry Demand	1,943	2,102	2,206	2,181	1,737
	Normal Year Demand	1,893	1,899	1,905	1,911	1,917
	% of Normal Year	102.7%	110.7%	115.8%	114.1%	90.6%
Supply/Demand Comparison	Supply/Demand Difference	476	317	213	238	682
	Supply/Demand (%)	124.5%	115.1%	109.7%	110.9%	139.3%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above and by multiple dry year increases of 102.7%, 110.7%, 115.8%, 114.1%, and 90.6%.
2. All other items similarly derived in Table 3.16.
3. Surface Water multiple dry year projections based on lowest five consecutive year average production from 2013 to 2017.

*See notes below Table 3.16 for explanation of groundwater supply / overall demand.



Table 3.20: RCLWA's Water Supply Availability & Demand Projections - Multiple Dry Years (2031 - 2035) (AF)

		2031	2032	2033	2034	2035
Water Service Area Population		9,538	9,568	9,598	9,628	9,658
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	98	98	98	98	98
	Total Supply	2,419	2,419	2,419	2,419	2,419
	Normal Year Supply	2,439	2,439	2,439	2,439	2,439
	% of Normal Year	99.2%	99.2%	99.2%	99.2%	99.2%
Demand	Total Dry Demand	1,974	2,135	2,241	2,215	1,764
	Normal Year Demand	1,923	1,929	1,935	1,941	1,947
	% of Normal Year	102.7%	110.7%	115.8%	114.1%	90.6%
Supply/Demand Comparison	Supply/Demand Difference	445	284	178	204	655
	Supply/Demand (%)	122.5%	113.3%	108.0%	109.2%	137.1%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above and by multiple dry year increases of 102.7%, 110.7%, 115.8%, 114.1%, and 90.6%.
2. All other items similarly derived in Table 3.16.
3. Surface Water multiple dry year projections based on lowest five consecutive year average production from 2013 to 2017.

*See notes below Table 3.16 for explanation of groundwater supply / overall demand.



Table 3.21: RCLWA’s Water Supply Availability & Demand Projections - Multiple Dry Years (2036 - 2040) (AF)

		2036	2037	2038	2039	2040
Water Service Area Population		9,688	9,718	9,749	9,779	9,810
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	98	98	98	98	98
	Total Supply	2,419	2,419	2,419	2,419	2,419
	Normal Year Supply	2,439	2,439	2,439	2,439	2,439
	% of Normal Year	99.2%	99.2%	99.2%	99.2%	99.2%
Demand	Total Dry Demand	2,005	2,169	2,276	2,250	1,792
	Normal Year Demand	1,953	1,959	1,966	1,972	1,978
	% of Normal Year	102.7%	110.7%	115.8%	114.1%	90.6%
Supply/Demand Comparison	Supply/Demand Difference	414	250	143	169	627
	Supply/Demand (%)	120.6%	111.5%	106.3%	107.5%	135.0%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above and by multiple dry year increases of 102.7%, 110.7%, 115.8%, 114.1%, and 113%.
2. All other items similarly derived in Table 3.16.
3. Surface Water multiple dry year projections based on lowest five consecutive year average production from 2013 to 2017.

*See notes below Table 3.16 for explanation of groundwater supply / overall demand.



Table 3.22: RCLWA's Water Supply Availability & Demand Projections - Multiple Dry Years (2041 - 2045) (AF)

		2041	2042	2043	2044	2045
Water Service Area Population		9,841	9,872	9,903	9,934	9,965
Supply	Imported Water	500	500	500	500	500
	Groundwater	1,821	1,821	1,821	1,821	1,821
	Surface Water	98	98	98	98	98
	Total Supply	2,419	2,419	2,419	2,419	2,419
	Normal Year Supply	2,439	2,439	2,439	2,439	2,439
	% of Normal Year	99.2%	99.2%	99.2%	99.2%	99.2%
Demand	Total Dry Demand	2,037	2,203	2,312	2,286	1,820
	Normal Year Demand	1,984	1,990	1,997	2,003	2,009
	% of Normal Year	102.7%	110.7%	115.8%	114.1%	90.6%
Supply/Demand Comparison	Supply/Demand Difference	382	216	107	133	599
	Supply/Demand (%)	118.8%	109.8%	104.6%	105.8%	132.9%

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

1. Total Demand based on 180 GPCD (SBx7-7) multiplied by population projections shown above and by multiple dry year increases of 102.7%, 110.7%, 115.8%, 114.1%, and 113%.
2. All other items similarly derived in Table 3.16.
3. Surface Water multiple dry year projections based on lowest five consecutive year average production from 2013 to 2017.

*See notes below Table 3.16 for explanation of groundwater supply / overall demand.

3.11 REDUCED DELTA RELIANCE REPORTING

3.11.1 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.

3.11.2 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.

3.12 ENERGY INTENSITY

3.12.1 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 to the preparation of an UWMP, as defined in CWC Section 10631.2(a). Energy intensity vary 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 RCLWA. 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.

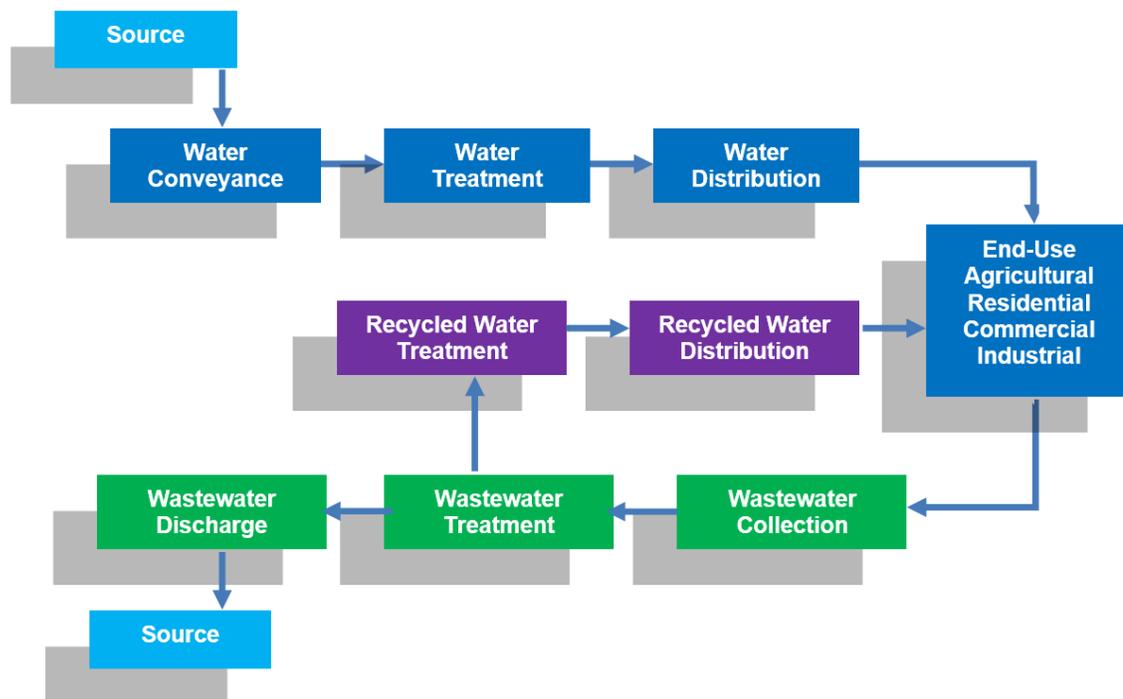


Figure 3.22: Typical Municipal Water Use Diagram

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.



3.12.2 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. RCLWA 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.

3.12.3 ENERGY USAGE AND INTENSITY

In order to determine energy use related to water supply processes under RCLWA's operational control, RCLWA collected billing and energy quantity data provided by Southern California Edison (SCE) for 2020 (December 10, 2019 to December 8st, 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 3.23** summarizes the energy intensity for RCLWA. As shown, over 2 million kWh of energy was used to deliver over 2,175 AF of potable water. This equates to an energy intensity of 930.9 kWh/AF. DWR requires the reporting of energy intensity as kWh per million gallons (kWh/MG). Therefore, RCLWA's energy intensity is 2,856.7 kWh/MG.

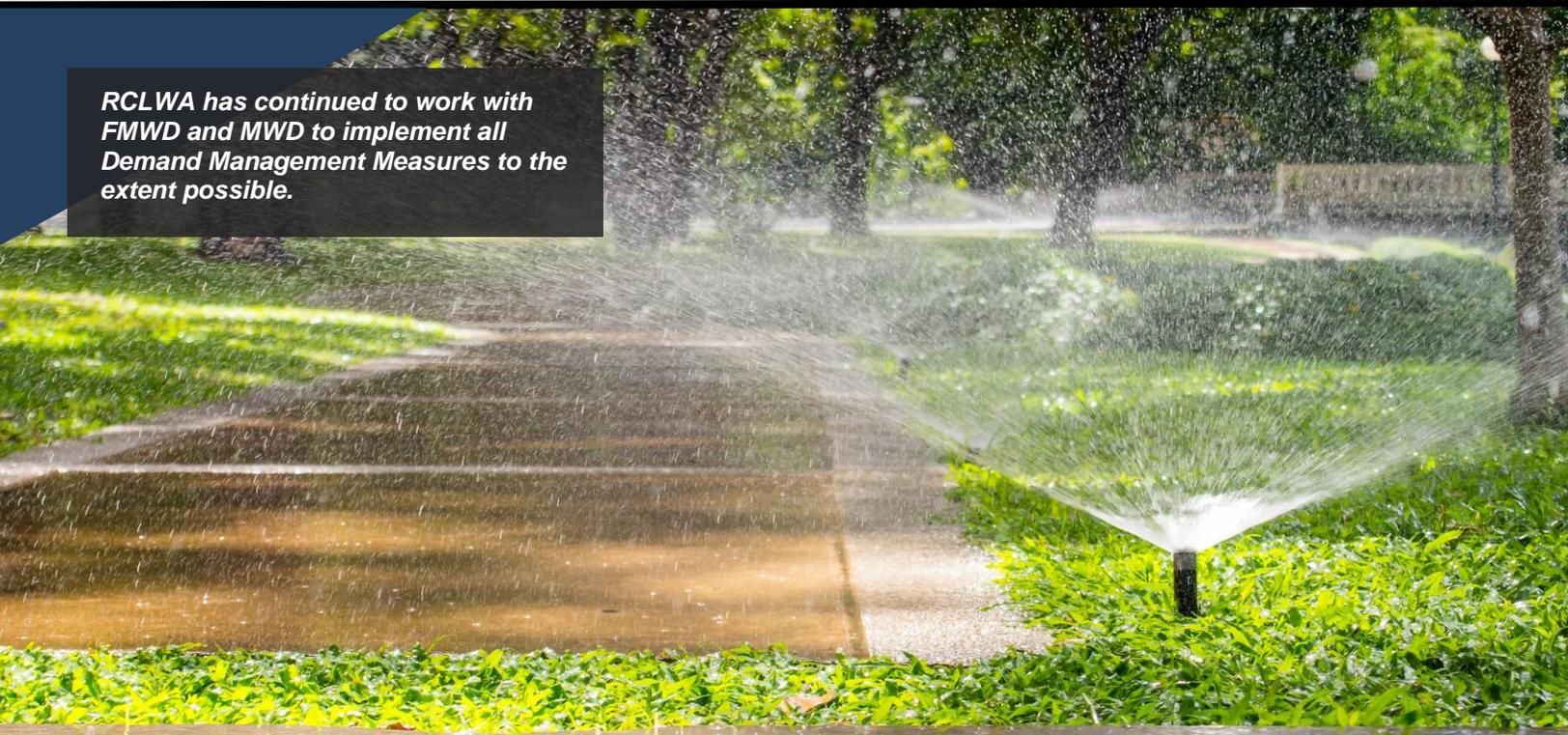


Table 3.23: RCLWA Total Energy Intensity (DWR Table O1-B)

		Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (AF)		2,175	0	2,175
Energy Consumed (kWh)		2,024,615	0	2,024,615
Energy Intensity	(kWh/AF)	930.9	0	930.9
	(kWh/MG)	2,856.7	0	2,856.7



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RCLWA has continued to work with FMWD and MWD to implement all Demand Management Measures to the extent possible.

SECTION 4: CONSERVATION MEASURES

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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. 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 RCLWA implements each applicable BMP and how RCLWA 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 Program*



4.2 RCLWA CONSERVATION PROGRAMS

RCLWA, in conjunction with FMWD and MWD, plays an active role in promoting water use efficiency in its service area. FMWD, as a wholesale water agency, assists RCLWA and its other retail agencies by administering various rebate programs for its retail agencies and providing assistance to the retail agencies in other water use efficiency programs, such as education and public information programs. To this day, RCLWA is continuously working with FMWD and MWD towards implementing the BMPs through means of various conservation measures. **Table 4.1** provides a status overview of RCLWA'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 RCLWA 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

On February 17, 2015, the Los Angeles Board of Supervisor approved Ordinance No. 2015-0004 promoting water conservation in the county's unincorporated areas (**Appendix G**). The revisions offered stricter violations by increasing penalty fees. The ordinance prohibits certain activities regarding landscape irrigation, washing of sidewalks and driveways, washing of vehicles, filling and washing decorative fountains and similar structures, and serving of water at restaurants/hotels.



Figure 4.1: Water Waste is Prohibited by RCLWA Ordinance

On May 20, 2015, RCLWA amended Resolution No. 2015.03.Cons, establishing a Moratorium on New Water Connections and Adopting Mandatory Water Conservation Program. It was in the best interest of RCLWA that redevelopment of properties will not require new service connections and shall maintain the existing connection. This is in efforts to encourage redevelopment of existing properties in a manner that reduces water demand. The moratorium also states water conservation measures similarly as mentioned for Ordinance No. 2015-0004.

METERING

RCLWA has a 3 Tier Water Rate Structure. Each account is allotted units in each tier. RCLWA meters all of the accounts by volume of use and standby charge. RCLWA will continue to install and read meters on all new and existing services, and will continue to conduct its meter replacement program. Meter calibration and periodic replacement ensures that customers are paying for all of the water they consume, and therefore encourages conservation. A summary of the water rates is shown on **Table 4.2**.

CONSERVATION PRICING

RCLWA's 3 Tier Water Rate Structure promotes conservation by offering the lowest rate to customers who use 16 billing units per month or less. Each water unit represents 100 cubic feet (ccf) or 748 gallons. In an event of an unexpected shortage, RCLWA will update the prices accordingly to promote conservation. **Tables 4.2** and **4.3** summarize the water rates within RCLWA, effective as of February 1, 2021. A monthly standby charge, depending on the size of the meter, is used as well as a three-tiered monthly usage charge, which is based on the amount of consumption. In addition, multiple dwelling units, which include two or more on the same lot such as: duplex, triplex, rear houses, townhomes, condominiums, etc., have an additional fixed monthly charge of \$10.00 per unit.



Table 4.2: Water Rates 2020 – Monthly Standby Charge based on Meter Size

Charge	5/8" –3/4"	1"	1.5"	2"	Over 2"
Monthly Stand-by Charge (2021)	\$28.50	\$34.20	\$39.00	\$48.00	\$53.00
Monthly Stand-by Charge (2019)	\$28.50	\$34.15	\$38.20	\$47.00	\$52.00

Table 4.3: Water Rates 2020 – Tiered Monthly Usage Charge per Unit

Charge	Tier 1: 1-12 units	Tier 2: 13-26 units	Tier 3: Over 26 units
Monthly Usage Charge (2021)	\$3.05 per CCF	\$3.75 per CCF	\$4.10 per CCF
Monthly Usage Charge (2019)	\$3.00 per CCF	\$3.65 per CCF	\$4.00 per CCF

PROGRAMS TO ASSESS & MANAGE DISTRIBUTION SYSTEM REAL LOSS

RCLWA conducts water audits and leak detection and repair on a daily and monthly basis. The distribution system is constantly being upgraded and repaired. RCLWA's trained staff surveys the system during the daily inspection and maintenance schedule. RCLWA monitors all water meters on a monthly basis. Stuck or faulty meters are detected and changed immediately. RCLWA continues to upgrade meters monthly to reduce unaccounted for water. In the past five years, non-revenue water averaged 6 percent.

It appears that distribution system leaks are the most-likely culprit for loss of water. RCLWA 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 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

FMWD implements this BMP on the behalf of its member agencies. FMWD supports MWD's extensive in-class education programs for specific grade levels. The District

participates in a regional “*Water Is Life*” student art contest where top selections are sent to MWD for further consideration. FMWD also regularly sponsors a high school team in the annual Solar Cup competition held by MWD, where students build water crafts operated by solar power and compete at Lake Skinner.



Figure 4.2: Girl Scouts Tours FMWD Facilities and Learned About Water Resources

On a local level, FMWD composes and makes information available to school districts for incorporation in student curriculum. A popular education program led by FMWD staff involves interactive water experiments/activities and the offering of tours of District facilities. Staff also provides lectures and presentations to schools and other community groups upon request.



Figure 4.3: FMWD Completed 6th Annual “*Water Is Life*” Student Art Contest

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 operating booths at fairs and other community functions. Not only does this aid in spreading awareness but it also provides incentives for students to earn community service hours at a professional setting.

Tables 4.4 and 4.5 show past, current, and planned school education programs by grade level from 2016 to 2025.

No method currently exists to evaluate water savings attributable to this BPM; however, FMWD continues to administer this BMP for its ability to educate and interact with customers.



Table 4.4: FMWD School Education Programs (2016-2020)

Actual	2016	2017	2018	2019	2020
Grades K - 3rd	Yes	Yes	Yes	Yes	Yes
Grades 4th - 6th	Yes	Yes	Yes	Yes	Yes
Grades 7th - 8th	Yes	Yes	Yes	Yes	Yes
High School	Yes	Yes	Yes	Yes	Yes
Actual Expenditures (\$)*	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500

*Material distributed is part of conservation material used at other events as well and costs are not broken out by type of event.

Table 4.5: FMWD Projected School Education Programs (2021-2025)

Planned	2021	2022	2023	2024	2025
Grades K - 3rd	Yes	Yes	Yes	Yes	Yes
Grades 4th - 6th	Yes	Yes	Yes	Yes	Yes
Grades 7th - 8th	Yes	Yes	Yes	Yes	Yes
High School	Yes	Yes	Yes	Yes	Yes
Planned Expenditures (\$)	\$2,000	\$3,500	\$3,500	\$3,500	\$3,500

WATER CONSERVATION PROGRAM COORDINATION & STAFFING SUPPORT

FMWD implements this BMP on behalf of RCLWA. FMWD has designated the administrative manager as FMWD's water conservation coordinator. This is not a full-time position, but time is devoted to coordination and oversight of conservation programs. RCLWA uses its website, water bills, and special mailings to inform customers of conservation issues.

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

In concert with FMWD, RCLWA provides literature, brochures, posters, videos, etc., to the public. FMWD maintains a library of water resource education conservation videos for loan to individuals and local organizations. FMWD provides speakers to various groups upon request.

No method currently exists to evaluate water savings attributable to this BMP; however, RCLWA continues to provide public information services and materials to emphasize water use efficiency and other resource issues.

Table 4.6 shows past, current, and planned public information programs within the FMWD’s service area from 2016 to 2025.

Table 4.6: Public Information Programs

Actual	2016	2017	2018	2019	2020
Paid Advertising	No	No	No	No	No
Public Service Announcement	No	No	No	No	No
Bill Inserts/Newsletters/Brochures	Yes	Yes	Yes	Yes	Yes
Bill Showing Water Usage in Comparison to Previous Year's Usage	No	No	No	No	No
Demonstration Gardens	Yes	Yes	Yes	Yes	Yes
Special Events/Media Events	Yes	Yes	Yes	Yes	Yes
Speaker's Bureau	Yes	Yes	Yes	Yes	Yes
Program to Coordinate with Other Government Agencies, Industry and Public Interest Groups and Media	Yes	Yes	Yes	Yes	Yes

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

RCLWA also participates in various FMWD/MWD programs, such as SoCal Water\$mart program, formerly Save Water Save a Buck Rebate program. The program is aimed at increasing landscape water use efficiency for residential and commercial customers including rebate programs which provide financial incentives for residential customers. Listed below are the rebates offered through SoCal Water\$mart program:

- Water Survey Assistance** – RCLWA has a water usage assessment service that can be conducted upon request. In addition, RCLWA proactively targets customers with high consumption and suspected leaks. During meter reading, a tag is hung on the customer’s door if there is a high consumption. Also, if the



Figure 4.4: Residential Water Survey



meter reader notices the meter dial is turning, he will make note on the door hanger that there is a suspected leak. A door hanger will also be left for residences that water their lawn during the daytime or waste water in some way.

- ***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 (WBIC), 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 \$75 per barrel or \$300 per cistern. The barrels and cisterns must adhere to specified design guidelines.
- ***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 irrigation controller station. 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

RCLWA, through FMWD, participates in a Regional Conservation Rebate Program through MWD’s SoCal Water\$mart. This program offers rebates for premium high-efficiency toilets (PHETs). Initially, the rebate was offered for replacing existing toilets using 1.6 gallons per flush (gpf) or more with new toilets rating at 1.28 gpf. Starting

November 11, 2015, rebate incentives are only offered for replacements for PHETs (1.06 gpf or less). There are also rebates for the installation of flow-sensing shut-off devices and hot water recirculation system.

HIGH-EFFICIENCY WASHING MACHINE REBATES

RCLWA participates in the SoCal Water\$mart residential rebate program offered by FMWD/MWD. This program offers financial incentives to single-family and multi-family residential customers through the form of a rebate. Residents in the FMWD service area are eligible to receive an \$85 rebate when they purchase a new High Efficiency



Figure 4.5: HE Washing Machines

Clothes Washer (HECW). Rebates are available on a first-come, first-served basis, while funds last. Participants must be willing to allow an inspection of the installed machine for verification of program compliance. Machines must have a water factor of 3.7 or less. Depending on use, these machines can save about 14 gallons of water a day. Participants are encouraged to contact their local gas and/or electric utility since additional rebates may be available.

4.2.4 BMP 4: COMMERCIAL, INDUSTRIAL, & INSTITUTIONAL PROGRAMS

RCLWA has only a small number of commercial accounts and no industrial water use within their area. Local schools and churches would qualify as institutional accounts. In 1999, RCLWA, through FMWD, implemented an agreement with MWD for participation in a Commercial-Industrial-Institutional (CII) retrofit incentive project. This conservation credits program is designed to assist local water agency commercial customers in conserving water supplies.

Currently, RCLWA offers financial incentives under the SoCal Water\$mart, which offers rebates for various water efficient devices to 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 4.7** 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.

Table 4.7: Retrofit Devices and Rebate Amounts under SoCal WaterSmart Program

Retrofit Device	Rebate Amount
Premium High Efficiency Toilet	\$40
Ultra-Low-Water or 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

RCLWA contains only five large landscapes, including parks, a cemetery, and a gated community. RCLWA offers water audit by bill messages. RCLWA will continue to implement this BMP by annual review of customers' water use, and by offering on-site follow-up evaluations to customers whose total water use exceeds their total annual water budget upon request. Landscapes that are upgraded based on survey recommendations could result in a 15 percent reduction in water demand.

In addition, RCLWA supports large landscape conservation through FMWD/MWD's regional programs including:

SoCal WaterSmart – As a member agency of FMWD, RCLWA takes part in the SoCal WaterSmart program, which offers financial incentives to both residential and commercial customers who purchase approved WBIC, rotating nozzles, and synthetic turf. The available landscape programs are previously described under “**Residential Programs**” 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, RCLWA takes advantage of regional and local efforts that target and market to large landscape properties including bill inserts and direct marketing efforts.

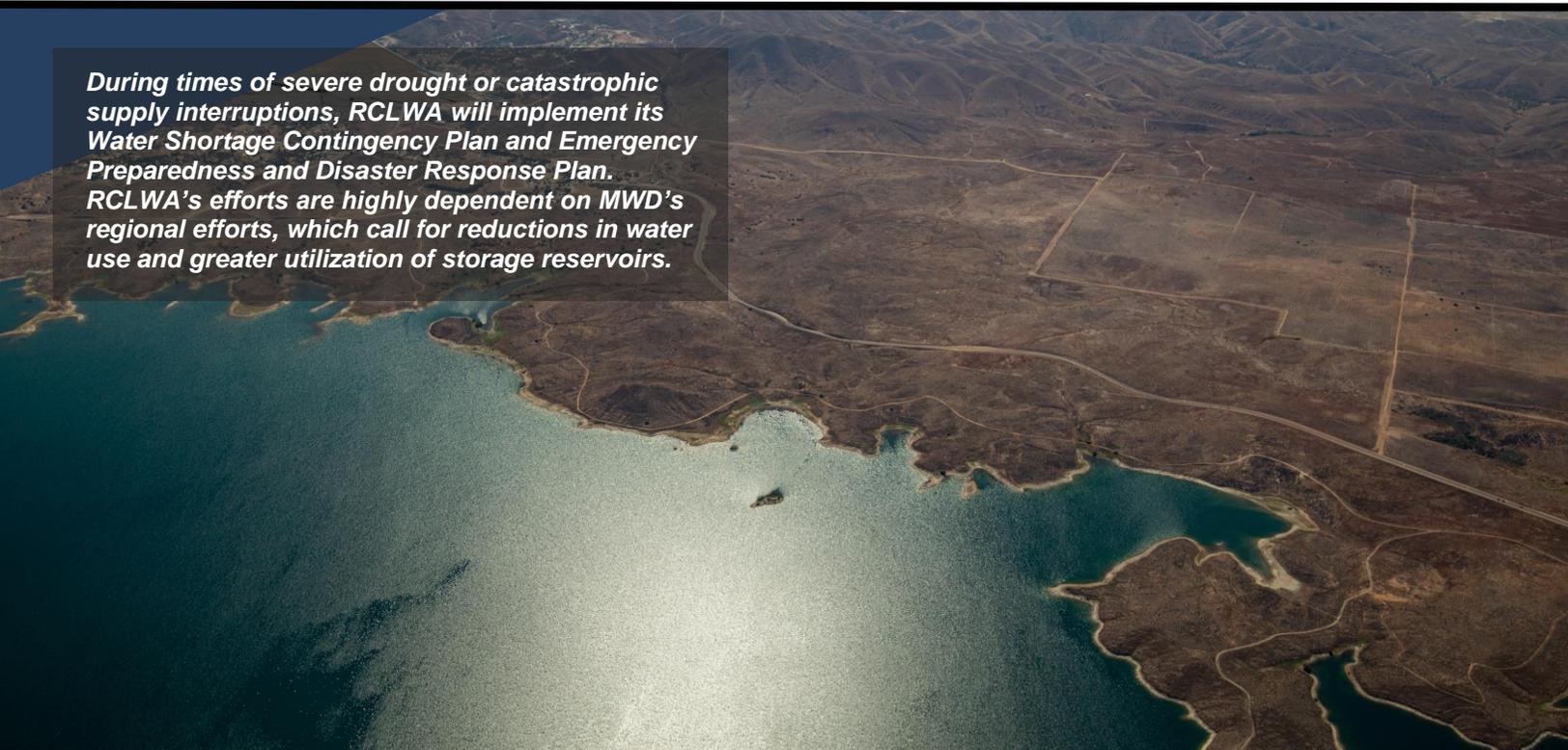
4.2.6 OTHER FMWD CONSERVATION MEASURES

WHOLESALE AGENCY PROGRAMS

RCLWA is a retail water agency. Therefore, the BMP does not apply. RCLWA 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.



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An aerial photograph of a large, deep reservoir with dark blue water, surrounded by a dry, brownish landscape with rolling hills and some agricultural fields. The sky is clear and blue.

During times of severe drought or catastrophic supply interruptions, RCLWA will implement its Water Shortage Contingency Plan and Emergency Preparedness and Disaster Response Plan. RCLWA's efforts are highly 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

RUBIO CAÑON LAND AND WATER ASSOCIATION | 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 RCLWA have in place to respond to water supply shortages, including a catastrophic interruption and up to 50 percent or greater 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 RCLWA's climate and as a result of past drought conditions, RCLWA 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, RCLWA 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	2,439	2,439	2,439	2,439	2,439
Demand totals	1,887	1,917	1,947	1,978	2,009
Difference	552	522	492	461	430

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

	2025	2030	2035	2040	2045
Supply totals	2,385	2,385	2,385	2,385	2,385
Demand totals	2,016	2,048	2,080	2,113	2,147
Difference	369	337	305	272	238

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

		2025	2030	2035	2040	2045
First year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	1,913	1,943	1,974	2,005	2,037
	Difference	506	476	445	414	382
Second year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	2,070	2,102	2,135	2,169	2,203
	Difference	349	317	284	250	216
Third year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	2,172	2,206	2,241	2,276	2,312
	Difference	247	213	178	143	107
Fourth year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	2,147	2,181	2,215	2,250	2,286
	Difference	272	238	204	169	133
Fifth year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	1,710	1,737	1,764	1,792	1,820
	Difference	709	682	655	627	599



5.2.2 FIVE-YEAR DROUGHT RISK ASSESSMENT

During a five-year drought, RCLWA may import water to meet demands in excess of its adjudicated pumping right of 1,221 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 3.10** and **3.11** 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, RCLWA 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 RCLWA’s water supplies. **Table 5.4** shows the results of the analysis. The analysis was done using DWR’s DRA Planning Tool to determine supply and demand projections, and to analyze RCLWA’s vulnerability to droughts. The tool also allows water purveyors to use 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, RCLWA 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	1,864	1,870	1,875	1,881	1,887
Total Supplies	2,419	2,419	2,419	2,419	2,419
Surplus/Shortfall w/o WSCP Action	555	549	544	538	532
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	555	549	544	538	532
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%



Response to a future drought would follow the water use efficiency mandates of RCLWA'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 RCLWA'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

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

Starting in 2022, RCLWA staff will submit and present a finalized Annual Water Shortage Assessment Report to the Board of Directors for approval by June each year. RCLWA staff will also present determination of recommended water shortage response actions deemed appropriate as a result of the Annual Assessment. Following approval, RCLWA 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**.

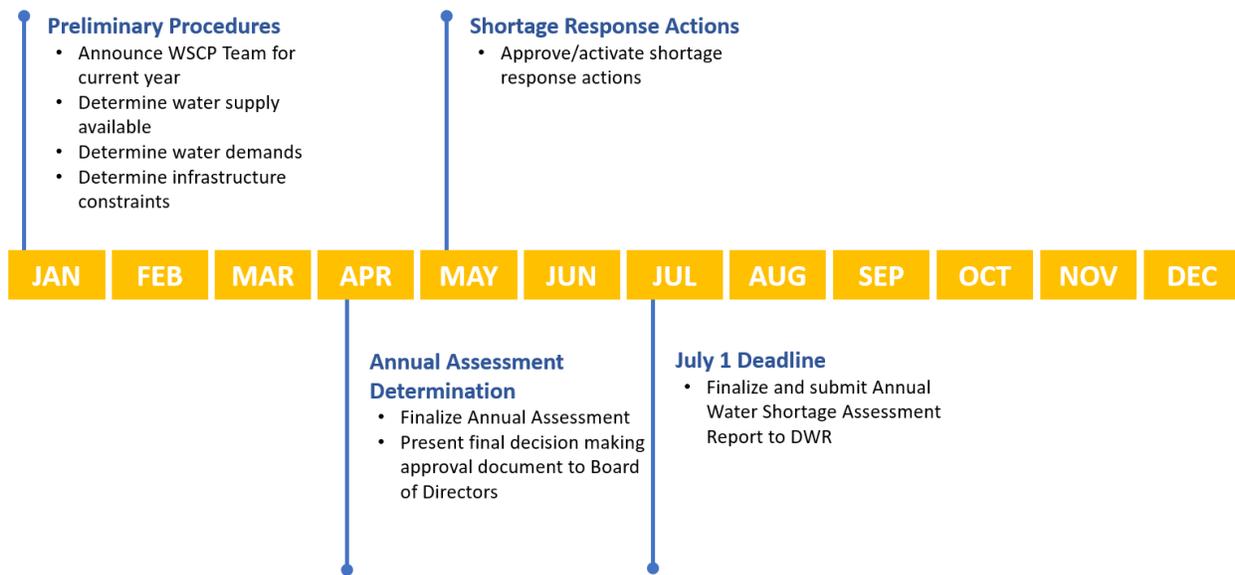


Figure 5.1: Sample Annual Assessment Decision-Making Process Timeline

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 RCLWA's water supply sources as shown and quantified in **Tables 5.5** and **5.6**.

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

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Purchased or Imported Water	from FMWD	0	Drinking Water
Groundwater (not desalinated)	Raymond Basin	2,028	Drinking Water
Surface Water (not desalinated)	Rubio Canyon	146	Drinking Water
Total		2,175	

Table 5.6: Projected Water Supply Availability (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	500	500	500	500	500
Groundwater (not desalinated)	Raymond Basin	1,821	1,821	1,821	1,821	1,821
Surface water (not desalinated)	Rubio Canyon	118	118	118	118	118
Total		2,439	2,439	2,439	2,439	2,439

Imported Water Purchases

RCLWA receives its imported water supply from MWD through its wholesaler FMWD. Supply from MWD originates from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. Currently, RCLWA's total water supply is comprised of 0 percent imported water and is projected to be able to have access of its full Tier 1 limit supply with FMWD of 500 AF as shown in **Table 5.6**.

Groundwater Supply

RCLWA uses groundwater from the Raymond Groundwater Basin. RCLWA draws from this groundwater basin through its wells which fulfills about 93 percent of its total supply. RCLWA's current safe yield of the Raymond Basin is 1,221 AFY as shown in **Table 5.6**. Furthermore, RCLWA has agreements with City of Pasadena to produce an additional 600 AFY of groundwater. Groundwater supplies within the Raymond 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 Raymond Basin Management Board.

Surface Water Supply

Surface water from Rubio Canyon, which is treated at a conventional treatment plant, has supplied RCLWA with an average of 118 AFY (around 7 percent of total supplies) over the past 6 years. The canyon water is supplied through a shallow shaft well (Well #3), the Rubio stream, and a tunnel called Carter Tunnel.

5.4 SHORTAGE STAGES AND SHORTAGE RESPONSE ACTIONS

5.4.1 MWD STAGES OF ACTION

WATER SURPLUS & DROUGHT MANAGEMENT PLAN (WSDM)

In addition to the provisions of the County's Conservation Ordinance, RCLWA also works in conjunction with FWMD and MWD to implement conservation measures within the framework of MWD's WSDM Plan. The WSDM Plan was developed in 1999 by MWD with assistance and input with 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.



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



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 that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable; however, in the event of an extreme shortage, an allocation plan will be implemented.

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, RCLWA's imported water supplies will be allocated based on the methodology documented in FMWD's Allocation Plan, which mostly mirrors the MWD allocation plan.

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

The following description of shortage stages 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.

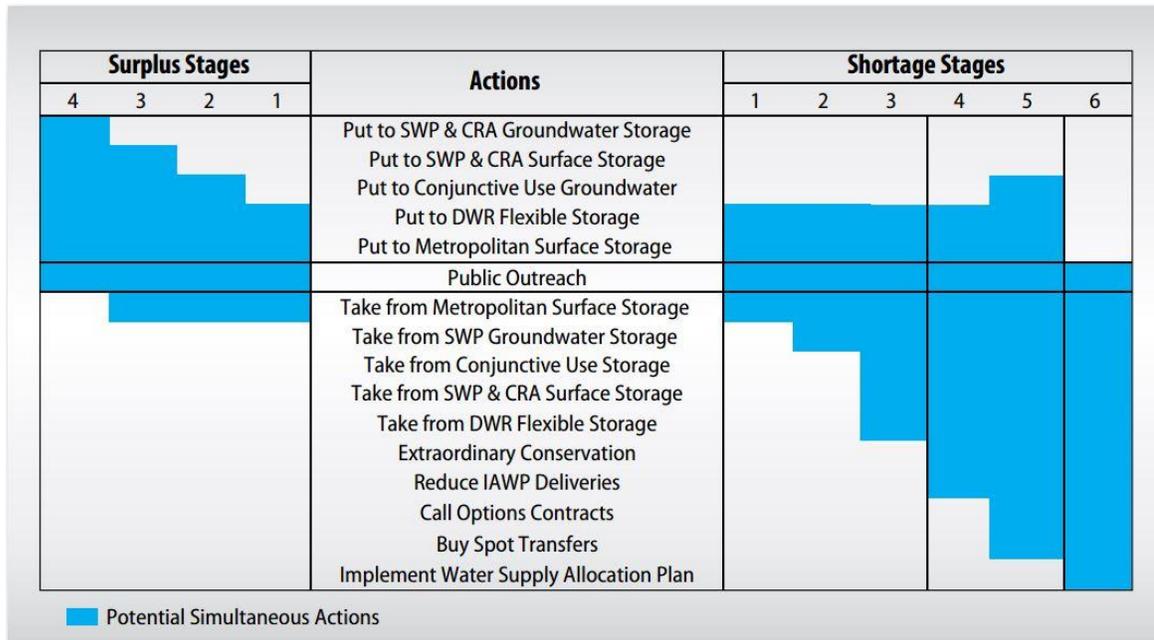


Figure 5.3: MWD WSDM Surplus & Drought Stages

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.”

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 firm 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 water

When a WSDM Shortage Stage 7 is triggered, MWD's WSAP helps to assess resources in the most equitable way possible.



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

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’ 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 used 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 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.



Figure 5.5: Lake Mead “Bathtub Ring” (December 20, 2020)

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., SDCWA/IID) 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 – A two-year average of historical water use using 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 used in an allocation year.

Extraordinary Allocation Year Local Supplies – These are previously unscheduled local water supplies to be used 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 is calculated as 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 that 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 WSAP Penalty Rates, an Allocation Surcharge will be in effect that is 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 RCLWA STAGES OF ACTION

On May 20, 2015, the RCLWA Board of Directors adopted a mandatory Conservation Program Resolution No. 2015.03.Cons (**Appendix H**) with a goal of reducing water use by 36 percent or more.

Per CWC Section 10632(a)(3)(B), a supplier may continue using their own water shortage levels that were previously used. **Table 5.8** correlates RCLWA’s water shortage levels to the six standard water shortage levels mandated by CWC Section 10632(a)(3)(A).



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

RCLWA Shortage Levels			Mandated Standard Shortage Levels	
Stage No.	Water Supply Conditions	% Shortage	Shortage Level	% Shortage
1	Standard Water Conservation. FMWD can meet all Member Agency demands. Voluntary water conservation applies.	Up to 10%	1	Up to 10%
2	Increased Water Conservation. Some supplies have been impacted, and consumers should increase efforts to conserve.	10% to 20%	2	Up to 20%
3	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%	3	Up to 30%
4	Allocation. MWD has implemented its allocation plan to its member agencies. Thus, supplies are limited.	30% to 40%	4	Up to 40%
5	Critical. Water supplies are reduced drastically.	40% to 50%	5	Up to 50%
6	Emergency. Water supplies are only available for health and safety needs.	Greater than 50%	6	>50%

5.4.4 PROHIBITIONS

The RCLWA Conservation Program Resolution No. 2015.03.Cons and FMWD Water Conservation Plan Resolution No. 913-0621 list water conservation requirements that shall take effect upon implementation by the RCLWA and FMWD Board of Directors. These prohibitions shall promote the efficient use of water, reduce or eliminate water waste, complement the RCLWA's water quality regulations and urban runoff reduction efforts, and enable implementation of the RCLWA's Water Shortage Contingency Measures. Prohibitions include but are not limited to the following restricted activities: outdoor watering, washing of vehicles, washing of hard or paved surfaces, filling or refilling swimming pools and decorative water features, and using potable water in construction activities. Additionally, RCLWA requires any leaks to be repaired in a time frame specific



to each stage’s conservation requirements. The prohibitions and the stages at which they take effect can be found in **Table 5.9**.

Table 5.9: Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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.	At All Times
<p>All new plumbing fixtures installed within the RCLWA service area must conform to the following requirements:</p> <ul style="list-style-type: none"> • Toilets shall use less than 1.6 gallons per flush. • Showerheads shall flow at less than 2.5 gallons per minute. • Non-residential lavatory faucets shall be metering or self-closing. • Urinals shall use not more than 1.5 gallons per flush. 	At All Times
Where recycled water is available and appropriate, the use of potable water for irrigation purposes shall be considered a waste of potable water. Upon written notice from the General Manager that recycled water is available and appropriate for use, the customer shall have 60 days to commence the use of recycled water.	At All Times
Potable water shall not be used for construction activities such as compaction and dust control when recycled water is available and appropriate. As used in this paragraph, “available” also means the cost of required recycled water conveyance facilities, is less than or equal to the cost of an equivalent amount of potable water priced at 150% of regular potable water rates, plus the cost of necessary potable water conveyance facilities. Both potable and non-potable 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.	At All Times
No irrigation of new or existing parks, median strips, landscaped public areas or landscaped areas, lawns, or gardens surrounding single-family homes, condominiums, townhouses, apartments, and industrial parks shall occur in such a way as to waste water. The rate and extent of application of water shall be controlled by the consumer so as to eliminate runoff or overspray from the irrigated areas.	At All Times
Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m. Pacific Standard Time on any day, except by use of a hand-held bucket or similar container, a hand- held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the purpose of adjusting or repairing an irrigation system.	At All Times
Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device not continuously attended is limited to no more than ten (10) minutes watering per day per	At All Times



Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
station. This subsection does not apply to landscape irrigation systems using only very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70% efficiency standard.	
Irrigation of turf and ornamental landscapes is prohibited during and 48 hours following measurable precipitation.	At All Times
Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a handheld hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.	At All Times
Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.	At All Times
Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut- off nozzle or device. This subsection does not apply to any commercial car washing facility 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.	At All Times
Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.	At All Times
Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.	At All Times
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.	At All Times
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.	At All Times
Installation of single pass cooling systems is prohibited in buildings requesting new water service.	Stage 2
Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.	Stage 2
All commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from RCLWA.	Stage 2
Outdoor water use is limited to odd or even days, based on ending number of customer address.	Stage 2



Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
<p>Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three days per week on Tuesdays, Thursdays and Saturdays. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than two days per week on Tuesdays and Saturdays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.</p>	<p>Stage 3</p>
<p>Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two days per week on Tuesdays and Saturdays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.</p>	<p>Stage 4</p>
<p>All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the local water purveyor unless other arrangements are made with RCLWA.</p>	<p>Stage 4</p>
<p>Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this plan.</p>	<p>Stage 4</p>
<p>Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash systems, or at a commercial car washing facility that uses a re-circulating water system to capture or reuse water.</p>	<p>Stage 4</p>
<p>No new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability) will be issued, except under the following circumstances:</p> <ul style="list-style-type: none"> • A valid, unexpired building permit has been issued for the project; or • The project is necessary to protect the public health, safety, and welfare; or • The applicant provides substantial evidence of an enforceable commitment that water demands for the project will offset prior to the provision of a new water meter(s) to the satisfaction of the local water purveyor 	<p>Stage 4</p>



Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to 1 day per week. Any waivers to this restriction must be obtained from RCLWA.	Stage 5
Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. Any waivers to this restriction must be obtained from RCLWA.	Stage 6
All leaks, breaks, or other malfunctions in the water user’s plumbing or distribution system must be repaired within twenty-four (24) hours of notification by RCLWA unless other arrangements are made with RCLWA.	Stage 6

5.4.5 CONSUMPTION REDUCTION MEHTHODS

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

Stage When Method Takes Effect	Consumption Reduction Methods	Projected Reduction (%)
1	Implement Stage 1 Conservation Measures	Up to 10%
2	Implement Stage 2 Conservation Measures	10% to 20%
3	Implement Stage 3 Conservation Measures	20% to 30%
4	Implement Stage 4 Conservation Measures	30% to 40%
5	Implement Stage 5 Conservation Measures	40% to 50%
6	Implement Stage 6 Conservation Measures	Greater than 50%

5.4.6 CATASTROPHIC SUPPLY INTERRUPTION

Given the great distances that imported supplies travel to reach the FMWD service area, the region is vulnerable to interruptions along hundreds of miles 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.



Figure 5.6: Reservoirs Provide Emergency Supplies (Lake Skinner)

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 Requirement to mitigate against 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 maximum probable seismic event in the Delta that would 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.

RCLWA

For a sudden or catastrophic water supply interruption, RCLWA has recently developed 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.

In the event of a power outage, RCLWA has emergency generators at all of its key wells and booster locations. If the normal water supply is interrupted, water can be supplied to RCLWA from emergency interconnections with the City of Pasadena or Las Flores Mutual Water Company.

RCLWA’s distribution system is located in the foothills of the San Gabriel Mountains. It ranges in elevation from 1,100 feet to 1,800 feet above mean sea level. As a result, with major reservoirs at the top of this system, water can be fed by gravity to all users. It is RCLWA’s policy to keep these reservoirs as full as possible at all times. This means that users can usually be supplied with water for two to three days in the case of either a power or supply outage.

In addition, the Foothill Conjunctive Use Program is currently being implemented. This program provides for groundwater storage of up to 9,000 AF, with up to 3,000 AF to be produced for each of three consecutive dry years, thus decreasing dependence on imported surface water supply. Additionally, there are current considerations to implement the Raymond Basin Conjunctive Use Program, which would generate grant funding for the construction of a nitrate removal plant. This plant would further lessen RCLWA’s dependence on imported water supply. An implementation schedule is not yet available for the Raymond Basin Conjunctive Use Program.

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

Table 5.11: RCLWA Preparation Actions for Catastrophe

Possible Catastrophe	Preparation Actions
Regional Power Outage	<ul style="list-style-type: none"> • Emergency Generators • Emergency Interconnections • Gravity Fed Distribution Systems • Reservoir Level Maintenance • Conjunctive Use Program • Emergency Response Fund
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 RCLWA's structures and equipment, disruption of service, and injuries to staff. This section provides a description of RCLWA'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 RCLWA's Risk and Resilience Assessment (RRA), ERP, and Chlorine System California Accidental Release Prevention (CalARP) Seismic Revalidation (**Appendix I**) as well as the 2019 County of Los Angeles All-Hazards Mitigation Plan (**Appendix J**). The complete RRA and ERP documents are not presented within this plan due to the highly confidential nature of the reports. Although RCLWA does not currently have a mitigation plan or a schedule to prepare such a plan, RCLWA refers to the 2019 County of Los Angeles All-Hazards Mitigation Plan.

SEISMOLOGY OF WATER FACILITIES & VULNERABILITY

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

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 RCLWA system is crossed by a known fault line as shown in **Figure 5.7**. Therefore, there are no RCLWA potable water structures with an extremely high risk of earthquake damage. There are, however, three known fault lines (Verdugo Fault, Sierra Madre Fault, and Raymond Fault) in the vicinity of RCLWA's service area. The nearest fault line, the Raymond Fault, is within five miles of RCLWA's service area.

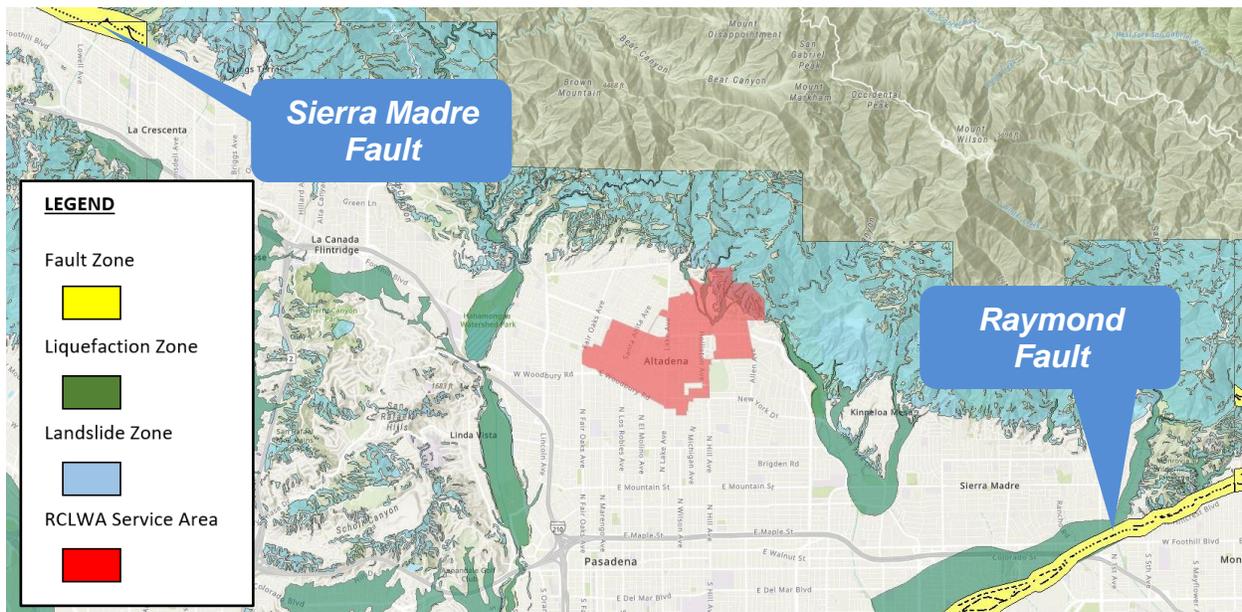


Figure 5.7: Seismic Hazards within RCLWA's Service Area (California Geological Survey)

Furthermore, there are water facilities (i.e., Cañon Reservoir, Zane Grey Tanks, Zane Grey Pump Station, etc.) with increased risk due to landslides and soil liquefaction in the north part of RCLWA's service area. Liquefaction happens when loosely packed sandy or silty materials saturated with water are shaken hard enough to lose strength and stiffness. Liquefied soils behave like a liquid and are responsible for tremendous damage in an earthquake. Liquefaction susceptibility is typically defined on a scale ranging from very low to very high based on the intensity of the earthquake. According to RCLWA's CalARP Seismic Revalidation report (2016), although part of RCLWA is located in landslide and liquefaction zones and in the vicinity of several known fault lines, the potential for



landslide, liquefaction, and ground faulting, which is the movement and displacement of the ground's surface, is low for RCLWA's water facility sites.

ERP – EARTHQUAKE EMERGENCY RESPONSE

RCLWA is currently preparing a new 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 RCLWA staff with the necessary information, strategies, procedures, and mitigation actions to address earthquake emergencies. RCLWA'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 RCLWA'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, RCLWA 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.

CHLORINE SYSTEM CalARP SEISMIC REVALIDATION

In September 2016, RCLWA performed a 5-year revalidation of its original seismic evaluations of the chlorine systems at four RCLWA facilities, including: Figueroa Sump Basin, Calaveras Reservoir, Maiden Lane Reservoir, and Ames Treatment Plant. Title 19 of the California Code of Regulations requires facilities with regulated substances to perform an evaluation of equipment and structures to minimize the risk of a release during a seismic event. Seismic evaluations follow a guidance document written for this purpose. Based on the revalidation, the chlorine equipment and buildings should perform adequately during a seismic event if all the deficiencies identified by the seismic evaluations are corrected.

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.

County of Los Angeles

The goals of the County of Los Angeles All-Hazard Mitigation Plan are based on a risk assessment, representing a long-term vision for hazard reduction or enhanced mitigation capabilities.

The five mitigation goals and descriptions are listed below:



1. ***Protect Life and Property*** – Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, human-caused, and technological hazards. Improve hazard assessment information to make recommendations for avoiding new development in high-hazard areas and encouraging preventive measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.
2. ***Enhance Public Awareness*** – Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards. Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.
3. ***Preserve Natural Systems*** – Support management and land use planning practices with hazard mitigation to protect life. Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.
4. ***Encourage Partnerships and Implementation*** – Strengthen communication and coordinate participation with public agencies, citizens, nonprofit organizations, business, and industry to support implementation. Encourage leadership within the County and public organizations to prioritize and implement local and regional hazard mitigation activities.



5. ***Strengthen Emergency Services*** – Establish policy to ensure mitigation projects are considered for critical facilities, services, and infrastructure.

The specific mitigation actions and measures established by the County of Los Angeles to mitigate seismic risks and vulnerabilities are described in detail within its hazard mitigation plan.

RCLWA

As a result of the recommendations in the Chlorine System CalARP Seismic Revalidation, improvements to the chlorine cylinders and weigh scale located at three RCLWA facilities were made by adding/replacing chains around stored cylinders and adding anchor bolts.

RCLWA's mitigation actions to mitigate seismic risks and vulnerabilities are further described within its CalARP Seismic Revalidation report and ERP.

5.5 COMMUNICATION PROTOCOLS

5.5.1 INTRODUCTION

RCLWA's communication protocol includes the various channels that RCLWA will use to convey critical messages regarding water shortage allocations and voluntary and mandatory actions. The goal of RCLWA 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 RCLWA 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 Water Conservation. Activation of the communication protocol will continue through all subsequent water shortage stages. RCLWA 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 RCLWA is taking to respond to the water supply situation.

5.5.2 COORDINATION

The goal of RCLWA'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, RCLWA 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 RCLWA and its customers. In addition to collaboration with its wholesaler, FMWD, RCLWA 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 RCLWA'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 RCLWA's website, signage in front of the RCLWA office, and wholesale agency coordination.

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

RCLWA's customers and public will be notified about any triggered or anticipated to be



triggered shortage response actions. RCLWA 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, 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 RCLWA's website and published in a daily newspaper. Upon declaration by the Board that a water shortage emergency exists, the WSCP shall be implemented. The plan shall remain in effect until the Board declares the water shortage emergency has ended.

5.5.6 OTHER RELEVANT COMMUNICATION PROTOCOLS

To reduce water use consumption during any water shortage stage, RCLWA will increase its public education and outreach efforts to build awareness of needed actions from the public. Moreover, RCLWA 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).

RCLWA may implement these communication strategies through its newsletters, website, and social media platforms to reflect supply conditions. In addition, RCLWA 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 RCLWA's facilities, RCLWA 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 RCLWA's facilities, RCLWA may determine that it is necessary to use 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 and other assigned personnel will go to the designated EOC and begin implementation of RCLWA 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. RCLWA will keep the Board of Directors informed of incident status and coordinate with public health officials.

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

5.6 COMPLIANCE AND ENFORCEMENT

The means by which RCLWA will use to safeguard compliance with and enforcement of water shortage rules include, but are not limited to, the following:

- Warning and citation protocols
- Water-waste patrols
- Fines and surcharges
- Rules and measures associated with fixing breaks or leaks in irrigation systems
- Customer service, education, and communication programs
- Other responses



5.6.1 PENALTIES OR CHARGES

Any customer who violates provisions of the Water Conservation Program Resolution 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 the RCLWA 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	First Violation
Written Notice	Second Violation
Final Written Notice	Third Violation
\$100 Fine	Fourth Violation
\$250 - \$500 Fine	Fifth and Subsequent Violation

5.6.2 APPEAL REGARDING VIOLATIONS

Any customer of RCLWA who receives a notice of violation or any fine may appeal such notice or fine to RCLWA’s Board of Directors within 30 days after the date of such notice or fine. The decision of the Board of Directors on such appeal shall be conclusive and final.

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 RCLWA 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 RCLWA 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. RCLWA 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

RCLWA has a long-established emergency reserve fund for use in earthquakes, a water shortage, or drought situations. Its rate structure is designed to allow for operations, capital improvements, and the maintenance of this reserve. In addition, RCLWA can institute additional levels of its existing tiered rate structure to offset the loss of revenue that might occur. Such measures taken by RCLWA are listed in **Tables 5.13** and **5.14**.

Table 5.13: Proposed RCLWA Measures to Overcome Revenue Impacts

Name of Measures
Emergency Reserve Fund
Rate Structure Adjustment
Tiered Rate Structure Adjustments

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

A daily water use recording and monitoring system is in use under normal water supply conditions. During a declared water shortage emergency, the RCLWA management staff will compare daily water production with targeted goals and take appropriate action as outlined in this plan.

Reduction Monitoring Mechanisms are listed in **Table 5.15**.



Table 5.15: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type of Data Expected
Recording and Monitoring System	Daily Water Use

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 RCLWA does not currently use recycled water and does not have the ability to use recycled water due to a lack of infrastructure, RCLWA would use non-potable water for non-pool water features if and when recycled water supply ever becomes available to RCLWA. 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, RCLWA provided 60-day notification letters to agencies within RCLWA’s service area. Copies of the draft WSCP were made available for public review at the RCLWA 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, RCLWA’s final WSCP was approved and adopted by its Board of Directors on June 24, 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 July 1, 2021, RCLWA’s approved WSCP was filed with DWR. By July 1, 2021, RCLWA’s plan was submitted to the California State Library, County of Los Angeles, and cities within its service area. RCLWA 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 requirements. It is vital that RCLWA'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 RCLWA General Manager is responsible for maintaining this plan and updating it as needed. The General Manager is the primary RCLWA staff member who will carry out this process. In addition, 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.



RCLWA does not operate a sewage collection system, but instead relies on Los Angeles County Sanitation District for treatment and disposal. RCLWA's wholesale provider, FMWD, plays an important role in supporting its member agencies' own water supply projects that reduce imported water reliance.

SECTION 6: RECYCLED WATER

RUBIO CAÑÓN LAND AND WATER ASSOCIATION | 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, RCLWA continues to investigate the feasibility and cost-effectiveness of using recycled water.

Cost-effective opportunities for using recycled water in the RCLWA service area are limited due to the lack of large users and large irrigated areas. In addition, there is presently no nearby source of recycled water supply. This potential is continually assessed by RCLWA, FMWD, and MWD.

6.2 WASTEWATER DESCRIPTION AND DISPOSAL

6.2.1 WASTEWATER COLLECTION

Municipal wastewater is generated in RCLWA's service area from a combination of residential and commercial sources. The quantities of wastewater generated are generally proportional to the population and the water used in the service area.

RCLWA does not provide wastewater services. Rather, the areas it serves rely on Los Angeles County Sanitation District (LACSD) for wastewater treatment and disposal at the Whittier Narrows Water Reclamation Plant (WRP). The County Sanitation Districts, which provide wastewater services within the FMWD service area, are Districts 16 (Pasadena),



17 (Altadena), 28 (the area of La Cañada Flintridge surrounding the La Cañada Country Club), and 34 (the majority remainder of La Cañada Flintridge).

Table 6.1 shows the estimated wastewater collected within RCLWA’s service area. Per City of Los Angeles Bureau of Engineering, average per wastewater flow in the Los Angeles area is estimated at 90 GPCD. This average is used to estimate the wastewater volumes generated within RCLWA’s service area.

Table 6.1: 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?
LACSD	Estimated	929	LACSD	Los Angeles-Glendale WRP	No	No
Total Wastewater Collected from Service Area in 2020:		929				

6.2.2 WASTEWATER TREATMENT

LA CAÑADA WASTEWATER TREATMENT PLANT (WRP) or LANTERMAN PLANT

Of the sanitation districts near RCLWA's service area, only District 28 provides local wastewater treatment. The La Cañada WRP provides extended aeration secondary treatment for 200,000 gallons of wastewater per day. The plant serves the Country Club and 425 surrounding homes. All of the disinfected, secondary effluent is put into the four lakes on the 105-acre Country Club golf course. Lake water (augmented by potable water during the summer) is used for landscape irrigation of the golf course.

Recycled water is made available near RCLWA's service area by the LAGWRP and the La Cañada or "Lanterman" Plants.

The District 28 WRP (also known as the La Cañada WRP or the Lanterman Treatment Plant) is a secondary wastewater treatment plant with a capacity of 200,000 gallons per day. The plant provides wastewater treatment for the residential area around the La Cañada Flintridge Country Club and presently treats about 100,000 gallons per day. The effluent

is discharged into ponds at the country club and is then pumped and used for irrigation of the fairways and greens. Disinfected secondary effluent meets the regulatory requirements for controlled access golf course irrigation but not for landscape irrigation.

The 100,000 gallons per day of effluent are adequate to meet the irrigation needs in the cooler months, although Mesa Crest Water Company (FMWD distributing agency) provides supplemental water to the ponds during the warmer summer months.

The District 28 Plant is the most expensive to operate in all of the LACSD water reclamation facilities, and there have been a number of investigations into alternative facilities that would allow for the abandonment of the facility. The most recent of these has resulted in the construction of a sewer to the northwest beyond JPL, which would allow for the discharge of raw wastewater from the plant's service area into the LACSD Joint Outfall System through the City of Pasadena's Linda Vista Trunk sewer. At present, LACSD only plans for the discharge of sludge from the District 28 plant into this line, since they recognize the value of the effluent as a water resource for the golf course. There is also the possibility of capturing storm water flows and introducing those flows into the system for use to irrigate the adjacent golf course.

The remainder of the wastewater collected in or near RCLWA's service area goes to either LACSD's Whittier Narrows WRP in El Monte or LACSD's JWPCP in Carson. LACSD does not monitor the amount of wastewater collected from the areas, but only measures the amount of wastewater that enters the plants. Also, LACSD has no way of quantifying the percentage of flow from each city as it enters the treatment plants

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 RCLWA's service area.

6.4 POTENTIAL RECYCLED WATER USES

In the past, FMWD, RCLWA's wholesale provider, promoted a Local, Reliable Water Supply Program (LRWSP) aimed to reduce imported water demands by implementing increased conservation, stormwater capture, and recycled water projects. The LRWSP evolved over time to FMWD focusing its efforts on recycled water development and conservation support for its member agencies. In January 2012, FMWD completed a facilities planning study for the development of recycled water. As recycled water project planning progressed, in September 2013, the FMWD retail agencies asked FMWD to suspend recycled water development due to implementation costs.

Despite a holding pattern for internal recycled water development, FMWD is committed to various conservation programs. FMWD plays an important role in supporting its retailing agencies' own water supply projects that reduce imported water reliance. FMWD also actively monitors outside recycled water development and opportunities that may be beneficial for its member agencies.

FMWD supports the implementation of Pasadena Water and Power's (PWP) Recycled Water Program (Program), which could assist in the reduction of imported supplies to FMWD's retail agencies. Developing the Program is one potential element of an overall solution to address PWP water resource challenges. Maximizing the beneficial use of recycled water provides an opportunity to use available local water resources and increase water supply reliability. PWP completed a Water Integrated Resources Plan (WIRP) in January 2011, which included non-potable reuse (NPR) and groundwater recharge with recycled water (GWR-RW). PWP then completed a Recycled Water Planning Study in February 2012, which was partially funded by a grant from the SWRCB Water Recycling Funding Program and by a grant from the USBR Title XVI Water Reclamation and Reuse Program. PWP has moved forward with CEQA and NEPA for the Project. Phase 1 of the Program is approximately \$12M and will supply approximately 700 AFY to irrigation customers. Phase 1 of the PWP Program is now under construction.

In addition, MWD is developing a Regional Recycled Water Supply Program. MWD's Regional Water Supply Program is exploring the potential of a water purification project to beneficially reuse water currently discharged to the Pacific Ocean for recharge of regional groundwater basins. Under a partnership with LACSD, MWD would build a new



purification plant and distribution lines to groundwater basins in Los Angeles and Orange counties including a basin within FMWD's service area. The Regional Water Supply Program would represent the first in-region production of water by MWD. Diversifying the region's water supply sources, advancing conservation, and maintaining imported supplies are all part of MWD's long-term Integrated Water Resources Plan.

6.4.1 DIRECT NON-POTABLE REUSE

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

6.4.2 INDIRECT NON-POTABLE REUSE

RCLWA does not have the potential for indirect potable reuse within its service area.

6.5 OPTIMIZATION PLAN

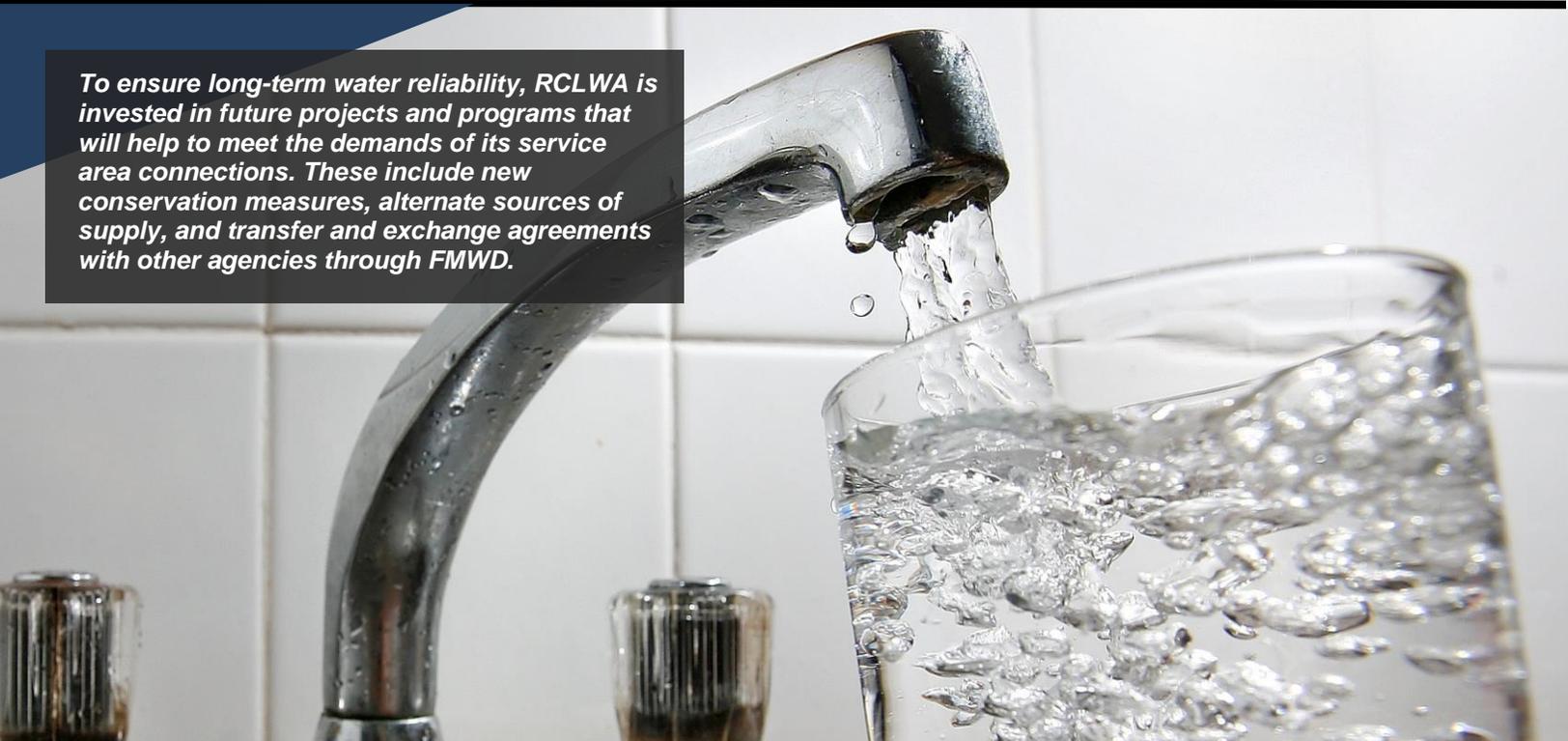
Because RCLWA is not using recycled water at this time, it is not practicable to provide a recycled water optimization plan. RCLWA has positioned itself to receive recycled water if it becomes available to serve some of the large development areas.

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 RCLWA exceed the cost of purchasing additional imported water from MWD.

RCLWA 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.



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To ensure long-term water reliability, RCLWA is invested in future projects and programs that 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 SUPPLY PROJECTS & PROGRAMS

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SECTION 7

FUTURE WATER SUPPLY PROJECTS & PROGRAMS

7.1 OVERVIEW

In general, RCLWA continually reviews practices that will provide its customers with adequate and reliable supplies. As discussed in previous sections, RCLWA is dedicated to maximizing its supply sources while reducing its dependency on imported supplies. RCLWA considers, at least on some level, 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 many supply sources.

MWD's 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 RCLWA to meet future water demands. With the eventual replacement of older wells with new and more efficient wells in addition to the continued efforts in reducing water waste, RCLWA can meet projected demands with existing facilities and distribution systems.

7.4 TRANSFER OR EXCHANGE OPPORTUNITIES

RCLWA relies on efforts of FMWD and MWD to pursue transfer or exchange opportunities. At this time, RCLWA is not currently involved in any transfer or exchange opportunities.

7.5 PLANNED WATER SUPPLY PROJECTS AND PROGRAMS

GROUNDWATER STORAGE PROGRAM

Working with FMWD and other water agencies in this area, RCLWA participates in the FMWD Conjunctive Use Program. This program, which began in 2003, allows additional supply storage from MWD in the Raymond Basin for the FMWD retailers to produce when called upon. During periods of shortage, MWD may ask for production of this water instead of providing direct deliveries. From 2007 to 2015, member agencies withdrew all the water stored in the conjunctive use account to meet part of their needs from MWD.

RAYMOND BASIN GROUNDWATER RESTORATION

RCLWA participates in this program as a member of the Raymond Basin Management Board. The overall goals are to enhance local recharge and bring a secondary source of untreated replenishment water into the basin. Groundwater levels are declining and the area's population continues to grow.

Three specific projects are contemplated: conversion of existing flood control debris basins into water spreading facilities; constructing an untreated water transmission line into the basin; and constructing four new monitoring wells at key locations to better determine actual water quality conditions and groundwater levels.



7.6 DESALINATION OPPORTUNITIES

There are technologies in place to remove the salts in both brackish groundwater and ocean water for potable use. RCLWA 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

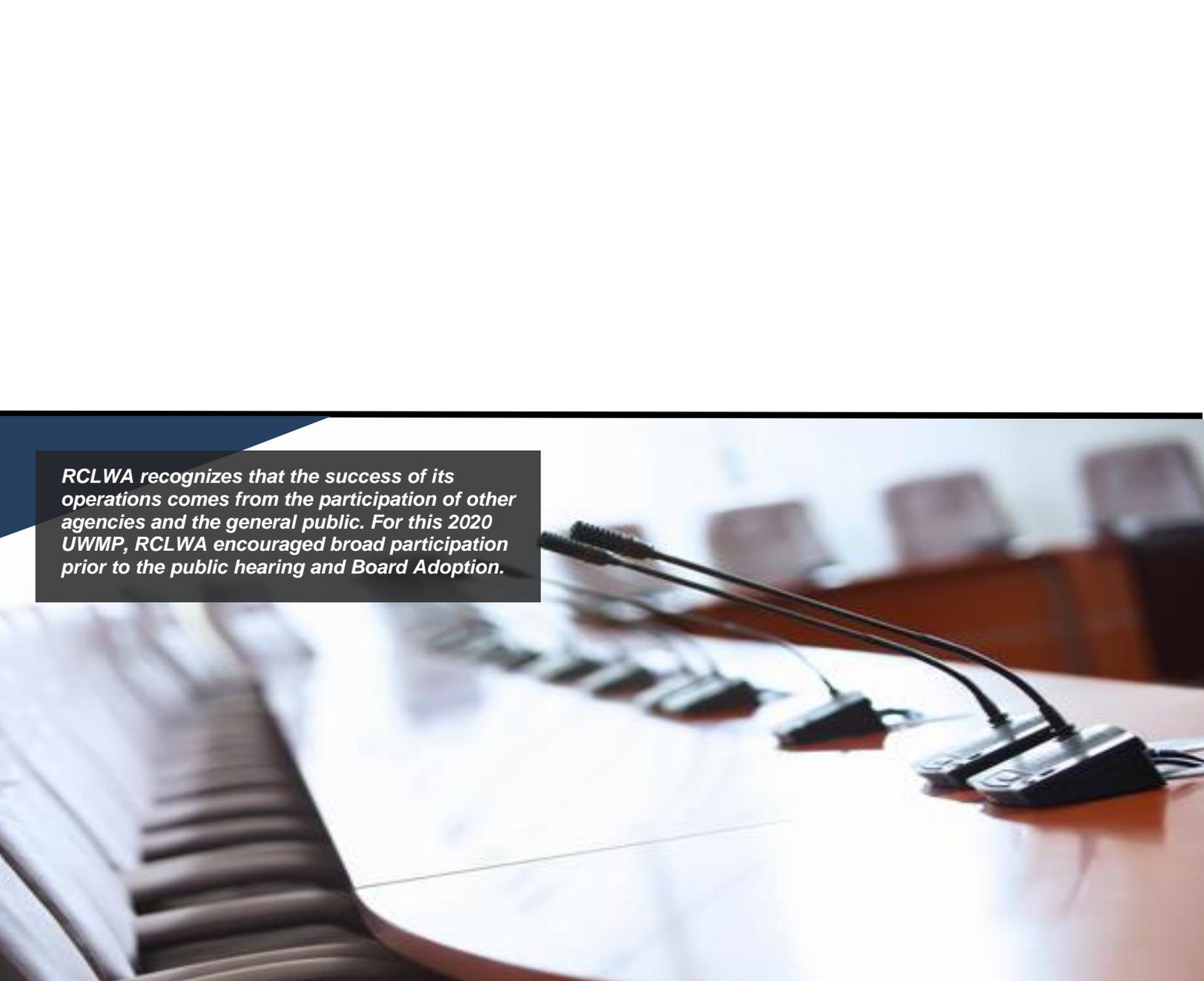
There are currently no brackish groundwater opportunities within RCLWA's service area.

7.6.2 DESALINATION OF OCEAN WATER

RCLWA does not have the opportunity to directly develop desalinated supplies. It does not border the ocean and cannot participate directly in ocean desalination; however, RCLWA supports MWD's Seawater Desalination Program (SDP), which provides incentives to MWD's member agencies for the production of desalinated ocean water. Although RCLWA is not able to directly participate in seawater desalination, it participates indirectly by supporting MWD's program.



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

SECTION 8: PLAN ADOPTION PROCESS

RUBIO CAÑÓN LAND AND WATER ASSOCIATION | 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, RCLWA worked closely with other entities to develop and update this planning document. RCLWA provided 60-day notification letters to encourage agencies to participate in the UWMP preparation process (**Appendix C**). Copies of the draft UWMP and draft WSCP were made available for public review at the RCLWA 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 D**). At a subsequent board meeting following the public hearing, RCLWA adopted the 2020 UWMP and WSCP on June 24, 2021. Finally, as required by the UWMP Act, this 2020 UWMP and the WSCP are being provided by RCLWA 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**.

RCLWA'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 California Water Code (CWC) requires that RCLWA 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** summarizes external coordination and outreach activities carried out by RCLWA during the preparation of its 2020 UWMP, along with corresponding dates.

Also in accordance with Article 3 of the CWC, RCLWA 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 Resolution (**Appendix E**) on June 24, 2021, RCLWA 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, and other Agencies	March 26, 2021
Public Hearing	Public Hearing Held at RCLWA Office (two-week and one-week notices published)	June 24, 2021
Board Adoption	Board Adoption of UWMP by Resolution	June 24, 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)	July 1, 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 CWC and to provide for its own benefit, RCLWA has actively solicited community participation during the UWMP preparation and adoption process by performing the activities on the following page.

- Encouraging attendance and participation in Board Meetings prior to the actual UWMP Public Hearing as part of RCLWA's ongoing community outreach efforts
- Soliciting comments on the UWMP while providing copies of its Draft 2020 UWMP at the RCLWA 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 24, 2021, RCLWA 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 RCLWA's draft UWMP was printed in a local newspaper, a copy of which is provided in **Appendix D**. 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

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

All of RCLWA’s water supply planning relates to the policies, rules, and regulations of its regional and local providers. RCLWA is dependent on imported water from MWD via FMWD and local groundwater from the Raymond Basin, which is managed by the Raymond Basin Management Board. RCLWA serves water to the northwestern portion of Altadena, an unincorporated area within the County of Los Angeles. In addition, RCLWA consistently negotiates to lease groundwater rights, at a lower cost than imported water, from other water purveyors who cannot pump their groundwater. As such, RCLWA involved these entities in the development of its 2020 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		✓		✓	
DWR		✓		✓	
LAWC		✓		✓	
LA County		✓		✓	
Pasadena Water and Power		✓		✓	
General Public		✓		✓	✓

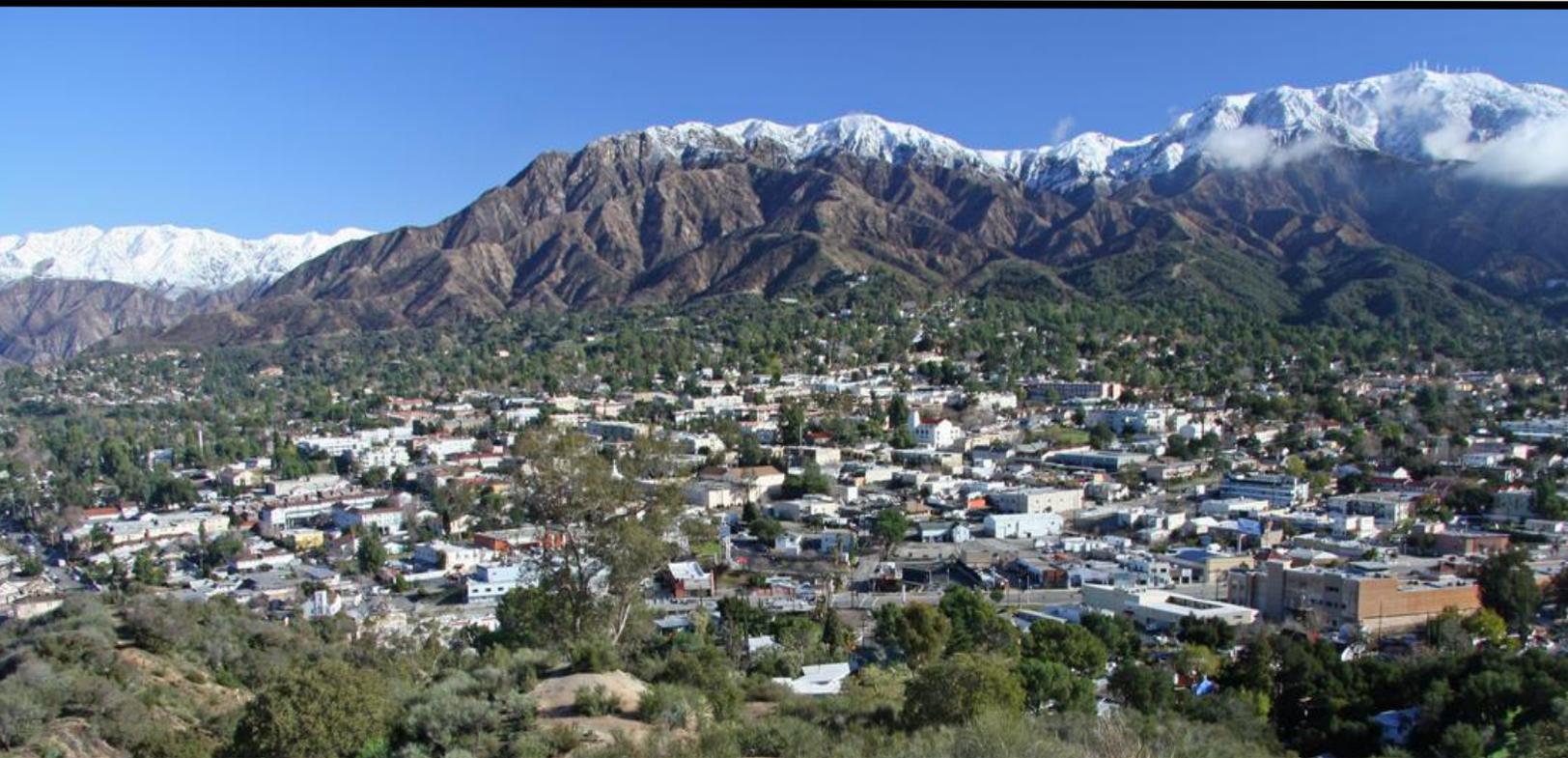
8.3 Plan Submittal

RCLWA’s final 2020 UWMP and WSCP were approved by its Board of Directors on June 24, 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 July 1, 2021, RCLWA’s approved 2020 UWMP and WSCP were filed with DWR. By July 1, 2021, RCLWA’s plans were submitted to the California State Library, County of Los Angeles, and cities within its service area. RCLWA will make both plans available for public review during normal business hours and no later than 30 days after filing with DWR.



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APPENDICES A - J

RUBIO CAÑON LAND AND WATER ASSOCIATION | 2020 URBAN WATER MANAGEMENT PLAN



Appendix A: UWMP Checklist

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

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	Section 1.4
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	Section 1.4
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 8.1 Section 8.2 Appendix C Appendix D
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 Appendix C Appendix D
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	N/A
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
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 2.2
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
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
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 2.2
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 Section 2.6
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
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
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
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
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 3.7
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
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 2.4, did not meet
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	Section 2.4
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
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 Appendix B
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 3.8 Section 3.10
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 3.8 Section 3.10
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 Section 3.3 Section 3.4
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 3.2 Section 3.3 Section 3.4
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 3.8 Section 3.10
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 Appendix F
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	Section 3.3 Appendix F
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 Section 3.6
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 3.8
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
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 7
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 3.12
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 3.5
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 Section 7.2
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 3.8 Section 3.10 Section 5.2
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
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

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	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
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 3.8 Section 3.10
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 3.8 Section 3.10 Section 5.2
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
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
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
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
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Section 5.4
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 Appendix I
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
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Planning	Section 5.4
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 5.7
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
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
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
x	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	Appendix C
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
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	Appendix C Appendix D
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 Appendix C Appendix D
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	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	Appendix E
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 8.3
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 Section 8.3
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 Section 8.3
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
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 8.3



Appendix B: DWR Submittal Tables

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

DWR Submittal Tables – 2020 UWMP

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 *
<i>Add additional rows as needed</i>			
CA1910140	Rubio Cañon Land and Water Association	3,131	2,175
TOTAL		3,131	2,175
* <i>Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>			
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)
<input checked="" type="checkbox"/>	Individual UWMP	
	<input type="checkbox"/> Water Supplier is also a member of a RUWMP	
	<input type="checkbox"/> Water Supplier is also a member of a Regional Alliance	
<input type="checkbox"/>	Regional Urban Water Management Plan (RUWMP)	
NOTES:		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	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
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>	
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)
	9,215	9,360	9,508	9,658	9,810	9,965

NOTES:

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable¹ 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	1,725
Multi-Family		Drinking Water	168
Commercial	w/ Institutional	Drinking Water	126
Landscape		Drinking Water	24
Losses		Drinking Water	132
TOTAL			2,175

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>				
		2025	2030	2035	2040	2045 (opt)
<p><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</p>						
Add additional rows as needed						
Single Family		1,497	1,520	1,544	1,569	1,593
Multi-Family		146	148	150	153	155
Commercial	w/ Institutional	110	111	113	115	117
Landscape		21	21	21	22	22
Losses		114	116	118	120	122
TOTAL		1,887	1,917	1,947	1,978	2,009
<p>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.</p>						
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>	2,175	1,887	1,917	1,947	1,978	2,009
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	0	0	0	0	0	0
TOTAL WATER USE	2,175	1,887	1,917	1,947	1,978	2,009

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	91.409
01/2017	114.281
01/2018	86.200
01/2019	29.221
01/2020	132.000

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

<p>Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i></p>	No
<p>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.</p>	
<p>Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i></p>	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	1999	2008	231	185
5 Year	2004	2008	232	

**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)		
211	0	211	185	NO

**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						
<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type <i>Drop Down List</i> May use each category multiple times	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
<i>Add additional rows as needed</i>						
Alluvial Basin	Raymond Groundwater Basin	1,663	1,819	1,953	1,619	2,028
TOTAL		1,663	1,819	1,953	1,619	2,028
* 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						
<input type="checkbox"/>	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>
Los Angeles County Sanitation District	Estimated	929	Los Angeles County Sanitation District	Los Angeles-Glendale Water Reclamation Plant	No	No
Total Wastewater Collected from Service Area in 2020:		929				
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 .						
NOTES: Per City of Los Angeles Bureau of Engineering, average per wastewater flow in the Los Angeles area is estimated at 90 GPCD. This average is used to estimate the wastewater volumes generated within RCLWA's service area.						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020											
<input checked="" type="checkbox"/> 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										
<input checked="" type="checkbox"/> 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 units¹</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		
<input checked="" type="checkbox"/>	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			
<input checked="" type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6	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						
<input type="checkbox"/>	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.					
<input checked="" type="checkbox"/>	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 Drop Down List	Total Right or Safe Yield* (optional)
<i>Add additional rows as needed</i>				
Purchased or Imported Water	FMWD	0	Drinking Water	
Groundwater (not desalinated)	Raymond Basin	2,028	Drinking Water	
Surface water (not desalinated)	Rubio Canyon	146	Drinking Water	
Total		2,175		0
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.				
NOTES:				

Submittal Table 6-9 Retail: Water Supplies — Projected											
Water Supply 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	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
		2025		2030		2035		2040		2045 (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Purchased or Imported Water	MWD via FMWD	500		500		500		500		500	
Groundwater (not desalinated)	Raymond Basin	1,821		1,821		1,821		1,821		1,821	
Surface water (not desalinated)	Rubio Canyon	118		118		118		118		118	
	Total	2,439	0	2,439	0	2,439	0	2,439	0	2,439	0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>											
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	
		<input checked="" type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location <u>Section 3.10.4</u>
		<input type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year			
Single-Dry Year			
Consecutive Dry Years 1st Year			
Consecutive Dry Years 2nd Year			
Consecutive Dry Years 3rd Year			
Consecutive Dry Years 4th Year			
Consecutive Dry Years 5th Year			
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.</i>			
NOTES:			

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals (autofill from Table 6-9)	2,439	2,439	2,439	2,439	2,439
Demand totals (autofill from Table 4-3)	1,887	1,917	1,947	1,978	2,009
Difference	552	522	492	461	430
NOTES:					

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	2,385	2,385	2,385	2,385	2,385
Demand totals*	2,016	2,048	2,080	2,113	2,147
Difference	369	337	305	272	238
*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	2,419	2,419	2,419	2,419	2,419
	Demand totals	1,913	1,943	1,974	2,005	2,037
	Difference	506	476	445	414	382
Second year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	2,070	2,102	2,135	2,169	2,203
	Difference	349	317	284	250	216
Third year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	2,172	2,206	2,241	2,276	2,312
	Difference	247	213	178	143	107
Fourth year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	2,147	2,181	2,215	2,250	2,286
	Difference	272	238	204	169	133
Fifth year	Supply totals	2,419	2,419	2,419	2,419	2,419
	Demand totals	1,710	1,737	1,764	1,792	1,820
	Difference	709	682	655	627	599
Sixth year <i>(optional)</i>	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	1,864
Total Supplies	2,419
Surplus/Shortfall w/o WSCP Action	555
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	555
Resulting % Use Reduction from WSCP action	0%
2022	Total
Total Water Use	1,870
Total Supplies	2,419
Surplus/Shortfall w/o WSCP Action	549
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	549
Resulting % Use Reduction from WSCP action	0%
2023	Total
Total Water Use	1,875
Total Supplies	2,419
Surplus/Shortfall w/o WSCP Action	544
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	544
Resulting % Use Reduction from WSCP action	0%
2024	Total
Total Water Use	1,881
Total Supplies	2,419
Surplus/Shortfall w/o WSCP Action	538
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	538
Resulting % Use Reduction from WSCP action	0%
2025	Total
Total Water Use	1,887
Total Supplies	2,419
Surplus/Shortfall w/o WSCP Action	532
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	532
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%	Standard Water Conservation. FMWD can meet all Member Agency demands. Voluntary water conservation applies.
2	Up to 20%	Increased Water Conservation. Some supplies have been impacted, and consumers should increase efforts to conserve.
3	Up to 30%	Extraordinary Water Conservation. MWD is withdrawing water from most of its storage programs to meet demands. Extraordinary conservation is called for from consumers.
4	Up to 40%	Allocation. MWD has implemented its allocation plan to its member agencies. Thus, supplies are limited.
5	Up to 50%	Critical. Water supplies are reduced drastically.
6	>50%	Emergency. Water supplies are only available for health and safety needs.

NOTES:

Submittal Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions <i>Drop down list</i> <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? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Supplier Only</i> <i>Drop Down List</i>
<i>Add additional rows as needed</i>				
Shortage Level 1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Reduction of 10% to over 50% depending on Shortage Phase	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.	Yes
Shortage Level 1	Other	Reduction of 10% to over 50% depending on Shortage Phase	All new plumbing fixtures installed within the FMWD service area must conform to the following requirements: 1) Toilets shall use less than 1.6 gallons per flush, 2) Showers/baths shall flow at less than 2.5 gallons per minute, 3) Non-residential lavatory faucets shall be metering or self-closing, and 4) Urinals shall use not more than 1.5 gallons per flush.	Yes
Shortage Level 1	Other	Reduction of 10% to over 50% depending on Shortage Phase	Where recycled water is available and appropriate, the use of potable water for irrigation purposes shall be considered a waste of potable water. Upon written notice from the FMWD General Manager that recycled water is available and appropriate for use, the customer shall have 60 days to commence the use of recycled water.	Yes
Shortage Level 1	Other - Prohibit use of potable water for construction and dust control	Reduction of 10% to over 50% depending on Shortage Phase	Potable water shall not be used for construction activities such as compaction and dust control when recycled water is available and appropriate. As used in this paragraph, "available" also means the cost of required recycled water conveyance facilities, is less than or equal to the cost of an equivalent amount of potable water priced at 150% of regular potable water rates, plus the cost of necessary potable water conveyance facilities. Both potable and non-potable 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.	Yes
Shortage Level 1	Landscape - Prohibit certain types of landscape irrigation	Reduction of 10% to over 50% depending on Shortage Phase	No irrigation of new or existing parks, median strips, landscaped public areas or landscaped areas, lawns, or gardens surrounding single-family homes, condominiums, townhouses, apartments, and industrial parks shall occur in such a way as to waste water. The rate and extent of application of water shall be controlled by the consumer so as to eliminate runoff or overspray from the irrigated areas.	Yes
Shortage Level 1	Landscape - Limit landscape irrigation to specific times	Reduction of 10% to over 50% depending on Shortage Phase	Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m. Pacific Standard Time on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the purpose of adjusting or repairing an irrigation system.	Yes
Shortage Level 1	Landscape - Other landscape restriction or prohibition	Reduction of 10% to over 50% depending on Shortage Phase	Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device not continuously attended is limited to no more than ten (10) minutes watering per day per station. This subsection does not apply to landscape irrigation systems using only very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather-based controllers or stream rotor sprinklers that meet a 70% efficiency standard.	Yes
Shortage Level 1	Other - Prohibit use of potable water for washing hard surfaces	Reduction of 10% to over 50% depending on Shortage Phase	Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.	Yes
Shortage Level 1	Water Features - Restrict water use for decorative water features, such as fountains	Reduction of 10% to over 50% depending on Shortage Phase	Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.	Yes
Shortage Level 1	Other	Reduction of 10% to over 50% depending on Shortage Phase	Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility 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.	Yes
Shortage Level 1	CII - Restaurants may only serve water upon request	Reduction of 10% to over 50% depending on Shortage Phase	Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.	Yes
Shortage Level 1	CII - Commercial kitchens required to use pre-rinse spray valves	Reduction of 10% to over 50% depending on Shortage Phase	Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.	Yes
Shortage Level 1	Landscape - Other landscape restriction or prohibition	Reduction of 10% to over 50% depending on Shortage Phase	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.	Yes
Shortage Level 1	Other	Reduction of 10% to over 50% depending on Shortage Phase	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 FMWD.	Yes
Shortage Level 2	Other	Up to 20%	Installation of single pass cooling systems is prohibited in buildings requesting new water service.	Yes
Shortage Level 2	Other	Up to 20%	Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.	Yes
Shortage Level 2	Other	Up to 20%	All commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from LAWC.	Yes
Shortage Level 2	Landscape - Limit landscape irrigation to specific days	Up to 20%	Outdoor water use is limited to odd or even days, based on ending number of customer address.	Yes
Shortage Level 3	Landscape - Limit landscape irrigation to specific days	Up to 30%	Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three days per week on Tuesdays, Thursdays and Saturdays. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than two days per week on Tuesdays and Saturdays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.	Yes
Shortage Level 4	Landscape - Limit landscape irrigation to specific days	Up to 40%	Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two days per week on Tuesdays and Saturdays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.	Yes
Shortage Level 4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Up to 40%	All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the local water purveyor unless other arrangements are made with LAWC.	Yes
Shortage Level 4	Water Features - Restrict water use for decorative water features, such as fountains	Up to 40%	Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this plan.	Yes
Shortage Level 4	Other	Up to 40%	Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash systems, or at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water.	Yes
Shortage Level 5	Other	Up to 50%	No new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability) will be issued, except under the following circumstances: A valid, unexpired building permit has been issued for the project; or the project is necessary to protect the public health, safety, and welfare; or the applicant provides substantial evidence of an enforceable commitment that water demands for the project will offset prior to the provision of a new water meter(s) to the satisfaction of the local water purveyor.	Yes
Shortage Level 5	Other	Up to 50%	FMWD will suspend consideration of annexations to its service area. This subsection does not apply to boundary corrections and annexations that will not result in any increased use of water.	Yes
Shortage Level 6	Landscape - Prohibit all landscape irrigation	Greater than 50%	Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. Any waivers to this restriction must be obtained from the LAWC.	Yes
Shortage Level 6	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Greater than 50%	All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within twenty-four (24) hours of notification by the local water purveyor unless other arrangements are made with the LAWC.	Yes

NOTES: Demand reductions for Shortage Level 1 is applicable to all stages unless a more restrictive mandate is in place.

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 WUdata 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>			
Shortage Level 1	Expand Public Information Campaign	Reduction of 10% to > 50%	
Shortage Level 1	Other Actions (describe)	Reduction of 10% to > 50%	Rebate programs
NOTES: Above actions are applicable to all of RCLWA's shortage levels (1-6).			

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>		
City of Pasadena	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Los Angeles County	Yes	Yes
NOTES:		

Energy Intensity Tables – 2020 UWMP

Urban Water Supplier:

Rubio Canon Land and Water Association

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	12/10/2019	Urban Water Supplier Operational Control		
End Date	12/8/2020			
<input type="checkbox"/> 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>		2175		2175
<i>Energy Consumed (kWh)</i>		2024615		2024615
<i>Energy Intensity (kWh/vol. converted to MG)</i>		2856.7	#DIV/0!	2856.7
Quantity of Self-Generated Renewable Energy				
0 kWh				
Data Quality (<i>Estimate, Metered Data, Combination of Estimates and Metered Data</i>)				
dropdown menu				
Data Quality Narrative:				
Volume shown is based on total water volume delivered. All water volumes are metered. Total Water in process is 2,175 AF. Energy consumption is based on wall water related facilities within RCLWA's system. Energy data is metered and obtained from SCE. Total energy usage is 2,024,615 kWh.				
Narrative:				
Energy Intensity is based on the total energy consumption and total water volume. Per Energy Use Excel, Energy Intensity is converted to units of kWh/MG. RCLWA's energy intensity is 2,856.7 kWh/MG.				

SBx7-7 2020 Compliance Tables – 2020 UWMP

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

9,215

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>	
	2,175			-		-	2,175

* 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 - Raymond Basin		
This water source is (check one) :			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	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
	2,028	-	2,028

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.

Name of Source		Surface Water - Rubio Canyon	
This water source is (check one) :			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	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
	146		146
<p>¹ <i>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.</i></p> <p>² <i>Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i></p>			
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
2,175	9,215	211
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				
211	-	-	-	-	211	185	NO

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:



Appendix C: 60-Day Notification of Public Hearing

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan



March 26, 2021

Ms. Kathryn Barger
County of Los Angeles
Clerk-Recorder
320 W. Temple, 13th Floor
Los Angeles, CA 90012

Re: Notice of Intention to Adopt Urban Water Management Plan

This letter serves as a formal 60-day notice that Rubio Cañon Land and Water Association is in the process of preparing updates to its Urban Water Management Plan, Risk Resiliency Assessment and Emergency Response Plan (The Plan) A public hearing is scheduled on June 24, 2021 for comments. Comments may be submitted in writing before that time to:

Rubio Canon Land & Water Association
Post Office Box 398
Altadena CA 91003

Please refer to our website rclwa.org for updates on hearing dates and a draft of the Plan when it is available. The draft will be available 30 days prior to the public hearing which is scheduled for June 24, 2021.

Should no comments be made during the public meeting recommending changes, the Plan may be adopted by the Board of Directors on that day. Otherwise, a meeting will take place with a response or an updated Plan for adoption.



March 26, 2021

Department of Water Resources
Clerk-Recorder
P.O. Box 942836
Sacramento, CA 94236

Re: Notice of Intention to Adopt Urban Water Management Plan

This letter serves as a formal 60-day notice that Rubio Cañon Land and Water Association is in the process of preparing updates to its Urban Water Management Plan, Risk Resiliency Assessment and Emergency Response Plan (The Plan) A public hearing is scheduled on June 24, 2021 for comments. Comments may be submitted in writing before that time to:

Rubio Canon Land & Water Association
Post Office Box 398
Altadena CA 91003

Please refer to our website rclwa.org for updates on hearing dates and a draft of the Plan when it is available. The draft will be available 30 days prior to the public hearing which is scheduled for June 24, 2021.

Should no comments be made during the public meeting recommending changes, the Plan may be adopted by the Board of Directors on that day. Otherwise, a meeting will take place with a response or an updated Plan for adoption.



March 26, 2021

Ms. Nina Jazmadarian
Foothill Municipal Water District
General Manager
4536 Hampton Rd.
La Cañada, CA 91011

Re: Notice of Intention to Adopt Urban Water Management Plan

This letter serves as a formal 60-day notice that Rubio Cañon Land and Water Association is in the process of preparing updates to its Urban Water Management Plan, Risk Resiliency Assessment and Emergency Response Plan (The Plan) A public hearing is scheduled on June 24, 2021 for comments. Comments may be submitted in writing before that time to:

Rubio Canon Land & Water Association
Post Office Box 398
Altadena CA 91003

Please refer to our website rclwa.org for updates on hearing dates and a draft of the Plan when it is available. The draft will be available 30 days prior to the public hearing which is scheduled for June 24, 2021.

Should no comments be made during the public meeting recommending changes, the Plan may be adopted by the Board of Directors on that day. Otherwise, a meeting will take place with a response or an updated Plan for adoption.



March 26, 2021

Ms. Jennifer Betancourt Torres
Lincoln Avenue Water Company
General Manager
564 W. Harriet Street
Altadena, CA 91001

Re: Notice of Intention to Adopt Urban Water Management Plan

This letter serves as a formal 60-day notice that Rubio Cañon Land and Water Association is in the process of preparing updates to its Urban Water Management Plan, Risk Resiliency Assessment and Emergency Response Plan (The Plan) A public hearing is scheduled on June 24, 2021 for comments. Comments may be submitted in writing before that time to:

Rubio Canon Land & Water Association
Post Office Box 398
Altadena CA 91003

Please refer to our website rclwa.org for updates on hearing dates and a draft of the Plan when it is available. The draft will be available 30 days prior to the public hearing which is scheduled for June 24, 2021.

Should no comments be made during the public meeting recommending changes, the Plan may be adopted by the Board of Directors on that day. Otherwise, a meeting will take place with a response or an updated Plan for adoption.



March 26, 2021

Ms. Elisa Ventura
Pasadena Water and Power
150 South Los Robles Ave. #200
Pasadena CA 91101

Re: Notice of Intention to Adopt Urban Water Management Plan

This letter serves as a formal 60-day notice that Rubio Cañon Land and Water Association is in the process of preparing updates to its Urban Water Management Plan, Risk Resiliency Assessment and Emergency Response Plan (The Plan) A public hearing is scheduled on June 24, 2021 for comments. Comments may be submitted in writing before that time to:

Rubio Canon Land & Water Association
Post Office Box 398
Altadena CA 91003

Please refer to our website rclwa.org for updates on hearing dates and a draft of the Plan when it is available. The draft will be available 30 days prior to the public hearing which is scheduled for June 24, 2021.

Should no comments be made during the public meeting recommending changes, the Plan may be adopted by the Board of Directors on that day. Otherwise, a meeting will take place with a response or an updated Plan for adoption.



Appendix D: Two-Week & One-Week Notification of Public Hearing

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

Pasadena Star-News

Affiliated with SGV Newspaper Group
911 E. Colorado Blvd.
Pasadena, CA 91109
626-962-8811 ext. 40885

RUBIO CANON LAND AND WATER ASSO.
583 E. SACRAMENTO ST.
ALTADENA, CA 91001

.....
Account Number: 5276610

Ad Order Number: 0011468426

Customer's Reference
/ PO Number:

Publication: Pasadena Star-News

Publication Dates: 06/10/2021, 06/17/2021

Total Amount: \$284.00

Payment Amount: \$284.00 *Payment Method:* Credit Card

Amount Due: \$0.00

Invoice Text: **Notice of Public Hearing
For 2020 Urban Water Management Plan and
Availability of Draft Plan For Review**

Rubio Cañon Land and Water hereby releases its Draft 2020 Urban Water Management Plan (UWMP) for public review. The UWMP will be available through June 24, 2021 at www.rclwa.org, and our office at 583 E Sacramento St., Altadena, CA.

A Public Hearing will be held on June 24, 2021 at 8:30 am to consider comments to the Draft UWMP and to adopt the UWMP. The Public Hearing location is 583 E Sacramento St., Altadena.

A
If you have any questions concerning the 2020 UWMP, please contact: Lisa or Armando at 626.797.0509.

Pub: June 10 & 17, 2021 Pasadena Star News Ad#11468426

Pasadena Star-News

Affiliated with SGV Newspaper Group
911 E. Colorado Blvd.
Pasadena, CA 91109
626-962-8811 ext. 40885

5276610

RUBIO CANON LAND AND WATER ASSO.
583 E. SACRAMENTO ST.
ALTADENA, CA 91001

**PROOF OF PUBLICATION
(2015.5 C.C.P.)**

**STATE OF CALIFORNIA
County of Los Angeles**

I am a citizen of the United States, and a resident of the county aforesaid. I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of PASADENA STAR-NEWS, a newspaper of general circulation for the City of Pasadena, by the Superior Court of the County of Los Angeles, State of California, on the date of June 22, 1927, Case Number 225647. The notice, of which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

06/10/2021, 06/17/2021

I declare under the penalty of perjury that the foregoing is true and correct.

Executed at Monrovia, LA Co. California
On this 17th day of June, 2021.



Signature

(Space below for use of County Clerk Only)

Legal No. **0011468426**

**Notice of Public Hearing
For 2020 Urban Water Management Plan and
Availability of Draft Plan For Review**

Rubio Cañon Land and Water hereby releases its Draft 2020 Urban Water Management Plan (UWMP) for public review. The UWMP will be available through June 24, 2021 at www.rclwa.org, and our office at 583 E Sacramento St., Altadena, CA.

A Public Hearing will be held on June 24, 2021 at 8:30 am to consider comments to the Draft UWMP and to adopt the UWMP. The Public Hearing location is 583 E Sacramento St., Altadena.

A
If you have any questions concerning the 2020 UWMP, please contact:
Lisa or Armando at 626.797.0509.

Pub: June 10 & 17, 2021 Pasadena Star News Ad#11468426



Appendix E: RCLWA Board Resolution Adopting 2020 UWMP & WSCP

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

Resolution #UWMP2020

**Rubio Canon Land & Water Association
Adopting the 2020 Urban Water Management Plan**

WHEREAS, the California Legislature in 1983 enacted the Urban Water Management Plan Act (Water Code 10610 et seq.) which mandates that suppliers of water for municipal purposes to more than 3,000 customers or supplying more than 3,000-acre feet of water annually, prepare an Urban Water Management Plan;

WHEREAS, since its passage in 1983, several updates have been made to the Urban Water Management Plan Act, the most recent for year 2020;

WHEREAS, the Urban Water Management Plan Act (10621 of the California Water Code) requires the Urban Water Management Plans be periodically updated at least once every five years on or before July 1, in years ending in five and zero, in order to reflect changes in water supply, water quality, trends, conservative policies and the law;

WHEREAS, Rubio Canon Land & Water Association has prepared and made available for public review, an update to its Urban Water Management Plan for the 2020 update. In furtherance of its adoption, a properly notified public hearing regarding the Plan was held by the Board of Directors on June 24, 2021;

NOW, THEREFORE, BE IT RESOLVED, that Rubio Canon Land & Water Association hereby adopts its 2020 Urban Water Management Plan.

ADOPTED, SIGNED AND APPROVED this 24th day of June, 2021.



Janet Fahey, President
Rubio Canon Land & Water Association



John Vrsalovich, Secretary-Treasurer
Rubio Canon Land & Water Association

ATTEST

STATE OF CALIFORNIA)
)
COUNTY OF LOS ANGELES)

I, John Vrsalovich, Secretary-Treasurer of Rubio Canon Land and Water Association, do hereby certify that the attached is a full, true and correct copy of the 2020 Updated Urban Water Management Plan adopted by said Board, and that the same has not been amended or repealed.

DATED: June 24,2021



John Vrsalovich, Secretary-Treasurer
Rubio Canon Land & Water Association

Resolution #WSCP2020

**Rubio Canon Land & Water Association
Adopting the 2020 Water Shortage Contingency Plan**

WHEREAS, the California Legislature in 1983 enacted the Urban Water Management Plan Act (Water Code 10610 et seq.) which mandates that suppliers of water for municipal purposes to more than 3,000 customers or supplying more than 3,000-acre feet of water annually, prepare and adopt, in accordance with prescribed requirements, a Water Shortage Contingency Plan as part of its Urban Water Management Plan;

WHEREAS, pursuant to recent amendments to the Act, urban water suppliers are required to adopt and electronically submit their Water Shortage Contingency Plan to the California Department of Water Resources by July 1, 2021;

WHEREAS, Rubio Canon Land and Water meets the definition of an urban water supplier for purposes of the Act and is required to prepare and adopt a Water Shortage Contingency Plan as part of its 2020 Urban Water Management Plan;

WHEREAS, Rubio has prepared a Water Shortage Contingency Plan in accordance with Act, and in accordance with applicable legal requirements, has undertaken certain coordination, notice, public involvement, public comment, and other procedures in relation to its Water Shortage Contingency Plan;

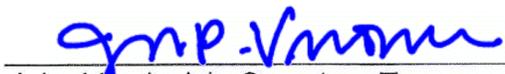
WHEREAS, Rubio Canon Land & Water Association has prepared and made available for public review, an update to its Urban Water Management Plan which includes the Water Shortage Contingency Plan for the 2020 update. In furtherance of its adoption, a properly notified public hearing regarding the Plan was held by the Board of Directors on June 24, 2021;

NOW, THEREFORE, BE IT RESOLVED, that Rubio Canon Land & Water Association hereby adopts its 2020 Water Shortage Contingency Plan.

ADOPTED, SIGNED AND APPROVED this 24th day of June, 2021.



Janet Fahey, President
Rubio Canon Land & Water Association



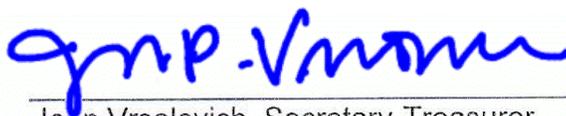
John V. Salovich, Secretary-Treasurer
Rubio Canon Land & Water Association

ATTEST

STATE OF CALIFORNIA)
)
COUNTY OF LOS ANGELES)

I, John Vrsalovich, Secretary-Treasurer of Rubio Canon Land and Water Association, do hereby certify that the attached is a full, true and correct copy of the 2020 Water Shortage Contingency Plan adopted by said Board, and that the same has not been amended or repealed.

DATED: June 24,2021



John Vrsalovich, Secretary-Treasurer
Rubio Canon Land & Water Association



Appendix F: Raymond Basin Adjudication Court Order

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

LAW OFFICES OF
BEST, BEST & KRIEGER
4200 ORANGE STREET
POST OFFICE BOX 1928
RIVERSIDE, CALIFORNIA 92502

1 Victor Kaleta
2 City Attorney, Pasadena
3 City Hall
4 Pasadena, California 91109
5
6 BEST, BEST & KRIEGER
7 Arthur L. Littleworth
8 P. O. Box 1028
9 Riverside, California 92502
10 Telephone: (714) 686-1450
11 Special Counsel for Plaintiff

12 SUPERIOR COURT OF CALIFORNIA, COUNTY OF LOS ANGELES

13 CITY OF PASADENA, a municipal) NO. Pasadena C-1323
14 corporation,)
15 Plaintiff,) JUDGMENT
16 vs.) (As Modified and Restated
17 CITY OF ALHAMBRA, a municipal) March 26, 1984
18 corporation, et al.,)
19 Defendants.)

20 The above-entitled action was brought by plaintiff,
21 City of Pasadena, a municipal corporation, against City of
22 Alhambra, a municipal corporation, City of Monrovia, a municipal
23 corporation, City of Arcadia, a municipal corporation, City of
24 Sierra Madre, a municipal corporation, City of South Pasadena,
25 a municipal corporation, La Canada Irrigation District, San
26 Gabriel County Water District, Lincoln Avenue Water Company, a
27 corporation, The Las Flores Water Company, a corporation, Rubio
28 Canon Land and Water Association, a corporation, Valley Water
Company, a corporation, Flintridge Mutual Water Company, a
corporation, California-Michigan Land and Water Company, a cor-

LAW OFFICES OF
BEST, BEST & KRIEGER
4200 ORANGE STREET
POST OFFICE BOX 1028
RIVERSIDE, CALIFORNIA 92502

1 poration, Mira Loma Mutal Water Company, a corporation, El
2 Campo Mutual Water Company, a corporation, Sunnyslope Water
3 Company, a corporation, California Water and Telephone Company,
4 a corporation, Crown City Ice Company, a corporation, Rancho
5 Santa Anita, Inc., a corporation, Royal Laundry and Dry Cleaning
6 Company, a corporation, Alice H. Graves, A. V. Wagner, Eugene E.
7 Bean, Fred M. Wilcox, and Charles Hueston Hastings, Defendants,
8 for the purpose of quieting the title of said plaintiff as
9 against said defendants to the alleged prior and paramount right
10 of said plaintiff to take, divert and use the waters within the
11 area involved in the issues of the action situate in the County
12 of Los Angeles, State of California, and to enjoin each defen-
13 dant found to own a right to take or divert water from the
14 Raymond Basin from taking therefrom, in any year, water in such
15 volume as, when added to the amount which the other parties
16 shall be adjudged and decreed to be entitled to take and divert,
17 would result in a total annual diversion from said basin in
18 excess of the average annual supply of water thereto; and on
19 July 13, 1939, the above-entitled Court having issued its order
20 directing said plaintiff to bring in and make parties to said
21 action Ross M. Lockhard, Pasadena Cemetery Association, a cor-
22 poration, Altadena Golf Club, a corporation, Henry E. Huntington
23 Library and Art Gallery, a corporation, Bradbury Estate Company,
24 a corporation, and East Pasadena Water Company, Ltd., a corpora-
25 tion, and said Court on the 8th day of November, 1939, having
26 made its order declaring void the order to bring in new parties
27 made July 13, 1939, insofar as East Pasadena Water Company, Ltd.,
28 is concerned, and said defendant having been dismissed from

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1 this action; and

2 All said parties defendant having been duly served
3 personally with summons and a copy of the complaint, and the
4 issues having been joined; defendant Ross M. Lockhard having
5 answered by his true name Ross M. Lockhart; and Robert A.
6 Millikan, Archer Milton Huntington, Herbert Hoover, William B.
7 Munro and Edwin P. Hubbell, Trustees of the Henry E. Huntington
8 Library and Art Gallery answering for defendant Henry E.
9 Huntington Library and Art Gallery, a corporation; defendants
10 Bradbury Estate Company, a corporation, and Eugene E. Bean
11 having disclaimed any right, title, interest or estate in and
12 to the properties involved in this action, Charles Heuston
13 Hastings, having answered by his true name Charles Heuston
14 Hastings, and since the commencement of this action said defen-
15 dant Charles Heuston Hastings having died and Ernest Crawford
16 May as Executor of the Last Will and Testament of Charles
17 Heuston Hastings, deceased, having been substituted for said
18 decedent, and A. V. Wagner having answered and having asserted
19 and claimed a right to water on his own behalf and on behalf of
20 others claiming under and through him, and Canyon Mutual Water
21 Company, a corporation, sued herein as Doe Corporation No. 1,
22 having answered under its true name, and defendant Alice H.
23 Graves having died since the commencement of this action, and
24 Alice Graves Stewart and Katharine Graves Armstrong and
25 Francis P. Graves being the heirs at law of said Alice H.
26 Graves, deceased, and being the residuary legatees under the
27 Last Will and Testament of Alice H. Graves, deceased, and having
28 been substituted by stipulation as parties defendant for said

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1 Alice H. Graves, and plaintiff since the commencement of this
2 action having acquired the water rights owned and claimed by
3 Jacob Bean Securities Company, a corporation, Alice Graves
4 Stewart, Katharine Graves Armstrong and Francis P. Graves,
5 exclusive of the rights of the last named individuals which
6 are hereinafter set forth and defined, and plaintiff having
7 duly filed its supplemental complaint with respect thereto,
8 and the defendant City of Arcadia, since the commencement of
9 this action, having acquired all water rights involved herein
10 of the Rancho Santa Anita, Inc., a corporation, and said
11 defendants having duly filed their supplemental answer with
12 respect thereto, and First Trust and Savings Bank of Pasadena,
13 a corporation, answering as successor in interest to defendant
14 Altadena Golf Club, defendant Sunnyslope Water Company, a
15 corporation, having stipulated that its true name is Sunny
16 Slope Water Company, Chesley E. Osborn and Kathleen M. Osborn
17 having been substituted as parties defendant in the place and
18 stead of defendant Fred M. Wilcox, and Dell A. Schweitzer,
19 executor of the estate of Fred M. Wilcox, deceased; motion of
20 defendant City of South Pasadena for permission to file its
21 amended answer disclaiming any interest or estate in the
22 water and/or water rights in the Raymond Basin as described
23 in plaintiff's complaint, having been granted, and said
24 defendant, City of South Pasadena, having been dismissed from
25 this action, subject to the obligation of said defendant to
26 pay certain costs, plaintiff and certain defendants having
27 jointly filed herein their motion that reference should be
28 made to the Division of Water Resources, Department of Public

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1 Works, State of California, as referee; after hearing thereon,
2 following notice duly served on all defendants not parties to
3 said motion, said Division of Water Resources having been
4 appointed referee herein to investigate all of the physical
5 facts involved herein, and seasonably to report to the Court
6 thereon, and the said referee having filed its report herein
7 and the objections thereto filed with it, a stipulation in
8 writing having been entered into on the 29th day of September,
9 1943 by and between the attorneys for certain parties, to
10 wit: City of Alhambra, City of Arcadia, California Water and
11 Telephone Company, Canyon Mutual Water Company, Crown City
12 Ice Company, El Campo Mutual Water Company, First Trust and
13 Savings Bank of Pasadena, Flintridge Mutual Water Company,
14 Francis P. Graves, Alice Graves Stewart and Katharine Graves
15 Armstrong, being the heirs of Alice H. Graves, deceased, and
16 being the residuary legatees under the Last Will and Testament
17 of Alice H. Graves, deceased, Las Flores Water Company,
18 Lincoln Avenue Water Company, Ross M. Lockhart, Ernest Crawford
19 May, as Executor of the Last Will and Testament of Charles
20 Heuston Hastings, deceased, Robert A. Millikan, Archer Milton
21 Huntington, Herbert Hoover, William B. Munro and Edwin P.
22 Hubbell, Trustees of the Henry E. Huntington Library and Art
23 Gallery, Mira Loma Mutual Water Company, City of Monrovia,
24 Chesley E. Osborn and Kathleen M. Osborn, Pasadena Cemetery
25 Association, City of Pasadena, Royal Laundry and Dry Cleaning
26 Company, Rubio Canon Land and Water Association, San Gabriel
27 County Water District, City of Sierra Madre, Sunny Slope
28 Water Company, Valley Water Company, A. V. Wagner and those

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1 claiming under and through him, and said stipulation having
2 been filed herein on the 24th day of November, 1943, requesting
3 that a certain judgment be entered herein as between said
4 parties, and stipulating that the amount of water pumped or
5 otherwise taken by non-parties to this action in the Western
6 Unit of the Raymond Basin Area as described in Paragraph I of
7 the proposed judgment attached to said stipulation was 340
8 acre feet per year and that the amount of water pumped or
9 otherwise taken by non-parties to this action in the Eastern
10 Unit of said Raymond Basin Area was 109 acre feet per year,
11 and the Court on November 24, 1943 having made its order
12 making each and all of the terms and provisions of said
13 proposed judgment immediately effective as to said stipulating
14 parties, and on April 5, 1944 the Court having made its order
15 appointing and authorizing the Division of Water Resources of
16 the Department of Public Works of the State of California to
17 act and serve herein as Watermaster in accordance with the
18 provisions of the proposed judgment attached thereto and made
19 a part thereof, and a stipulation between said stipulating
20 parties and the defendant La Canada Irrigation District
21 making the defendant La Canada Irrigation District a party to
22 said stipulation for said judgment and order having been
23 filed in this Court on April 28, 1944, and this Court on
24 April 28, 1944 having ordered that during the pendency of
25 this litigation or until further order of this Court the said
26 defendant La Canada Irrigation District be made a party to
27 the stipulation for judgment and order entered into on the
28 29th day of September, 1943 and filed on the 24th day of

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1 November, 1943, and all objections and exceptions to the
2 Report of Referee, except those of defendant California-
3 Michigan Land and Water Company, having been withdrawn, and
4 defendant Flintridge Mutual Water Company having assigned all
5 its water rights involved herein to defendant Valley Water
6 Company,

7 This cause came on regularly for hearing of the
8 objections and exceptions of defendant California-Michigan
9 Land and Water Company filed to the Report of Referee and the
10 further trial of the cause between said defendant and the
11 other parties on the 18th day of May, 1944 before the Honorable
12 Frank C. Collier, judge presiding in Department Pasadena A of
13 the above-entitled Court, the Court sitting without a jury;
14 said hearing and trial were held on the following dates in
15 the year 1944, to wit: May 18, May 19, May 23, May 24,
16 May 25, May 31, June 1, June 2, June 6, June 7, June 8,
17 July 20, August 7 and August 8. A. E. Chandler, Esq., Special
18 Counsel, and Harold P. Huls, Esq., City Attorney, appearing
19 as attorneys for plaintiff; Messrs. Goodspeed, McGuire,
20 Harris & Pfaff by Richard C. Goodspeed, Esq., J. Donald
21 McGuire, Esq., and Paul Vallee, Esq., appearing as attorneys
22 for defendant California-Michigan Land and Water Company;
23 Emmett A. Tompkins, Esq., City Attorney, and Kenneth K.
24 Wright, Esq., appearing as attorneys for defendant City of
25 Alhambra; Paul F. Garber, Esq., City Attorney, and Kenneth K.
26 Wright, Esq., appearing as attorneys for defendant City of
27 Monrovia; Kenneth K. Wright, Esq., appearing as attorney for
28 defendant Ross M. Lockhart; Kenneth K. Wright, Esq., appearing

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1 as attorney for defendant Flintridge Mutual Water Company;
2 Kenneth K. Wright, Esq., appearing as attorney for defendant
3 Valley Water Company; John C. Packard, Esq. and Kenneth K.
4 Wright, Esq., appearing as attorneys for defendant El Campo
5 Mutual Water Company; Messrs. Derthick, Cusack and Ganahl by
6 W. J. Cusack, Esq., and Kenneth K. Wright, Esq., appearing as
7 attorneys for defendant Crown City Ice Company; Messrs.
8 Dunn & Sturgeon by Walter F. Dunn, Esq., Messrs. Chandler &
9 Wright by Howard W. Wright, Esq., and Kenneth K. Wright,
10 Esq., appearing as attorneys for defendants Francis Graves,
11 Alice Graves Stewart and Katharine Graves Armstrong; Messrs.
12 Bailie, Turner & Lake by Norman A. Bailie, Messrs. Cruickshank,
13 Brooke & Dunlap by Robert H. Dunlap, Esq., and Kenneth K.
14 Wright, Esq., appearing as attorneys for defendant Ernest
15 Crawford May, as Executor of the Last Will and Testament of
16 Charles Heuston Hastings, deceased; Messrs. Gibson, Dunn &
17 Crutcher by Ira C. Powers, Esq., and Kenneth K. Wright, Esq.,
18 appearing as attorneys for defendants Robert A. Millikan,
19 Archer Milton Huntington, Herbert Hoover, William B. Munro
20 and Edwin P. Hubbell, trustees of the Henry E. Huntington
21 Library and Art Gallery; Messrs. Anderson and Anderson by
22 Trent G. Anderson, Esq., and Kenneth K. Wright, Esq., appearing
23 as attorneys for defendant Rubio Canon Land and Water Associa-
24 tion; Frank P. Doherty, Esq., and Kenneth K. Wright, Esq.,
25 appearing as attorneys for defendant La Canada Irrigation
26 District; Messrs. Boyle, Holmes & Garrett by John W. Holmes,
27 Esq., and Kenneth K. Wright, Esq., appearing as attorneys for
28 defendant First Trust and Savings Bank of Pasadena; Walter F.

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1 Dunn, Esq., City Attorney, and Kenneth K. Wright, Esq.,
2 appearing as attorneys for defendant City of Sierra Madre;
3 Wilton W. Webster, Esq., and Kenneth K. Wright, Esq., appearing
4 as attorneys for defendant Royal Laundry and Dry Cleaning
5 Company; Messrs. Bacigalupi, Elkus & Salinger by Claude
6 Rosenberg, Esq., and Kenneth K. Wright, Esq., appearing as
7 attorneys for defendant California Water and Telephone Company;
8 Kenneth K. Wright, Esq., appearing as attorney for defendant
9 San Gabriel Valley Water Company; Messrs. Merriam, Rinehart &
10 Merriam by Ralph T. Merriam, Esq., appearing as attorneys for
11 defendant Pasadena Cemetery Association; Frederick G. Stoehr,
12 Esq., appearing as attorney for defendant A. V. Wagner;
13 Messrs. Potter and Potter, by Bernard Potter, Esq., appearing
14 as attorneys for defendant Mira Loma Mutual Water Company;
15 Gerald E. Kerrin, Esq. and James C. Bone, Esq., City Attorney,
16 appearing as attorneys for defendant City of Arcadia; Laurence B.
17 Martin, Esq., appearing as attorney for defendant Sunny Slope
18 Water Company; Robert E. Moore, Esq., appearing as attorney
19 for defendant Lincoln Avenue Water Company; Messrs. Hahn and
20 Hahn by Edwin F. Hahn, Esq., appearing as attorneys for
21 defendant The Las Flores Water Company; Messrs. Hahn and Hahn
22 by Edwin F. Hahn, Esq., appearing as attorneys for defendants
23 Chesley E. Osborn and Kathleen M. Osborn; and Messrs. Hahn
24 and Hahn by Edwin F. Hahn, Esq., appearing as attorneys for
25 defendant Canyon Mutual Water Company, and

26 All objections and exceptions to the Report of
27 Referee filed by defendant California-Michigan Land and Water
28 Company having been overruled by the Court with the exception

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1 of objection 18 which was withdrawn by said defendant, and
2
3 Certain stipulations having been entered into by
4 and between the parties and evidence both oral and documentary
5 having been introduced and the cause having been submitted to
6 the Court for its decision upon briefs, and briefs for the
7 respective parties having been filed and considered, the
8 Court, being fully advised in the premises, and having made
9 its findings of fact and conclusions of law, and

10 The Court, by reason of the stipulation aforesaid
11 and the findings of fact and conclusions of law, having
12 rendered its Judgment on December 23, 1944, and such Judgment
13 having been entered in Book 1491, page 84, on December 26,
14 1944, and

15 Pursuant to its reservation of jurisdiction in this
16 case, and pursuant to appropriate motions, the Court having
17 modified the Judgment on April 29, 1955; on January 17, 1974;
18 and on June 24, 1974, and

19 Plaintiff having moved the Court for an order
20 further modifying and restating the Judgment as modified,
21 such motion having come on regularly for hearing on the 16th
22 day of March, 1984, in Department A of the Northeast District
23 of this Court, the Honorable Robert M. Olson, Judge, presiding;
24 and notice of such motion having been duly served on all
25 defendants and interested parties; and no objections to the
26 granting of the motion having been filed or made at the hearing;
27 and good cause having been shown, and the Court having therefore
28 granted the motion, pursuant to the continuing jurisdiction of
the Court,

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1 IT IS HEREBY ORDERED, ADJUDGED AND DECREED that the
2 Judgment in this case be modified and restated (including all
3 transfers of rights and prior modifications which remain
4 valid) as follows:

5
6 I
7

8 There exists in the County of Los Angeles, State of
9 California, a field of groundwater, known and hereinafter
10 referred to as the Raymond Basin Area, and subdivisions
11 thereof herein designated the Eastern Unit and the Western
12 Unit which are shown on the map attached hereto and hereby
13 made a part hereof.

14 Under existing conditions, the safe yield of said
15 Eastern Unit is 5,290 acre feet per year, and the safe yield
16 of said Western Unit is 25,480 acre feet per year.

17 The amount of water pumped or otherwise taken by
18 non-parties to this action in said Western Unit is less than
19 100 acre feet per year, and the amount of water pumped or
20 otherwise taken by non-parties to this action in said Eastern
21 Unit is zero acre feet per year.

22 The parties hereto pumping from wells or otherwise
23 taking water for beneficial use from the ground in said sub-
24 divisions of said Raymond Basin Area are as shown in the
25 table in Paragraph IV hereof.

26
27 / / /

28 / / /

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II

AS to those parties hereto who are taking or diverting water for beneficial use from any source contributing to the supply of water in the ground in said Raymond Basin Area, each of said parties has the right as against all parties other than the defendant California-Michigan Land and Water Company, no determination as to the existence of such right being made as against it, to continue to divert from such source for such use an amount of water measured by the maximum capacity of its diversion works and other facilities as the same existed at any time within five (5) years prior to October 1, 1937. That said maximum capacities of the said works and facilities of each of said parties in cubic feet per second are as follows:

La Canada Irrigation District (Snover Canyon)	1.20
Las Flores Water Company	0.50
Lincoln Avenue Water Company	6.59
Lockhart, Ross M.	1.20
May, Ernest Crawford, as Executor of the Last Will and Testament of Charles Heuston Hastings, deceased	0.26
Mira Loma Mutual Water company	0.81
Pasadena Cemetery Association	0.02
Pasadena, City of	
Arroyo Seco Including Millard Canyon	25.00
Eaton Canyon	8.90
Rubio Canon Land and Water Association	2.20
Sierra Madre, City of	6.00

Each of said parties, and each of their agents, employees, attorneys, and any and all persons acting by, through, or under them, or any of them, are and each of them is hereby forever enjoined and restrained from increasing its taking or diversion from such source beyond the amount of

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1 such taking or diversion as measured by said maximum capacity
2 of its diversion works and other facilities.

3 Each of the said parties, and their successors in
4 interest, having diversion rights as set forth above in the
5 Western Unit of the Raymond Basin Area shall have the right
6 in its discretion to spread the surface water diverted pursuant
7 to its respective right, and to recapture eighty percent
8 (80%) thereof by pumping, subject to and upon the following
9 terms and conditions.

10 (1) The water shall be spread for percolation into
11 the underground in the existing water conservation facilities
12 of the Los Angeles County Flood Control District, or in such
13 additional spreading grounds as the parties may acquire or con-
14 struct, or in any natural stream channels leading to such
15 existing or future spreading grounds, provided that all such
16 spreading locations shall be located within the Monk Hill Basin
17 or Pasadena Subarea hydrologic subdivisions of the Western Unit
18 of the Raymond Basin Area.

19 (2) A metering device, or devices, shall be installed
20 and maintained by each diverting party at such party's expense
21 to measure all amounts of water diverted by such party for
22 spreading purposes. Such metering facilities, and the continued
23 accuracy thereof, shall be subject to the approval of the Water-
24 master and the Los Angeles County Flood Control District, and
25 all such measurements shall be available to them. The Water-
26 master, with such assistance as the Los Angeles County Flood
27 Control District may provide, shall determine and account for
28 all water diverted for spreading, the amount of water spread

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1 and available for recapture, and the amount so recaptured, and
2 shall include such determinations and accounting in its reports.

3 (3) In the event that the capacity of any of the
4 spreading grounds of the Los Angeles County Flood Control Dis-
5 trict is fully utilized for the conservation of natural flows,
6 and water diverted for spreading in such facilities cannot be
7 percolated into the Basin and escapes therefrom, such quantity
8 of water shall be subtracted from the amount diverted for
9 spreading to determine the amount available for recapture.
10 Such losses shall be divided among the parties diverting water
11 for such spreading in proportion to the amounts diverted at
12 the time the loss occurs.

13 (4) Each such party shall have the right to pump
14 from any wells in the Monk Hill Basin an amount of water equal
15 to eighty percent (80%) of the amount which it has diverted for
16 such spreading therein and which is available for recapture, and
17 the right to pump from any wells in the Pasadena Subarea an
18 amount of water equal to eighty percent (80%) of the amount which
19 it has diverted for such spreading therein and which is available
20 for recapture. Such amounts pumped shall be in addition to the
21 respective Decreed Rights of the parties as provided in the
22 Judgment herein, as modified on April 29, 1955, and in addition
23 to the amounts which can be pumped or otherwise taken under the
24 provisions of Paragraph V hereof. Any amounts recaptured under
25 the terms of this Paragraph shall be pumped in such a manner as
26 not to injure other parties having rights under this Judgment.
27 The effect of such pumping shall be monitored by the Watermaster,
28 and the Watermaster shall report any such injury to the Court

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1 for appropriate action.

2 (5) Any additional amounts allowed to be taken as
3 provided in subparagraph (4) above shall be pumped by the end
4 of the next accounting year utilized by the Watermaster follow-
5 ing such diversions for spreading. If such pumping does not
6 occur within this period of time, the right to take such amount
7 of water shall be lost.

8 (6) For accounting purposes, the first water taken
9 from the Western Unit of the Raymond Basin Area during any
10 accounting year, by any party having made diversions for spread-
11 ing purposes during the previous accounting year, shall be con-
12 sidered by the Watermaster as water pumped pursuant to subpara-
13 graph (4) above, unless such water was pumped during the same
14 accounting year in which it was diverted and spread.

15 (7) The rights provided in subparagraph (4) above
16 shall apply to all water diverted for spreading as required
17 herein after May 1, 1973.

18 (8) The right to divert for spreading and recapture
19 is an alternative, in whole or in part, to the right to make
20 direct use of such diversions, and does not preclude the direct
21 use of such water, provided that the total amount of water
22 diverted, either for spreading or direct use, does not exceed
23 the respective rights of the parties set forth above.

24 (9) These provisions concerning the right to spread
25 and recapture by pumping remain subject to the continuing
26 jurisdiction of the Court. Any additional costs incurred by
27 the Watermaster in making determinations, accountings, reports,
28 and monitoring of pumping as required in connection with such

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1 spreading and recapture of water shall be paid by the parties
2 diverting water for spreading in proportion to the amount of
3 water which each party diverts for such purpose. Such costs
4 shall be included as part "C" of the Watermaster's Annual
5 Budget.

6
7 III

8
9 Each and all of the rights of the parties hereto to
10 pump water from wells or otherwise take water from the ground
11 in said Raymond Basin Area are of equal priority and of the
12 same legal force and effect.

13
14 IV

15
16 Subject to the provisions of Paragraphs V, VI and
17 XXI hereof, each party hereto is the owner of the right to
18 pump water from wells or otherwise take water from the ground
19 in each of said units in the amount set forth opposite the
20 name of each party in the following table, which said right,
21 for convenience, is designated the "present unadjusted right":

22
23 PRESENT UNADJUSTED RIGHTS TO TAKE
24 WATER IN RAYMOND BASIN AREA

<u>Eastern Unit</u>	<u>Acre Feet Per Year</u>
Arcadia, City of	2,527
Sierra Madre, City of	1,264
/ / /	

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	<u>Western Unit</u>	
1		
2	Alhambra, City of	1,042
3	Arcadia, City of (including, as	2,141
4	successor, the rights of the	
	City of Monrovia)	
5	California American Water Company	2,324
6	(as successor to the California	
7	Water and Telephone Company, and	
	including, as successor, the rights	
	of the El Campo Mutual Water Company)	
8	Crown City Ice Company	0
9	East Pasadena Water Company (as	521
10	successor to the California-	
	Michigan Land and Water Company)	
11	Henry E. Huntington Library and Art	265
12	Gallery (as successor to Robert A.	
13	Millikan, et al., Trustees of the	
	Henry E. Huntington Library and Art	
	Gallery)	
14	Kinneloa Irrigation District (as	522
15	successor to the rights of Francis P.	
16	Graves, et al.; Ross M. Lockhart;	
17	A. V. Wagner; Mira Loma Mutual Water	
	Company; Canyon Mutual Water Company;	
	and Chesley E. and Kathleen M. Osborn)	
18	La Canada Irrigation District	101
19	Las Flores Water Company	252
20	Lincoln Avenue Water Company	573
21	May, Ernest Crawford, as Executor	0
22	of the Last Will and Testament of	
	Charles Heuston Hastings, deceased	
23	Milum Textile Services Company (as	111
24	successor to Royal Laundry and Dry	
	Cleaning Company)	
25	Pasadena Cemetery Association	92
26	Pasadena, City of (including, as	12,946
27	successor, the rights of the First	
	Trust and Savings Bank of Pasadena)	
28	///	

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1 each of their agents, employees, attorneys, and any and all
2 persons acting by, through, or under them, are and each of
3 them is, subject to the terms of Paragraph XXI hereof,
4 hereby forever enjoined and restrained on and after July 1,
5 1944, as to all parties other than California-Michigan Land
6 and Water Company, and on and after July 1, 1945 as to said
7 California-Michigan Land and Water Company, from pumping or
8 otherwise taking from the ground in said Western Unit more
9 water than its decreed right in this Paragraph determined;
10 provided that a party may exceed its decreed right to the
11 extent that it has acquired and exercises the decreed right
12 of any other party, or as may become necessary in the case of
13 an emergency or temporarily for other reasonable cause as
14 determined by the Watermaster, taking into account the basin
15 supply, quality conditions, the impact on other parties, and
16 subject to such conditions as the Watermaster may impose,
17 including whether or not such excess extractions must be made
18 up in future years; and provided, however, that any of the
19 parties to this action may take in any twelve-month period
20 beginning July 1 for its own beneficial use, and for the
21 release of water for use by other parties or persons pursuant
22 to and in accordance with the Raymond Basin Area Water Exchange
23 Agreement for 1943 and amendment thereto, hereinafter referred
24 to, attached hereto and hereby made a part hereof, an amount
25 not exceeding one hundred ten percent (110%) of its decreed
26 right as fixed herein, plus any amount of allowable underpumping
27 as hereinafter provided. Any such extractions in excess of a
28 party's decreed right (not including any emergency or temporary

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1 extractions authorized by the Watermaster) shall be made up
2 in the following year, and the amount of water which a party
3 may take under its decreed right in that year shall be reduced
4 by an equivalent amount. If a party in any twelve-month
5 period, beginning July 1, takes less than its decreed right,
6 or less than the amount allowed after reduction for any
7 excess extractions, the amount of such underpumping, but not
8 exceeding ten percent (10%) of its decreed right or such
9 additional amount as the Watermaster may allow for an emergency
10 or other reasonable cause, may be carried over and taken
11 during the next succeeding year. The yearly period from
12 July 1 to June 30 hereby is adopted and shall be used in the
13 administration and enforcement of this Judgment.
14

15 DECREED RIGHTS TO TAKE WATER FROM THE GROUND
16 IN SAID WESTERN UNIT IN ACRE FEET PER YEAR

	<u>Acre Feet Per Year</u>
17 Alhambra, City of	1,031
18 Arcadia, City of (including, as	2,118
19 successor, the rights of the	
20 City of Monrovia)	
21 California American Water Company	2,299
22 (as successor to the California	
23 Water and Telephone Company, and	
including, as successor, the rights	
of the El Campo Mutual Water Company)	
24 East Pasadena Water Company (as	515
25 successor to the California-	
Michigan Land and Water Company)	
26 Henry E. Huntington Library and Art	262
27 Gallery (as successor to Robert A.	
28 Millikan, et al., Trustees of the	
Henry E. Huntington Library and Art	
Gallery)	

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1	Kinneloa Irrigation District (as	516
2	successor to the rights of Francis P.	
3	Graves, et al.; Ross M. Lockhart;	
4	A. V. Wagner; Mira Loma Mutual Water	
	Company; Canyon Mutual Water Company;	
	and Chesley E. and Kathleen M. Osborn)	
5	La Canada Irrigation District	100
6	Las Flores Water Company	249
7	Lincoln Avenue Water Company	567
8	Milum Textile Services Company (as	110
9	successor to Royal Laundry and Dry	
	Cleaning Company)	
10	Pasadena Cemetery Association	91
11	Pasadena, City of (including, as	12,807
12	successor, the rights of the First	
	Trust and Savings Bank of Pasadena)	
13	Rubio Canon Land and Water Association	1,221
14	San Gabriel County Water District	1,091
15	Sunny Slope Water Company	1,558
16	Valley Water Company (including, as	797
17	successor, the rights of the	
	Flintridge Mutual Water Company)	
18	Total Western Unit	25,332

VI

22 The decreed right of each party hereto in said
23 Eastern Unit is as follows:
24 City of Arcadia, 3,526 acre feet per year;
25 City of Sierra Madre, 1,764 acre feet per year.
26 Each of said parties, and each of their agents,
27 employees, attorneys and any and all persons acting by,
28 through, or under them, are and each of them is subject to

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1 the terms of Paragraph XXI hereof, hereby forever enjoined
2 and restrained on and after July 1, 1944, as follows:

3 (1) From pumping or otherwise taking from the
4 ground in said Eastern Unit more water than its decreed right
5 in this Paragraph determined; provided that a party may
6 exceed its decreed right to the extent that it has acquired,
7 and exercises the decreed right of any other party, or as may
8 become necessary in the case of an emergency or temporarily
9 for other reasonable cause as determined by the Watermaster,
10 taking into account the basin supply, quality condition, the
11 impact on other parties, and subject to such conditions as
12 the Watermaster may impose, including whether or not such
13 excess extractions must be made up in future years; and
14 provided, however, that any of the parties to this action may
15 take in any twelve-month period beginning July 1 for its own
16 beneficial use, and for the release of water for use by other
17 parties or persons pursuant to and in accordance with the
18 Raymond Basin Area Water Exchange Agreement for 1943 and
19 amendment thereto, hereinafter referred to, attached hereto
20 and hereby made a part hereof, an amount not exceeding one
21 hundred ten percent (110%) of its decreed right as fixed
22 herein, plus any amount of allowable underpumping as herein-
23 after provided. Any such extractions in excess of a party's
24 decreed right (not including any emergency or temporary
25 extractions authorized by the Watermaster) shall be made up
26 in the following year, and the amount of water which a party
27 may take under its decreed right in that year shall be reduced
28 by an equivalent amount. If a party in any twelve-month

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1 period, beginning July 1, takes less than its decreed right,
2 or less than the amount allowed after reduction for any
3 excess extractions, the amount of such underpumping, but not
4 exceeding ten percent (10%) of its decreed right or such
5 additional amount as the Watermaster may allow for an
6 emergency or other reasonable cause, may be carried over
7 and taken during the next succeeding year.

8 (2) From pumping or otherwise taking water from
9 the ground in said Eastern Unit in any year within one-half
10 mile of its western boundary in an amount which, in addition
11 to other extractions, would be in excess of the average
12 amount pumped or taken in said one-half mile zone during the
13 period 1927-28 to 1937-38, to wit: 88 acre feet per annum,
14 the half mile being measured along a perpendicular erected on
15 the boundary between said unit and said Western Unit as shown
16 on the map attached hereto.

17 (3) From pumping or otherwise taking water from
18 the ground in said Eastern Unit in any year in excess of the
19 average amount pumped or taken therein during the period
20 1927-28 to 1937-38, to wit: 3,261 acre feet per annum,
21 during any year in which static groundwater level measurements,
22 made at the time of maximum high water table in the spring
23 season of each year, show that the average water table eleva-
24 tion in the area between Foothill Boulevard and Raymond Fault
25 and between a line 300 feet west of Rosemead Boulevard and a
26 line 100 feet east of Michillinde Avenue, less any increase
27 in such elevation that is attributable to any groundwater
28 storage program, is higher than that at the Arcadia group of

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1 wells designated as such on said map attached hereto and
2 located west of the intersection of Orange Grove and Santa
3 Anita Avenues in the City of Arcadia, this limitation to
4 apply only when the water table elevation at said group is
5 less than 500 feet above sea level, United States Geological
6 Survey datum.

7
8 VII

9
10 There is now and, so long as the requirements in sub-
11 paragraphs 2 and 3 of Paragraph VI hereof are fulfilled and
12 maintained, there will be no material movement of water across
13 the boundary between the Western Unit and the Eastern Unit.

14
15 VIII

16
17 Nothing in this Judgment contained shall be deemed
18 to modify the rights as between the defendants City of Sierra
19 Madre and City of Arcadia as set forth in that certain Judgment
20 entitled "The City of Sierra Madre, a municipal corporation, et
21 al., vs. The City of Arcadia, a municipal corporation," No.
22 209747 in the Superior Court of the State of California, in
23 and for the County of Los Angeles, entered on the 22nd day of
24 April, 1930, but in the exercise of such rights each of said
25 parties shall be subject to the express provisions of Para-
26 graph VI hereof.

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28 / / /

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IX

A Watermaster shall be appointed by this Court to serve at the pleasure of the Court to administer and enforce the provisions of this Judgment, the Raymond Basin Area Water Exchange Agreement of 1943 and amendment thereto, attached hereto and made a part hereof, and the instructions and orders of this Court, and if any such provisions, instructions or orders of the Court, or any order, rule or direction of such Watermaster, made in accordance with and for the enforcement of this Judgment and said Agreement and amendment thereto, shall have been disobeyed or disregarded, said Watermaster hereby is empowered and authorized to report promptly to the Court such fact and the circumstances connected therewith and leading thereto.

A violation of any provision of this Judgment, or attached Agreement and amendment thereto, or order, instruction, rule or direction of the Court or of the Watermaster, shall be punished in such manner as the Court may direct.

The compensation of said Watermaster shall be fixed by an order or orders which the Court hereafter from time to time may make.

X

There is hereby established a Raymond Basin Management Board (sometimes hereafter called "Board") which shall be the Watermaster. The Board shall have all of the rights,

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1 and shall carry out all of the responsibilities, of the
2 Watermaster as provided in this Judgment. In addition, in
3 order to implement sound water management practices within
4 the framework of the rights of the parties as determined
5 herein, the Board shall have the powers set forth in Para-
6 graph XII.

7
8 XI
9

10 The Board shall be organized and constituted as
11 follows:

12 (1) Each party holding a decreed right of 1,000
13 acre feet or more shall appoint one member to the Board.

14 (2) The parties within each subarea, namely, Monk
15 Hill Subarea, Pasadena Subarea, and the Eastern Unit, who
16 each hold decreed rights of less than 1,000 acre feet shall
17 together appoint a member from each respective subarea. The
18 appointment for each subarea shall be by majority vote, with
19 each such party having one vote.

20 (3) No party shall have the right to appoint, or
21 to participate in the appointment of, more than one member to
22 the Board.

23 (4) Board members shall have broad engineering or
24 management experience in the operation of a water utility or
25 groundwater basin.

26 (5) Each member shall be appointed for a term of
27 one year, or until replaced. Members shall serve at the
28 pleasure of the appointing party, parties or body. No member

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1 shall be appointed by or represent more than one party or
2 group of parties. The Board shall select its own officers.
3 A quorum of the Board shall consist of six members, and the
4 Board may act by a majority of those members present at a
5 meeting. The Board shall meet at least quarterly, and all
6 parties to the action may attend. Minutes of the Board
7 meetings shall be kept and sent to all parties in the action.
8 The Board shall have the power to adopt such by-laws, rules
9 and regulations, not inconsistent with the terms of this
10 Judgment, as may be necessary for its own organization and
11 operation.

12
13 XII
14

15 The powers and responsibilities of the Raymond
16 Basin Management Board, as Watermaster and otherwise, shall
17 be exercised with a view toward protecting the long-term
18 quantity and quality of the groundwater supply; utilizing the
19 groundwater storage capacity of the basin for the maximum
20 advantage of the parties, without however causing significant
21 adverse impact upon any party; integrating to the extent
22 feasible the use of surface and groundwater supplies so as to
23 reduce costs, improve reliability of supply, and to protect
24 against drought; and to encourage the parties to cooperate in
25 the utilization of their respective water rights and water
26 systems for the mutual good. The Board shall have power:

27 (1) To contract with the California Department of
28 Water Resources, or with any other competent person or firm,

- 1 to perform all or part of the Watermaster functions.
2
3 (2) To determine the amount of storage capacity that
4 is available in the basin from time to time for groundwater
5 storage programs.
6 (3) To allocate such storage capacity among the
7 parties, and to provide for its use and the recapture of
8 equivalent amounts of stored water. The Board may approve,
9 condition or disapprove proposed water storage programs, and
10 imported, nontributary water shall not be stored in the basin
11 without the Board's approval. Approved programs shall include
12 provisions for the duration of allowed storage of water, for
13 determination of losses, for the rates and places of recapture,
14 and for such other conditions as may be necessary to prevent
15 operational problems for other parties, including degradation
16 of water quality.
17 (4) To control the direct recharge into the basin
18 of imported, non-tributary water.
19 (5) To issue such rules and regulations as may be
20 necessary in order to account properly for sales, leases,
21 exchanges or other transfers among the parties of decreed
22 rights and the use of water. The Board shall attempt to
23 facilitate, not restrict, such transfers, including efforts
24 to develop agreements for the production and distribution of
25 water through facilities of other parties where such practices
26 promote efficiency and sound water management. This policy
27 shall extend to the use of stored water where consistent with
28 the policies of The Metropolitan Water District of Southern
California with respect to the use of supplemental water

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1 which it provides.

2 (6) To conduct studies or undertake other activities
3 for the common benefit of the parties in the operation of the
4 Raymond Basin Area; to obtain engineering, legal and other
5 professional services in such connection; and, in addition to
6 the Watermaster budget procedures, to assess the parties in
7 an equitable manner and as may be necessary to pay the costs
8 of the Board's operations, which assessments shall be paid by
9 the parties. Payment shall be enforced in the same manner as
10 provided in Paragraph XV for the annual budget, although the
11 actual apportionment of costs may differ from the method
12 provided in Paragraph XV. All actions of the Board, including
13 any assessments imposed, shall be subject to review by the
14 Court, pursuant to the procedures of Paragraph XVII.
15

16 XIII

17
18 Each party hereto at its own expense shall:

19 (1) Measure and keep records of all its diversions
20 from any source contributing to the supply of water in the
21 ground, of its importations of water, and of its production
22 of water from the ground in the Raymond Basin Area, subject
23 to the approval of the Watermaster as to equipment and methods;

24 (2) Measure and keep records of its production and
25 distribution in such manner as to show its use in, transfers
26 within, and exports of water from the Raymond Basin Area, or
27 any subdivision thereof, as required by the Watermaster;

28 / / /

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1 (3) Measure and record the depth to the water
2 table in all wells owned or operated by it within the Raymond
3 Basin Area once a month, or as required by the Watermaster.

4 Any party owning any facilities for the diversion
5 from any source contributing to the supply of the water in
6 the ground in the Raymond Basin Area, or for pumping or
7 otherwise taking water from the ground in said area, at its
8 own expense shall install and at all times maintain in good
9 working order reliable measuring devices and facilities for
10 testing said devices and shall keep records of its diversions
11 and production through the use of such devices and facilities
12 as may be required by the Watermaster; that upon failure of
13 any such party to install such devices and facilities on or
14 before such day as the Watermaster shall fix, after due
15 notice from the Watermaster so to do, the Watermaster shall
16 give the Court notice of such failure for proper action in
17 the premises.

18
19 XIV

20
21 In addition to other duties herein provided, the
22 Watermaster shall:

23 (1) Supervise the collection, assembly and presenta-
24 tion of the records and other data required of the parties;
25 such records and other data to be open to inspection by any
26 party or its representative during normal business hours.

27 (2) Require all parties hereto to operate their
28 respective wells in a manner which will accomplish the stated

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1 purposes of said Agreement and amendment thereto, and will
2 effectuate this Judgment without placing undue burden on any
3 party; study separately pumping patterns in the Monk Hill
4 Basin, Pasadena Subarea, and the Eastern Unit, and report
5 recommendations thereon not less than twice each year; such
6 report shall recognize the right of each party to pump its
7 decreed right, but shall include recommendations as to whether
8 more or less water should be pumped from individual wells;
9 such recommendations shall be calculated to minimize inter-
10 ference among parties, to conserve energy, expense and local
11 water supplies, and to provide for the most efficient and
12 equitable use of groundwater in the Raymond Basin Area; such
13 recommendations shall be advisory only, and shall not be
14 binding upon the parties unless confirmed by order of this
15 Court.

16 (3) Establish an ongoing program to monitor water
17 quality in the Raymond Basin Area.

18 (4) Prepare a tentative annual budget for the
19 fiscal year commencing July 1, separately stating the antici-
20 pated expense for administering the provisions of said Agree-
21 ment and amendment thereto for the release and receipt of
22 water, and the anticipated expense of the administration of
23 the other provisions of said Agreement and amendment thereto
24 and of enforcing this Judgment. The Watermaster shall serve
25 said tentative budget upon each of the parties on or before
26 May 1 of each year. If any party has any objection to said
27 tentative budget, or any suggestions with respect thereto, it
28 shall present the same in writing within ten (10) days after

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1 service thereof upon it. Thereafter, the Watermaster shall
2 prepare a final budget and serve the same upon each party.
3 If any party objects to said final budget it may make written
4 objection thereto by filing its objection with this Court
5 within fifteen (15) days after service of the same upon it,
6 after first having served such objection upon each party
7 hereto, and shall bring such objection on for hearing before
8 this Court within fifteen (15) days after such filing, or at
9 such time as the Court may direct.

10 If no objection to said budget be made as herein
11 provided, it shall be the annual budget for the particular
12 year involved. If objection to such budget be filed with
13 this Court as herein provided, then the annual budget shall
14 be determined by the order of this Court.

15 (5) Make an annual report on or before September 1
16 of each year to the parties hereto of the scope of the Water-
17 master's work during the preceding fiscal year and a statement
18 of receipts and expenditures in appropriate detail, segregated
19 as to the items attributable to the administration of the
20 provisions of said Agreement and amendment thereto respecting
21 the release and receipt of water, and as to the items attri-
22 butable to the administration of the other provisions of said
23 Agreement and amendment thereto and to the enforcement of
24 this Judgment.

25
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XV

1
2
3 The cost of enforcing this Judgment or any order or
4 direction of this Court or of the Watermaster (other than
5 those with respect to the release and receipt of water in
6 accordance with the provisions of said Agreement and amendment
7 thereto) shall be borne by the parties in proportion to their
8 respective decreed rights as determined in Paragraphs V
9 and VI of this Judgment, and the Watermaster shall assess
10 such cost to each party accordingly.

11 Payment thereof shall be made by each party within
12 thirty (30) days after the annual budget shall have become
13 final and the service on such party by the Watermaster of a
14 statement of the amount due. If payment be not made within
15 said thirty (30) days, such payment shall be delinquent and
16 the Watermaster shall add a penalty of ten percent (10%)
17 thereof to said statement, and the amount of said statement
18 plus said penalty thereupon shall be due and payable. Payment
19 required of any party hereunder or under the terms of said
20 Agreement and amendment thereto may be enforced by execution
21 issued out of this Court or as may be provided by any order
22 hereinafter made by this Court. All payments and penalties
23 received by the Watermaster, except payments received on
24 account of the release and receipt of water, shall be deposited
25 by the Watermaster in a fund which shall be designated "The
26 Watermaster Service Fund" and shall be expended for the
27 administration of the Agreement and amendment thereto and the
28 enforcement of this Judgment in accordance with the annual

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1 budgets herein provided for. Any money remaining at the end
2 of any year shall be available for use the following year for
3 such Watermaster service. Money collected or received by the
4 Watermaster in connection with the release and receipt of
5 water under the provisions of said Agreement and amendment
6 thereto shall be deposited by him in a special deposit fund
7 and paid out by him in accordance with the provisions of said
8 Agreement and amendment thereto.

9
10 XVI

11
12 Any Watermaster ceasing to perform Watermaster
13 service hereunder immediately upon such cessation shall
14 deposit with the clerk of this Court all funds in his posses-
15 sion collected from the parties in accordance with this
16 Judgment or said Agreement and amendment thereto, and forth-
17 with shall serve upon the parties hereto and file with this
18 Court his final account and report, and shall deliver to his
19 successor, or as the Court may direct, all property and all
20 records or certified copies thereof.

21
22 XVII

23
24 Any party having objection to any determination or
25 finding made by the Watermaster, other than as provided in
26 subparagraph (4) of Paragraph XIV hereof, may make the same
27 in writing to the Watermaster within thirty (30) days after
28 the making of such determination or finding after first

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1 having served a copy of such objection upon each party, and
2 within thirty (30) days thereafter the Watermaster shall
3 consider said objection and shall amend or affirm his finding
4 or determination; any party objecting thereto within thirty
5 (30) days thereafter may file its objections with this Court,
6 bringing the same on for hearing before said Court within
7 sixty (60) days thereafter, or at such time as the Court may
8 direct, after first having served said objection upon each
9 party. The Court may affirm, modify, amend or overrule any
10 such finding or determination of the Watermaster.
11

12 XVIII

13
14 Within thirty (30) days after the appointment of
15 the Watermaster, each of the parties shall file with the
16 Watermaster and serve on each party the name and address of
17 the person to whom any notice, demand, request, objection or
18 the submission of any budget and the annual report is to be
19 made or given, and each of said parties may change the name
20 and address of said person from time to time by filing said
21 changed name and address with the Watermaster and by serving
22 a copy thereof upon each of the parties hereto.

23 Any notice, demand, request, objection or the
24 submission of a budget and the annual report required or
25 authorized by this Judgment or said Agreement and amendment
26 thereto to be given or made to or served upon any party or
27 the Watermaster, shall be delivered or mailed by registered
28 mail postage prepaid to the person so designated at the

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1 address last filed with the Watermaster. Such service by
2 mailing shall be complete at the time of the deposit in the
3 United States mail.

4 Notice of any other motion or proceeding herein may
5 also be given by service upon the person and at the address
6 filed with the Watermaster, in the manner designated in this
7 Paragraph, provided that certified or registered mail may be
8 used. If any party or successor in interest has failed to
9 make such filing with the Watermaster, notice may be mailed
10 to the address which the Watermaster uses for such party or
11 successor.

12
13 XIX
14

15 The agreement entered into by certain parties,
16 entitled "Raymond Basin Area Water Exchange Agreement of 1943"
17 and amendment thereto, a copy of which is attached hereto,
18 and each and all of its terms and provisions be, and the same
19 is and are hereby fully approved, and said Agreement and
20 amendment thereto is hereby expressly made a part of this
21 Judgment to the same purpose and effect as though said Agree-
22 ment and amendment thereto were at this point fully herein
23 written and set forth at length; provided, however, that
24 California-Michigan Land and Water Company, Sunny Slope Water
25 Company, and Ernest Crawford May, as Executor of the Last
26 Will and Testament of Charles Heuston Hastings, deceased, who
27 are not parties to said Agreement or amendment thereto, shall
28 not be bound by nor required to perform any of the provisions

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1 thereof, nor pay any part of the cost of administering or
2 enforcing said Agreement or amendment thereto; that the power
3 of the Court is hereby expressly made to underlie all of the
4 terms and provisions of said Agreement and amendment thereto
5 and the enforcement thereof, and that the parties thereto,
6 and each thereof, are hereby ordered to perform fully said
7 Agreement and amendment thereto and all of its said terms and
8 provisions.

9 No taking of water by any party under the provisions
10 of said Agreement and amendment thereto concerning the release
11 and receipt of water in any amount in excess of its decreed
12 right to pump or otherwise take water from the ground in the
13 Raymond Basin Area shall constitute a taking adverse to any
14 other party; nor shall any party have the right to plead the
15 statute of limitations or an estoppel against any other party
16 by reason of its said taking of water in the Raymond Basin
17 Area pursuant to a request for the release of water; nor
18 shall such release of water by any party constitute a for-
19 feiture or abandonment by such party of any part of its
20 decreed right to water; nor shall such release in any wise
21 constitute a waiver of such right, although such water, when
22 released under the terms of said Agreement and amendment
23 thereto, may be devoted to the public use of others; nor shall
24 such release of water by any such party in any wise obligate
25 any party so releasing to continue to release or furnish water
26 to any other party or its successor in interest, or to the
27 public generally, or to any part thereof, otherwise than as
28 provided in Article IV of said Agreement and amendment thereto.

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XX

In the event any party shall serve upon the parties and file with the Watermaster and with the Court a declaration of forfeiture or abandonment of its decreed right, or any part thereof, said party shall be relieved of the payment of further costs of administering the provisions of said Agreement and amendment thereto and enforcing this Judgment applicable to the right so forfeited or abandoned; provided that said relief from said further costs shall not become effective until the beginning of the next fiscal year for which a budget has not become final; and provided that said party making such forfeiture or abandonment shall pay to the Watermaster its proportion of such costs to the effective date of such relief from costs. The amount of water so abandoned or forfeited shall be available immediately for use by the parties in the proportions set forth in Paragraphs V and VI hereof, pending the time that any review shall have been made as provided for in Paragraph XXI hereof.

XXI

The Court hereby reserves jurisdiction and authority upon application of any party hereto, or upon its own motion, to review (1) its determination of the safe yield of either or both of said units of the Raymond Basin Area, or (2) the rights, in the aggregate, of all of the parties in either or both of said units as affected by the abandonment or forfeiture

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1 of any right, in whole or in part, decreed herein, and by the
2 abandonment or forfeiture of any right by any other person or
3 entity, and, in the event material change be found or any
4 such abandonment or forfeiture be established, to adjudge
5 that the decreed right of each party to pump or otherwise
6 take water from the ground in the Raymond Basin Area shall be
7 changed proportionately in the same manner as originally
8 fixed herein; provided, however, that notice of such review
9 shall be served on all parties at least thirty (30) days
10 prior thereto and that the review of its determination of the
11 safe yield of either or both of said units of the Raymond
12 Basin Area shall be had not more frequently than at five (5)
13 year intervals after the date hereof. Except as provided
14 herein, and except as rights decreed herein may be abandoned
15 or forfeited by nonuser, in whole or in part, each and every
16 right decreed herein hereby is fixed as of the date hereof.
17

18 XXII
19

20 The Court hereby reserves jurisdiction and authority
21 at any time, upon application of any party, the Watermaster,
22 or upon its own motion, to make such modifications of, or
23 such additions to, the provisions of this Judgment, or to
24 make such further order or orders, as may be necessary or
25 desirable for the adequate enforcement, protection or preserva-
26 tion of the rights of the respective parties as declared in
27 this Judgment or as provided in said Agreement and amendment
28 thereto. The Court further reserves jurisdiction to make any

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1 other and/or additional orders of sufficient kind and nature
2 to protect the waters in said Raymond Basin Area or any
3 portion thereof from contamination of the groundwater supply
4 from cesspool effluent or surface waters.
5

6 XXIII
7

8 The defendant California-Michigan Land and Water
9 Company is entitled to become a party to the Raymond Basin
10 Area Water Exchange Agreement of 1934 and thereby become
11 entitled to receive water upon the same terms and conditions
12 provided in said Agreement with respect to the several parties
13 thereto.
14

15 XXIV
16

17 The defendant Bradbury Estate Company, a corporation,
18 and Eugene E. Bean be and they hereby are dismissed without
19 costs.
20

21 XXV
22

23 None of the parties is entitled to recover its
24 costs as against any other party.
25

26 DATED: March 26, 1984

27 /s/ Robert M. Olson
28 JUDGE OF THE SUPERIOR COURT



Appendix G: Water Conservation Plan (Ordinance No. 2015-0004)

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan



CYNTHIA A. HARDING, M.P.H.
Interim Director

JEFFREY D. GUNZENHAUSER, M.D., M.P.H.
Interim Health Officer

ANGELO J. BELLOMO, REHS, QEP
Director of Environmental Health

TERRI S. WILLIAMS, REHS
Assistant Director of Environmental Health

6050 Commerce Drive
Baldwin Park, California 91708
TEL (626) 430-5100 • FAX (626) 813-3000

www.publichealth.lacounty.gov

March 19, 2015

**REQUEST TO INFORM CUSTOMERS OF REVISED WATER CONSERVATION
REQUIREMENTS FOR UNINCORPORATED COUNTY AREAS**

Dear Water Purveyor:

On February 17, 2015, the Los Angeles County Board of Supervisors adopted the attached ordinance amending water conservation requirements to reflect the mandatory water conservation and waste prevention regulations adopted by the State Water Resources Control Board on July 15, 2014, in response to the severe drought. Specifically, the amendments increase the fine to \$500 for repeat violations of outdoor urban water use and expand the list of runoff destinations for the watering of lawns and landscaping to include adjacent property, non-irrigated areas, private and public walkways, roadways and structures.

We request that you notify your customers in the unincorporated County areas of the requirements, including the recent amendments, and encourage their voluntary compliance. Attached is a sample fact sheet with conservation requirements that can be used as the notification.

Based on our experience during the last drought, we expect compliance with water conservation requirements will be achieved primarily through public education and outreach by water purveyors. However, water purveyors servicing customers in the unincorporated County areas should respond to alleged offenses. Repeat offenders may be referred to the Department of Public Health for progressive enforcement. To request enforcement action for repeat violations of the water conservation and waste prevention requirements, please contact the Environmental Health Customer Call Center at (888) 700-9995.

Very truly yours,

Angelo J. Bellomo, REHS, QEP
Director of Environmental Health

Attachment



BOARD OF SUPERVISORS

Hilda L. Solis
First District

Mark Ridley-Thomas
Second District

Shella Kuehl
Third District

Don Knabe
Fourth District

Michael D. Antonovich
Fifth District

Update on County of Los Angeles Water Conservation Regulations

The Los Angeles County Board of Supervisors recently adopted an ordinance that revised the existing water conservation regulations. This ordinance, in addition to increasing the starting fine to \$500, specified the following:

- Persons who own or rent property have a duty to inspect for leaks, and to have the leaks repaired.
- Run-off from watering lawns or landscaping should not flow into adjacent property, walkways, or roadways.

To avoid fines, please comply with the new ordinance and the restrictions below.

	<p>Don't wash down sidewalks and driveways. <i>Use a broom, instead.</i></p>
	<p>Don't allow water to run off your property. <i>Adjust sprinkler coverage, check sprinkler system for leaks, and replace broken sprinkler heads.</i></p>
	<p>Don't wash motor vehicles with a hose, unless it is fitted with a shut-off nozzle. <i>Consider using an auto wash facility where water is recycled.</i></p>
	<p>Don't operate fountains or decorative water features unless the water is recirculated. <i>Consider replacing outdoor water features with drought-tolerant plants or xeriscaping.</i></p>

Please do your part to conserve water during this severe drought.

To report overwatering or runoff, or for more information about water conservation, contact us *(Insert contact information here)*

Insert company
logo

ANALYSIS

This ordinance amends Part 4 of Chapter 11.38 of Title 11 – Health and Safety of the Los Angeles County Code, relating to water conservation requirements for the unincorporated area of Los Angeles County, by revising the fines for violations thereof from One Hundred Dollars (\$100) to Five Hundred Dollars (\$500) and clarifying that fines are assessed for each day of violation. The amendment also expands prohibited water runoff areas to include adjacent property, non-irrigated areas, private and public walkways, roadways, and structures.

MARK J. SALADINO
County Counsel

By


MICHAEL L. MOORE
Principal Deputy County Counsel
Public Works Division

MLM:gm

Requested: 09/10/14
Revised: 12/05/14

ORDINANCE NO. 2015-0004

An ordinance amending Part 4 of Chapter 11.38 of Title 11 – Health and Safety of the Los Angeles County Code, relating to water conservation requirements for the unincorporated area of Los Angeles County.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Section 11.38.620 is hereby amended to read as follows:

11.38.620 ~~Hose w~~Watering p~~Prohibition.~~

No person shall hose water or wash down any sidewalks, walkways, driveways, parking areas or other paved surfaces, except as is required for the benefit of public health and safety. Willful violation hereof shall be subject to a written warning for the first violation, and shall be an infraction punishable by a fine of \$4500.00 for each subsequent day thereafter on which a violation occurs.

SECTION 2. Section 11.38.630 is hereby amended to read as follows:

11.38.630 ~~Watering of l~~Lawns and l~~Landscaping.~~

A. No person shall water or cause to be watered any lawn or landscaping between the hours of 10:00 a.m. and 5:00 p.m.

B. No person shall water or cause to be watered any lawn or landscaping more than once a day.

C. No person shall water or cause to be watered any lawn or landscaping to such an extent that runoff into adjacent property, non-irrigated areas, private and public walkways, roadways, structures, adjoining streets, parking lots or alleys occurs due to incorrectly directed or maintained sprinklers or excessive watering.

D. It shall be the duty of all persons ~~to inspect~~ who own or rent premises that have all hoses, faucets and sprinkling systems to inspect for leaks, and to cause all leaks to be repaired as soon as is reasonably practicable.

E. Willful violation hereof shall be subject to a written warning for the first violation, and shall be an infraction punishable by a fine of \$~~4~~500.00 for each ~~subsequent~~day thereafter on which a violation occurs.

SECTION 3. Section 11.38.640 is hereby amended to read as follows:

11.38.640 Indoor ~~p~~lumbing and ~~f~~ixtures.

A. It shall be the duty of all persons ~~to inspect~~ who own or rent premises that have all-accessible indoor plumbing and faucets to inspect for leaks, and to cause all leaks to be repaired as soon as is reasonably practicable.

B. Willful violation hereof shall be subject to a written warning for the first violation, and shall be an infraction punishable by a fine of \$~~4~~500.00 for each ~~subsequent~~day thereafter on which a violation occurs.

SECTION 4. Section 11.38.650 is hereby amended to read as follows:

11.38.650 Washing ~~v~~ehicles.

No motor vehicle, boat, trailer, or other type of mobile equipment may be washed, except at a commercial carwash or with reclaimed water, unless such vehicle is washed by using a hand-held bucket or a water hose equipped with an automatic shutoff nozzle. No person shall leave a water hose running while washing a vehicle or at any other time. Willful violation hereof shall be subject to a written warning for the

first violation, and shall be an infraction punishable by a fine of \$4500.00 for each ~~subsequent~~day thereafter on which a violation occurs.

SECTION 5. Section 11.38.660 is hereby amended to read as follows:

11.38.660 Public eEating pPlaces.

No restaurant, hotel, cafeteria, café, or other public place where food is sold or served shall serve drinking water to any customer unless specifically requested to do so by such customer. Willful violation hereof shall be subject to a written warning for the first violation, and shall be an infraction punishable by a fine of \$4500.00 for each ~~subsequent~~day thereafter on which a violation occurs.

SECTION 6. Section 11.38.670 is hereby amended to read as follows:

11.38.670 Decorative fFountains.

No person shall use water to clean, fill, or maintain levels in decorative fountains, ponds, lakes, or other similar aesthetic structures unless such water flows through a recycling system. Willful violation hereof shall be subject to a written warning for the first violation, and shall be an infraction punishable by a fine of \$4500.00 for each ~~subsequent~~day thereafter on which a violation occurs.

SECTION 7. Section 11.38.680 is hereby amended to read as follows:

11.38.680 Procedural rRequirements.

The Director of Public Works, with input and concurrence from the Director of Public Health, shall periodically review the provisions of this Part and recommend necessary updates to the Board of Supervisors. The review of these provisions and

|

preparation of resulting recommendations, if any, shall be performed, at a minimum,
every two years following the first review, which shall be completed by
December 31, 2010.

[1138620MMCC]

SECTION 8. This ordinance shall be published in The Daily Commerce a newspaper printed and published in the County of Los Angeles.



Mike Antonovich

Mayor

ATTEST:

Patrick Ogawa

Patrick Ogawa
Acting Executive Officer -
Clerk of the Board of Supervisors
County of Los Angeles

I hereby certify that at its meeting of February 17, 2015 the foregoing ordinance was adopted by the Board of Supervisors of said County of Los Angeles by the following vote, to wit:

<u>Ayes</u>		<u>Noes</u>	
Supervisors	<u>Hilda Solis</u>	Supervisors	<u>None</u>
	<u>Sheila Kuehl</u>		
	<u>Don Knabe</u>		
	<u>Michael D. Antonovich</u>		

Effective Date: March 19, 2015

~~Operative Date:~~ _____

Patrick Ogawa

Patrick Ogawa
Acting Executive Officer -
Clerk of the Board of Supervisors
County of Los Angeles

I hereby certify that pursuant to Section 25103 of the Government Code, delivery of this document has been made.

PATRICK OGAWA
Acting Executive Officer
Clerk of the Board of Supervisors

By *[Signature]*
Deputy



APPROVED AS TO FORM:
MARK J. SALADINO
County Counsel

By *[Signature]*
Richard D. Weiss
Chief Deputy County Counsel



Appendix H: RCLWA Water Conservation Program

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

RESOLUTION: 2015.03.Cons

**RESOLUTION OF THE BOARD OF DIRECTORS OF
RUBIO CAÑON LAND & WATER ASSOCIATION
DECLARING A WATER SUPPLY ALERT,
ESTABLISHING A MORATORIUM ON NEW WATER CONNECTIONS AND
ADOPTING MANDATORY WATER CONSERVATION PROGRAM**

WHEREAS, Rubio Cañon Land & Water Association (the “Association”) is a mutual water company empowered to provide water service within its boundaries; and

WHEREAS, due to a prolonged drought condition and other issues affecting the deliveries of imported water to Southern California, the Association will likely face water shortages in the near future; and

WHEREAS, on January 17, 2014, California Gov. Edmund G. Brown Jr. formally proclaimed a State of Emergency for California in light of the drought conditions, calling on local water agencies and “all Californians to conserve water in every way possible;” and

WHEREAS, on July 15, 2014, the State Water Resources Control Board adopted findings regarding the existing statewide drought conditions and adopted emergency water conservation regulations prohibiting all individuals from engaging in certain water use practices and requiring public water suppliers to undertake mandatory conservation-related actions during the declared drought emergency; and

WHEREAS, on March 17, 2015, the State Water Resources Control Board adopted expanded emergency water use regulations to further limit water use throughout California; and

WHEREAS, the Office of Administrative Law (OAL) on March 27, 2015 approved the Urban Water Conservation Emergency Regulations that had been approved on March 17, 2015 by the State Water Resources Control Board; and

WHEREAS, on April 1, 2015, Governor Edmund G. Brown, Jr. issued an Executive Order requiring all Californians to reduce their water use by 25% as compared to 2013 consumption, and setting forth a variety of measures to meet that required reduction; and

WHEREAS, on May 5, 2015, the State Water Resources Control Board adopted amended emergency water regulations to implement the requirements of Governor Brown’s April 1, 2015 Executive Order; and

WHEREAS, under the State Water Resources Control Board’s further regulations, the Association must reduce its water use by 36% as compared to 2013 levels of use; and

WHEREAS, given the current drought conditions and the high likelihood of restricted water availability in the foreseeable future, the Association finds it necessary to again declare a

water supply alert and continue a temporary moratorium on new connections to the Association's distribution system.

NOW, THEREFORE, BE IT RESOLVED that the Association hereby issues a water supply alert and declares a drought condition to exist in its service area; and

BE IT FURTHER RESOLVED, that the Association finds that mandatory water restrictions, as currently expanded, must continue to remain in effect to further reduce consumption. Previous water restrictions have resulted in some reduction by its customers, further measures are necessary to avoid additional demands being placed on its system during the drought; and

BE IT FURTHER RESOLVED, that the Association hereby establishes a temporary moratorium on new connections and applications which lead to an added demand on the Association's water distribution system. All previous moratoriums will remain in effective. No Will-Serve Letters and/or Fire Flow Availability Information forms will be issued to developers seeking new meter connections or building permits for new construction. Existing Will-Serve Letters will be honored according to their terms. The Board will review the continued necessity for this moratorium as deemed appropriate by the Board until such time as drought conditions no longer exist and the statewide water supply has improved.

BE IT FURTHER RESOLVED, that the Association requires the following conservation measures from its customers to:

- a. Reduce irrigation to no more than two (2) days per week, and limit irrigation during those days to no longer than 15 minutes per irrigation station;
- b. Adjust sprinklers and irrigation systems to avoid overspray, runoff and waste;
- c. Not water lawns between 9:00 a.m. and 5:00 p.m.;
- d. Not irrigate turf or landscapes during and 48 hours following measurable precipitation;
- e. Shut off decorative fountains, ponds, or other similar aesthetic features, unless a water recycling system is used;
- f. Not hose down driveways, sidewalks and other paved surfaces, except when necessary for health or sanitary reasons;
- g. Not allow the hose to run while washing any vehicle and to use a bucket or a hose with an automatic cutoff valve;
- h. Have all restaurants and other food service establishments only serve water to customers upon request;

- i. All hotels, motels, bed and breakfast, inns or other commercial short-term lodging facilities shall provide guests with the option of choosing not to have towels and linens laundered daily and shall prominently display notice of this option;
- j. The Association shall promptly notify any customer of a leak of which the Association becomes aware. Customers must routinely check faucets, toilets and pipes, both indoor and outdoor, including house service laterals and sprinkler piping, for leaks and repair them, as well as any leaks the Association identifies, immediately, or upon demand of the Association.
- k. No potable water shall be used to irrigate ornamental turf on public street medians.

BE IT FURTHER RESOLVED, that the Association shall enforce the foregoing conservation measures as follows:

A violation of the regulations and restrictions set forth herein will result in progressive warnings, fines, or result in the discontinuance of service to consumers willfully violating the conservation measures set forth herein or such other penalty or restriction as may be allowed by law, as set forth below:

1. **First Violation:** The Association will issue a written notice of non-compliance, to be delivered by mail or personal delivery that sets forth the particular violation.
2. **Second Violation:** For a second violation within the preceding twelve (12) calendar months, the Association will issue a second written notice of non-compliance to be delivered by mail or personal delivery that sets forth the particular violation.
3. **Third Violation:** For a third violation within the preceding twelve (12) calendar months, the Association will issue a third and final written notice of non-compliance to be delivered by mail or personal delivery that sets forth the particular violation.
4. **Fourth and Subsequent Violations:** For a fourth violation within the preceding twelve (12) calendar months, the Association will impose a monetary fine, not to exceed one hundred dollars (\$100.00). For a fifth and each subsequent violation within the preceding twelve (12) calendar months, the Association will impose a monetary fine of no less than two hundred fifty dollars (\$250.00) and no more than five hundred dollars (\$500.00).
5. **Appeal:** Any customer of the Association who receives a notice of violation or any fine as set herein may appeal such notice or fine to the Association's Board of Directors within thirty (30) days after the date of such notice or fine.

The decision of the Board of Directors on such appeal shall be conclusive and final.

BE IT FURTHER RESOLVED, that if critical water shortages occur and supplies of imported water are reduced, the Association will consider further action to curtail water use. If any portion of this Resolution is found to be illegal or invalid, the Association hereby declares that it would have enacted the remainder of this Resolution regardless of the absence of any such invalid part.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Rubio Cañon Land & Water Association held on May 20, 2015.

Janet Fahey, President

ATTEST:

Secretary



Appendix I: RCLWA 2016 SEISMIC ASSESSMENT

Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan

Argos Engineers, Inc.

369 Van Ness Way • Suite 730 • Torrance, CA 90501

Phone: (310) 782 – 3353

Fax: (310) 533 – 9206

**RUBIO CAÑON LAND AND WATER ASSOCIATION
CHLORINE SYSTEM CalARP SEISMIC REVALIDATION**



Prepared for: SCS Tracer Environmental
5963 La Place Court, Suite 207
Carlsbad, CA 92008

Revision 0

September 2016

Project Number 16-842

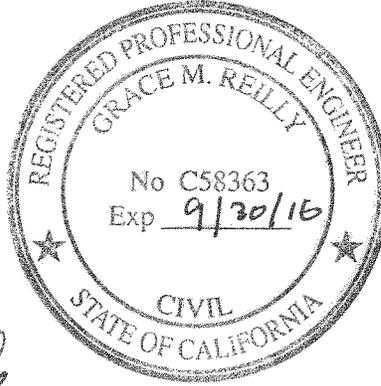
Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 2
Section: Table of Contents	Sheet: 1 of 1

1.0 Introduction	4
1.1 Problem Statement	4
1.2 Investigation Approach	5
1.3 Results Summary	6
2.0 Seismic Hazards	7
3.0 Walkdown Findings	11
4.0 References	18
Appendices	
Appendix A	Prior Recommendations Status
Appendix B	Walkdown Forms

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑÓN CalARP SEISMIC REVALIDATION	Page: 3
Section: Sign Off Sheet	Sheet: 1 of 1

Revision 0 – Initial Issue



Prepared By: Grace M. Reilly
Grace M. Reilly

9/1/16
Date

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 4
Section: 1.0 Introduction	Sheet: 1 of 3

1.1 Problem Statement

Title 19 of the California Code of Regulations [1] requires facilities with regulated substances to perform an evaluation of equipment and structures to minimize the risk of a release during a seismic event. Seismic evaluations follow a guidance document written for this purpose [2]. Additionally, the seismic evaluations are to be updated and revalidated every five years. This is a 5-year revalidation of the chlorine systems at the Rubio Cañon Land & Water Association facilities.

The chlorine process facilities and their locations are as follows:

- Figueroa Sump Basin – 263 Figueroa Drive, Altadena, CA
- Calaveras Reservoir – 825 E. Calaveras Street, Altadena, CA
- Maiden Lane Reservoir – 2663 Maiden Lane, Altadena, CA
- Ames Treatment Plant – 3371 Rubio Cañon Road, Altadena, CA

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 5
Section: 1.0 Introduction	Sheet: 2 of 3

1.2 Investigation Approach

The earthquake loading for the facility of interest will be determined using the United States Geological Survey seismic hazards ground motion website [3].

The facilities containing the equipment and piping will be visited and a walkdown of the relevant items will be conducted. Any nearby items that could impact the chlorine containing equipment during a seismic event will also be assessed. The equipment and piping will be assessed for seismic resistance capability following the Guidance For California Accidental Release Prevention (CalARP) Program Seismic Assessments [2]. Remediation recommendations if any from prior seismic evaluation will be verified. Any additional items found that require remediation or further evaluation will be identified. This report will list remediation recommendations only. No detailed engineering calculations will be performed as part of this effort.

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 6
Section: 1.0 Introduction	Sheet: 3 of 3

1.3 Results Summary

A total of thirty-one components were evaluated along with the associated piping. The revalidation findings can be found in Table 3.0.1.

A prior evaluation [7] found five deficiencies. See Appendix A for the list of prior recommendations and current status.

Based upon the walkdown, there were no cylinders at the Calaveras Reservoir and at the Maiden Lane Reservoir. The cylinders at the Ames Treatment Plant requires tightening of the chains and additional anchor bolts at the cylinder scale. Also as the Ames Treatment Plant, the pump at the Injector needs to be anchored. See Appendix B for the walkdown forms.

These opinions are based upon a visual inspection only of the conditions observed on the date of the walkdown. No calculations, further evaluations, or investigations have been prepared to support or counter these opinions.

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By: GMR	Ck:	By:	Ck:	By:	Ck:

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Section: 2.0 Seismic Hazards	Sheet: 1 of 4

Site-specific seismic loads are obtained from the United States Geological Survey [3].

Site Location

34.18199 Latitude, - 118.1383 Longitude

Ground Motions for Site

In the vicinity of these sites are the Verdugo Fault, the Sierra Madre Fault, the Raymond Fault and the San Andreas Fault. The approximate distances from the sites to each fault are included in Table 2.0.1 [4].

Fault System	Approximate Distance from Site (km)
Verdugo	2
Sierra Madre	2
Raymond	2
San Andreas	35

Table 2.0.1 Distances to Fault Systems

The design spectral acceleration and the maximum considered earthquake (MCE) spectral acceleration for this site can be seen in Figures 2.0.1 and 2.0.2 [3]. The design spectral acceleration corresponds to recurrence interval of 475 years and the MCE corresponds to a recurrence interval of 2,500 years. There is a 10% probability of exceeding Richter magnitude of 7.9 earthquake within 50 years and within 50 km of the sites [4].

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Section: 2.0 Seismic Hazards	Sheet: 2 of 4

The potential for landslide, liquefaction, tsunami/seiche and ground faulting is low for these sites [7] [9].

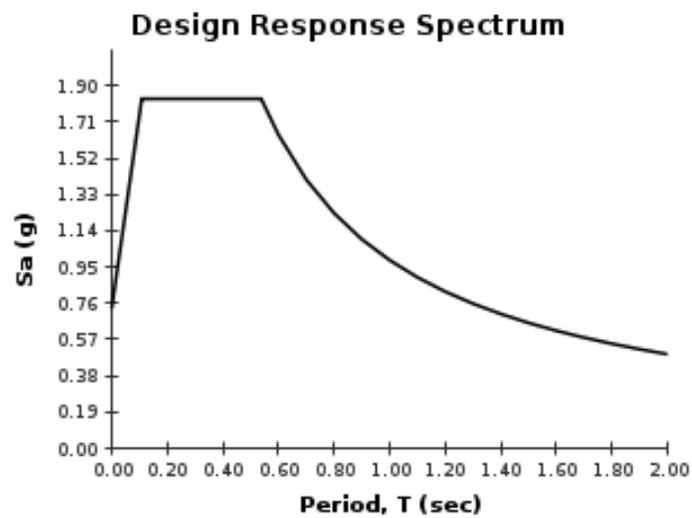


Figure 2.0.1 Design Response Spectrum for Rubio Cañon facilities [3]

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Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 9
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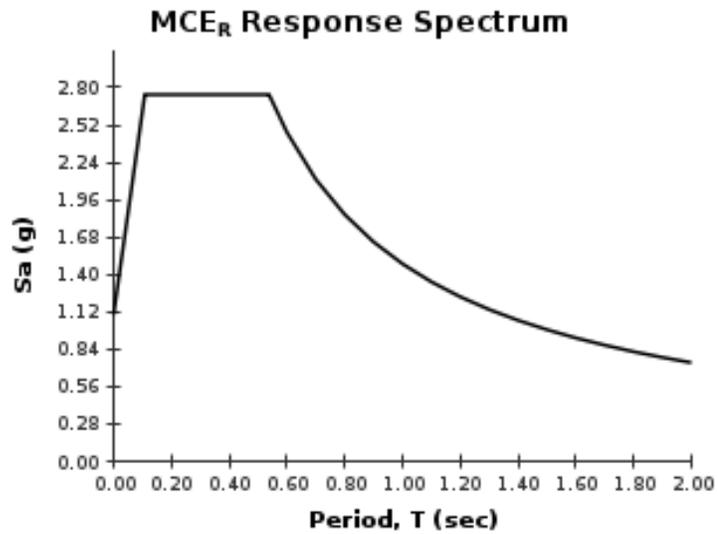


Figure 2.0.2 MCE Response Spectrum for Rubio Cañon facilities [3]

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By: GMR	Ck:	By:	Ck:	By:	Ck:

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Section: 2.0 Seismic Hazards	Sheet: 4 of 4

Comparison of 2014 CalARP Seismic Requirement to 1979 Uniform Building Code:

The facilities were originally built in 1940. The Chlorine systems were added later and appear to be of 1980's vintage.

2014 CalARP Seismic Demand -

$$\frac{E_e}{Q}$$

E_e is the unreduced elastic earthquake load based upon ground motion determined in ASCE 7-10. $E_e = 1.83 W_p \times 0.7$

Q is the ductility based reduction factor per Table 1 of CalARP Guidance Document [2]. $Q=4$ for anchored vessels

1979 Uniform Building Code Seismic Demand –

$$F_p = Z I C_p W_p$$

$$F_p = 0.20 W_p \quad \text{for equipment at grade}$$

Seismic Demands:

1979 UBC	2014 CalARP
0.20 W_p	0.32 W_p

The current CalARP seismic demand exceeds the original design seismic load by 60%. Due to their minimal seismic loading, the chlorine equipment and buildings should perform adequately during a seismic event if all of the deficiencies are corrected.

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By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 11
Section: 3.0 Walkdown Findings	Sheet: 1 of 7

The chlorine equipment, associated piping and the findings list is in Table 3.0.1.

A prior evaluation [8] had five recommendations. All the Chlorine Cylinders required chains around the base of the cylinders and the existing chains should be replaced with heavy welded chains. Also the number of cylinders chained should be limited to two per chain system. The weigh scale at the Calaveras Reservoir should be bolted to the floor and the Pump at the Ames Treatment was missing anchor bolt nuts and washers.

The current walkdown found all but one of the prior recommendations have been addressed. The Pump was replaced and it requires anchorage to the concrete floor. See Figure 3.0.1.

Additionally the chains around the Cylinders at the Ames Treatment Plant should be tightened. See Figure 3.0.2. Add missing nut at the top bracket of the Cylinder Scale. See Figure 3.0.3. Additional anchor bolts are required at the base of the Cylinder Scale. See Figure 3.0.4. Weigh scale may be strapped to the CMU wall near the top bracket in lieu of the additional anchor bolts at base.

All remaining component, piping and buildings were found to be adequate.

These opinions are based upon a visual inspection only of the conditions observed on the date of the walkdown. No calculations, further evaluations, or investigations have been prepared to support or counter these opinions.

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 12
Section: 3.0 Walkdown Findings	Sheet: 2 of 7

Figueroa Sump Basin:

Component	Findings	Recommendations
150 Pound Cylinders (2)	Adequate	-
Vacuum Regulators (2)	Adequate	-
Flow Meter (1)	Adequate	-
Injector (1)	Adequate	-
Chlorine Sensor w/ SCADA monitoring	Adequate	-
Piping	Adequate	-
Building	Adequate	-

Calaveras Reservoir (Standby):

Component	Findings	Recommendations
150 Pound Cylinders (1)	Further Evaluation Required	Not on site
Vacuum Regulator w/ Flow Meter (1)	Further Evaluation Required	Not on site
Injector (1)	Adequate	-
Chlorine Sensor w/ SCADA monitoring	Adequate	-
Piping/Tubing	Adequate	-
Building	Adequate	-

Table 3.0.1 Chlorine Process System Findings List
(Continued on next page)

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 13
Section: 3.0 Walkdown Findings	Sheet: 3 of 7

Maiden Lane Reservoir (Not Connected – Standby):

Component	Findings	Recommendations
150 Pound Cylinder (1)	Further Evaluation Required	Not on site
Vacuum Regulator (1)	Further Evaluation Required	Not on site
Flow Meter (1)	Adequate	-
Injector (1)	Adequate	-
Chlorine Sensor w/ SCADA monitoring	Adequate	-
Piping/tubing	Adequate	-
Building	Adequate	-

Ames Treatment Plant:

Component	Findings	Recommendations
150 Pound Cylinders (2 on scale, 12 in storage)	Not Adequate	Tighten chains, add missing nut and anchor bolts at weigh scale
Vacuum Regulators (2)	Adequate	-
Flow Meter (1)	Adequate	-
Injector (1)	Not Adequate	Anchor associated pump to concrete
Chlorine Sensor w/ SCADA monitoring	Adequate	-
Piping/tubing	Adequate	-
Buildings	Adequate	-

Table 3.0.1 Chlorine Process System Findings List
(Continued)

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 14
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Figure 3.0.1 Anchor the pump at the Ames Treatment Plant

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By: GMR	Ck:	By:	Ck:	By:	Ck:

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Section: 3.0 Walkdown Findings	Sheet: 5 of 7



Figure 3.0.2 Tighten chains around stored cylinders at Ames Treatment Plant

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 16
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Figure 3.0.3 Add missing nut at top bracket on the weigh scale

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 17
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Figure 3.0.4 Additional anchor bolts required at the Ames Treatment Plant weigh scale

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: 18
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- 1) California Code of Regulations, Title 19, Division 2, Chapter 4.5, "California Accidental Release Prevention (CalARP) Program Detailed Analysis," 2004.
- 2) Guidance For California Accidental Release Prevention (CalARP) Program Seismic Assessments, Prepared for the Administering Agency (AA) Subcommittee Region I Local Emergency Planning Committee (LEPC), Prepared by CalARP Program Seismic Guidance Committee, March 2014.
- 3) United States Geological Survey's U.S. Seismic Design Maps <http://earthquake.usgs.gov/designmaps/us/application.php>.
- 4) United States Geological Survey's 2009 Earthquake Probability Mapping, <http://geohazards.usgs.gov/eqprob/2009/index.php>.
- 5) "Maps of Known Active Faults Near-Source Zones in California and Adjacent Portions of Nevada," 1997 Uniform Building Code.
- 6) Email from Jeanne Lemaster (Tracer) to Ken Saunders (Argos), "Rubio Canyon Seismic Assessment Revalidation," August 18, 2016.
- 7) California Emergency Management Agency/Hazard Mitigation Portal, <http://myhazards.caloes.ca.gov>, September 22, 2011.
- 8) Argos Engineers Report 11-402, "Rubio Cañon Land & Water Association Chlorine Process CalARP Seismic Evaluation," August, 2011, Revision 0.
- 9) California Department of Conservation, Division of Mines and Geology, "State of California seismic Hazard Zones," Mt. Wilson Quadrangle, December 2007.

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: A1
Section: Appendix A	Sheet: 1 of 2

Prior Recommendations Status

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: A2
Section: Appendix A	Sheet: 2 of 2

**Rubio Cañon Facilities Seismic Evaluation
CalARP Prior Recommendations and Status**

Date:	9/1//16	By:	GMR
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Item	Location	Comment	Fixed?		
			Y	N	Note
1	All Chlorine Cylinders	Add chains at bottom	√		
2	Chlorine Cylinders (except at Ames Treatment)	Replace existing chains with heavier welded chains	√		
3	Ames Treatment – Chlorine Cylinders	Limit number of cylinders to two per chain system	√		
4	Calaveras Reservoir – Weigh Scale	Bolt to floor	√		
5	Ames Treatment – Pump connected to Injector	Add missing nuts and washers at anchors		√	

Reference: [8]

Notes:

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Calculation Title: RUBIO CAÑON CalARP SEISMIC REVALIDATION	Page: B1
Section: Appendix B	Sheet: 1 of 29

Walkdown Forms

Revision: 0	Date: 8/19/16	Revision:	Date:	Revision:	Date:
By: GMR	Ck:	By:	Ck:	By:	Ck:

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

FIGUEROA

Component ID:	150lb CYLINDERS (2)	Date:	9/1/16
Component Type:	VERT. P.V.	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality	✓	

Notes 2 HEAVY CHAIRS, TOP & BOTT, TO
SCALE. SCALE IS BOLTED TO CONCRETE
W/ (4) 3/8" Ø A.B.'S.

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG.

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

FIGUEROA

Component ID:	VACUUM REGULATORS	Date:	9/1/16
Component Type:	- (2)	By:	GR

Evaluation Summary (Circle one)

Adequate
 Not Adequate
 Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts			Bolt spacing/edge distance		
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

} N/A

} N/A

} N/A

Notes THREADED TO TOPS OF CHLORINE CYLINDERS

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BUILDING

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

FIGUEROA

Component ID:	FLOW METER (1)	Date:	9/1/16
Component Type:	VERT. P.V.	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality	N/A	

Notes (2) 1/4" ϕ SCREWS TO CMU WALL

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

ATTACHED TO BUILDING

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

FIGUEROA

Component ID:	<i>INJECTOR (1)</i>	Date:	<i>9/1/16</i>
Component Type:	<i>-</i>	By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	<input checked="" type="checkbox"/>		Number of bolts OK	<input checked="" type="checkbox"/>	
Missing/loose bolts		<input checked="" type="checkbox"/>	Bolt spacing/edge distance	<input checked="" type="checkbox"/>	
Bolt damage		<input checked="" type="checkbox"/>	Bolt corrosion		<input checked="" type="checkbox"/>
Concrete quality	<input checked="" type="checkbox"/>		Weld quality	<i>N/A</i>	

Notes *THREADED TO TUBING & ANCHORED TO CMU WALL*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

FIGUEROA

Component ID:	CHLORINE SENSOR w/	Date:	9/1/16
Component Type:	SCADA MONITORING	By:	GR.

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality	N/A	

Notes SCREWED TO CMU WALL

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG.

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Piping

FIGUEROA

Line Number:	TUBING	Date:	9/1/16
Drawing Number:	—	By:	GR.

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Inspection Attributes				
	Yes	No	Inac	Comments
Piping				
Damaged		✓		
Corrosion		✓		
Flanged/Threaded Joints	✓			
Buried Run		✓		
Adequate Branch Flexibility	✓			
Rigidly Spans Components		✓		
Supports				
Piping Spans OK	✓			
Missing Hardware		✓		
Corrosion		✓		
Hardware Damaged/Loose		✓		
Seismic Interaction				
Adequate Clearance	✓			
Adjacent Comps. Secure	✓			
Clearance at AOVs/MOVs	✓			

Argos Engineers

TIGWELDA

Line Number:	TUBING	Date:	9/1/16
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Notes and Sketches

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Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

CALAVERAS

Component ID:	<i>150 lbs. CYLINDER (1)</i>	Date:	<i>9/1/16</i>
Component Type:	<i>VERT. P.V.</i>	By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts			Bolt spacing/edge distance		
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes *NOT ON SITE*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y ___ N ___

If yes, list adjacent components and type of risk if known

Notes and Sketches (over)

NO CYLINDER

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

CALAVERAS

Component ID:	VACUUM REGULATOR	Date:	9/1/16
Component Type:		By:	GR.

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts			Bolt spacing/edge distance		
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes NOT ON SITE

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y___ N___

If yes, list adjacent components and type of risk if known

Notes and Sketches (over)

NOT ON SITE.

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

CALAVERAS

Component ID:	INJECTOR (1)	Date:	9/1/16
Component Type:		By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	} N/A		Number of bolts OK	} N/A	
Missing/loose bolts			Bolt spacing/edge distance		
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes THREADED IN LINE W/ PVC PIPING

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BUILDING

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

CAMAVERAS

Component ID:	<i>CM CHLORINE SENSOR w/</i>	Date:	<i>9/1/16</i>
Component Type:	<i>SCADA MONITORING</i>	By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate
 Not Adequate
 Further Evaluation Required

Bolting of Equipment to Foundation/Structure

		Y	N			Y	N
Size of bolts OK		✓		Number of bolts OK		✓	
Missing/loose bolts			✓	Bolt spacing/edge distance		✓	
Bolt damage			✓	Bolt corrosion			✓
Concrete quality	<i>N/A</i>			Weld quality	<i>N/A</i>		

Notes *BOLTED TO FIBERGLASS BUILDING WALL*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG.

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Piping

CANAVERAS

Line Number:	<i>PIPING / TUBING</i>	Date:	<i>9/1/16</i>
Drawing Number:		By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Inspection Attributes				
	Yes	No	Inac	Comments
Piping				
Damaged		✓		
Corrosion		✓		
Flanged/Threaded Joints	✓			
Buried Run		✓		
Adequate Branch Flexibility	✓			
Rigidly Spans Components		✓		
Supports				
Piping Spans OK	✓			
Missing Hardware		✓		
Corrosion		✓		
Hardware Damaged/Loose		✓		
Seismic Interaction				
Adequate Clearance	✓			
Adjacent Comps. Secure	✓			
Clearance at AOVs/MOVs	✓			

Argos Engineers

CAVAVERAS

Line Number:	PIPING / TUBING	Date:	9/1/16
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Notes and Sketches

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Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

MAIDEN LAKE

Component ID:	150 lbs. CYLINDER	Date:	9/1/16
Component Type:	VERT. P.V.	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts			Bolt spacing/edge distance		
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes _____

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y ___ N ___

If yes, list adjacent components and type of risk if known

Notes and Sketches (over)

NOT ON SITE

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

MAIDEN LANE

Component ID:	VACUUM REGULATOR	Date:	9/1/16
Component Type:	—	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts			Bolt spacing/edge distance		
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes _____

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y ___ N ___

If yes, list adjacent components and type of risk if known

Notes and Sketches (over)

NOT ON SITE

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

MAIDEN LANE

Component ID:	<i>FLOW METER</i>	Date:	<i>9/1/16</i>
Component Type:	<i>VERT. P.V.</i>	By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality <i>N/A</i>			Weld quality <i>N/A</i>		

Notes *(2) 1/4" SCREWS TO FIBERGLASS BUILDING WALL.*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

ATTACHED TO BLDG

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

MAIDEN LAKE

Component ID:	<i>INJECTOR (1)</i>	Date:	<i>9/1/16</i>
Component Type:		By:	<i>CR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts	<i>} N/A</i>		Bolt spacing/edge distance	<i>} N/A</i>	
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes *THREADED INTO PVC PIPING.*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG.

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

MAIDEN CANYE

Component ID:	<i>CHLORINE SENSOR W,</i>	Date:	<i>9/1/16</i>
Component Type:	<i>SCADA MONITORING</i>	By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality <i>N/A</i>			Weld quality <i>N/A</i>		

Notes *BOLTED TO FIBERGLASS BLDG. WALL.*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG.

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Piping

MAIDEN LAKE

Line Number:	PIPING / TUBING	Date:	9/1/16
Drawing Number:	-	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Inspection Attributes				
	Yes	No	Inac	Comments
Piping				
Damaged		✓		
Corrosion		✓		
Flanged/Threaded Joints	✓			
Buried Run		✓		
Adequate Branch Flexibility	✓			
Rigidly Spans Components		✓		
Supports				
Piping Spans OK	✓			
Missing Hardware		✓		
Corrosion		✓		
Hardware Damaged/Loose		✓		
Seismic Interaction				
Adequate Clearance	✓			
Adjacent Comps. Secure	✓			
Clearance at AOVs/MOVs	✓			

Argos Engineers

MAIDEN LAKE

Line Number:	PIPING / TUBING	Date:	9/1/16
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Notes and Sketches

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Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

AMES TREATMENT

Component ID:	150 lb. CYLINDERS IN	Date:	9/1/16
Component Type:	VERT. P.V. STORAGE	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality	N/A	

Notes TOP & BOTTOM CHAINS AROUND 2
CYLINDERS, EA. & BOLTED TO S.M.V. WALL

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG

Notes and Sketches (over)

TIGHTEN CHAINS AROUND
CYLINDERS

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

AMES TREATMENT

Component ID:	150 lbs. CYLINDERS (2)	Date:	9/11/16
Component Type:	VERT. P.V.	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK		✓
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality	✓	

Notes (2) 3/8" φ BOLTS BACK OF SCALE.
(1) 3/8" φ BOLT IN FRONT OF SCALE
TIGHTEN CHAINS AROUND CYLINDER

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y ✓ N

If yes, list adjacent components and type of risk if known

INSIDE BLDG.

Notes and Sketches (over)

*ADD ANCHOR BOLT TO FRONT
OF CYLINDER SCALE &
TIGHTEN CHAINS AROUND CYLINDERS
& ADD MISSING NUT @
TOP SUPPORT.*

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

AMES TREATMENT

Component ID:	VACUUM REGULATORS (2)	Date:	9/1/16
Component Type:	-	By:	CR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts	<i>N/A</i>		Bolt spacing/edge distance	<i>N/A</i>	
Bolt damage			Bolt corrosion		
Concrete quality			Weld quality		

Notes ATTACHED TO TOPS OF CYLINDERS

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLOG

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

AMES TREATMENT

Component ID:	FLOW METER (1)	Date:	9/1/16
Component Type:	VERT. P.V.	By:	GR

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality	N/A	

Notes (2) 1/4" ϕ SCREWS INTO CMU WALL

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

ATTACHED TO BLDG

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

AMES TREATMENT

Component ID:	<i>INJECTOR (1)</i>	Date:	<i>9/1/16</i>
Component Type:		By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK			Number of bolts OK		
Missing/loose bolts	} <i>N/A</i>		Bolt spacing/edge distance	} <i>N/A</i>	
Bolt damage			Bolt corrosion		
Concrete quality	✓		Weld quality		

Notes

THREADED TO PVC PIPING.

ASSOCIATED PUMP IS NOT ANCHORED

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG

Notes and Sketches (over)

ANCHOR ASSOCIATED PUMP

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Rigid Mechanical Equipment

AMES TREATMENT

Component ID:	<i>CHLORINE SENSOR w/</i>	Date:	<i>9/1/16</i>
Component Type:	<i>SCADA MONITORING</i>	By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Bolting of Equipment to Foundation/Structure

	Y	N		Y	N
Size of bolts OK	✓		Number of bolts OK	✓	
Missing/loose bolts		✓	Bolt spacing/edge distance	✓	
Bolt damage		✓	Bolt corrosion		✓
Concrete quality	✓		Weld quality <i>N/A</i>		

Notes *SCREWED INTO CMU WALL*

Interaction/Deflection with Adjacent Structures or Equipment

Risk of damage from adjacent component failure Y N

If yes, list adjacent components and type of risk if known

INSIDE BLDG

Notes and Sketches (over)

Argos Engineers

Rubio Cañon Facilities Seismic Evaluation CalARP Walk Down Review Sheet Piping

AMES TREATMENT

Line Number:	<i>PIPING / TUBING</i>	Date:	<i>9/1/16</i>
Drawing Number:		By:	<i>GR</i>

Evaluation Summary (Circle one)

Adequate

Not Adequate

Further Evaluation Required

Inspection Attributes				
	Yes	No	Inac	Comments
Piping				
Damaged		✓		
Corrosion		✓		
Flanged/Threaded Joints	✓			
Buried Run	✓			<i>PARTIAL TO INJECTION POINT</i>
Adequate Branch Flexibility	✓			
Rigidly Spans Components		✓		
Supports				
Piping Spans OK	✓			
Missing Hardware		✓		
Corrosion		✓		
Hardware Damaged/Loose		✓		
Seismic Interaction				
Adequate Clearance	✓			
Adjacent Comps. Secure	✓			
Clearance at AOVs/MOVs	✓			

Argos Engineers

AMES TREATMENT

Line Number:	PIPING / TUBING.	Date:	9/1/16
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Notes and Sketches

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Appendix J: Los Angeles County All-Hazards Mitigation Plan

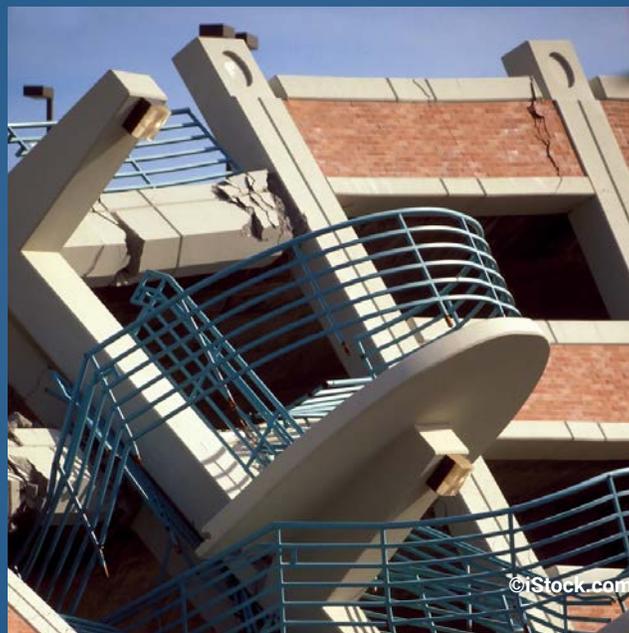
Rubio Cañon Land and Water Association | 2020 Urban Water Management Plan



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**

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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 Carsen
	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	Kage/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	Littleton
Sun Valley (portion)	Littleton/Juniper Hills
Sunland	Littleton/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

Kern County

San Bernardino
County

Ventura
County

Orange
County

Pacific Ocean

Los Angeles



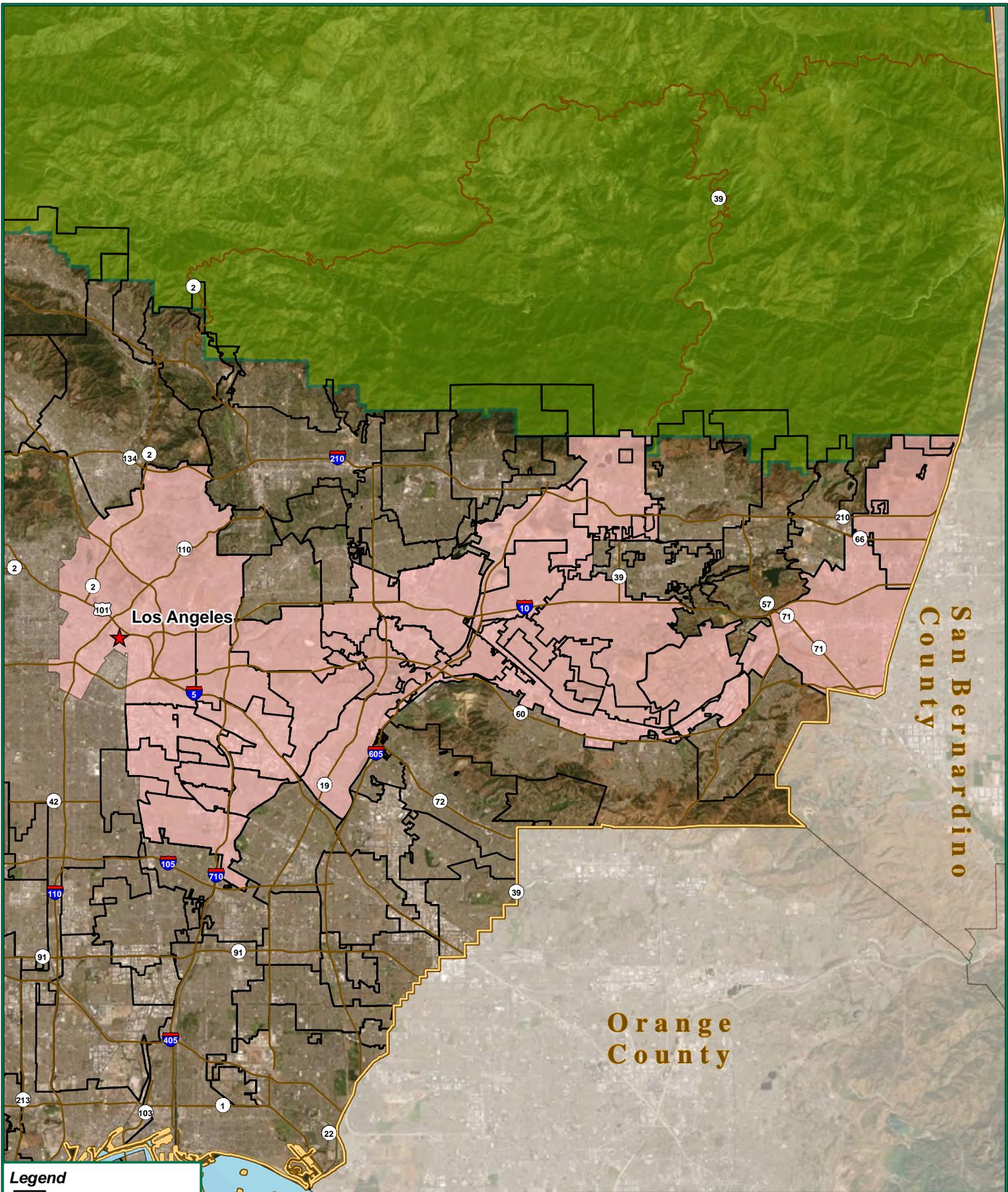
0 2.5 5 10 15 Miles

- Legend**
- Unincorporated County Boundary
 - National Forest

Source
<https://egis3.lacounty.gov>, 2019

Los Angeles County
Figure 3-1

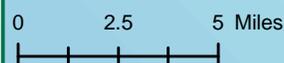
2019 Los Angeles County
All-Hazards Mitigation Plan



Legend

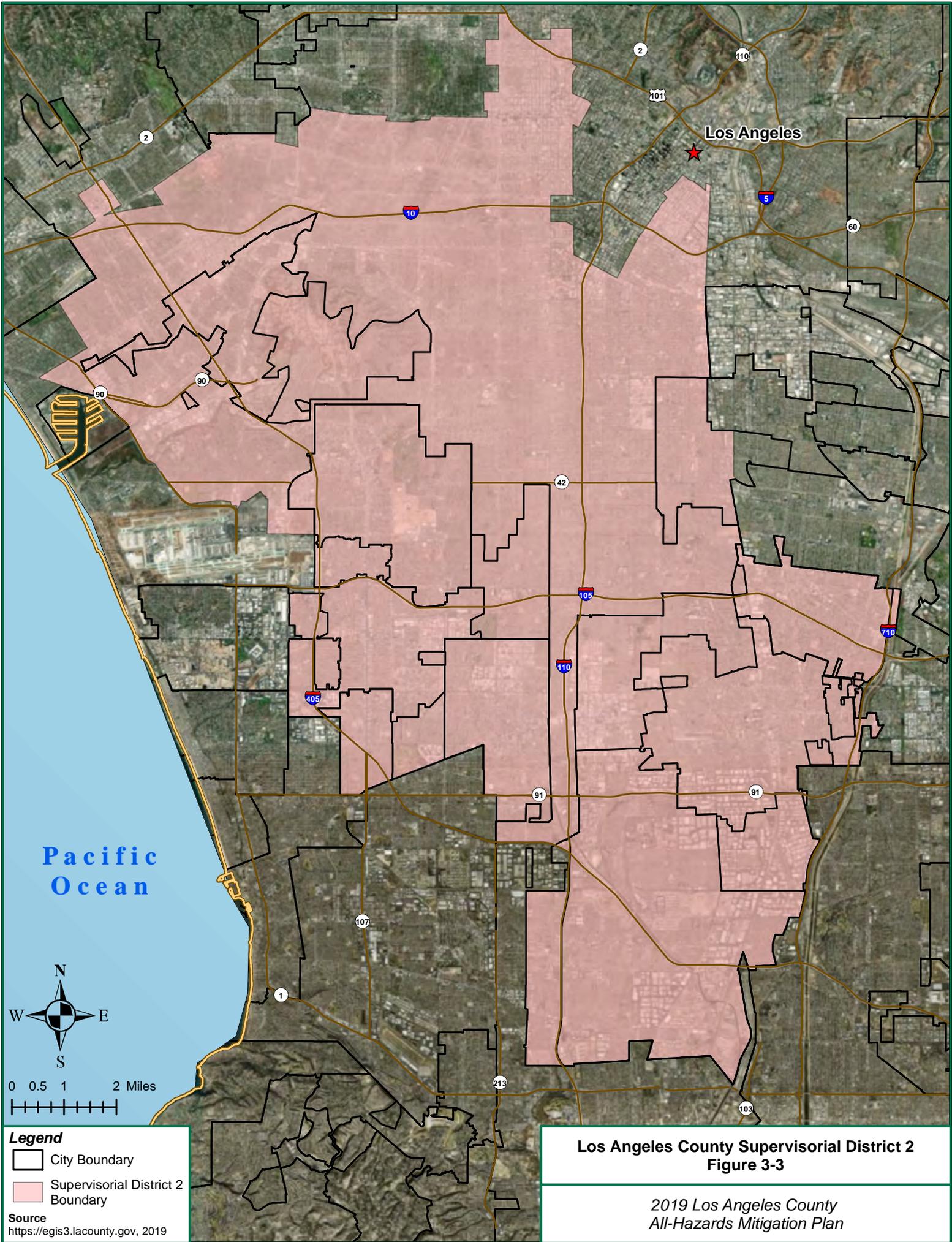
-  City Boundary
-  Supervisorial District 1 Boundary
-  National Forest

Source
<https://egis3.lacounty.gov>, 2019



Los Angeles County Supervisorial District 1
Figure 3-2

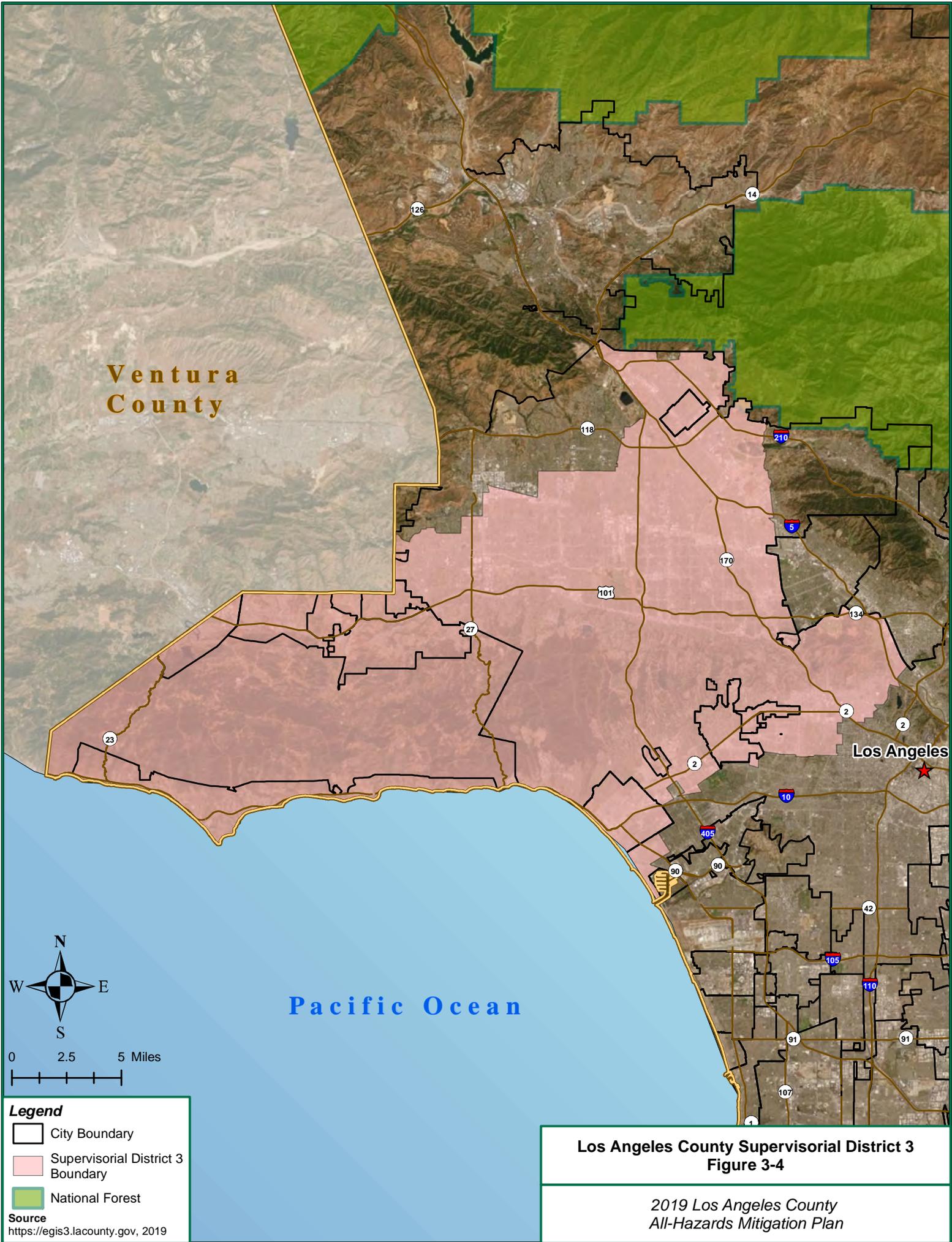
2019 Los Angeles County All-Hazards Mitigation Plan



Legend
City Boundary
Supervisorial District 2 Boundary
Source
<https://egis3.lacounty.gov>, 2019

**Los Angeles County Supervisorial District 2
Figure 3-3**

*2019 Los Angeles County
All-Hazards Mitigation Plan*



Ventura
County

Los Angeles

Pacific Ocean



0 2.5 5 Miles

Legend

- City Boundary
- Supervisorial District 3 Boundary
- National Forest

Source
<https://egis3.lacounty.gov>, 2019

Los Angeles County Supervisorial District 3
Figure 3-4

*2019 Los Angeles County
All-Hazards Mitigation Plan*



San Bernardino
County

Orange
County

Los Angeles

Pacific Ocean

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*

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

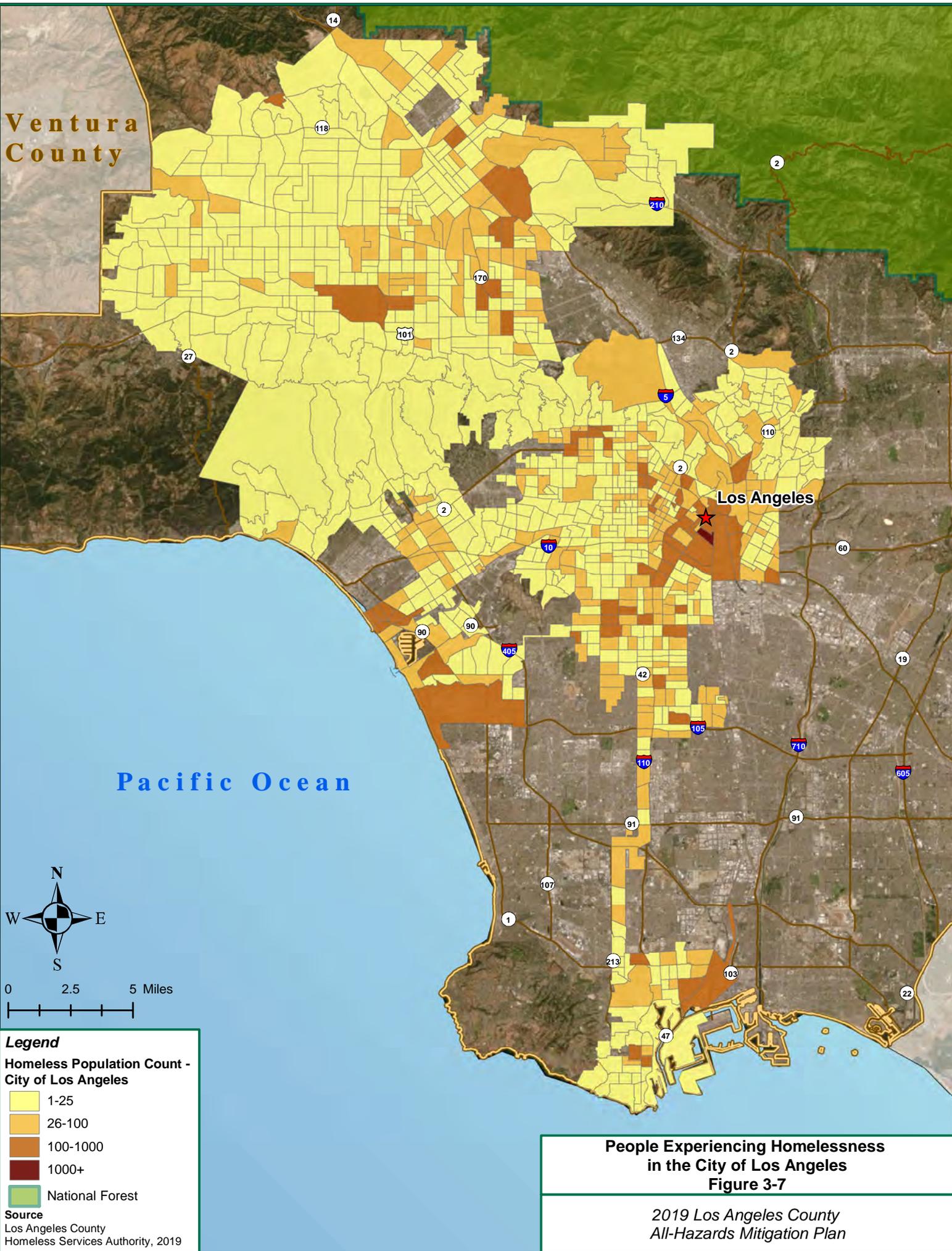
As noted by the Center for Disease Control (CDC), “Everyone must remain safe in an emergency. But for some, it’s more difficult.” Vulnerable or at-risk groups include people that may have difficulty communicating or accessing medical care, need help maintaining independence, require supervision, and 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



Ventura County

Los Angeles

Pacific Ocean



0 2.5 5 Miles

Legend

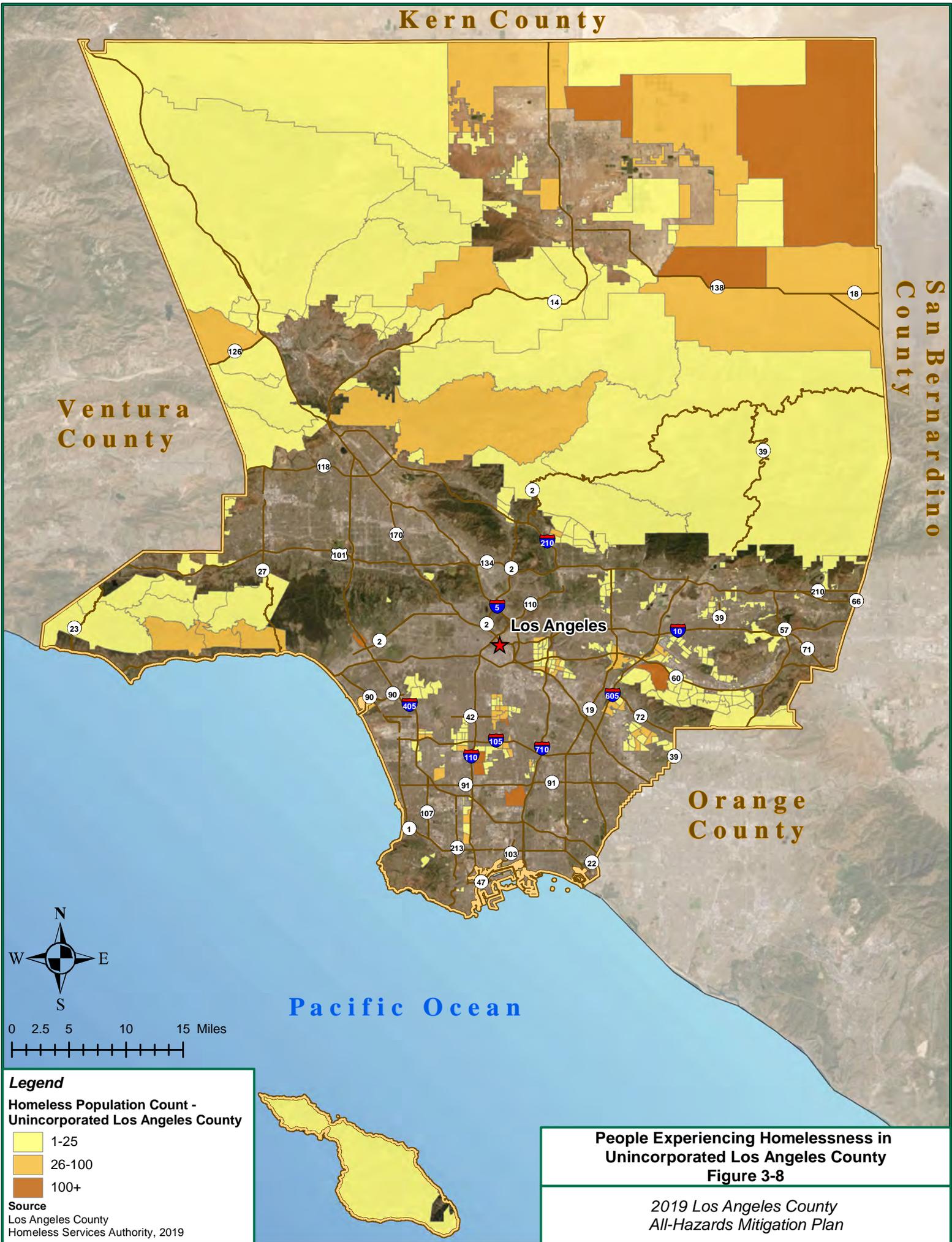
Homeless Population Count - City of Los Angeles

- 1-25
- 26-100
- 100-1000
- 1000+
- National Forest

Source
 Los Angeles County
 Homeless Services Authority, 2019

People Experiencing Homelessness in the City of Los Angeles
Figure 3-7

2019 Los Angeles County All-Hazards Mitigation Plan



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

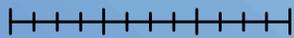
Ventura
County

Orange
County

Pacific Ocean



0 2.5 5 10 15 Miles



Legend

-  Animal Shelter
-  National Forest

Source
Los Angeles County
Animal Care and Control, 2019

Los Angeles County Animal Care & Control
Figure 3-9

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino
County

Ventura
County

Orange
County

Pacific Ocean



0 2.5 5 10 15 Miles



Legend

- Fire Station
- National Forest

Source
Homeland Infrastructure
Foundation-Level Data, 2019

Los Angeles County Fire Department
Figure 3-10

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino
County

Ventura
County

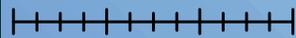
Orange
County

Pacific Ocean

Los Angeles



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



Kern County

San Bernardino County

Ventura County

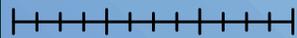
Orange County

Pacific Ocean

Los Angeles



0 2.5 5 10 15 Miles



Legend

- Library
- National Forest

Source
Los Angeles County
Library, 2019

Los Angeles County Library
Figure 3-12

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino
County

Ventura
County

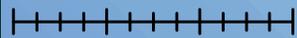
Orange
County

Pacific Ocean

Los Angeles



0 2.5 5 10 15 Miles



Legend

-  Museum
-  National Forest

Source
Los Angeles County Museum of Art
and Museum of Natural History, 2019

Los Angeles County Museum of Art
and Museum of Natural History
Figure 3-13

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino
County

Ventura
County

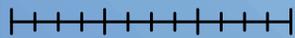
Orange
County

Los Angeles

Pacific Ocean



0 2.5 5 10 15 Miles



Legend

- School
- National Forest

Source
Los Angeles County
Office of Education, 2019

Los Angeles County Office of Education
Figure 3-14

2019 Los Angeles County
All-Hazards Mitigation Plan





Kern County

San Bernardino
County

Ventura
County

Orange
County

Los Angeles

Pacific Ocean



0 2.5 5 10 15 Miles



Legend

- Amphitheatre
- Auditorium
- Community Center
- Gymnasium
- Indoor Theater
- Senior Center
- Teen Center
- National Forest

Source
Los Angeles County
Parks and Recreation, 2019

Los Angeles County Parks & Recreation
Figure 3-16

2019 Los Angeles County
All-Hazards Mitigation Plan

Kern County

San Bernardino
County

Ventura
County

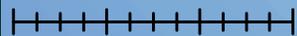
Orange
County

Pacific Ocean

Los Angeles



0 2.5 5 10 15 Miles



Legend

-  Clinic
-  National Forest

Source
Los Angeles County
Department of Public Health, 2019



Department of Public Health
Figure 3-17

2019 Los Angeles County
All-Hazards Mitigation Plan

Kern County

San Bernardino County

Ventura County

Orange County

Los Angeles

Pacific Ocean



0 2.5 5 10 15 Miles

Legend

- Communications
- Drinking Well water
- Maintenance/Operations
- Pump Station
- Stormwater Pumping
- Treatment Plant
- Yard
- Water Tank/Water Tank pump station
- National Forest

Source
Los Angeles County
Department of Public Works, 2019

Los Angeles County Public Works
Figure 3-18

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino County

Ventura County

Orange County

Los Angeles

Pacific Ocean



0 2.5 5 10 15 Miles



Legend

-  Correction Facility
-  Patrol Station
-  National Forest

Source
Los Angeles County
Sheriff's Department, 2019



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	<p>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.</p> <p>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.</p> <p>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.</p>
Location	<p>According to the National Climate Assessment, the entire Pacific coastal region, including Los Angeles County, has been affected by climate change.</p>
History	<p>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.</p> <p>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</p>

Table 4-1. Climate Change Identification Profile

Profile	Description
	<p>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.</p>
<p>Extent / Severity</p>	<p>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.</p> <p>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.</p>
<p>Recurrence Probability</p>	<p>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 of change and the severity and frequency of extreme weather events, the IPCC, in its Fifth Assessment of Climate Change (2014), concluded that:</p> <p style="padding-left: 40px;">...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.</p>

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

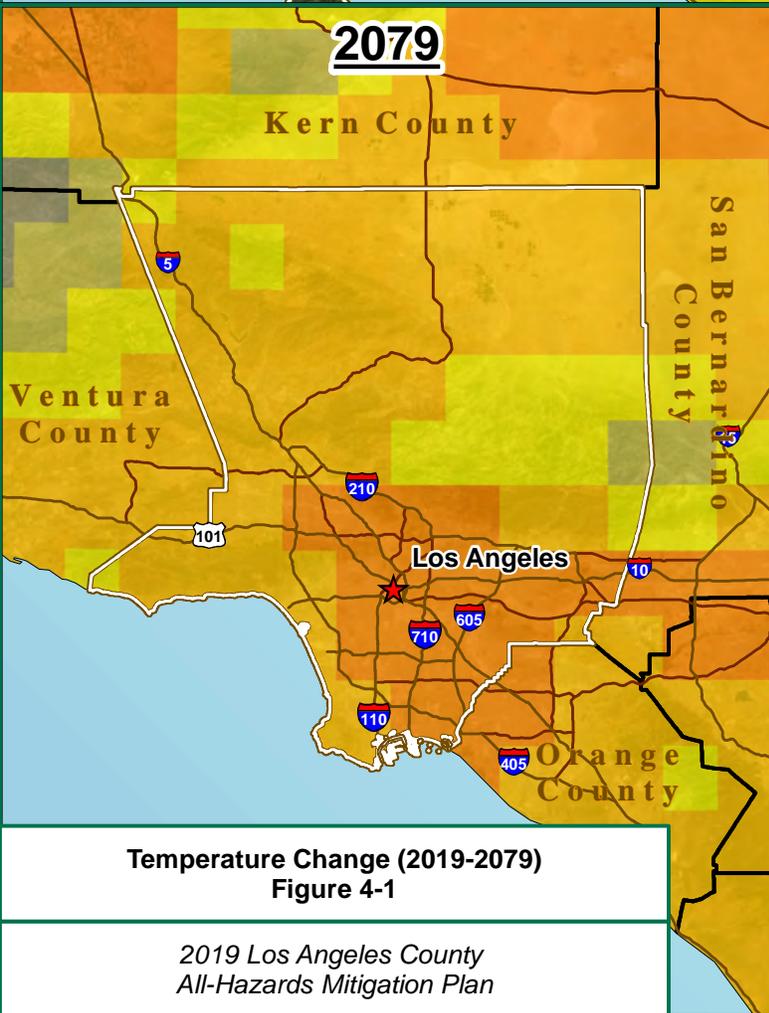
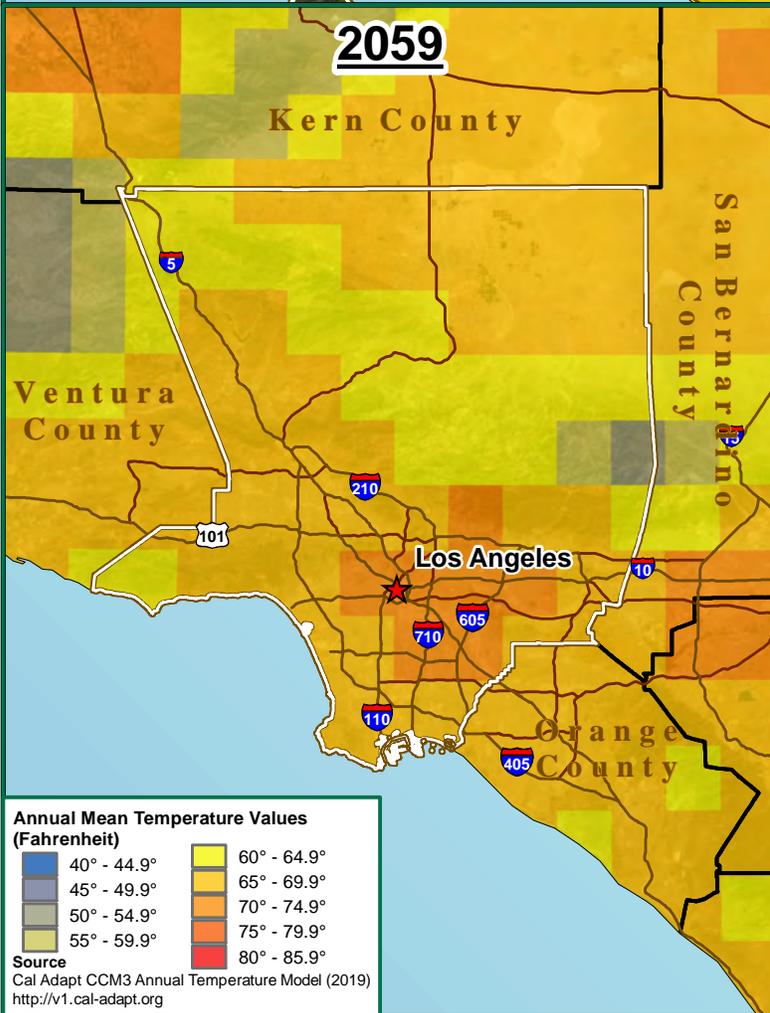
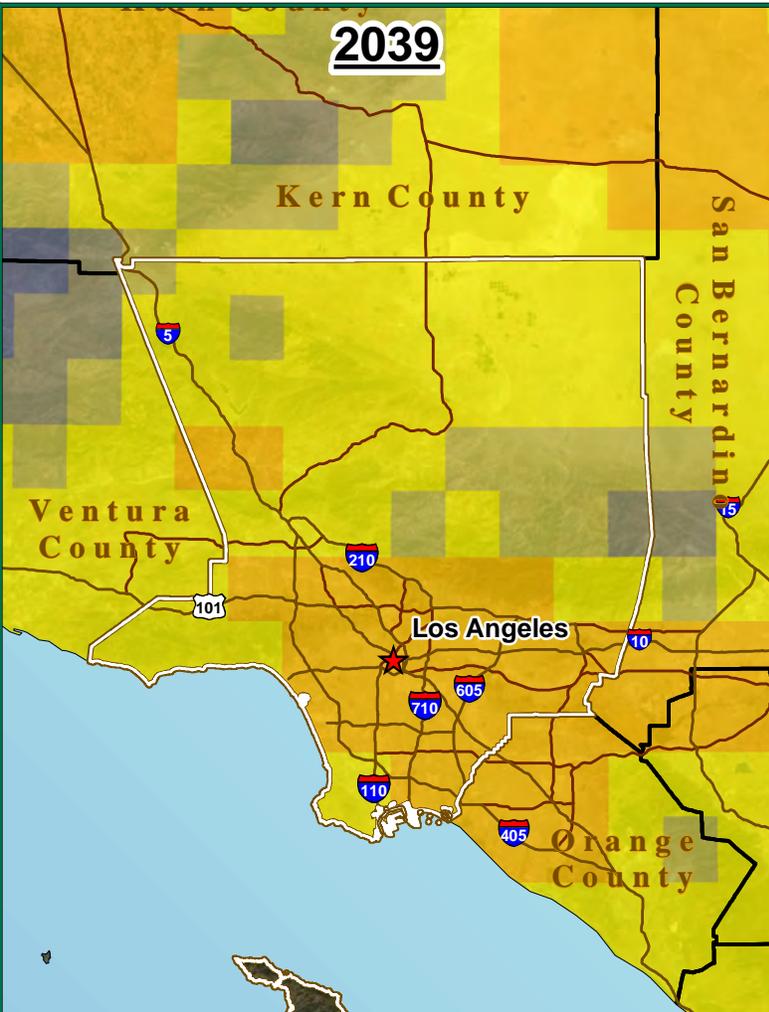
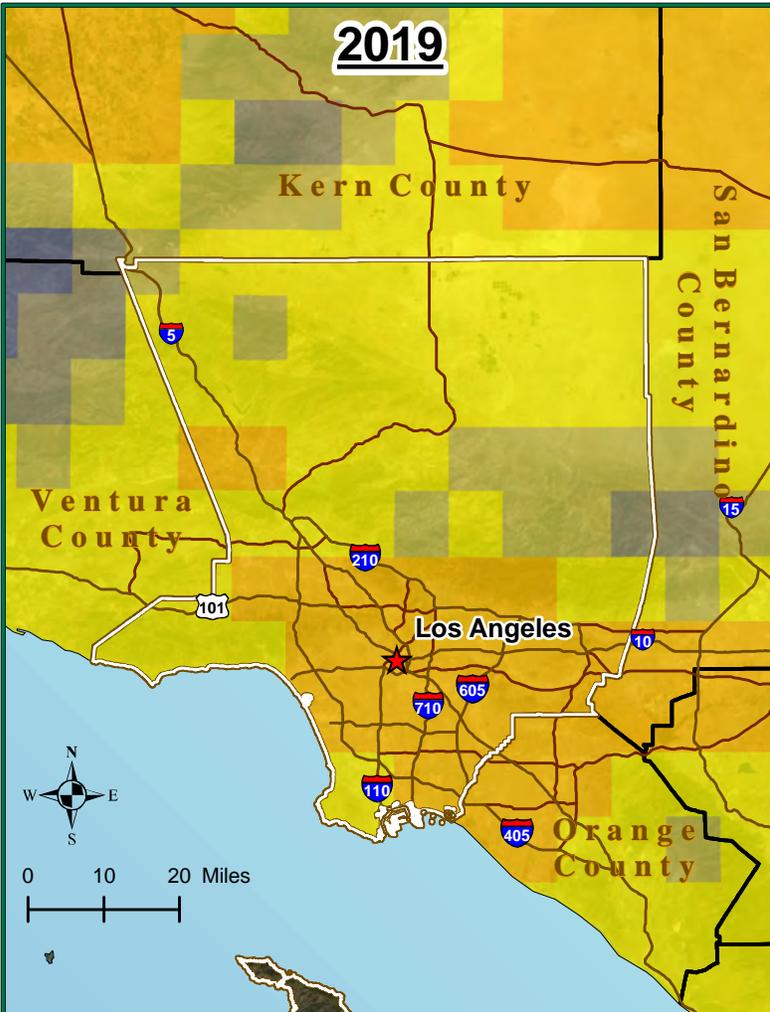
Department/ Agency	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00	0	0.00
Los Angeles County Fire Department	1	0.00	5	1.4
Los Angeles County Health Services	0	0.00	0	0.00
Los Angeles County Library	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	<p>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.</p> <p>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.</p> <p>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.”</p>

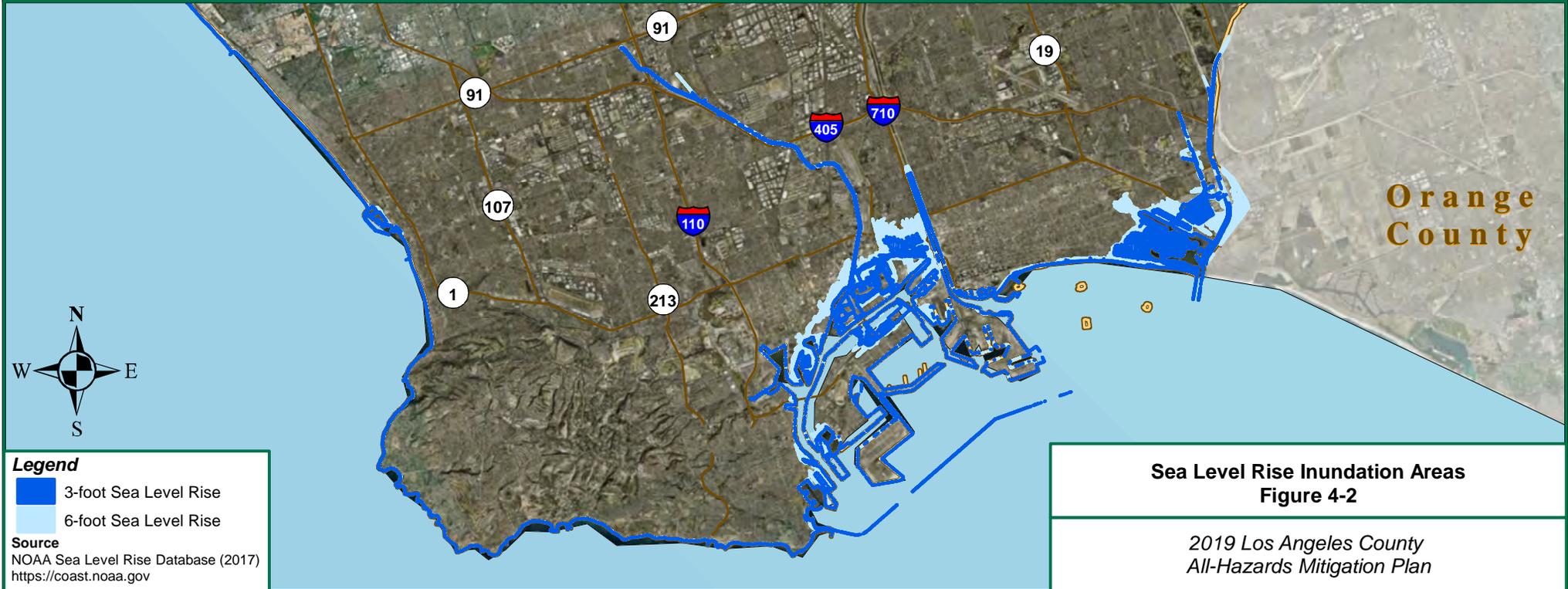


Annual Mean Temperature Values (Fahrenheit)

40° - 44.9°	60° - 64.9°
45° - 49.9°	65° - 69.9°
50° - 54.9°	70° - 74.9°
55° - 59.9°	75° - 79.9°
	80° - 85.9°

Source
 Cal Adapt CCM3 Annual Temperature Model (2019)
<http://v1.cal-adapt.org>

Temperature Change (2019-2079)
Figure 4-1



4.2 DAM FAILURE

Table 4-6. Dam Failure Identification Profile

Profile	Description
Nature	<p>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.</p>
Location	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>
Extent / Severity	<p>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.</p> <p>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.</p>
Recurrence Probability	<p>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.</p>

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

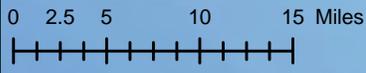
Table 4-9. Dam Failure Impact on County Critical Facilities

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	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

Kern County



- Legend**
- Dams With Inundation Mapping
 - Dam Inundation
 - National Forest

Source
Department of Water Resources
Database (2019)
<https://fmds.water.ca.gov>



**Dam Breach Inundation Areas
Figure 4-3**

*2019 Los Angeles County
All-Hazards Mitigation Plan*

Table 4-11. Drought Identification Profile

Profile	Description
Nature	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>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.</p>
Location	<p>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.</p>
History	<p>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.</p> <ul style="list-style-type: none"> • 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	<p>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.</p> <p>In addition to ground motion, several secondary natural hazards can occur from earthquakes, such as the following:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>

Table 4-14. Earthquake Identification Profile

Profile	Description
Location	<p>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:</p> <ul style="list-style-type: none"> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

Table 4-14. Earthquake Identification Profile

Profile	Description
History	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>In Los Angeles County, significant earthquakes over the past 50 years include:</p> <ul style="list-style-type: none"> • 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	<p>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.</p> <p>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.</p>

Table 4-14. Earthquake Identification Profile

Profile	Description
Recurrence Probability	<p>Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults are as follows:</p> <ul style="list-style-type: none"> • 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

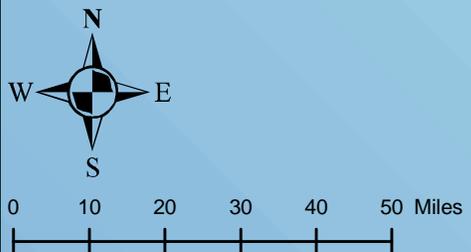
Table 4-17. Seismic Hazard Impact on County Critical Facilities

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	<p>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.</p> <p>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.</p>



Legend

Quaternary and Younger Faults

- Inferred
- - - Moderately Constrained
- · · Well Constrained

Source
 Quaternary Fault and Fold Database
 of the United States (2018)
<https://earthquake.usgs.gov>

Major Faults in Southern California
Figure 4-4

*2019 Los Angeles County
 All-Hazards Mitigation Plan*



Ridgecrest Earthquake
 Magnitude: 7.1
 Date: 2019

Kern County

San Bernardino
 County

Kern County Earthquake
 Magnitude: 7.5
 Date: 1952

Santa
 Barbara
 County

Ventura
 County

San Juan Capistrano Earthquake
 Magnitude: 7.5
 Date: 1812

West Ventura Earthquake
 Magnitude: 7.1
 Date: 1812

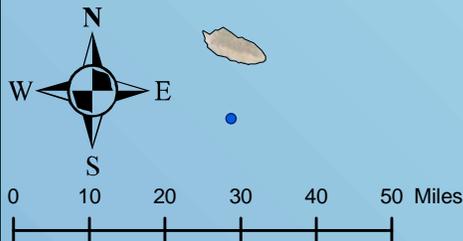
Los Angeles

Orange
 County

Riverside
 County

Pacific Ocean

San Diego
 County



Legend

Earthquakes M 5.0 >

- 7+
- 6 - 7
- 5 - 6

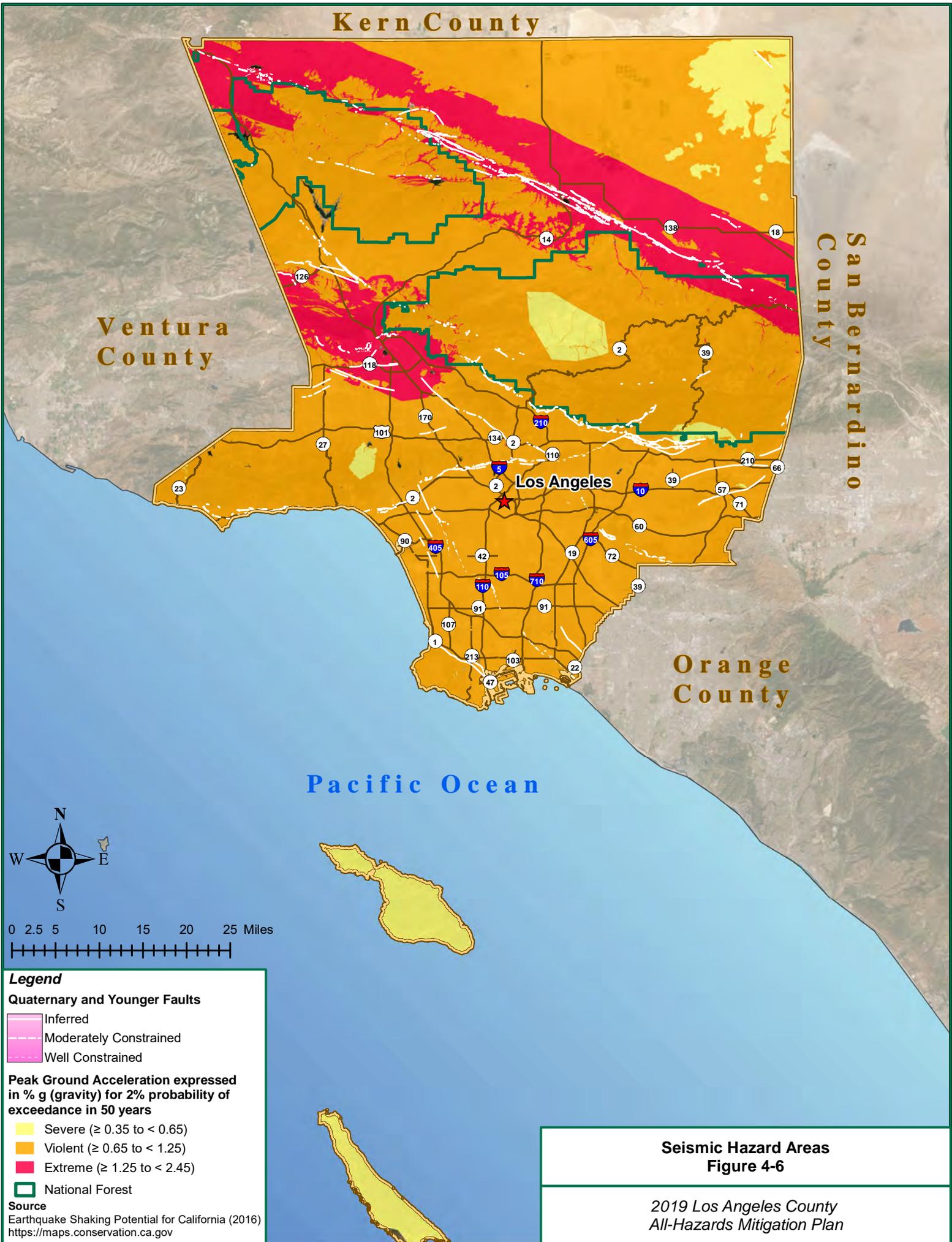
Quaternary and Younger Faults

- Inferred
- Moderately Constrained
- Well Constrained

Source

Historic Earthquakes, 1769 to 2015 - California (Magnitude 5.0-plus) (2019)
<https://hub.arcgis.com/>
 Earthquake Catalogs 1932-2019 (2019)
<http://service.scedc.caltech.edu>

Historical Earthquakes (1769-2019)
Figure 4-5



Kern County

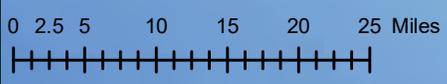
Ventura County

San Bernardino County

Orange County

Los Angeles

Pacific Ocean



Legend

Quaternary and Younger Faults

- Inferred
- Moderately Constrained
- Well Constrained

Peak Ground Acceleration expressed in % g (gravity) for 2% probability of exceedance in 50 years

- Severe (≥ 0.35 to < 0.65)
- Violent (≥ 0.65 to < 1.25)
- Extreme (≥ 1.25 to < 2.45)

National Forest

Source
 Earthquake Shaking Potential for California (2016)
<https://maps.conservation.ca.gov>

Seismic Hazard Areas
Figure 4-6

2019 Los Angeles County
 All-Hazards Mitigation Plan

4.4 FLOOD

Table 4-19. Flood Identification Profile

Profile	Description
Nature	<p>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.</p> <p>Secondary hazards from floods can include:</p> <ul style="list-style-type: none"> • 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. <p>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 desert, and more in the foothills and mountains.</p>
Location	<p>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.</p> <p>In the unincorporated areas of Los Angeles County, flooding sources include:</p> <ul style="list-style-type: none"> • 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 plain 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 runup and allow storm waves to reach higher than normal elevations along the coastline.

Table 4-19. Flood Identification Profile

Profile	Description
History	<p>The federal government has declared 13 flooding emergencies affecting Los Angeles County, including:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>
Recurrence Probability	<p>Floods can occur at any time but are most common with winter storms packed with subtropical moisture.</p>

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	<p>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.</p> <p>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.</p>

Kern County

San Bernardino County

Ventura County

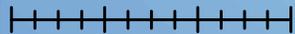
Orange County

Los Angeles

Pacific Ocean



0 2.5 5 10 15 Miles



Legend

- Debris Basin
- Concrete Lined Channels
- Soft Bottom Channels
- LACFCD levees
- USACE levees
- National Forest

Source
DPW (2019)
<http://egjsgcx.isd.lacounty.gov>

Los Angeles County Flood Control System
Figure 4-7

2019 Los Angeles County
All-Hazards Mitigation Plan

4.5 LANDSLIDE

Table 4-24. Landslide Identification Profile

Profile	Description
Nature	<p>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.</p> <p>Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>

Table 4-24. Landslide Identification Profile

Profile	Description
History	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>
Recurrence Probability	<p>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.</p>

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	<p>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.</p> <p>In Los Angeles County, landslide risks are mitigated through the Hillside Management Area Ordinance & Hillside Design Guidelines (Table 5-3).</p>

Kern County

San Bernardino County

Ventura County

Orange County

Los Angeles

Pacific Ocean

ROCK STRENGTH

1 2 3

SLOPE CLASS	ROCK STRENGTH		
	1	2	3
1	0	0	0
2	0	V	VII
3	0	V	VII
4	II	VIII	IX
5	VI	IX	X
6	VII	IX	X
7	VIII	IX	X
8	VIII	IX	X

LANDSLIDE SUSCEPTIBILITY CLASSES

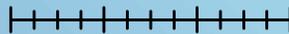
(0 III V VI VII VIII IX X)
 increasing susceptibility →

National Forest

Source
 Susceptibility to Deep-Seated
 Landslides in California (2018)
<https://maps.conservation.ca.gov>



0 2.5 5 10 15 Miles



Deep Seated Landslide Susceptibility Area
 Figure 4-9

2019 Los Angeles County
 All-Hazards Mitigation Plan

4.6 TSUNAMI

Table 4-29. Tsunami Identification Profile

Profile	Description
Nature	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Location	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>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.</p>

Table 4-29. Tsunami Identification Profile

Profile	Description
History	<p>Between 1923 and 2011, 11 major tsunami events occurred in Los Angeles County, including:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>
Recurrence Probability	<p>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.</p>

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	<p>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.</p> <p>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.</p> <p>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.</p>



4.7 WILDFIRE

Table 4-34. Wildfire Identification Profile

Profile	Description
Nature	<p>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.</p> <p>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.</p> <p>The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>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.</p>
Location	<p>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</p>

Table 4-34. Wildfire Identification Profile

Profile	Description
	<p>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.</p> <p>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.</p>
History	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>
Recurrence Probability	<p>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</p>

Table 4-34. Wildfire Identification Profile

Profile	Description
	<p>community becomes ever more likely to burn because of increased levels of dead plant material and lowered plant moisture levels.</p> <p>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.</p> <p>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.</p>

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	<p>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.</p> <p>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.</p> <p>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.</p>

Kern County

San Bernardino County

Ventura County

Orange County

Pacific Ocean

Los Angeles



0 2.5 5 10 15 Miles



Legend

Fire Hazard Severity Zones

Local Responsibility Area (LRA)

Very High

State Responsibility Area (SRA)

Very High

High

Moderate

National Forest

Source

Los Angeles County FHSZ Database
SRA (2007) and LRA (2012)
<http://www.fire.ca.gov>

Fire Hazard Severity Zones
Figure 4-11

2019 Los Angeles County
All-Hazards Mitigation Plan

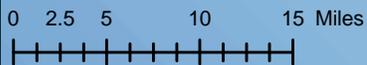
Kern County

San Bernardino County

Ventura County

Orange County

Pacific Ocean



Legend

Burned Areas

- 10,000 - 49,999
- 50,000 - 99,999
- 100,000+

National Forest

Source
Fire Resource and Assessment Program
Fire Perimeters Database (2019)
<http://frap.fire.ca.gov>

Day Fire
2006
(162,702 Acres)

Ranch Fire
2007
(54,716 Acres)

Simi Fire
2003
(107,560 Acres)

Station Fire
2009
(160,833 Acres)

Woolsey Fire
2018
(96,949 Acres)

Los Angeles

Recent Wildfires (2000-2018)
Figure 4-12

2019 Los Angeles County
All-Hazards Mitigation Plan

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
<p>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))</p> <p>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))</p> <p>C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))</p> <p>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))</p> <p>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))</p> <p>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))</p>

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
<p>Planner(s), engineer(s) and technical staff with knowledge of land development, land management practices, and human-caused and natural hazards.</p>	<p>Los Angeles County Department of Regional Planning</p>	<p>Develops and maintains the Los Angeles County 2035 General Plan, including the safety element.</p> <p>Develops area plans based on the Los Angeles County 2035 General Plan, to provide more specific guidance for the development of more specific areas.</p> <p>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.</p> <p>Anticipates and acts on the need for new plans, policies, and code changes.</p> <p>Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.</p>
<p>Engineer(s), Building Inspectors/Code Enforcement Officers or other professional(s), and technical staff trained in construction requirements</p>	<p>Los Angeles County Public Works</p>	<p>Oversees the effective, efficient, fair, and safe enforcement of the 2017 County of Los Angeles Building Code.</p>
<p>Engineers, construction project managers, and supporting technical staff</p>	<p>Los Angeles County Public Works</p>	<p>Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management.</p>
<p>Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff</p>	<p>Los Angeles County Public Works</p>	<p>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.</p>
<p>Floodplain Administrator</p>	<p>Los Angeles County Public Works</p>	<p>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.</p>
<p>Emergency Manager</p>	<p>Los Angeles County Chief Executive Office – Office of Emergency Management</p>	<p>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.</p>

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

	<p>Replenishes groundwater supplies</p> <p>Absorbs carbon</p> <p>Improves air quality and neighborhood aesthetics</p> <p>Improves pedestrian and bicycle safety</p>
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 s 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-nsn.gov; XXX@noaa.gov; XXX@cityofredlands.org; XXX@morongo-nsn.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](https://twitter.com/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

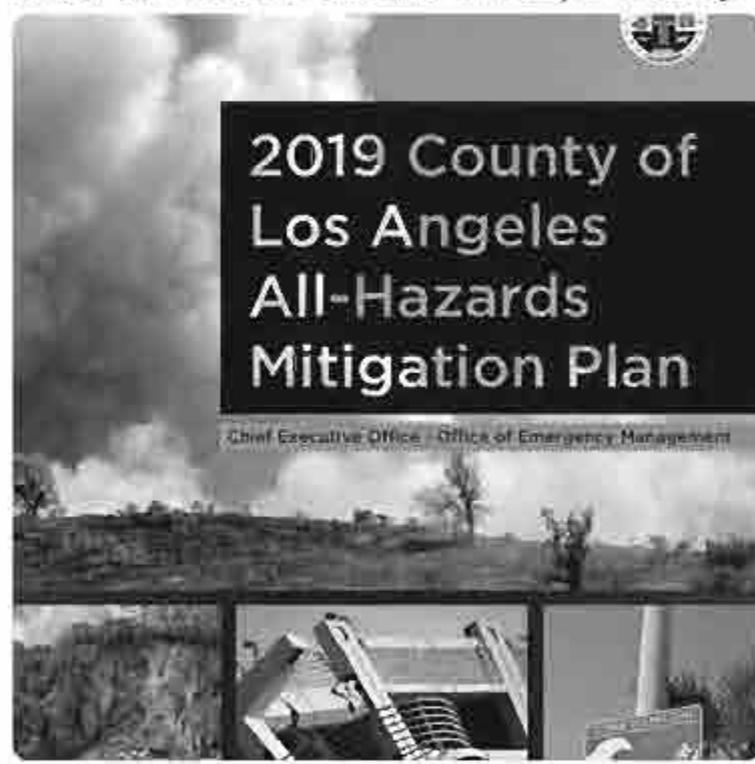
Official account of the Los Angeles County Office of Emergency Management for disaster & preparedness information. Please note: change in account name to @readylacounty.

Los Angeles County
@readylacounty
Twitter.com/ReadyLACounty

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

Reply, Retweet, Like icons



Ready Los Angeles County

@ReadyLACounty

Official Account of the Los Angeles County Office of Emergency Management for disaster & preparedness information. Please note change @LACOOM to @ReadyLACounty

- Los Angeles County
- LACOM.org
- Joined January 2012

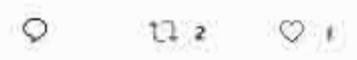
✓ **Ready Los Angeles County** Follow
 @ReadyLACounty

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





← 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



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

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

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 - Alamos Bay Pump Station
Public Works	PW SWMD – Alamos 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 - Portshhead 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
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
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
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 40				1		1						
Los Angeles County Fire Department Station 41				1								
Los Angeles County Fire Department Station 42				1								
Los Angeles County Fire Department Station 43				1								
Los Angeles County Fire Department Station 44				1								
Los Angeles County Fire Department Station 45				1		1						
Los Angeles County Fire Department Station 47				1								
Los Angeles County Fire Department Station 48				1								
Los Angeles County Fire Department Station 49				1								
Los Angeles County Fire Department Station 5				1								
Los Angeles County Fire Department Station 50				1								
Los Angeles County Fire Department Station 51				1						1		
Los Angeles County Fire Department Station 53				1						1		
Los Angeles County Fire Department Station 54				1		1						
Los Angeles County Fire Department Station 55										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-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
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-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-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 - 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 – Alamos 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 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 - Walteria 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 - McCennery 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

