LAWC
LINCOLN AVENUE WATER COMPANY
ALTADENA, CA

2020
URBAN WATER MANAGEMENT PLAN
LINCOLN AVENUE WATER COMPANY

JUNE 2021
PUBLIC DRAFT

2020

URBAN WATER MANAGEMENT PLAN

LAWC
LINCOLN AVENUE WATER COMPANY
ALTADENA, CA

Lincoln Avenue Water Company

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JUNE 2021 PUBLIC DRAFT

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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
cfs	cubic feet per second
CII	Commercial/Industrial/Institutional
CIMIS	California Irrigation Management Information System
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
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
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
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
NDMA	N-nitrosodimethylamine
PPCPs	Pharmaceuticals and Personal Care Products
PWP	Pasadena Water and Power
QSA	Quantification Settlement Agreement
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

EXECUTIVE SUMMARY & LAY DESCRIPTION

INTRODUCTION

This report serves as the 2020 update of the Lincoln Avenue Water Company (LAWC) Urban Water Management Plan (UWMP). The UWMP has been prepared consistent with the requirements under Water Code Sections 10610 through 10657 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 and adopt, in accordance with prescribed requirements, an urban water management plan." These plans must be filed with the California Department of Water Resources (DWR) every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. 2020 UWMP updates are to be adopted by July 1, 2021.

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

LAWC provides water to a population of approximately 13,683 throughout its service area. LAWC receives its water from three main sources: Raymond Groundwater Basin, surface water from Millard Canyon through the South Coulter Surface Water Treatment Plant, and imported water from the Foothill Municipal Water District (FMWD). LAWC provides potable drinking water to its customers via two wells, an imported source, and a local surface water source and treatment facility.

WATER DEMAND

Currently (2020), the total water demand for the 13,692 people served by LAWC is approximately 2,308 acre-feet annually, consisting of 122 acre-feet of imported water, 118 acre-feet of surface water, and 2,068 acre-feet of local water.

LAWC has selected to comply with **Option 1** of the SBx7-7 compliance options. Under Compliance Option 1, the simple 20 percent reduction from the baseline, LAWC's 2015 interim water use target was 164 GPCD, and the 2020 final water use target is 145 GPCD. A description of the compliance options is discussed in **Section 2.4**.

Despite the COVID-19 pandemic requiring majority of individuals to work from home, LAWC was able to achieve their 2020 Target Goals by having a GPCD of 143.

WATER SOURCES AND SUPPLY RELIABILITY

LAWC has three sources of water supply which include groundwater from the Monk Hill sub-basin of the Raymond Basin, local surface water from Millard Canyon, and FMWD imported water.

In the event that local production cannot supply 100 percent of the demand, LAWC supplements the remaining demand with imported water from Metropolitan Water District of Southern California (MWD) via FMWD. Currently, LAWC will lease groundwater rights from other local purveyors such as the City of Pasadena to increase groundwater supplies. LAWC takes FMWD imported water in the peak summer months, since groundwater production is not enough to meet the increased demands during the hotter months. The sources of imported water supplies include the Colorado River and the State Water Project (SWP).

The completion of MWD's 2020 Integrated Water Resources Plan will be completed after the submission of LAWC'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.

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. 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. LAWC 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**.

FUTURE WATER SUPPLY PROJECTS

In 2015, the National Aeronautics and Space Administration (NASA) constructed a new groundwater extraction well located in the rear parking lot area of the LAWC office. The new Well No. 6 was put into service until 2017. The Well enhances the groundwater cleanup efforts by removing contaminants in deeper levels of the aquifer, thus maintaining effective containment of the leading edge of groundwater chemicals originating from the Jet Propulsion Laboratory (JPL). The well also serves as a modern, reliable water source for LAWC's customers, ensuring continued clean drinking water supplies for many decades. This project was funded through NASA and is LAWC's third well within its service boundaries.

The Glenrose Reservoir site consists of two below grade concrete structures. The South Reservoir was built in 1891 and has a storage capacity of 2.7 million gallons. In response to the growing population and need for reliable drinking water, in 1937, LAWC built the North Reservoir adding an additional 1.8 million gallons of storage capacity to this site. In 2019, LAWC's proactive infrastructure repair and upgrade program focused on the rehabilitation of North Glenrose Reservoir. This project began with a structural evaluation. In order for the engineers to conduct a thorough inspection, it was necessary to drain the reservoir to fully expose the concrete floor and steel support columns in addition to providing access to the interior wood frame roof.

CHALLENGES AHEAD & STRATEGIES FOR MANAGING RELIABILITY RISKS

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

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

LAWC'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 Water Shortage Contingency Plan (WSCP) to conserve limited supplies.

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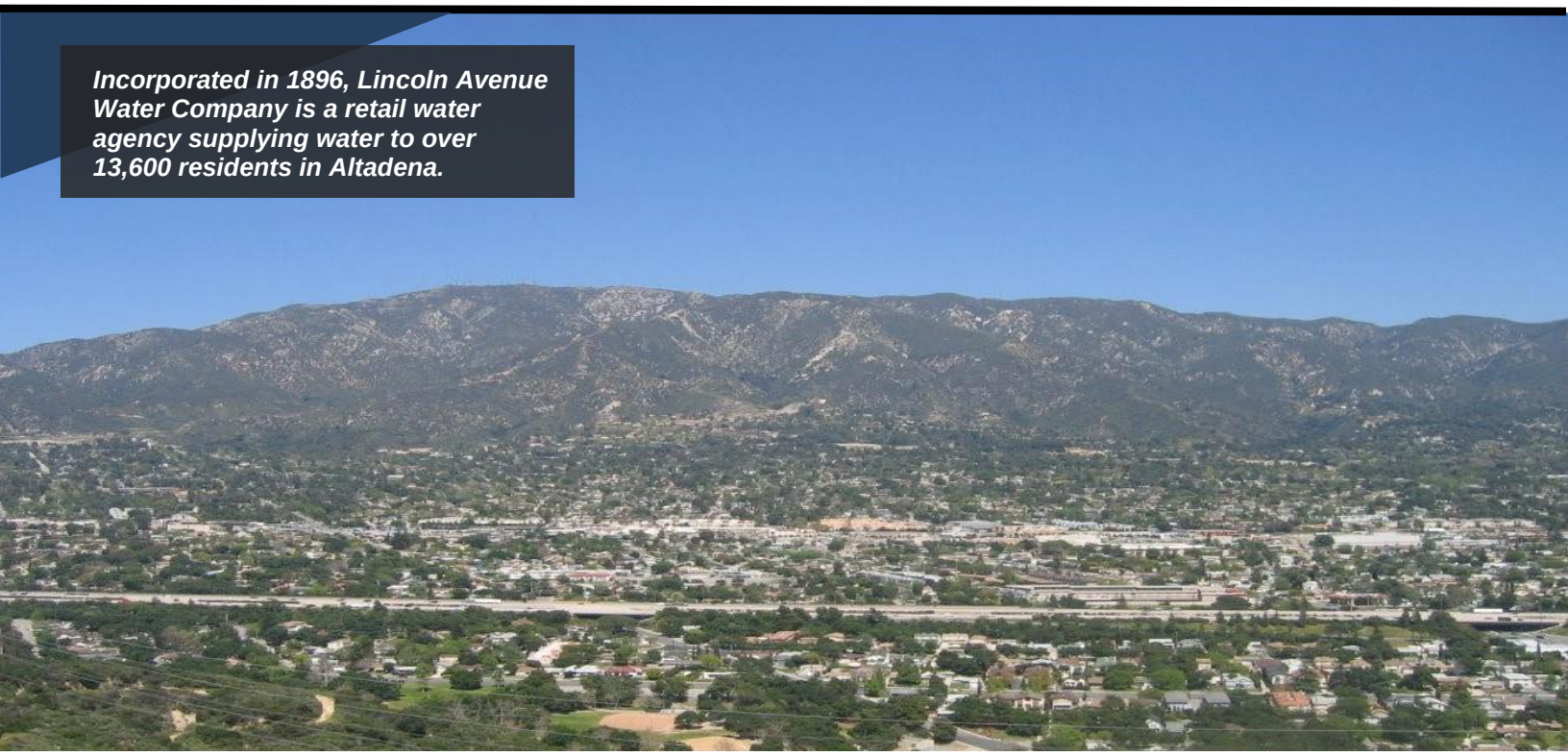
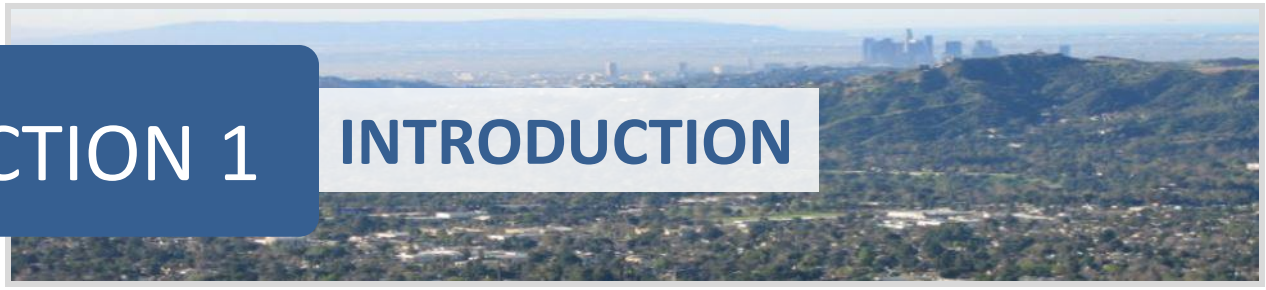


Incorporated in 1896, Lincoln Avenue Water Company is a retail water agency supplying water to over 13,600 residents in Altadena.

SECTION 1: INTRODUCTION

LINCOLN AVENUE WATER COMPANY | 2020 URBAN WATER MANAGEMENT PLAN



SECTION 1 INTRODUCTION

1.1 UWMP PURPOSE & SUMMARY

This is the 2020 Urban Water Management Plan (UWMP) for Lincoln Avenue Water Company (LAWC). This plan has been prepared in compliance with the Urban Water Management Planning Act (Act), which has been codified at California Water Code 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.

Figure 1.1: UWMPs Comply with State Water Code

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).

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 LAWC. Specifically, this document will provide water supply planning for a 25-year planning period in 5-year increments and effectively revises LAWC'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 LAWC.

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.

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

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

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 shown on the following page.

Section 1 - Introduction	This section describes the UWMP Act, LAWC's planning and coordination process, the history of LAWC '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 LAWC'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 LAWC 's water supplies, including imported water from MWD, and how LAWC handles those supplies. This section also discusses the quality of LAWC 's water sources, including a discussion on the treatment and testing of water.
Section 4 – Conservation Measures	This section addresses LAWC'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 LAWC 's contingency planning in the event of a water supply interruption, such as a drought or catastrophe. This section also discusses LAWC's Board adopted Water Shortage Contingency Plan (first adopted in 1992) 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 LAWC '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 LAWC, used to prepare this 2020 UWMP.

1.5 AGENCY OVERVIEW

LAWC was established in 1883 and incorporated in 1896 when it took over the operations of the Millard Canyon Water Company, and is a nonprofit mutual water company. LAWC has transitioned from an irrigation/agricultural water supplier to a municipal water supplier through the drilling and development of wells. LAWC serves Altadena, an unincorporated area of LA County. Currently LAWC provides water to over 13,600 people through approximately 4,500 service connections. LAWC's service area is mostly built-out with only a small potential for new development in the northerly part of its service area (in the foothills). LAWC receives its water from three main sources, the Raymond Groundwater Basin, surface water from Millard Canyon, and imported water from FMWD.

By helping form FMWD in 1953, LAWC began receiving imported water in 1955 as a means to supplement its groundwater supply.

FMWD, LAWC's wholesale provider, was formed in early 1952 by voters in the area to help meet the increasing water needs of a rapidly growing population following World War II. Because local well water supplies were limited, a supplemental water source was needed. A group of concerned community leaders determined that membership with MWD was the solution to meeting these local water needs. FMWD provides water in the foothills of the San Gabriel Mountains, bordered between the City of Pasadena on the east and the City of Glendale on the south and west. The service area covers about 22 square miles and serves seven retail agencies located in four communities, as indicated on **Figure 1.3**. While a majority of these agencies pump local groundwater, they may purchase additional water from FMWD to meet their demands.

LAWC has a 5-member Board of Directors that participate in the management of the company. The current members of the Board of Directors are:

- **John C. Clairday** – President
- **Robert J. Gomperz** – Vice President
- **Lawrence W. Duncan** – 1st Vice President
- **Diego Fernandez** – Treasurer
- **Vickie Thompson** – Assistant Secretary

LAWC's mission statement is:

> "*The mission of the Lincoln Avenue Water Company is to reliably provide to its customers and shareholders high quality water, service, and maintenance of the Company's resources in an environmentally and fiscally responsible manner*."

1.6 SERVICE AREA AND FACILITIES

LAWC provides water service to the northwest section of Altadena, which encompasses an area of approximately 2.5 square miles. The service area is bounded on the west by The Arroyo Seco, east to Marengo Avenue, on the south by Figueroa Street and north by the San Gabriel Mountains. **Figure 1.3** on page 1-7 shows a map of LAWC's service boundaries along with FMWD's member agencies. A more detailed map of LAWC's service boundaries is shown in **Figure 1.4** on page 1-8.

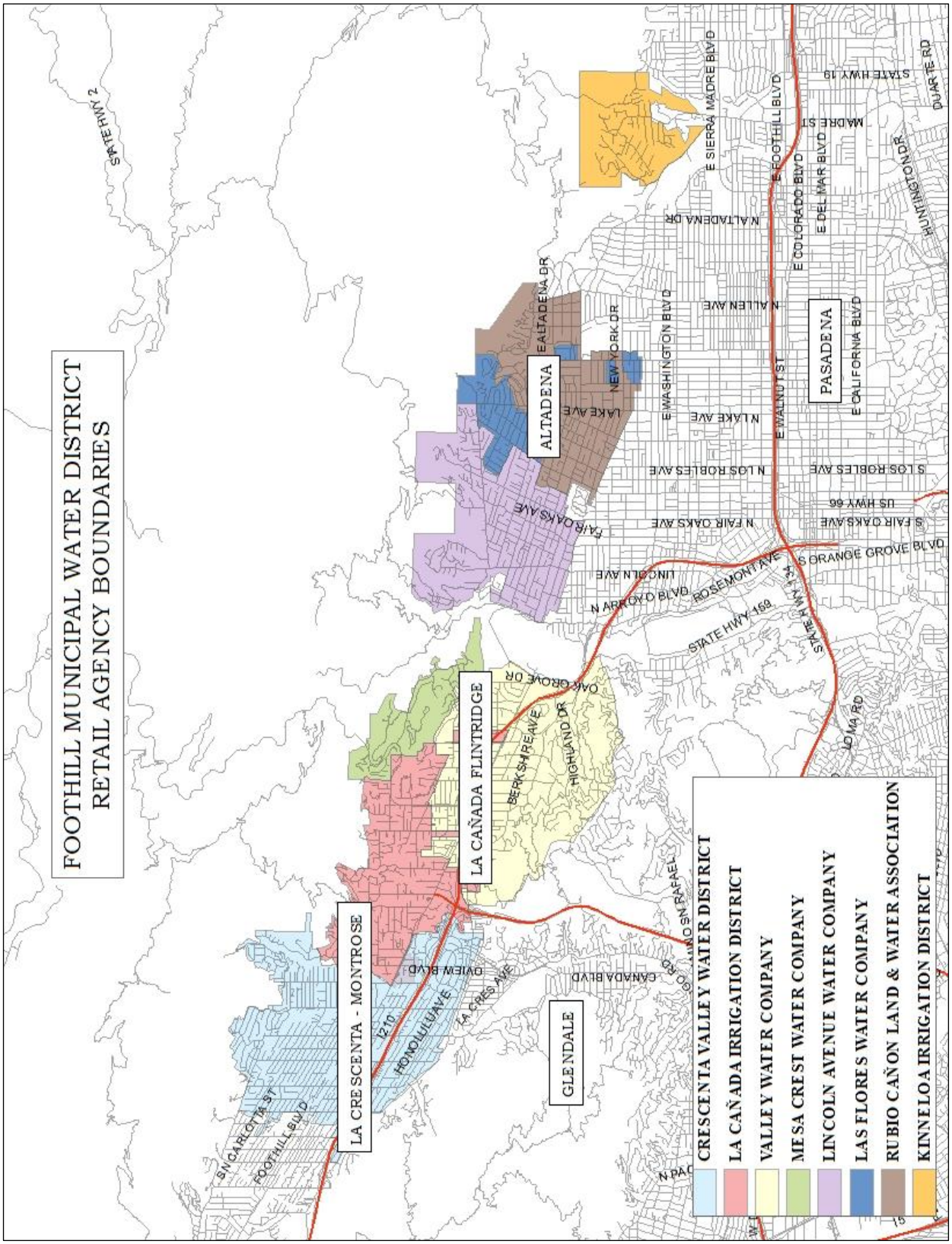


Figure 1.3: LAWC's Service Area (Purple) & FMWD Member Agencies

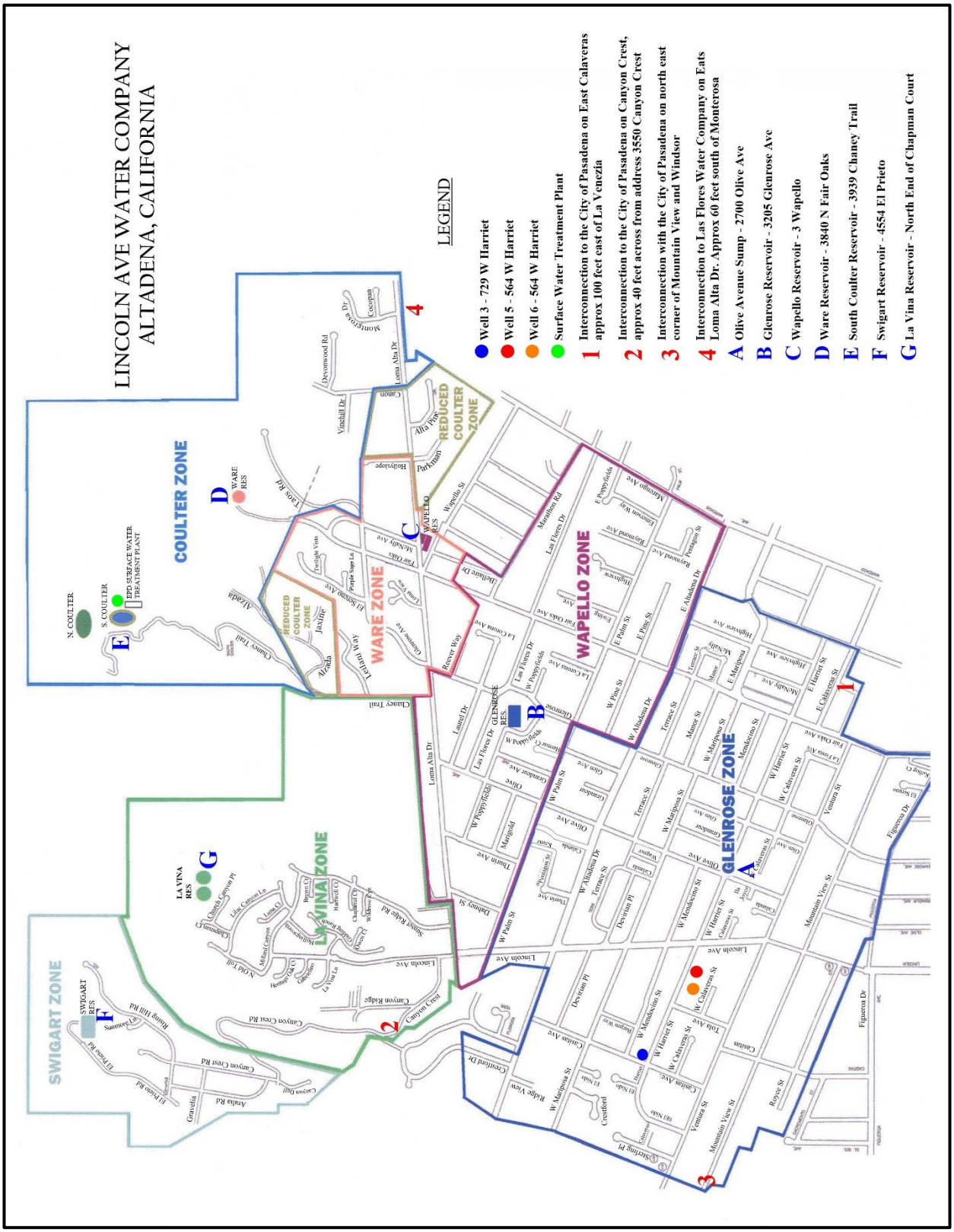


Figure 1.4: LAWC's System Map

1.6.1 SERVICE AREA DESCRIPTION

The LAWC serves the northwest portion of Altadena, which is an unincorporated area of Los Angeles bordering Pasadena. LAWC's service area is located within the service area of MWD, a regional water wholesaler, and FMWD, the member agency of MWD that distributes imported water to LAWC and the surrounding foothill areas. LAWC is bounded on the south by the City of Pasadena, on the east by the Las Flores Water Company and the Rubio Cañon Land Water Association (RCLWA), and on the north by the San Gabriel Mountains.

Figure 1.5: A Portion of LAWC's Service Area

1.6.2 LAWC'S WATER FACILITIES

LAWC provides potable drinking water to its customers via three wells, an imported source, and a local surface water source and treatment facility. The wells pump from the Raymond Groundwater Basin, which is LAWC's primary source of supply. The imported source water is obtained from the FMWD, a member agency of MWD. Its surface water source is the Millard Canyon, and supplies from this source are treated at the LAWC's South Coulter Surface Water Treatment Plant.

The system is serviced through eight pressure zones with four pumping stations. The two wells, Well Nos. 3, 5, and 6, provide capacities up to 900, 1,000, and 1,800 gallons per minute (gpm), respectively. LAWC utilizes seven reservoirs with a total storage capacity of over 10.5 million gallons (MG). A breakdown of each tank is shown in **Table 1.1**.

Table 1.1: LAWC Reservoir Capacities

Reservoir	Capacity (Gal)
Olive Avenue Sump	200,000
Glenrose	4,520,000
Wapello	1,390,000
Ware	910,000
South Coulter	2,000,000
Swigart	482,000
La Vina	1,000,000
Total Capacity:	**10,502,000**

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

SECTION 2: WATER DEMANDS

LINCOLN AVENUE WATER COMPANY | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 2 WATER DEMAND

2.1 OVERVIEW

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

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

2.2 FACTORS AFFECTING DEMAND

Water consumption is influenced by various 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 LAWC's service area are discussed in the following sub-sections.

2.2.1 CLIMATE CHARACTERISTICS

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 approximately 14.23 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 LAWC from 1951 to 2015.

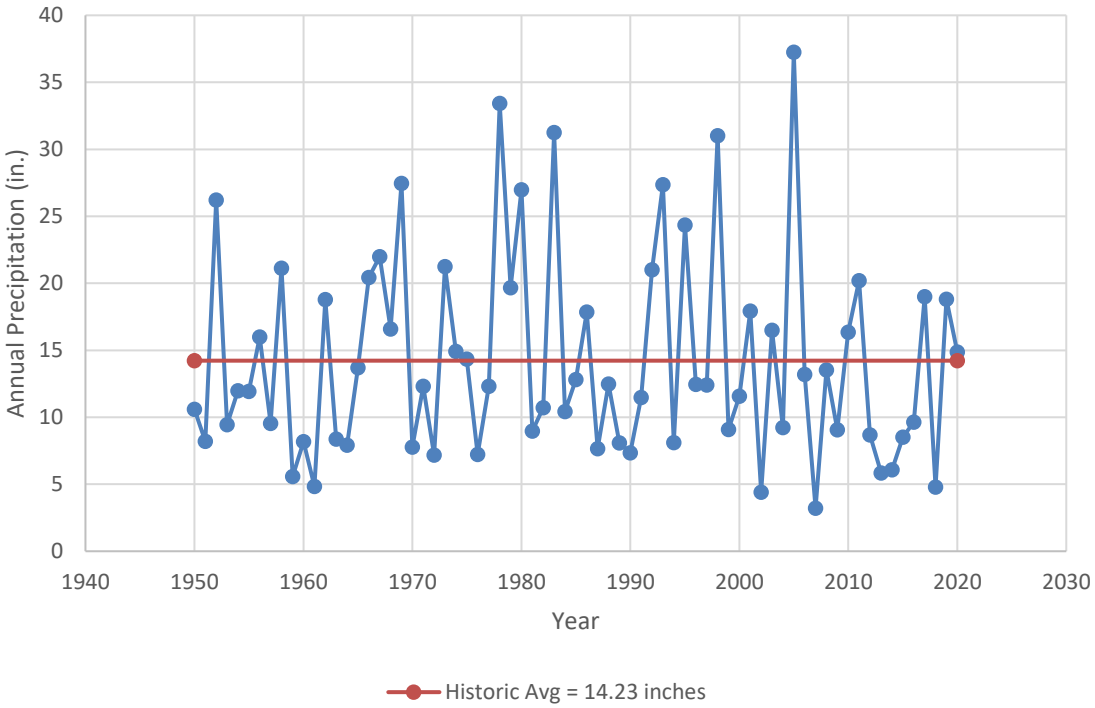


Figure 2.1: Historic Rainfall for LAWC

The sources of LAWC'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 LAWC and Southern California.

Climate fluctuations not only can increase or decrease demand, but can also directly affect LAWC's ability to meet demand, since reduced precipitation and snowfall means less groundwater replenishment. When faced with reduced groundwater supplies, LAWC 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, LAWC is already planning ahead to

ensure long lasting reliability of its source for their customers.

2.2.2 DEMOGRAPHICS

LAWC serves an estimate population of over 13,600. The population within LAWC's service area is expected to increase by 8.1 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)

Population Served	2020	2025	2030	2035	2040	2045
	13,692	13,908	14,127	14,350	14,576	14,806

The service area populations for LAWC 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 count on service connections would provide the current service population. Future service population can be projected based on the average growth factor.

Figure 2.3: Land Use within LAWC's Service Area

LAWC 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

LAWC currently provides water service to over 4,400 accounts. Approximately 97 percent of the accounts are residential and the remaining 3 percent are commercial. There is no industry within the service boundaries. LAWC's service area is, for the most part, built-

out with densification accomplished through single-family lot splits and conversion of single-family to multi-family dwelling units.

2.2.4 LEGISLATION

The passage of SBx7-7, discussed in **Section 2.4**, has increased efforts to reduce the use of potable supplies in the future. As a retailer, LAWC 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 LAWC'S SERVICE AREA

The knowledge of an agency's water consumption by type of use or by customer class is key to developing that agency's water use profile which identifies when, where, and how much water is used, and by whom within the agency's service area. A comprehensive water use profile is critical to the assessment of impacts of prior water conservation efforts as well as to the development of future conservation programs.

This section provides an overview of LAWC'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, including sales to other agencies and non-revenue water, are also discussed in this section.

2.3.1 HISTORIC WATER DEMAND

Water demands within the LAWC's service area over the past six years were met by two deep groundwater production wells located in the Monk-Hill sub-area of the Raymond Basin and imported water from FMWD. Annual water use since 2015 has ranged from

about 1,856 AF to 2,158 AF (average 2,005 acre-feet per year (AFY)) as shown below in **Table 2.2**. As indicated by the table, annual water use fluctuates each year.

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

Year	2015	2016	2017	2018	2019	2020
Demand	1,864	1,856	2,076	2,158	2,015	2,188*

*Note: 2020 demand excludes sales/transfers to City of Pasadena.

2.3.2 WATER USE STATISTICS

LAWC has maintained over 4,400 customer connections to its potable water distribution system since 2015. LAWC also maintains records of water consumption and bills its customers on a bi-monthly basis for water. Approximately 97 percent of LAWC's water demand is residential and the remaining 3 percent is commercial. LAWC does not provide any sales to industrial, landscape irrigation, agriculture, nor other agencies, saline water intrusion barriers, groundwater recharge, or conjunctive use. Institutional accounts consist of local schools and churches. Unaccounted for water consists of water losses due to leakage or inaccurate water meters. Water loss calculation was done in accordance with CWC 10631(e)(3)(B). The total number of service connections and water consumption is shown in **Tables 2.3** and **2.4**, respectively. **Table 2.5** shows the consumption breakdown and water losses from 2015 to 2020 for comparison.

Table 2.3: 2015 & 2020 Service Accounts by Sector

Sector	2015	2020
Single-Family Residential	4,103	4,057
Multi-Family Residential	219	304
Commercial / Institutional	118	118
Total Connections:	**4,440**	**4,479**

LAWC does not sell water to other agencies except in case of emergencies. From 2015 to 2020, there has been a single occasion (2020) when LAWC has delivered their water supply to the City of Pasadena via interconnections.

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
Other Potable	All Sectors (single family, multi-family, & CII combined)	Drinking Water	2,046
Losses		Drinking Water	142
Sales/Transfers/Exchanges to other Suppliers	To Pasadena	Drinking Water	120
		TOTAL	2,308

Table 2.5: Water Demands and Losses (AF) (2015 – 2020)

Year	2015	2016	2017	2018	2019	2020
Single Family Residential Multi-Family Residential Commercial/Institutional	1,685	1,696	1,833	1,953	1,798	2,046
Losses	180	160	243	204	216	142
Sent to Pasadena	0	0	0	0	0	120
Total	**1,864**	**1,856**	**2,076**	**2,158**	**2,015**	**2,308**

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

LAWC'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 2.6**. 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 LAWC 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 2.6: 2016 - 2020 Water Losses (AF) (DWR Table 4-4)

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss (AF)
01/2016	116.010
01/2017	228.120
01/2018	157.763
01/2019	243.835
01/2020	142.000

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 2015 and 2020 water use targets in the 2010 UWMPs, updates or revisions to these targets in the 2015 and 2020 UWMPs, and allows DWR to enforce compliance to the new water use standards. In essence, the bill requires each urban retail water supplier to develop water use targets to help meet the 20 percent goal by 2020 and an interim 10 percent goal by 2015.

Figure 2.4: LAWC Water Conservation Efforts Include Drought Tolerant Landscape

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 makes 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 LAWC. 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. LAWC 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 2.7** 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 2.7: DWR Compliance Methods

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

2.4.4 LAWC'S COMPLIANCE OPTION SELECTION

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

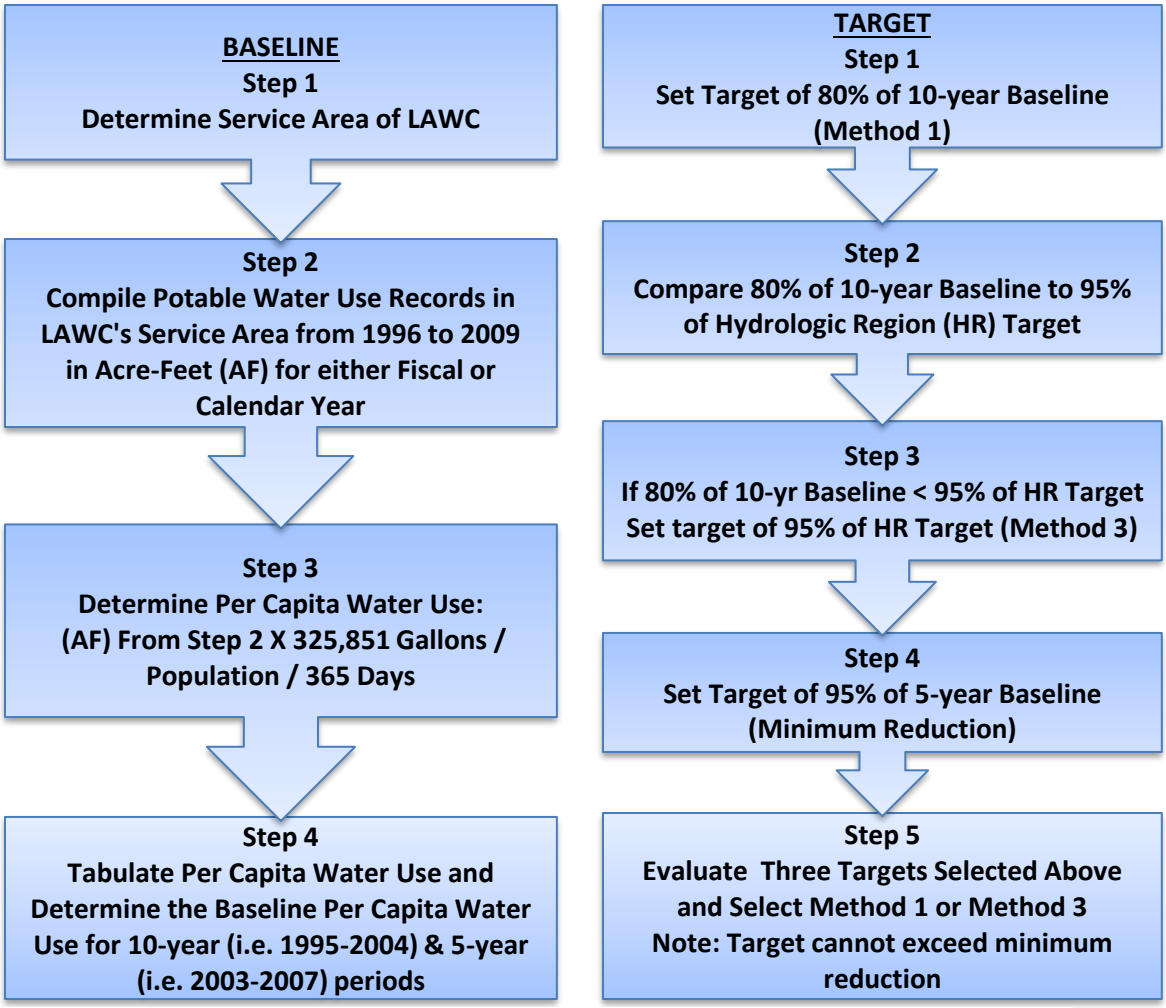


Figure 2.7: Procedure for Determining Baseline and Per Capita Water Use

relative to the region within which it supplies water. The basic options included a minimum reduction requirement of 5 percent (Water Code § 10620), a 5 percent reduction from the Regional (South Coast HR) target (Water Code § 10608.20 (b) (3)), or a strict 20 percent reduction.

While each retail agency 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 LAWC to determine its water use targets for Compliance Options 2 and 4 since LAWC 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

Recycled water use represents less than 10 percent of LAWC's retail delivery in 2008; therefore, a 10-year instead of a 15-year rolling average was calculated. LAWC's baseline water use is **181.6 GPCD**, which was obtained from the 10-year period January 1, 2000 to December 31, 2009.

Table 2.8 provides the base period ranges used to calculate the baseline water use for LAWC as well as the service area population and annual water use data from the base daily per capita water use. The data was used to calculate the continuous 10-year and 5-year average baseline. Moreover, regardless of the compliance method adopted by LAWC, it will need to meet the minimum water use target of 5 percent reduction from a five-year baseline as calculated.

Table 2.8: Past GPCD Water Use

Calendar Year	Service Area Population	Gross Water Use (AF)	Daily Per Capita Water Use (GPCD)
1996	13,023	2,217	152
1997	13,065	2,199	150
1998	13,107	2,044	139
1999	13,150	2,345	159
2000	13,186	2,452	166
2001	13,229	2,444	165
2002	13,279	2,704	182
2003	13,288	2,712	182
2004	13,293	2,806	188
2005	13,302	2,747	184
2006	13,319	2,930	196
2007	13,325	3,028	203
2008	13,327	2,723	182
2009	13,327	2,493	167
2010	13,527	2,262	149
		10-Year Average (2000-2009) Base Daily per Capita Water Use:	**181.6**
		5-Year Average (2003-2007) Base Daily per Capita Water Use:	**190.9**

2.4.6 SBX7-7 WATER USE TARGETS

In its 2010 UWMP, LAWC has selected compliance **Option 1**. Under Compliance Option 1, the simple 20 percent reduction from the baseline, LAWC's 2015 interim water use target was **164 GPCD**, and the 2020 final water use target is **145 GPCD** as summarized in **Table 2.9**.

Table 2.9: Preferred Compliance Option and Water Use Targets

Option 1	Baseline	2015 Target	2020 Target
Simple 20 percent Reduction from Baseline	182	164	145

Table 2.10 shows the GPCD within the past five years. As shown, LAWC's 2015 GPCD was 122 which is well below their 2015 and 2020 Targets. Furthermore, LAWC met their 2020 Target by achieving a GPCD of **135**. Per *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*, the exported water quantities are not included in the gross water use for GPCD calculation.

Table 2.10: Past 5-year GPCD Water Use

Calendar Year	Service Area Population	Gross Water Use (Acre-Feet)	Daily Per Capita Water Use (GPCD)
2015	13,631	1,864	122
2016	13,643	1,856	121
2017	13,655	2,076	136
2018	13,668	2,158	141
2019	13,680	2,015	131
2020	13,692	2,188	143

By meeting and maintaining its water conservation targets, LAWC can reduce dependency on surface waters and help preserve the natural habitat of the Bay-Delta, among other surface water supplies.

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, Los Angeles County also declared a state of emergency the same day. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. As a result, on March 19, 2020, an Executive Order and Public Health Order directed all Californians to stay home except to go to an essential job or to shop for essential needs. This also required most Californians to work remotely from home.

This event resulted in a significant increase to water demands for various water agencies, including LAWC. As previously shown on **Table 2.5**, the water use (without losses) in 2020 is significantly higher than the past year's averages. In 2020, the water usage was 2,046 AF and the average from 2015 to 2019 was 1,793 AF.

DWR allows water purveyors to make adjustments to their 2020 Gross Water Use in the event of usual events considered as Extraordinary Events, Economic Adjustment, or Weather Normalization; however, according to Section 5.5.1.4 of 2020 UWMP Guidebook, adjustments for COVID-19 are not allowed. This impact resulted in no issues for LAWC to achieve their 2020 targets as shown in **Table 2.11**.

Table 2.11: LAWC 2020 Compliance (DWR Table 5-2)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD		
143	*0*	*143*	*145*	*Yes*

2.5 WATER USE REDUCTION PLAN

2.5.1 ON-GOING WATER CONSERVATION EFFORTS

In order to meet the SBx7-7 targets, LAWC 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, FMWD (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 rebate programs for its retail agencies. Before conservation program budgets are approved by the FMWD's Board, they are vetted with LAWC 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 LAWC area.

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

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

Through financial incentive programs and various public outreach campaigns and events led by FMWD, LAWC has met its SBx7-7 target as shown previously on **Table 2.11**.

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.
- **Maximize the Effectiveness of Storage & Transfer:** Develop a comprehensive strategy to pursue transfers and exchanges to hedge against shorter-term water demands and supplies imbalances until long-term solutions are in place.
- **Encourage Innovation:** Facilitate innovation in recycled water, desalination, stormwater capture and groundwater cleanup through a growing portfolio of initiatives, technologies and new ideas.

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

2.6 DEMAND PROJECTIONS

2.6.1 25 YEAR PROJECTIONS

One of the main objectives of this UWMP is to provide LAWC'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 134 GPCD, based on the past five year average and projection population growth. Per capita consumption rates should be expected to remain under 134 GPCD and trend further below that rate to continue water conservation efforts to combat climate change. It is important to note that LAWC does not utilize recycled water within its service boundaries. This is further discussed in **Section 6**.

Table 2.12: LAWC's Demand Projections by Sector (AF) (DWR Table 4-2 Retail)

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Other Potable	All Sectors (single family, multi-family, & CII combined)	1,897	1,927	1,957	1,988	2,020
Losses		197	200	204	207	210
Sales/Transfers/Exchanges to other Suppliers	To Pasadena	0	0	0	0	0
TOTAL		**2,095**	**2,128**	**2,161**	**2,195**	**2,230**

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

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	2,308	2,095	2,128	2,161	2,195	2,230
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	2,308	2,095	2,128	2,161	2,195	2,230

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 or less of the County of Los Angeles' median income.

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.

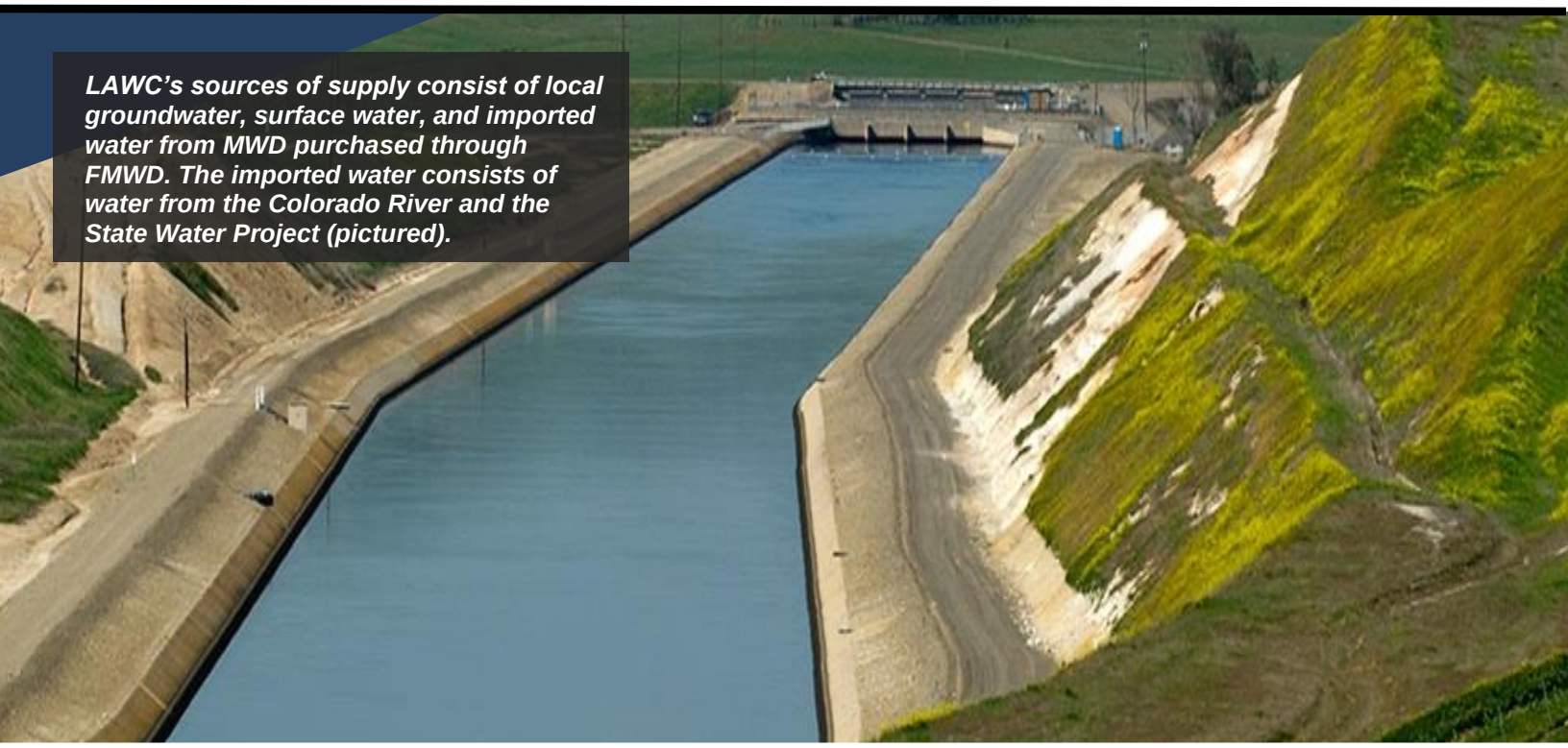
Existing and projected housing needs for Los Angeles County were incorporated into the most recent RHNA Subcommittee's report titled 6th Cycle Final RHNA Allocation Plan of the Southern California Association of Governments (SCAG). This plan covers the

planning period from October 2021 to October 2029. LAWC serves the northwest portion of Altadena, an unincorporated area in Los Angeles County. Based on the RHNA Plan, the projected housing need for low and very low-income households (hereafter referred to as low-income) in unincorporated area of Los Angeles County are 15.2 percent and 28.5 percent, respectively, or 43.7 percent combined.

Therefore, from inference, it is estimated that approximately 43.7 percent of the projected residential water demands within LAWC'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
Total Residential Demand	1,897	1,927	1,957	1,988	2,020
Total Low-Income Households Demand	**829**	**842**	**855**	**869**	**883**



LAWC'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

SECTION 3 WATER SOURCES & SUPPLY RELIABILITY

3.1 OVERVIEW

LAWC water supplies consist of groundwater produced from the Monk Hill sub-basin of the Raymond Basin, local surface water from Millard Canyon, and imported water purchased from FMWD to supplement local water production. Occasionally, LAWC will also lease water from other local water purveyors for supplementation. To ensure the community with a delivery of safe and high-quality water supply during periods of drought and shortage, LAWC works together with MWD and FMWD. During the hot summer months, when demand increases, LAWC peaks on imported water to supplement their groundwater supplies. Imported water is purchased from MWD through FMWD, and is sourced from the Colorado River Aqueduct (CRA) and the State Water Project (SWP). 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.

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

Figure 3.2: Sacramento-San Joaquin Delta

"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, 4 more are under construction, and the remaining 16 projects are planned to begin construction by 2021.

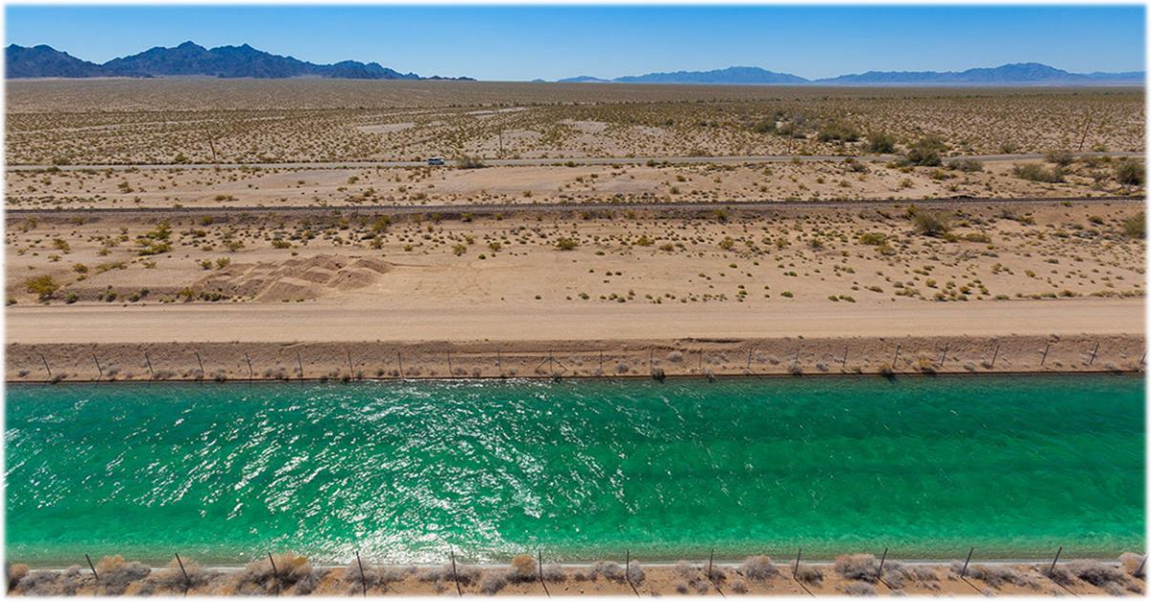


Figure 3.3: Colorado River Aqueduct

AQUEDUCT SYSTEMS

In order to provide Southern California imported water, MWD utilizes two separate 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.

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

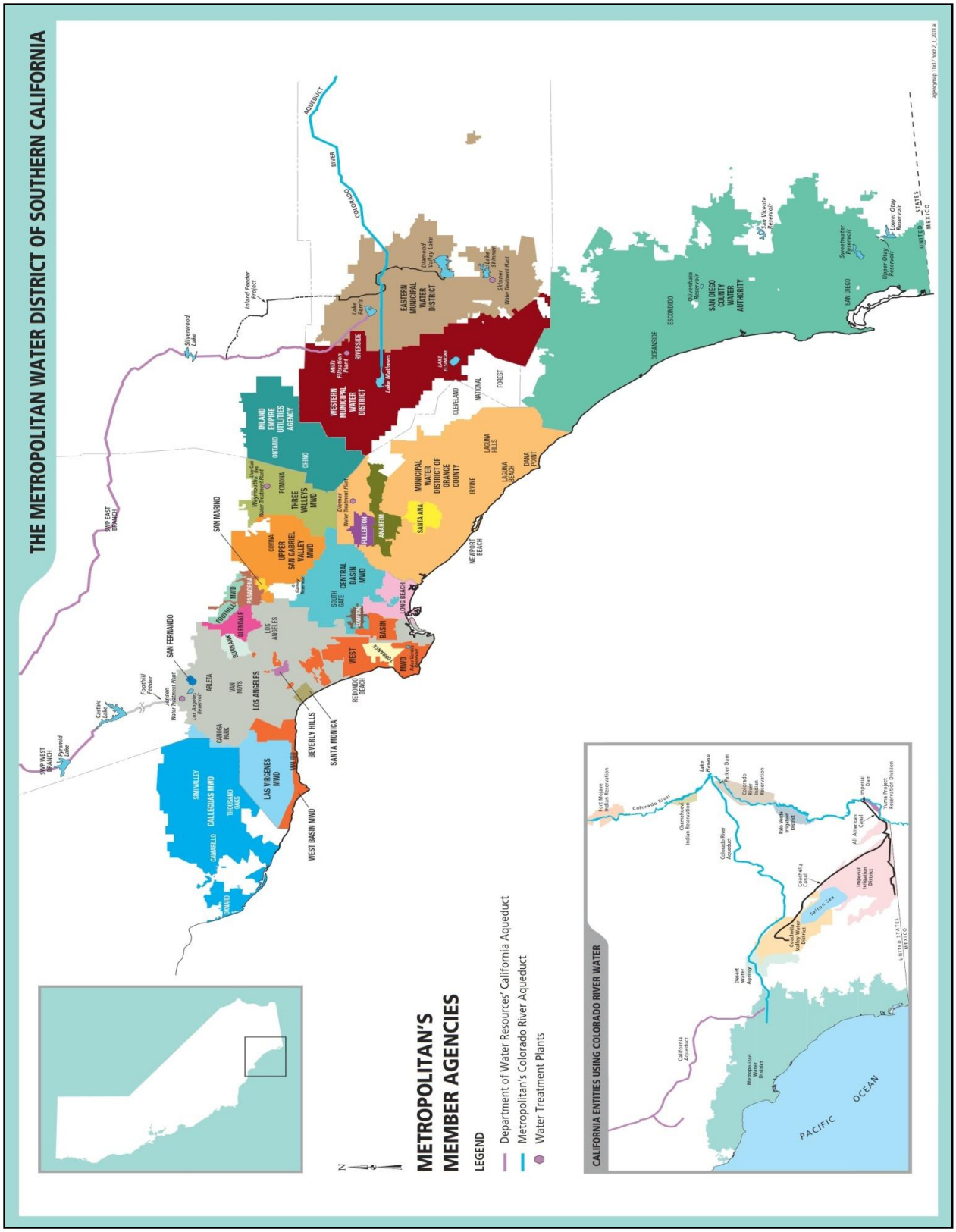


Figure 3.6: MWD Service Area Map

3.3 GROUNDWATER

Local potable water is produced from wells and treated runoff from the mountains. LAWC has an annual decreed right of 567 AF that it may pump from its adjudicated source, the Raymond Groundwater Basin (Basin). A copy of the judgment is included in this UWMP as **Appendix A**. 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 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.

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.

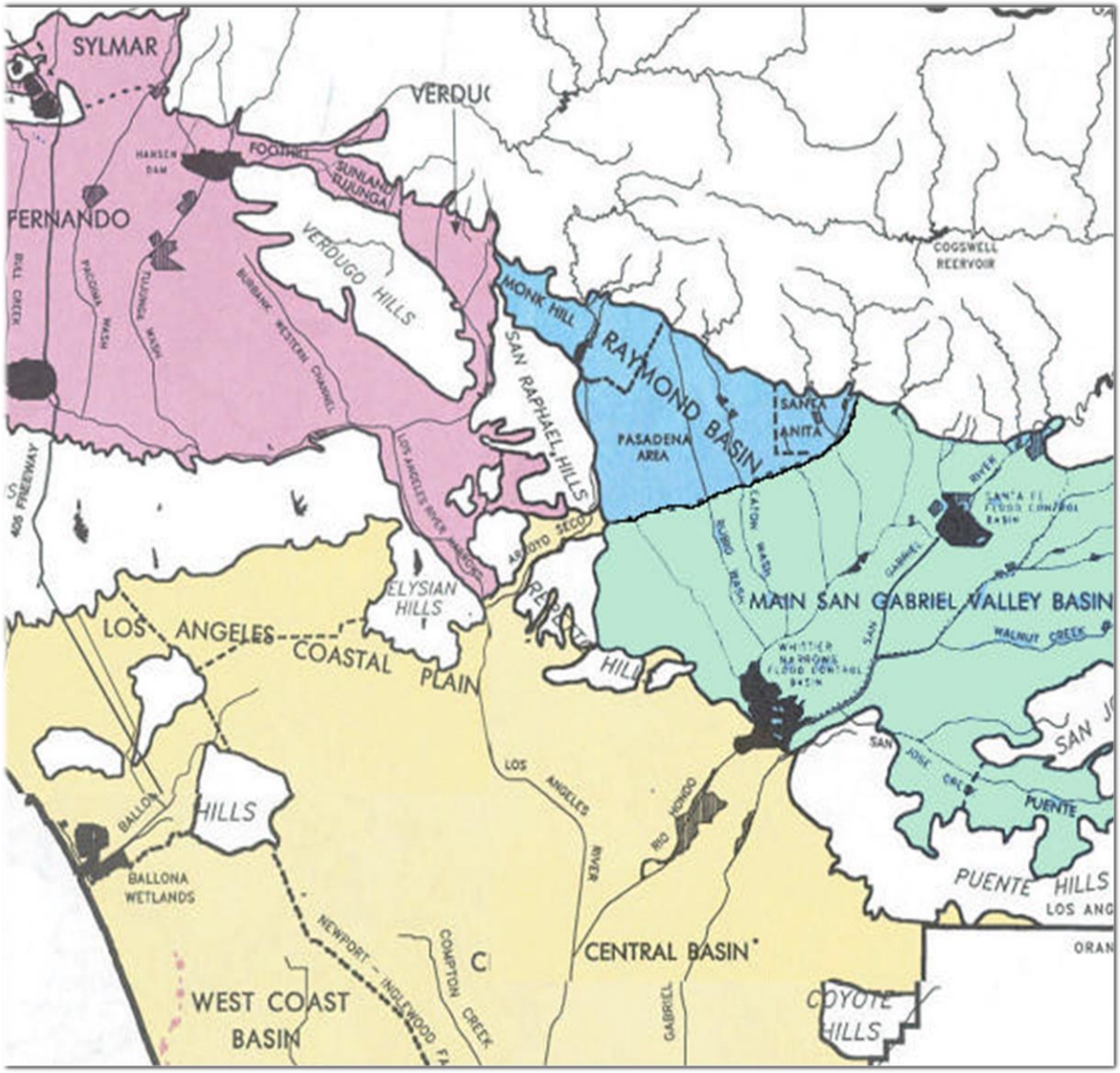


Figure 3.7: Local Groundwater Basins

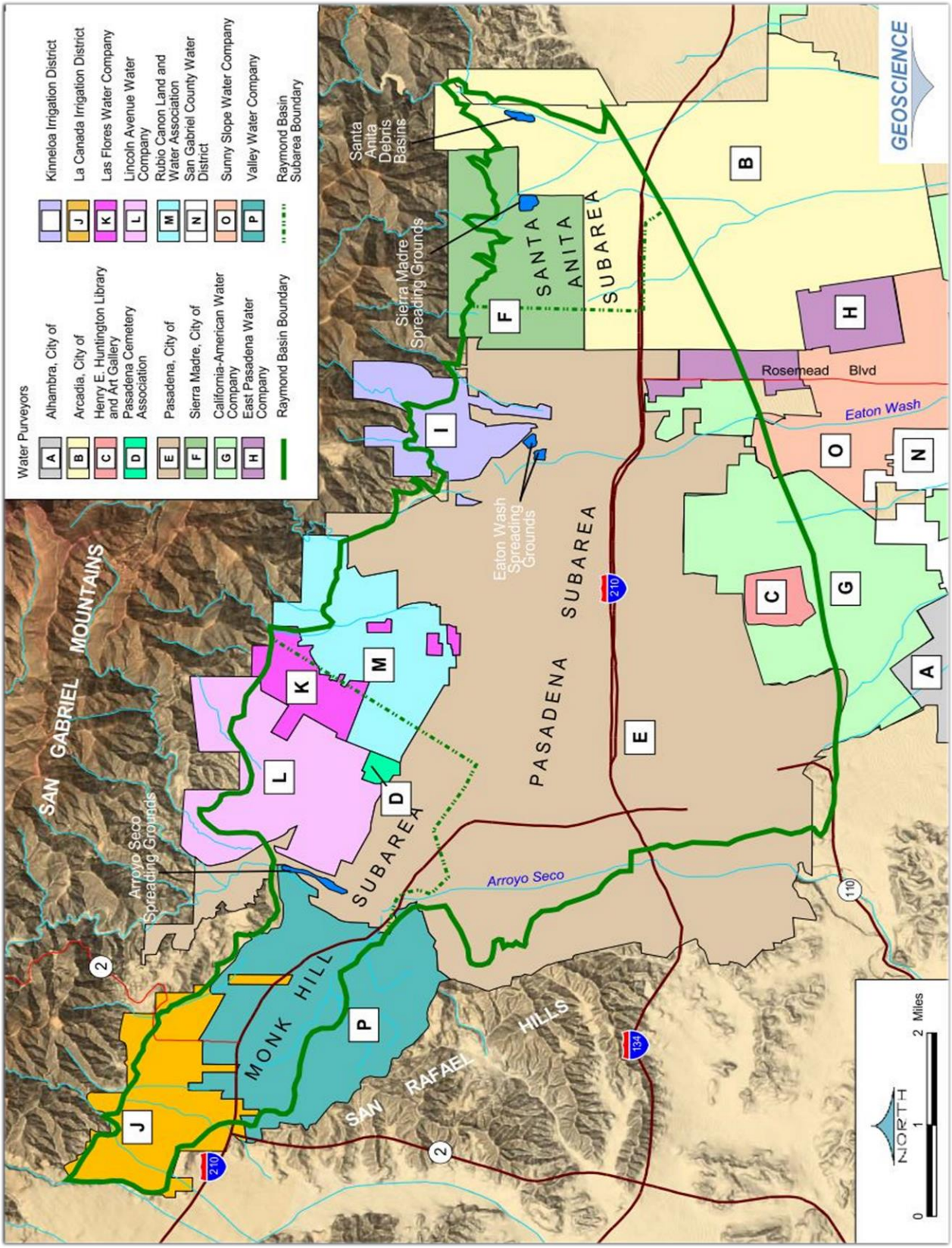


Figure 3.8: Raymond Basin (Outlined in Solid Green)

3.4 SURFACE WATER

LAWC maintains the South Coulter Surface Water Treatment Plant located north of Altadena. The facility began its operations in 1997, and it is capable of treating up to 1,130 AFY, dependent upon rainfall. Canyon water is diverted to the North Coulter raw water reservoir and then treated at the South Coulter Surface Water Treatment Plant where it is stored at our South Coulter reservoir before being introduced into the distribution system. Currently, the Surface Water Treatment Plant is operating at minimal capacity.

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, LAWC provides annual Consumer Confidence Reports to its customers that detail the water quality. The quality of water delivered to the customers is directly related to the quality of the supply sources from which LAWC obtains its water.

Figure 3.9: Health Standards Protect Drinking Water

To ensure the quality of its water, LAWC 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 two main sources of LAWC's water supply are imported water from FMWD via MWD and groundwater from the Raymond Groundwater Basin. Since MWD draws the majority

of its water from the CRA and the SWP, the quality of LAWC'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 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 3.10: 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 or organic materials is much higher, lending 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.

Figure 3.11: Native Rock to the Salinity of the Colorado River Water Supplies

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

3.5.2 GROUNDWATER QUALITY

LAWC'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). Groundwater quality does not impact water supply.

LAWC have 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 has three treatment facilities to aid in the chemical cleanup.

3.5.3 SURFACE WATER QUALITY

An assessment of LAWC's surface water source was completed in October 2000. The assessment concluded that LAWC's surface water source is considered vulnerable to the following activity or facility associated with contaminants detected in the water supply: recreation and low-density septic system use. In addition, the surface water source is considered vulnerable to historic mining operations, for which no associated contaminant has been detected to this day. LAWC maintains to provide quality water that meets DDW drinking water standards.

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

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

Water Source	2020	2025	2030	2035	2040	2045
Imported	0	0	0	0	0	0
Local (Groundwater & Surface Water)	0	0	0	0	0	0

3.6 CURRENT WATER SUPPLY

3.6.1 IMPORTED WATER PURCHASES

In 2020, LAWC currently relies on 122 AF of imported water wholesaled by MWD through FMWD to supplement local groundwater. Currently, imported water represents approximately 5 percent of LAWC's total water supply. FMWD adopted their MWD

Allocation Plan during April 2015. MWD has determined a set amount of water supplied to each of their agencies for further distribution taken into consideration the ongoing drought. MWD has allocated 11,773 AF to FMWD and they have further allocated this water to its retail agencies. Of that amount, LAWC has been allocated 247 AFY. **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	267	249	832	92	88	122
% of Total Water Supply	**17%**	**16%**	**72%**	**5%**	**5%**	**5%**

3.6.2 GROUNDWATER PRODUCTION

The Raymond Basin was adjudicated in 1944. This adjudication established a management that utilizes a fixed safe-yield operation.

LAWC's groundwater allocation is 567 AF per year, as shown in **Table 3.3**. This is supplemented, under the judgment, by a spread credit of 60 percent of the measured water that is not input to the South Coulter Surface Water 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. Between 2015 and 2020, LAWC received an average annual spreading credit of 115 AF. LAWC has also entered into water lease agreements with the City of Pasadena ranging from 600 AF to 1,100 AF. Furthermore, LAWC also utilizes their Long-Term Storage to further enhance their supply capabilities. All of these together allows LAWC to pump more groundwater than their allocated amount to meet their demands. **Table 3.4** shows LAWC's recent groundwater production from the Basin in the past six years from 2015 to 2020.

Table 3.3: Groundwater Pump Rights (AFY)

Basin Name	Pumping Right (AFY)
Raymond Basin	567
Total	**567**

Table 3.4: Amount of Groundwater Pumped in 2015 – 2020 (AF)

Basin	2015	2016	2017	2018	2019	2020
Raymond Basin GW	1,597	1,607	1,154	2,018	1,685	2,069
% of Total Water Supply	**86%**	**87%**	**56%**	**94%**	**84%**	**90%**

3.6.3 2020 SUMMARY OF LAWC WATER SUPPLIES

Table 3.5 shows LAWC's water supplies and max total right / safe yield in 2020.

Table 3.5: LAWC 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	122	Drinking Water
Groundwater (not desalinated)	Raymond Basin	2,069	Drinking Water
Surface Water (not desalinated)	South Coulter Surface WTP	118	Drinking Water
Total		2,309	

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 utilizes historic data and the latest computer models to analyze these potential impacts. Furthermore, the state provided public access to downscaled data, along with mapping and other visualization tools, found at Cal-Adapt. In respect to water resources, research shows that California has a highly variable climate and is susceptible to dry spells. Additionally, extended drought periods could become more pervasive in future decades. Utilizing the extended drought scenario tool on Cal-Adapt provided projections on impacts on LAWC 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 3.12** and **3.13**, 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**.

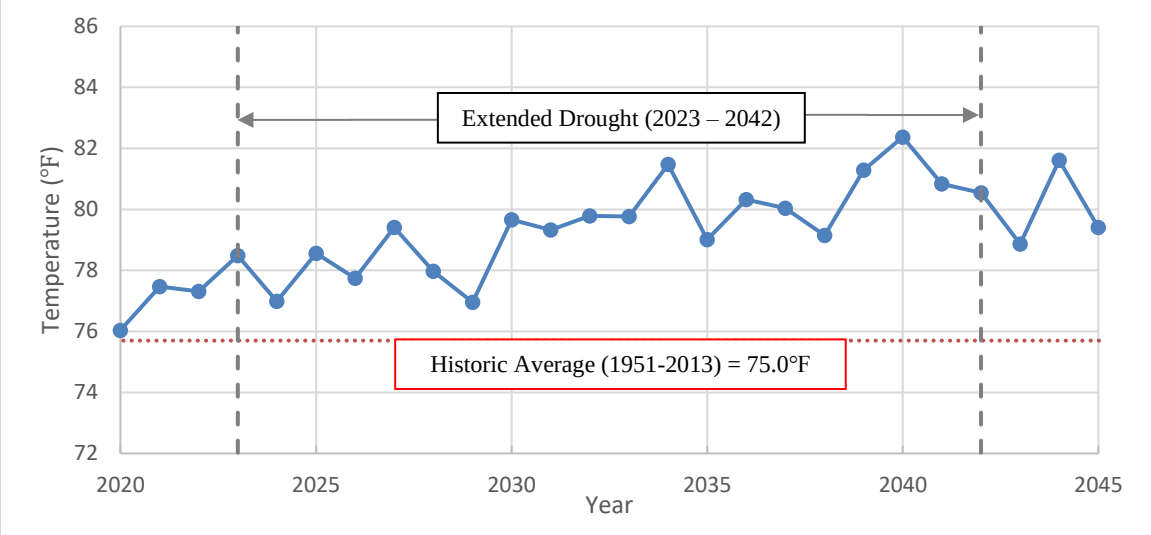


Figure 3.12: Extended Drought Scenario - Maximum Daily Average Temperatures

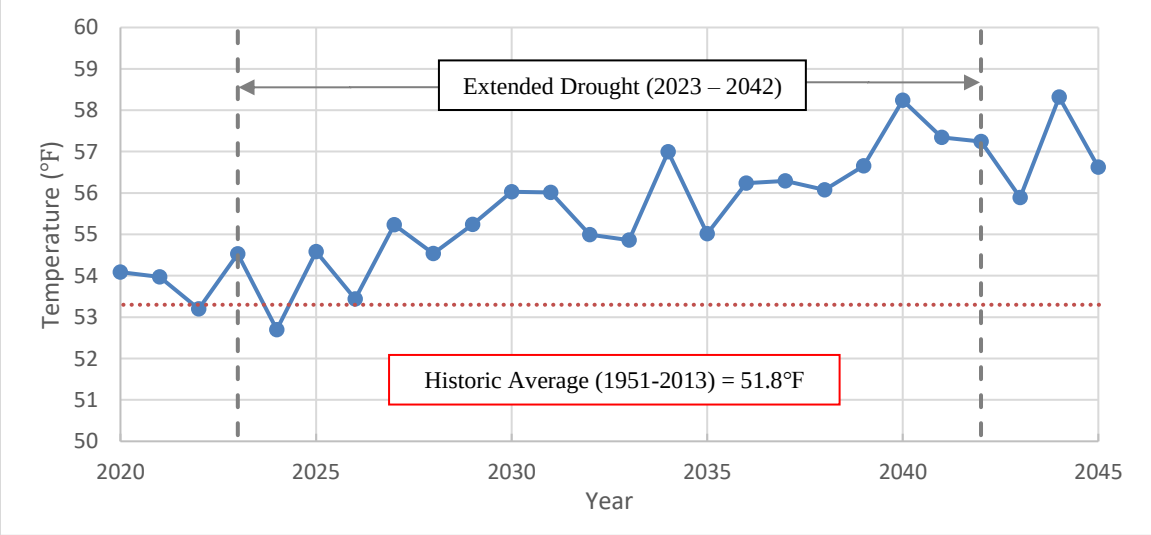


Figure 3.13: Extended Drought Scenario - Minimum Daily Average Temperatures

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

	Temperatures (°F)	
	Minimum	Maximum
Historic (1951-2013)	51.8	75.0
Projected (2023-2042)	55.5	79.2
Difference	+3.7	+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 3.14**.

This is also relating to reduced stormwater runoffs in a similar trend to precipitation as shown in **Figure 3.15**; 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.

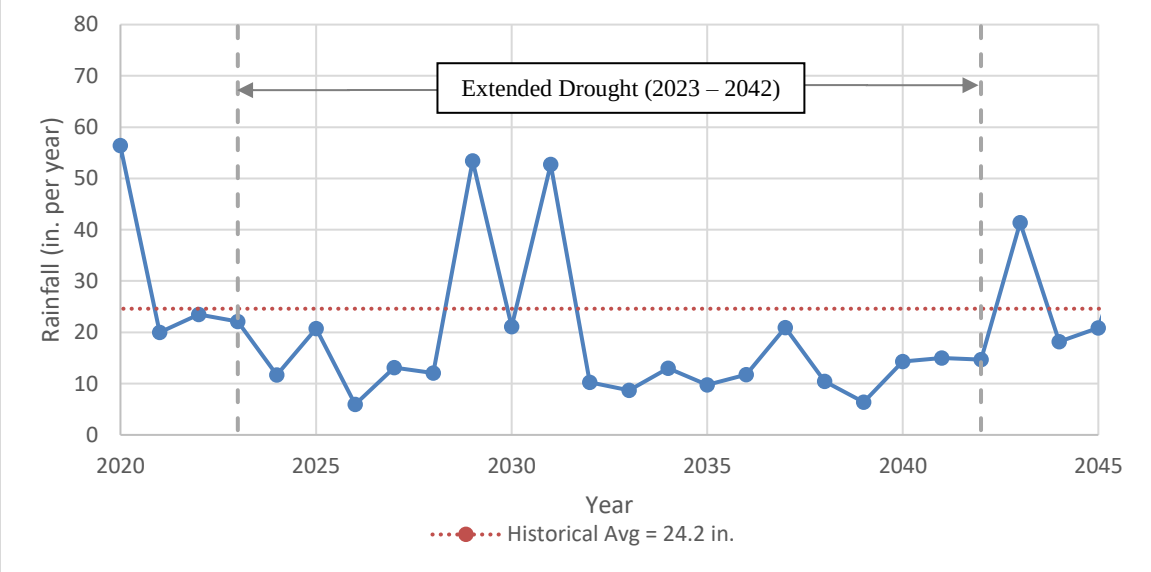


Figure 3.14: Extended Drought Scenario – Projected Annual Rainfall

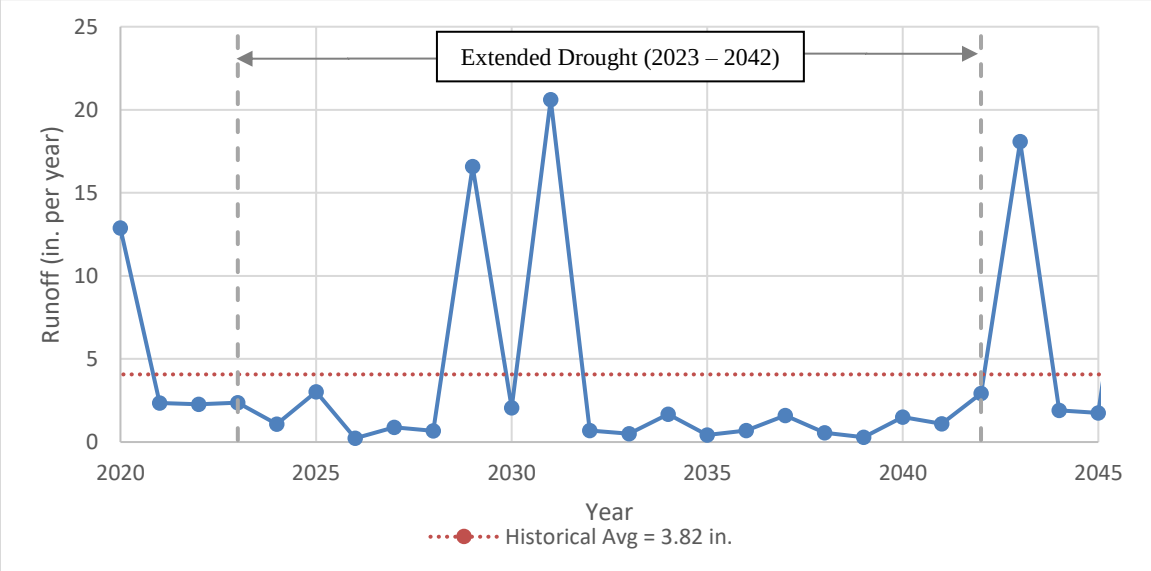


Figure 3.15: Extended Drought Scenario – Projected Annual Runoff

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)	24.2	3.82
Projected (2023-2042)	20.7	4.17
Difference	-3.5	+0.35

3.7.3 CLIMATE CHANGE IMPACTS TO LAWC'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 2012-15. 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 2012-15 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.

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 LAWC's supplies as shown in **Figure 3.16**. Since 2010, LAWC's reliance on groundwater has decreased from 2,261 AF at the peak in 2013 to 1,154 AF in 2017 (a decrease of 1,107 AF). This is due to the significantly decreased groundwater elevations caused by the recent droughts. Furthermore, production from the surface water treatment system stopped in 2010 due to the drought and recently restarted operations in 2017.

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%

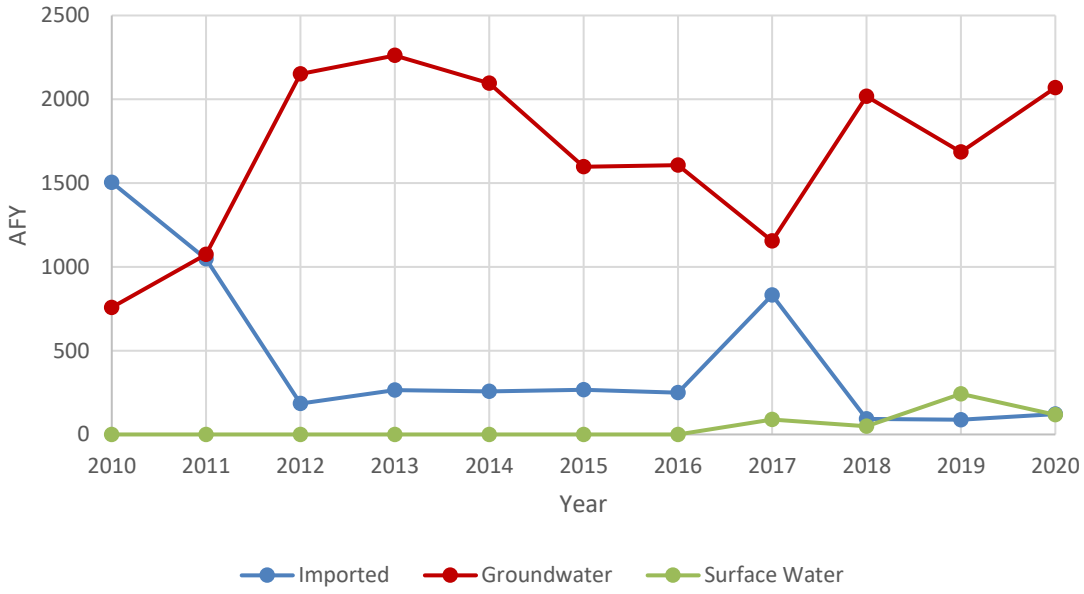


Figure 3.16: LAWC Imported and Groundwater Supplies (2010 - 2020)

3.8 WATER SUPPLY PROJECTIONS

3.8.1 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, LAWC's wholesale supplier, infers that it would also be able to meet the demands of its retail agencies under these conditions.

California Water Code 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 LAWC by FMWD.

3.8.2 GROUNDWATER SUPPLY PROJECTIONS

Table 3.9 also shows the amount of groundwater projected to be pumped from the Basin by LAWC over the next 25 years. These groundwater projections are based on the sum of the maximum adjudicated pump right in the Basin, average lease agreement amount with City of Pasadena and other factors that increases their pumping rights (long-term storage, spread credits, etc.).

3.8.2 SURFACE WATER SUPPLY PROJECTIONS

Table 3.9 also shows the projected surface water production from the South Coulter Surface Water Treatment Plant. It is assumed under normal year climatological conditions that this facility can produce an average of 100 AFY.

Table 3.9: Projected LAWC Water Supplies (AF) (2025 – 2045) (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Purchased or Imported Water	from FMWD	1,633	1,633	1,633	1,633	1,633
Groundwater (not desalinated)	Raymond Basin	2,000	2,000	2,000	2,000	2,000
Surface Water (not desalinated)	South Coulter Surface WTP	100	100	100	100	100
Total		**3,733**	**3,733**	**3,733**	**3,733**	**3,733**

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 utilizes climate change models from CalSim-II to project supply impacts and estimations.

On an annual basis, each of the 29 SWP contractors, including MWD, request an amount of SWP water based on their anticipated yearly demand. In most cases, MWD's requested supply is equivalent to its full Table A amount. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on Northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. For example, according to the 2019 DCR, the total SWP annual delivery of water to contractors ranged from 2009 to 2018 as shown in **Figure 3.17**. 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.

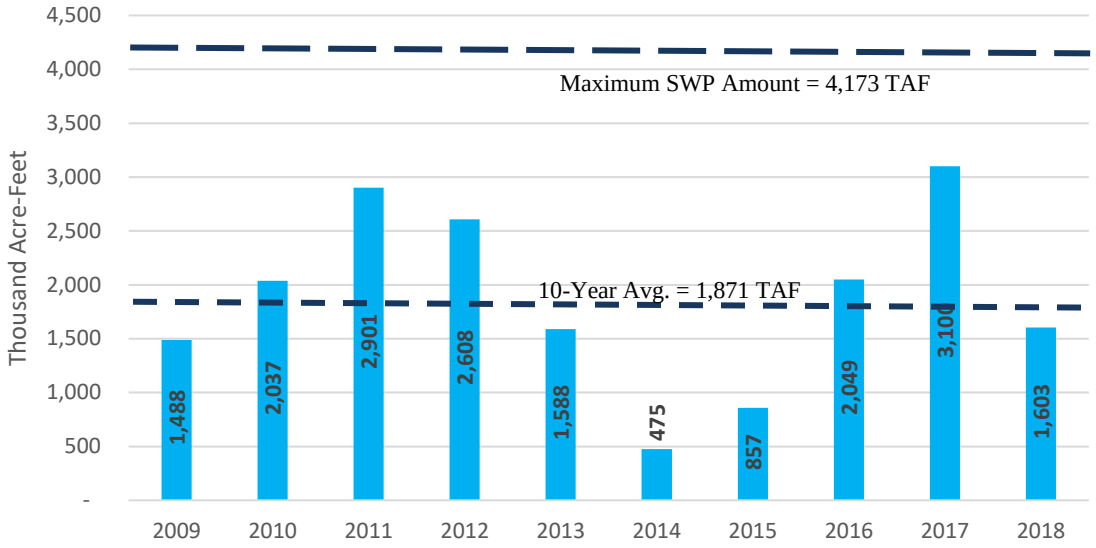


Figure 3.17: SWP Table A Deliveries (2009 - 2018)

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 3.8** compares the statewide reservoir levels during the recent drought period (2012-2015) with current levels (February 2021). **Figure 3.18** 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.

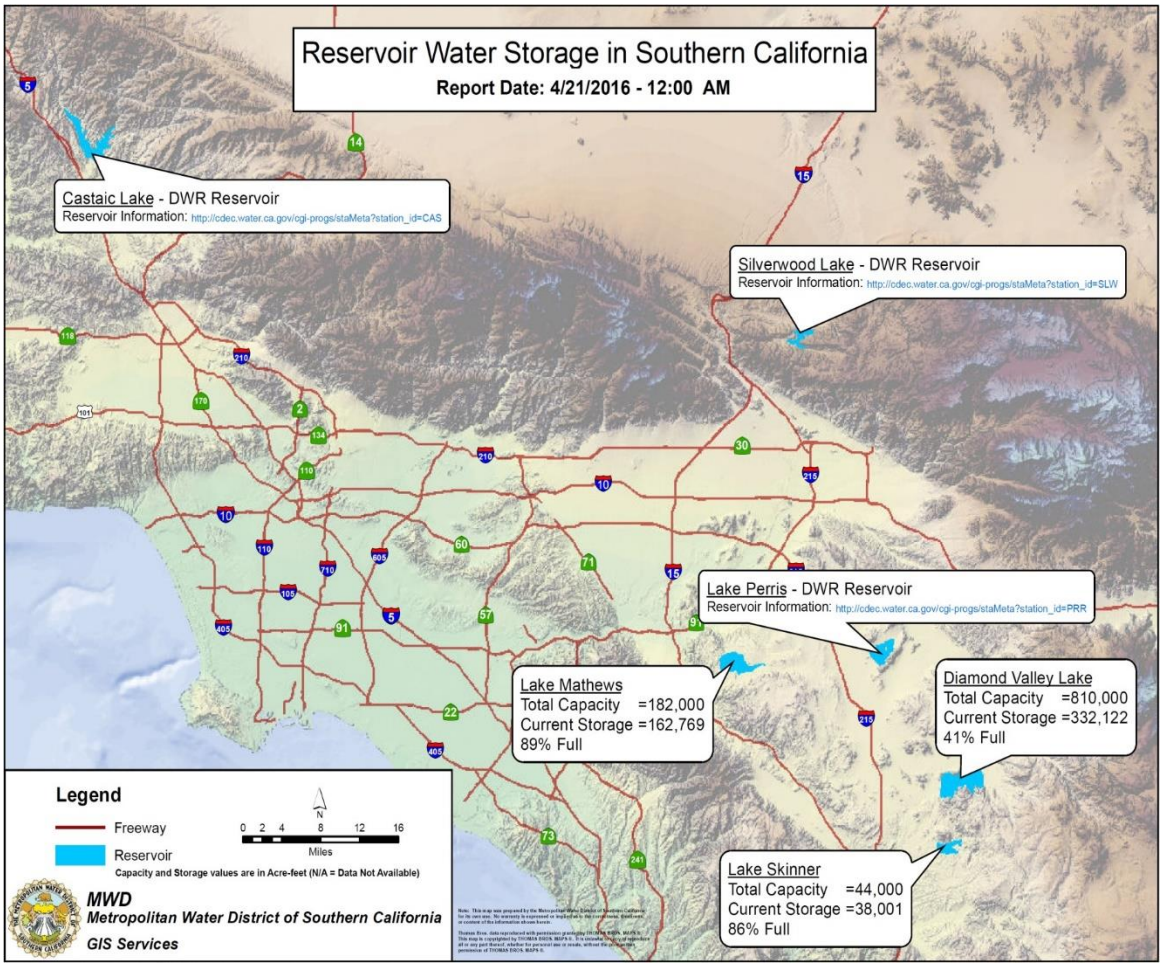


Figure 3.18: MWD Reservoir Levels (Feb. 2021)

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 correspond to MWD's 2020 UWMP Tables 2-1, 2-2, 2-3, 2-4, 2-5, and 2-6. These tables demonstrate that the region can provide reliable water supplies not only under normal conditions but also under both the single driest year and the multiple dry year hydrologies.

Table 3.10: 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	5,253,000	5,331,000	5,246,000	5,264,000	5,288,000
	L=B+J-E	Projected Surplus: Dry Year	4,129,000	4,178,000	4,197,000	3,982,000	4,029,000
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	5,253,000	5,331,000	5,246,000	5,264,000	5,288,000
	L=B+J-E	Projected Surplus: Multiple Dry Year	4,129,000	4,178,000	4,197,000	3,982,000	4,029,000
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 LAWC'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. LAWC 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.

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	100%
	Year 2	1989	100%
	Year 3	1990	100%
	Year 4	1991	100%
	Year 5	1992	100%

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 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 LAWC'S SUPPLY RELIABILITY

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

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

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

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

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

Legal, environmental, and water quality issues may have impacts on MWD supplies. It is believed, however, that climatic factors would have more of an impact than the others. Climatic conditions have been projected based on historical patterns; however, severe pattern changes may occur in the future. **Table 3.13** 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 LAWC'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 134.4 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 available during single and multiple dry drought periods. **Tables 3.16** to **3.22**, shown on the following pages, provide an analysis of LAWC's supply and demand projections.

Table 3.14: LAWC Demand during Single & Multiple Dry Years

		Base Year	Percent Increases
Average Year		2018-2019	100%
Single Dry Year		2013-2015	108%
Multiple Dry Years	**Year 1**	2011	102%
	Year 2	2012	112%
	Year 3	2013	121%
	Year 4	2014	113%
	Year 5	2015	89%

Table 3.15: LAWC Supply Availability during Single & Multiple Dry Years

		Base Year	Percent Available
Average Year		2015-2020	100%
Single Dry Year		2017-2018	97%
Multiple Dry Years	**Year 1**	2012	97%
	Year 2	2013	97%
	Year 3	2014	97%
	Year 4	2015	97%
	Year 5	2016	97%

Based on the data contained in **Tables 3.16** to **3.22**, LAWC 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, LAWC'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 3.16: LAWC's Water Supply Availability & Demand Projections - Normal Water Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		13,908	14,127	14,350	14,576	14,806
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	100	100	100	100	100
	Total Supply	3,733	3,733	3,733	3,733	3,733
Demand	Total Normal Demand	2,095	2,128	2,161	2,195	2,230
	% of 2018-2019 Avg. Demand (2,086)	100.4%	102.0%	103.6%	105.2%	106.9%
Supply/Demand Comparison	Supply/ Demand Difference	1,638	1,605	1,571	1,537	1,503
	Supply/Demand (%)	178.2%	175.4%	172.7%	170.0%	167.4%

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

1. Total Demand based on 134.4 GPCD (SBx7-7) multiplied by population projections shown above.

2. Imported Water Supply represents supply available to LAWC, if needed, based on the LAWC's FMWD's Tier 1 Limit of 1,633 AFY.

3. Groundwater Supplies based on the average LAWC's allowable pumping amount of 2,000 AFY (combination of pumping rights, leases, spread credits, etc).

**This Table not intended to be a projection of LAWC's actual groundwater production. LAWC may pump amounts different (above or below) from its adjudicated right of 567 AFY based on production and treatment capacity.*

**This Table is not intended to be a projection of LAWC's actual demand. Demand of 134.4 GPCD is based on SBx7-7 limits. Actual demand may be above or below the SBx7-7 limit of 134.4 GPCD in accordance with water usage needs in LAWC's service area.*

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

		2025	2030	2035	2040	2045
Water Service Area Population		13,908	14,127	14,350	14,576	14,806
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	0	0	0	0	0
	Total Supply	**3,633**	**3,633**	**3,633**	**3,633**	**3,633**
	Normal Year Supply	3,733	3,733	3,733	3,733	3,733
	% of Normal Year	97.3%	97.3%	97.3%	97.3%	97.3%
Demand	**Total Dry Demand**	**2,257**	**2,292**	**2,328**	**2,365**	**2,402**
	Normal Year Demand	2,095	2,128	2,161	2,195	2,230
	% of Normal Year	107.7%	107.7%	107.7%	107.7%	107.7%
Supply/Demand Comparison	Supply/Demand Difference	1,376	1,340	1,304	1,268	1,230
	Supply/Demand (%)	161.0%	158.5%	156.0%	153.6%	151.2%

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

1. Total Demand based on 134.4 GPCD (2015-2020 average demand) multiplied by population projections shown above and by single dry year increases of 107.7%

2. All other items derived in similitude to Table 3.16.

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

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

		2021	2022	2023	2024	2025
Water Service Area Population		13,735	13,778	13,821	13,864	13,908
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	0	0	0	0	0
	Total Supply	**3,633**	**3,633**	**3,633**	**3,633**	**3,633**
	Normal Year Supply	3,733	3,733	3,733	3,733	3,733
	% of Normal Year	97.3%	97.3%	97.3%	97.3%	97.3%
Demand	**Total Dry Demand**	**2,105**	**2,324**	**2,520**	**2,355**	**1,872**
	Normal Year Demand	2,068	2,075	2,081	2,088	2,095
	% of Normal Year	101.8%	112.0%	121.1%	112.8%	89.4%
Supply/Demand Comparison	Supply/Demand Difference	1,528	1,309	1,112	1,278	1,761
	Supply/Demand (%)	172.6%	156.3%	144.1%	154.3%	194.1%

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

1. Total Demand based on 134.4 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 101.8%, 112.0%, 121.1%, 112.8% and 89.4%.
2. All other items derived in similitude to Table 3.16.

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

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

		2026	2027	2028	2029	2030
Water Service Area Population		13,951	13,995	14,039	14,083	14,127
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	0	0	0	0	0
	Total Supply	**3,633**	**3,633**	**3,633**	**3,633**	**3,633**
	Normal Year Supply	3,733	3,733	3,733	3,733	3,733
	% of Normal Year	97.3%	97.3%	97.3%	97.3%	97.3%
Demand	**Total Dry Demand**	**2,138**	**2,360**	**2,560**	**2,392**	**1,901**
	Normal Year Demand	2,101	2,108	2,114	2,121	2,128
	% of Normal Year	101.8%	112.0%	121.1%	112.8%	89.4%
Supply/Demand Comparison	Supply/Demand Difference	1,495	1,272	1,073	1,241	1,731
	Supply/Demand (%)	169.9%	153.9%	141.9%	151.9%	191.1%

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

1. Total Demand based on 134.4 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 101.8%, 112.0%, 121.1%, 112.8% and 89.4%.

2. All other items derived in similitude to Table 3.16.

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

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

		2031	2032	2033	2034	2035
Water Service Area Population		14,171	14,216	14,260	14,305	14,350
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	0	0	0	0	0
	Total Supply	**3,633**	**3,633**	**3,633**	**3,633**	**3,633**
	Normal Year Supply	3,733	3,733	3,733	3,733	3,733
	% of Normal Year	97.3%	97.3%	97.3%	97.3%	97.3%
Demand	**Total Dry Demand**	**2,172**	**2,398**	**2,600**	**2,429**	**1,931**
	Normal Year Demand	2,134	2,141	2,148	2,154	2,161
	% of Normal Year	101.8%	112.0%	121.1%	112.8%	89.4%
Supply/Demand Comparison	Supply/Demand Difference	1,461	1,235	1,032	1,203	1,701
	Supply/Demand (%)	167.3%	151.5%	139.7%	149.5%	188.1%

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

1. Total Demand based on 134.4 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 101.8%, 112.0%, 121.1%, 112.8% and 89.4%.

2. All other items derived in similitude to Table 3.16.

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

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

		2036	2037	2038	2039	2040
Water Service Area Population		14,395	14,440	14,485	14,531	14,576
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	0	0	0	0	0
	Total Supply	**3,633**	**3,633**	**3,633**	**3,633**	**3,633**
	Normal Year Supply	3,733	3,733	3,733	3,733	3,733
	% of Normal Year	97.3%	97.3%	97.3%	97.3%	97.3%
Demand	**Total Dry Demand**	**2,206**	**2,435**	**2,641**	**2,468**	**1,962**
	Normal Year Demand	2,168	2,175	2,181	2,188	2,195
	% of Normal Year	101.8%	112.0%	121.1%	112.8%	89.4%
Supply/Demand Comparison	Supply/Demand Difference	1,427	1,197	991	1,165	1,671
	Supply/Demand (%)	164.7%	149.2%	137.5%	147.2%	185.2%

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

1. Total Demand based on 134.4 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 101.8%, 112.0%, 121.1%, 112.8% and 89.4%.

2. All other items derived in similitude to Table 3.16.

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

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

		2041	2042	2043	2044	2045
Water Service Area Population		14,622	14,668	14,714	14,760	14,806
Supply	Imported Water	1,633	1,633	1,633	1,633	1,633
	Groundwater	2,000	2,000	2,000	2,000	2,000
	Surface Water	0	0	0	0	0
	Total Supply	**3,633**	**3,633**	**3,633**	**3,633**	**3,633**
	Normal Year Supply	3,733	3,733	3,733	3,733	3,733
	% of Normal Year	97.3%	97.3%	97.3%	97.3%	97.3%
Demand	**Total Dry Demand**	**2,241**	**2,474**	**2,683**	**2,507**	**1,993**
	Normal Year Demand	2,202	2,209	2,216	2,223	2,230
	% of Normal Year	101.8%	112.0%	121.1%	112.8%	89.4%
Supply/Demand Comparison	Supply/Demand Difference	1,392	1,159	950	1,126	1,640
	Supply/Demand (%)	162.1%	146.8%	135.4%	144.9%	182.3%

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

1. Total Demand based on 134.4 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 101.8%, 112.0%, 121.1%, 112.8% and 89.4%.

2. All other items derived in similitude to Table 3.16.

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

3.11 REDUCED DELTA RELIANCE REPORTING

3.11.1 INTRODUCTION

Figure 3.19: Delta Plan Aims to Protect Bay-Delta's Fragile Ecosystem

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 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 FMWD. Energy is required for the pumping, conveyance, treatment and distribution of water, and for collection, treatment, and discharge of wastewater, and/or conveyance and distribution of recycled water. **Figure 3.20** illustrates a typical water use diagram.

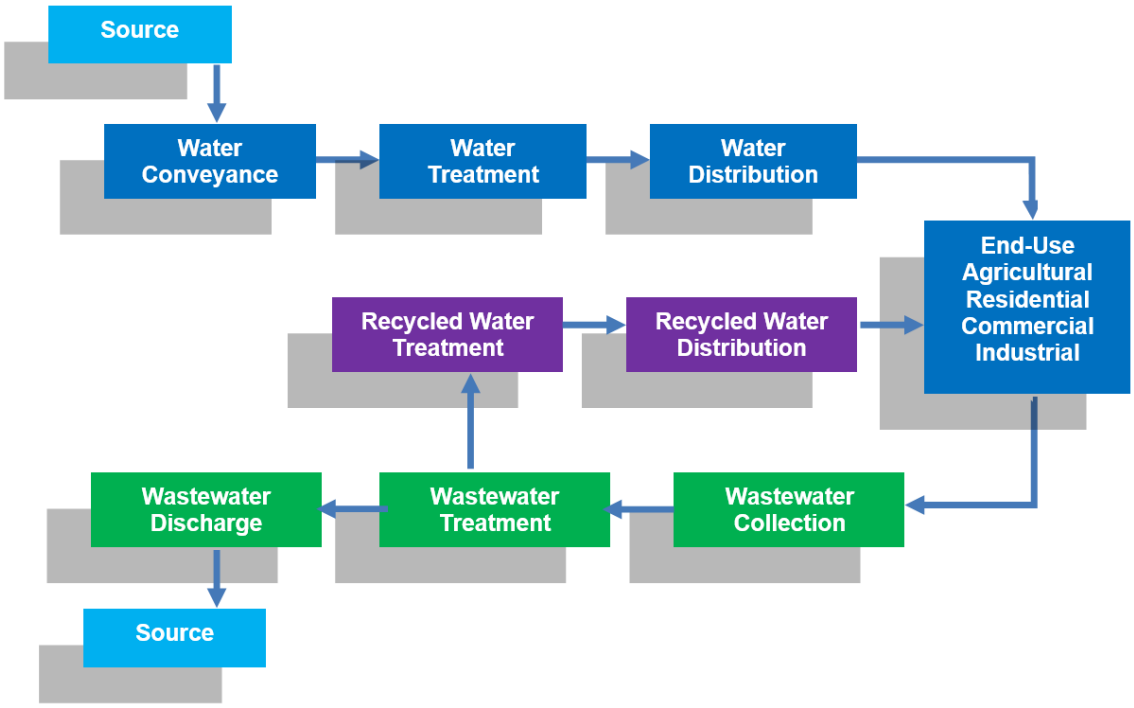


Figure 3.20: Typical Municipal Water Use Diagram

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. LAWC 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 LAWC's operational control, LAWC collected billing and energy quantity data provided by Southern California Edison (SCE) for 2020 (January 1, 2020 to December 31, 2020) representing the comprehensive one-year reporting period. The billing amounts for each facility were converted to an energy use quantity measured in kilowatt hours (kWh) for electricity. **Table 3.23** summarizes the energy intensity for LAWC. As shown, nearly 3.6 million kWh of energy was used to deliver over 2,309 AF of potable water. This equates to an energy intensity of 1,546.6 kWh/AF. DWR requires the reporting of energy intensity as kWh per million gallons (kWh/MG). Therefore, LAWC's energy intensity is 4,746.4 kWh/MG.

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

Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control		
End Date	12/31/2020			
☐ Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
Water Volume Units Used	*AF*	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (volume unit)		*2309*		*2309*
Energy Consumed (kWh)		*3571119*		*3571119*
Energy Intensity (kWh/vol. converted to MG)		*4746.4*	*#DIV/0!*	*4746.4*

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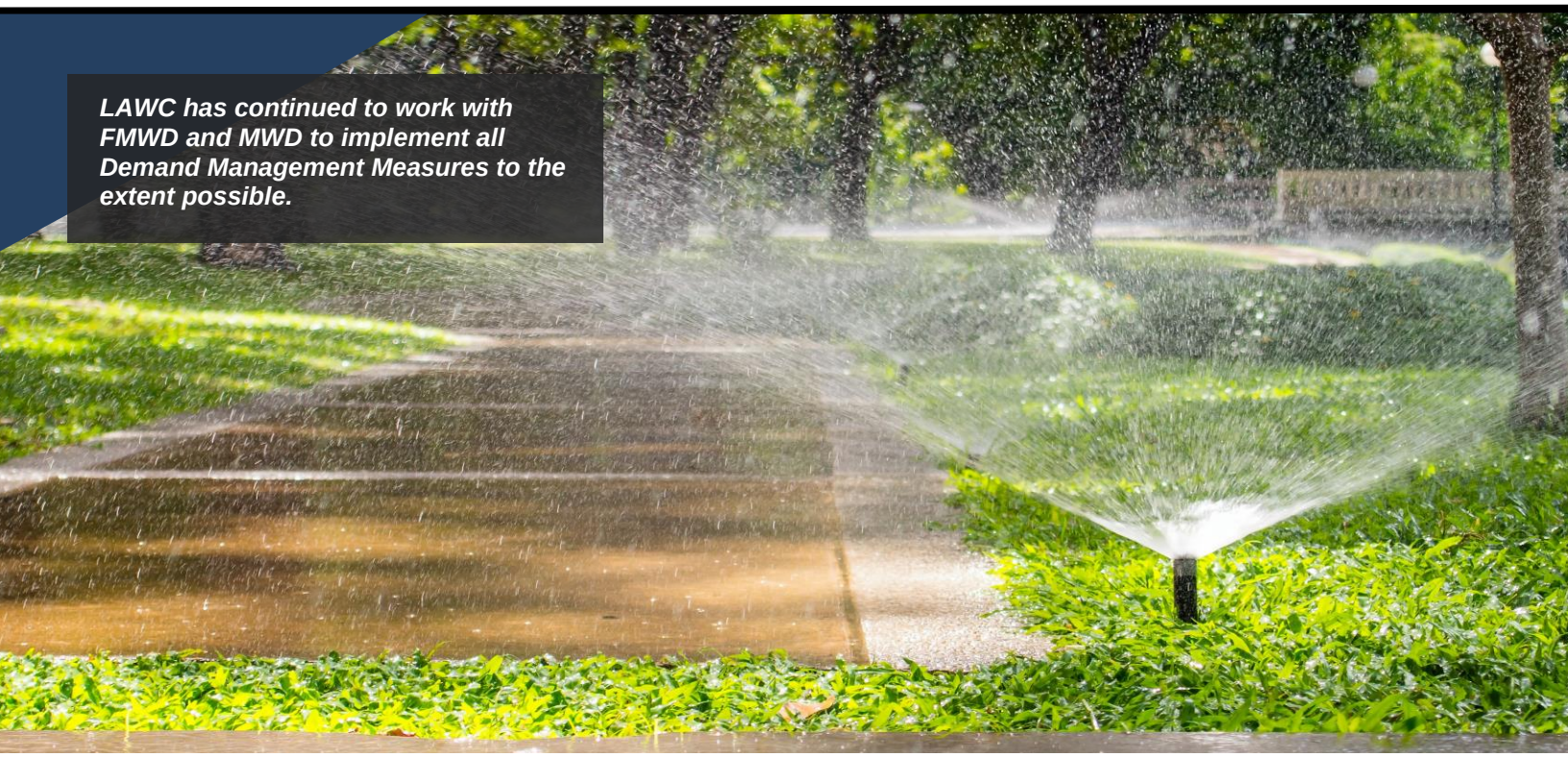

LAWC has continued to work with FMWD and MWD to implement all Demand Management Measures to the extent possible.

SECTION 4: CONSERVATION MEASURES

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 LAWC implements each applicable BMP and how LAWC 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 LAWC CONSERVATION PROGRAMS

LAWC, 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 LAWC 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. The LAWC Board of Directors have adopted temporary Moratorium's on activities which lead to added water demand on the distribution system. To this day, LAWC 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 LAWC's Conservation Measures.

Table 4.1: Conservation Measures

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

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 LAWC Ordinance

On October 23, 2015, LAWC amended Resolution No. LAWC032015 Moratorium on New Water Connections. It was in the best interest of LAWC 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 reduce water demand. The moratorium also states water conservation measures similarly as mentioned for Ordinance No. 2015-0004.

METERING

LAWC has a 4 Tier Water Rate Structure. Each account is allotted units in each tier. LAWC meters all of the accounts by volume of use and standby charge. LAWC 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**.

Table 4.2: LAWC Current Water Rates

Charge	Rates
➢ Tier 1: 0–7 units	$3.30
➢ Tier 2: 8-20 units	$3.89
➢ Tier 3: 21-40 units	$4.32
➢ Tier 4: 41+ units	$4.79

CONSERVATION PRICING

LAWC has a 4 Tier Water Rate Structure. This tier rate system promotes conservation by offering our lowest rate to customers who use 7 billing units per month or less. Each water unit represents 100 cubic feet or 748 gallons. LAWC have provided their water rates from 2018 to 2021. In an event of an unexpected shortage, LAWC will update the prices accordingly to promote conservation. **Table 4.2** summarizes the water rates within LAWC, effective as of June 1, 2018. LAWC also offers incentives for shareholders who own multiple shares. Shareholders will be allotted additional water units at the Tier 1 rate based on the number of shares owned.

PROGRAMS TO ASSESS & MANAGE DISTRIBUTION SYSTEM REAL LOSS

LAWC conducts water audits and leak detection and repair on a daily and monthly basis. The distribution system is constantly being upgraded and repaired. LAWC's trained staff surveys the system during the daily inspection and maintenance schedule. LAWC monitors all water meters on a monthly basis. Stuck or faulty meters are detected and changed immediately. LAWC continues to upgrade meters monthly to reduce unaccounted for water. In the past five years, non-revenue water averaged 10.1 percent.

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

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

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

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

Table 4.3: 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 4.4: 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 ($)	$3,500	$3,500	$3,500	$3,500	$3,500

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.

WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT

LAWC has designated a staff member as a water conservation coordinator. This is not a full-time position but time is devoted to coordination and oversight of conservation programs, particularly with FMWD and BMP implementations. The coordinator of FMWD administers MWD's programs among FMWD's retail agencies.

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

In concert with FMWD, LAWC 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 DMM; however, LAWC continues to provide public information services and materials to emphasize water use efficiency and other resource issues.

Table 4.5 shows past and current, and planned public information programs within FMWD's service area.

Table 4.5: FMWD Public Information Programs

Actual	2016	2017	2018	2019	2020
Paid Advertising	Yes	Yes	Yes	Yes	Yes
Public Service Announcement	No	No	No	No	No
Bill Inserts/Newsletters/Brochures	Yes	Yes	Yes	Yes	Yes
Press Releases/Local Media Support	Yes	Yes	Yes	Yes	Yes
Demonstration Gardens	Yes	Yes	Yes	Yes	Yes
Special Events/Media Events	No	Yes	Yes	Yes	Yes
Speaker's Bureau	No	No	No	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

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

- ***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 $35 per barrel or

$250-$350 per cistern. The barrels and cisterns must adhere to specified design guidelines. For the past seven years, LAWC participated in a Rain Barrel and Drought-Tolerant Landscape Event that took place at Descanso Gardens (La Cañada Flintridge, CA). LAWC co-sponsored the event along with FMWD and the Cities of Burbank, Glendale, Pasadena, and South Pasadena. As a result of the event, over 1,000 rain barrels were purchased by local residents.

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

RESIDENTIAL PLUMBING RETROFIT

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

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

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

HIGH-EFFICIENCY WASHING MACHINE REBATES

LAWC 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 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 4.0 or less. 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

LAWC 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, LAWC, 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, LAWC 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 4.6** 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 4.6: Retrofit Devices and Rebate Amounts under SoCal Water$mart 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

LAWC contains only five large landscapes, including parks, a cemetery, and a gated community. LAWC offers water audit by bill messages. LAWC will continue to implement this BMP by annual review of customers' water use, and by offering on-site follow-up evaluations to customers upon request. Landscapes that are upgraded based on survey

recommendations could result in a 15 percent reduction in water demand.

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

SoCal Water$mart – As a member agency of FMWD, LAWC takes part in the SoCal Water$mart 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, LAWC takes advantage of regional and local efforts which target and market to large landscape properties using bill inserts and direct marketing efforts.

4.2.6 OTHER FMWD CONSERVATION MEASURES

WHOLESALE AGENCY PROGRAMS

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

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

LINCOLN AVENUE WATER COMPANY | 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, that 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 LAWC have in place to respond to water supply shortages, including a catastrophic interruption and greater than a 50 percent reduction in water supply.

5.2 WATER SUPPLY RELIABILITY ANALYSIS

5.2.1 WATER SERVICE RELIABILITY ASSESSMENT

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

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

Due to the semi-arid nature of LAWC's climate and as a result of past drought conditions, LAWC 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, LAWC 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	3,733	3,733	3,733	3,733	3,733
Demand totals	2,095	2,128	2,161	2,195	2,230
Difference	1,638	1,605	1,571	1,537	1,503

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

	2025	2030	2035	2040	2045
Supply totals	3,633	3,633	3,633	3,633	3,633
Demand totals	2,228	2,264	2,299	2,336	2,372
Difference	1,404	1,369	1,333	1,297	1,260

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

		2025	2030	2035	2040	2045
First year	Supply totals	3,633	3,633	3,633	3,633	3,633
	Demand totals	2,079	2,111	2,145	2,178	2,213
	Difference	1,554	1,521	1,488	1,454	1,420
Second year	Supply totals	3,633	3,633	3,633	3,633	3,633
	Demand totals	2,295	2,331	2,368	2,405	2,443
	Difference	1,338	1,301	1,265	1,227	1,189
Third year	Supply totals	3,633	3,633	3,633	3,633	3,633
	Demand totals	2,489	2,528	2,568	2,608	2,649
	Difference	1,144	1,105	1,065	1,024	983
Fourth year	Supply totals	3,633	3,633	3,633	3,633	3,633
	Demand totals	2,325	2,362	2,399	2,437	2,475
	Difference	1,307	1,271	1,233	1,195	1,157
Fifth year	Supply totals	3,633	3,633	3,633	3,633	3,633
	Demand totals	1,848	1,878	1,907	1,937	1,968
	Difference	1,784	1,755	1,725	1,695	1,665

5.2.2 FIVE-YEAR DROUGHT RISK ASSESSMENT

During a five-year drought, LAWC may import water to meet demands in excess of its adjudicated pumping right of 567 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, LAWC 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 LAWC's water supplies. **Table 5.4** shows the results of the analysis. The analysis was done utilizing DWR's DRA Planning Tool to determine supply and demand projections, and to analyze LAWC's vulnerability to droughts. The tool also allows water purveyors to utilize potential water usage saving or supply augmentation methods to mitigate supply shortfalls. These water usages saving methods (restrictions) are further discussed in the WSCP. As shown, LAWC 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	2,043	2,049	2,056	2,062	2,069
Total Supplies	3,633	3,633	3,633	3,633	3,633
Surplus/Shortfall w/o WSCP Action	1,590	1,584	1,577	1,571	1,564
Planned WSCP Actions (Use Reduction and Supply Augmentation)					
Supply Augmentation Benefit from WSCP Response	0	0	0	0	0
Use Reduction Savings Benefit from WSCP Response	0	0	0	0	0
Revised Surplus/Shortfall	1,590	1,584	1,577	1,571	1,564
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

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

LAWC'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 LAWC service connections in its distribution system. To determine its water supply reliability and actual reductions in water use during declared water shortages or emergencies, LAWC can rely on its daily records as well as the production and sales reports including the monthly totals. These periodical analyses are used by LAWC to manage resources to meet projected demands and adjust to changing conditions (i.e., precipitation) throughout the year.

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

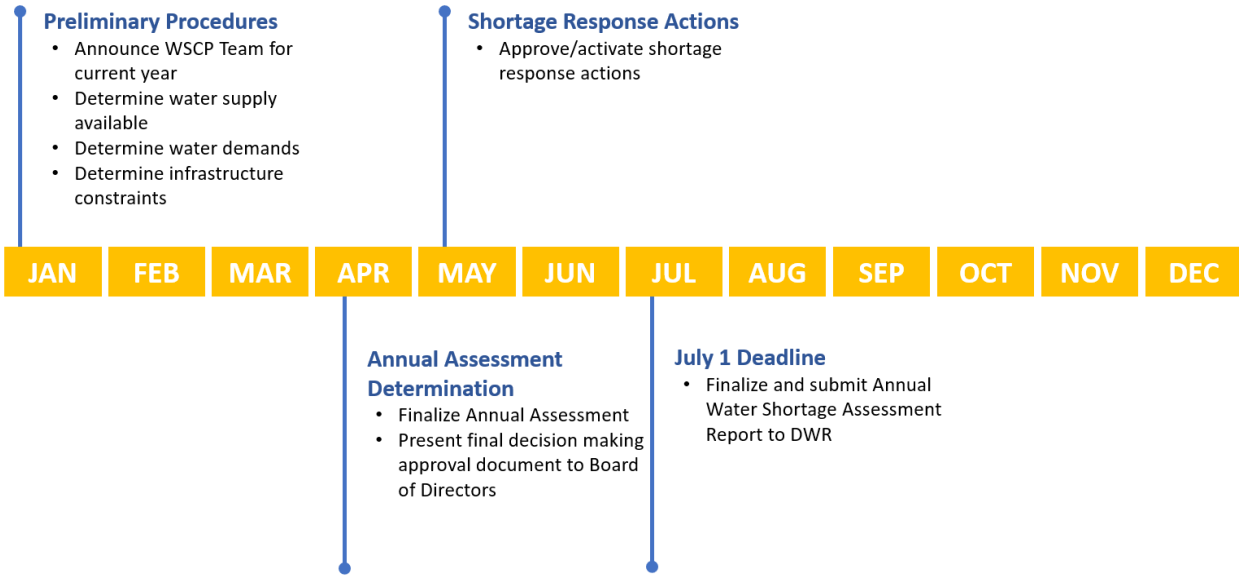

Figure 5.1: Sample Annual Assessment Decision-Making Process Timeline

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

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

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Purchased or Imported Water	from FMWD	122	Drinking Water
Groundwater (not desalinated)	Raymond Basin	2,069	Drinking Water
Surface Water (not desalinated)	South Coulter Surface WTP	118	Drinking Water
Total		2,309	

Table 5.6: Projected LAWC Water Supplies (AF) (2025 – 2045) (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Purchased or Imported Water	from FMWD	1,633	1,633	1,633	1,633	1,633
Groundwater (not desalinated)	Raymond Basin	2,000	2,000	2,000	2,000	2,000
Surface Water (not desalinated)	South Coulter Surface WTP	100	100	100	100	100
Total		3,733	3,733	3,733	3,733	3,733

Imported Water Purchases

LAWC receives its imported water supply from MWD through their wholesaler FMWD. Supply from MWD originates from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. Currently, LAWC's total water supply is comprised of approximately 6 percent imported water and is projected to be able to have access of its full Tier 1 limit supply with FMWD of 1,633 AF as shown in **Table 5.6**.

Groundwater Supply

LAWC utilizes groundwater from the Raymond Groundwater Basin. LAWC draws from this groundwater through three of its wells which fulfills about 90 percent of its total supply. LAWC's current safe yield of the Raymond Basin is 567 AFY. Furthermore, LAWC has agreements with City of Pasadena to produce additional groundwater to obtain an additional 600 to 1,100 AFY. 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

LAWC maintains the South Coulter Surface Water Treatment Plant located north of Altadena. The facility is capable of treating up to 1,130 AFY, dependent upon rainfall. Millard Canyon water is diverted to the North Coulter raw water reservoir and then treated at the South Coulter Surface Water Treatment Plant where it is stored at LAWC's South Coulter reservoir before being introduced into the distribution system.

5.4 SHORTAGE STAGES AND SHORTAGE RESPONSE ACTIONS

5.4.1 MWD STAGES OF ACTION

WATER SURPLUS & DROUGHT MANAGEMENT PLAN (WSDM)

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

In addition to the provisions of the County's Conservation Ordinance, LAWC also works in conjunction with FMWD 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 from its member agencies. The plan addresses both surplus and shortage contingencies. MWD's WSDM Plan documents the stages of action that it would undertake in response to a water supply shortage. FMWD's water supply shortage stages reflect MWD's WSDM Plan.

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

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

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

The 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.*

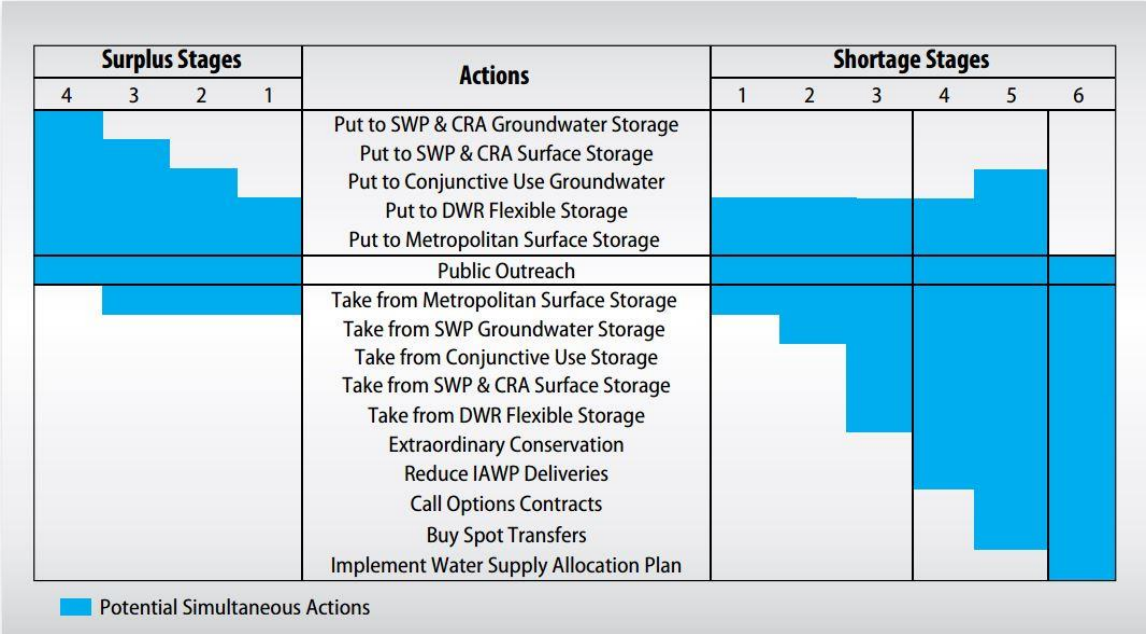

Figure 5.3: MWD WSDM Surplus & Drought Stages

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 demands of its member agencies. MWD revised its WSAP in 2014 to include the following updates: new FY 12-13 to FY 13-14 baseline, implement a Conservation Demand Hardening Adjustment, create a separate Groundwater Replenishment Allocation for applicable agencies, and replace WSAP Penalty Rates with Allocation Surcharges based on the marginal costs of turf removal. It should be noted that the WSAP is not a rationing plan. Rather, it is a pricing plan where water is allocated at regular prices and agencies that choose to take more than the allocated water pay surcharges. The surcharge pricing mechanism acts to discourage the use of water above the allocation.

The WSAP uses a combination of estimated total retail demands and historical local supply production within the member agency service area to estimate the demands on MWD from each member agency in a given year. Based on a number of factors, including storage and supply conditions, MWD then determines whether it has the ability to meet these demands or will need to allocate its limited supplies among its member agencies. Thus, implicit in MWD's decision not to implement an allocation of its supplies is that, at a minimum, MWD will be able to meet the demands identified for each of the member agencies.

According to MWD's 2015 IRP, the approach seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level and takes into account growth, local investments, changes in supply conditions and the demand hardening aspects of non-potable recycled water use and the implementation of conservation savings programs. The methodology attempts to allocate supplies based on an estimate of an agency's relative need for imported water using the following process:

1. Establish a baseline for total retail demands (and adjust for growth) to determine the allocation year total retail demands. ("*What are your total water demands?*")

2. Estimate the amount of local supplies to be utilized in the allocation year and subtract from total retail demands. This is the allocation year baseline demand on MWD. ("*How much imported water do you need from MWD?*")

3. Apply the minimum allocation percentage (per the regional shortage level) to the allocation year baseline demand and provide minor adjustments based on various criteria. ("*Restrict normal supply deliveries and provide allocation.*")

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

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

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

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.

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

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

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

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

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

Table 5.7: Water Allocation Percentages

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

5.4.2 FMWD SHORTAGE STAGES OF ACTION

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

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

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

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

Supply Allocation Formula Elements

The following are the elements of the allocation formula:

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

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

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

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

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

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

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

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

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

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

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

Conservation Plan Ordinance

FMWD's Conservation Plan (adopted April 2009; revised plan adopted June 2021) establishes a comprehensive staged water conservation program, which will encourage reduced water consumption within FMWD through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within FMWD. In June 2021, FMWD amended its Conservation Plan to conform to six standard water shortage levels as required by CWC Section 10632(a)(3)(A) and to better align with long-term water use goals. Along with permanent water conservation requirements, FMWD's Water Conservation Plan consists of six stages, which are described in **Table 5.8**, to respond to a reduction in potable water available to FMWD for distribution to its customers. Stage 1 conservation requirements are in effect at all times unless a mandatory conservation stage has been implemented by the Board of Directors.

5.4.3 LAWC STAGES OF ACTION

As the water purveyor, LAWC must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The rationing program triggering levels shown in **Table 5.8** were established to ensure that this goal is met.

Rationing stages may be triggered by a supply shortage or by contamination in one source or a combination of sources. LAWC's potable water sources are groundwater, local surface, and imported. Because shortages overlap Stages, triggers automatically implement the more restrictive Stage.

On March 9, 1992, the LAWC Board of Directors adopted a WSCP to better utilize the available water supplies and to preserve public health, safety, and general welfare. The existing WSCP will be replaced by this new WSCP, which will be adopted alongside the 2020 UWMP.

On October 7, 2008, the Los Angeles County Board of Supervisors approved Ordinance No. 2008-00052U to promote conservation in unincorporated areas of the County and limits or prohibits certain water uses.

LAWC has also adopted a Voluntary Water Use Efficiency Ordinance in July 2008, which utilizes a number of water conservation measures to achieve a 10 percent reduction goal in their service area.

On February 17, 2015, the Los Angeles County Board of Supervisors approved Ordnance No. 2015-0004, a revision to Ordinance No. 2008-00052U. The revisions offered stricter violations by increasing penalty fees. **Table 5.8** shows the supply shortage stages and the corresponding water supply conditions and shortage percentages.

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 LAWC'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

LAWC 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 FMWD Water Conservation Plan Ordinance No. 772-0409 lists water conservation requirements that shall take effect upon implementation by the FMWD Board of Directors. Combined with LAWC's Voluntary Water Use Efficiency Ordinance, these prohibitions shall promote the efficient use of water, reduce or eliminate water waste, complement the LAWC's Water Quality regulations and urban runoff reduction efforts, and enable implementation of the LAWC's Water Shortage Contingency Measures. Prohibitions include, but are not limited to: restrictions on outdoor watering, washing of vehicles, food preparation establishments, repairing of leaks and other malfunctions, swimming pools, decorative water features, construction activities, and water service provisions, which can be found in **Table 5.9**.

Table 5.9: Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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
All new plumbing fixtures installed within the FMWD service area must conform to the following requirements: • 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 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.	At All Times
Potable water shall not be used for construction activities such as compaction and dust control when recycled water is	At All Times

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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.	
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 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.	At All Times

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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 handheld bucket or similar container, a handheld hose equipped with a positive self closing water shutoff 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

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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.	At All Times
Installation of single pass cooling systems is prohibited in buildings requesting new water service.	Stage 2
Installation of nonrecirculating 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 recirculating water systems, or must have secured a waiver of this requirement from LAWC.	Stage 2
Outdoor water use is limited to odd or even days, based on ending number of customer address.	Stage 2
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 handheld bucket or similar container, a handheld hose equipped with a positive self closing water shutoff nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.	Stage 3
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	Stage 4

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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 handheld bucket or similar container, a handheld hose equipped with a positive selfclosing water shutoff nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.	
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.	Stage 4
Filling or refilling 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.	Stage 4
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 handheld bucket or similar container, a handheld 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.	Stage 4
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, willserve 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	Stage 5

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
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	
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.	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 the LAWC.	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 the local water purveyor unless other arrangements are made with the LAWC.	Stage 6

5.4.5 CONSUMPTION REDUCTION METHODS

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

Table 5.10: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect
Stage 1 Conservation Measures	1
Stage 2 Conservation Measures	2
Stage 3 Conservation Measures	3
Stage 4 Conservation Measures	4
Stage 5 Conservation Measures	5
Stage 6 Conservation Measures	6

5.4.6 CATASTROPHIC SUPPLY INTERRUPTION

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

MWD

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

LAWC

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

Auxiliary Generator – LAWC has a 375 kW portable auxiliary generator that can be

hooked up at all pump stations.

Emergency Water Interconnections – LAWC has a total of 4 emergency water interconnections; 3 with the City of Pasadena and 1 interconnection with the Las Flores Water Company to provide mutual aid.

Conjunctive Use Program – LAWC participates in storage programs in the Raymond Basin. The water is stored primarily through the in-lieu process; using imported water instead of pumping water out of the groundwater basin.

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

Table 5.11: Preparation Actions for Catastrophe

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

5.4.7 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

INTRODUCTION

Earthquakes can vary significantly in magnitude and the amount of damage caused. Major earthquakes can cause loss of electrical power, damage to LAWC's structures and equipment, disruption of service, and injuries to staff. This section provides a description of LAWC'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 LAWC's Risk and

Resilience Assessment (RRA) and ERP as well as the 2019 County of Los Angeles All-Hazards Mitigation Plan (**Appendix X**). The complete RRA and ERP documents are not presented within this plan due to the highly confidential nature of the reports. Although LAWC does not currently have a seismic risk assessment and mitigation plan or a schedule to prepare such a plan, LAWC 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 LAWC system is crossed by a known fault line as shown in **Figure 5.5**. Therefore, there are no LAWC potable water structures with an extremely high risk of earthquake damage. There are, however, areas with increased risk due to landslides, liquefaction, and some LAWC facilities that are more susceptible to earthquake damage than other facilities.

ERP – EARTHQUAKE EMERGENCY RESPONSE

LAWC 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).

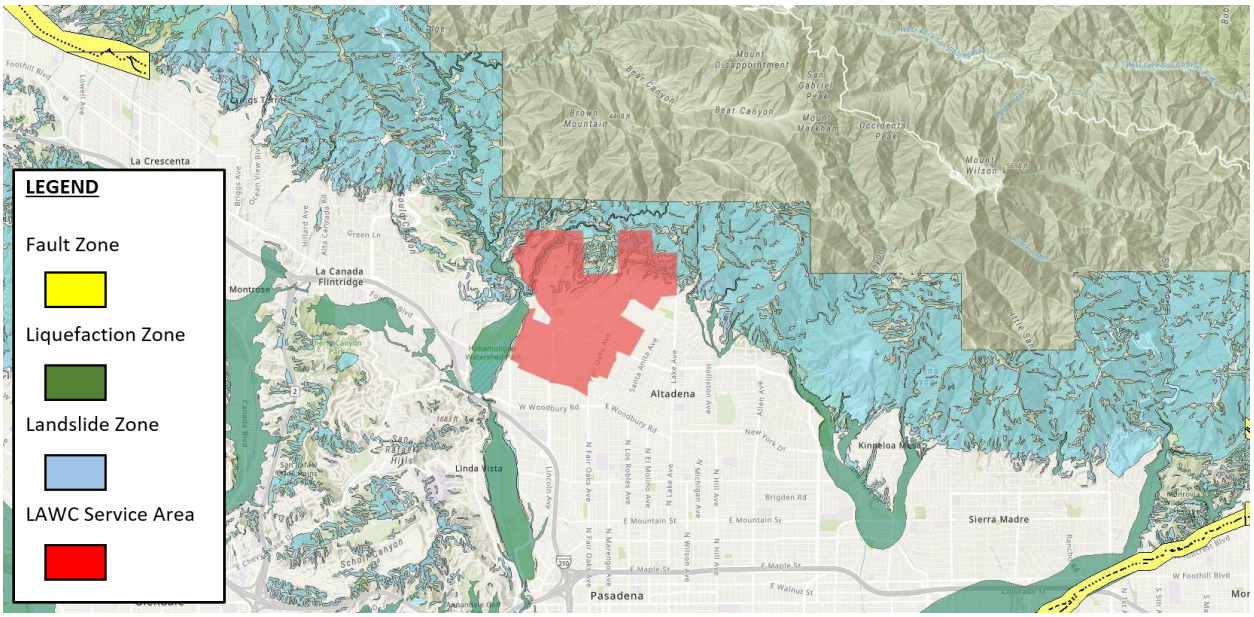

Figure 5.5: Seismic Hazards within LAWC's Service Area (California Geological Survey)

The ERP provides LAWC staff with the necessary information, strategies, procedures, and mitigation actions to address earthquake emergencies. LAWC'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 LAWC'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, LAWC 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.

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.

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

County of Los Angeles

The goals of the County of Los Angeles All-Hazards 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:

Figure 5.6: The Five Phases of Emergency Management

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.

5.5 COMMUNICATION PROTOCOLS

5.5.1 INTRODUCTION

LAWC's communication protocol includes the various channels that LAWC will utilize to convey critical messages regarding water shortage allocations and voluntary and mandatory actions. The goal of LAWC 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 LAWC and its customers, the public, elected officials, and other key stakeholders are essential should the WSCP need to be activated. How the water shortage messages are addressed to the public are described in this communication protocol. The communication protocol will be in place prior to a water supply shortage and be initiated in Stage 2 Increased Voluntary Conservation. Activation of the communication protocol will continue through all subsequent water shortage stages. LAWC 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 LAWC is taking to respond to the water supply situation.

5.5.2 COORDINATION

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

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

LAWC's customers and public will be notified about any triggered or anticipated to be triggered shortage response actions. LAWC 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, or 5 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 LAWC's website and published in a daily newspaper. Upon declaration by the Board of Directors that a water shortage emergency exists, the WSCP shall be implemented. The plan shall remain in effect until the Board of Directors declares the water shortage emergency has ended.

5.5.6 OTHER RELEVANT COMMUNICATION PROTOCOLS

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

LAWC may implement these communication strategies through its newsletters, website, and social media platforms to reflect supply conditions. In addition, LAWC 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 LAWC's facilities, LAWC 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 LAWC's facilities, LAWC may determine that it is necessary to utilize the Standardized Emergency Management System (SEMS) response and the Incident Command System (ICS). Public information and crisis communication are an integral part of the ICS structure. National Incident Management System (NIMS), SEMS, and ICS have been integrated into the ERP. It provides for a strategic response by all employees and assigns specific responsibilities in the event the plan is activated.

When an incident occurs, the General Manager (Emergency Response Manager), District Engineer (Emergency Operations Center Manager) and the Operations Manager (Field Crew Supervisor) will go to the designated EOC and begin implementation of LAWC 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. LAWC will keep the Board of Directors informed of incident status and coordinate with public health officials.

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

5.6 COMPLIANCE AND ENFORCEMENT

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

- Customer service, education, and communication programs
- Water-waste patrols
- Warning and citation protocols
- Fines
- Policies and procedures related to treatment of irrigation malfunctions

5.6.1 PENALTIES OR CHARGES

Any customer who violates provisions of the Water Conservation Plan Ordinance by either excess use of water or by specific violation of one or more of the applicable water use restrictions for a particular mandatory conservation stage may be cited by LAWC and may be subject to written notices, fines, flow restrictions, service disconnection, and/or service termination as detailed below:

First Violation – A letter will be sent reminding customer of water use prohibition and potential fines for non-compliance.

Second Violation – A door hanger is hand delivered listing the 2nd violation and requesting correction to avoid potential fines.

Third Violation – A letter will be sent listing prior notices and continued violation. $100 fine assessed to their water bill.

Consecutive Violation – Violations following the 3rd violation will be reviewed by the General Manager and/or Board of Directors. Further action and potential $500 fine will be assessed at their discretion.

5.6.2 APPEAL REGARDING VIOLATIONS

All actions taken by LAWC in response to water use prohibitions can be appealed in writing to the General Manager and/or Board of Directors. Appeals must include summary of violation and explanation as to why it was not addressed upon LAWC's request. If necessary, the request will be reviewed at the subsequent Board meeting and decision will be issued in writing.

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 LAWC 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 LAWC 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. LAWC 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

LAWC is a private mutually owned water company and is a non-profit organization. The Company's water rates were structured to allow for operations and capital improvement expenditures.

In the event that water usage demand increases, more imported water may need to be purchased. The imported water rate has been increasing steadily and may require us to

increase our water rates in order offset the difference.

In the event that water usage demand decreases, capital improvement projects may be minimal in order maintain current operations or water rates would be increase to offset the expenses. Such measures are listed in **Tables 5.12** and **5.13**.

Table 5.12: Proposed Measures to Overcome Revenue Impacts

Name of Measures
Rate Adjustment

Table 5.13: Proposed Measures to Overcome Expenditure Impacts

Name of Measures
Minimize Capital Improvement Projects

5.9 MONITORING AND REPORTING

5.9.1 REDUCTION MEASURING MECHANISM

Under normal water supply conditions, potable water production figures are recorded daily. Water Production totals are available daily to management. Totals are reported monthly to the Board of Directors in the monthly production and sales records report. Such measures are listed in **Table 5.14**.

Table 5.14: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type of Data Expected
Daily Records	Potable water production figures
Monthly Production and Sales Records Reports	Total Water Consumption

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 LAWC does not currently use recycled water and does not have the ability to use recycled water due to a lack of infrastructure, LAWC would use non-potable water for non-pool water features if and when recycled water supply ever becomes available to LAWC. 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, LAWC provided 60-day notification letters to agencies within LAWC's service area. Copies of the draft WSCP were made available for public review at the LAWC 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, LAWC's final WSCP was approved and adopted by its Board of Directors on June 18, 2021. **Appendix XX** contains the Board resolution adopting the WSCP. The final plan was submitted to DWR within 30 days of Board adoption and includes all information necessary to meet the requirements of CWC Section 10632.

By June XX, 2021, LAWC's approved WSCP was filed with DWR. By July 1, 2021, LAWC's plan was submitted to the California State Library, County of Los Angeles, and cities within its service area. LAWC 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 LAWC'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 LAWC Water Management is responsible for maintaining this plan and updating it as needed. The General Manager is the primary LAWC 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.

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LAWC does not operate a sewage collection system, but instead relies on Los Angeles County Sanitation District for treatment and disposal. LAWC'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

LINCOLN AVENUE WATER COMPANY | 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, LAWC continues to investigate the feasibility and cost-effectiveness of using recycled water.

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

6.2 WASTEWATER DESCRIPTION AND DISPOSAL

6.2.1 WASTEWATER COLLECTION

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

LAWC does not provide wastewater services. Rather, the areas it serves rely on Los Angeles County Sanitation District (LACSD) for wastewater treatment and disposal and the Los Angeles-Glendale (LAG) Water Reclamation Plant (WRP) or LAGWRP. 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 LAWC'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 LAWC'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	1,380	LACSD	La Canada Wastewater Treatment Plant	No	No
Total Wastewater Collected from Service Area in 2020:		1,380				

6.2.2 WASTEWATER TREATMENT

LA CAÑADA WASTEWATER TREATMENT PLANT (WRP) or LANTERMAN PLANT

Of the sanitation districts near LAWC'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.

The District 28 WRP (also known as the La Cañada WRP or the Lanterman Treatment 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.

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

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 LAWC'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 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 LAWC's service area.

Figure 6.1: Los Angeles-Glendale Plant

6.4 POTENTIAL RECYCLED WATER USES

In the past, FMWD, LAWC'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 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

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

6.4.2 INDIRECT POTABLE REUSE

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

6.5 OPTIMIZATION PLAN

Because LAWC is not using recycled water at this time, it is not practicable to provide a recycled water optimization plan. LAWC 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 LAWC exceed the cost of purchasing additional imported water from MWD.

LAWC 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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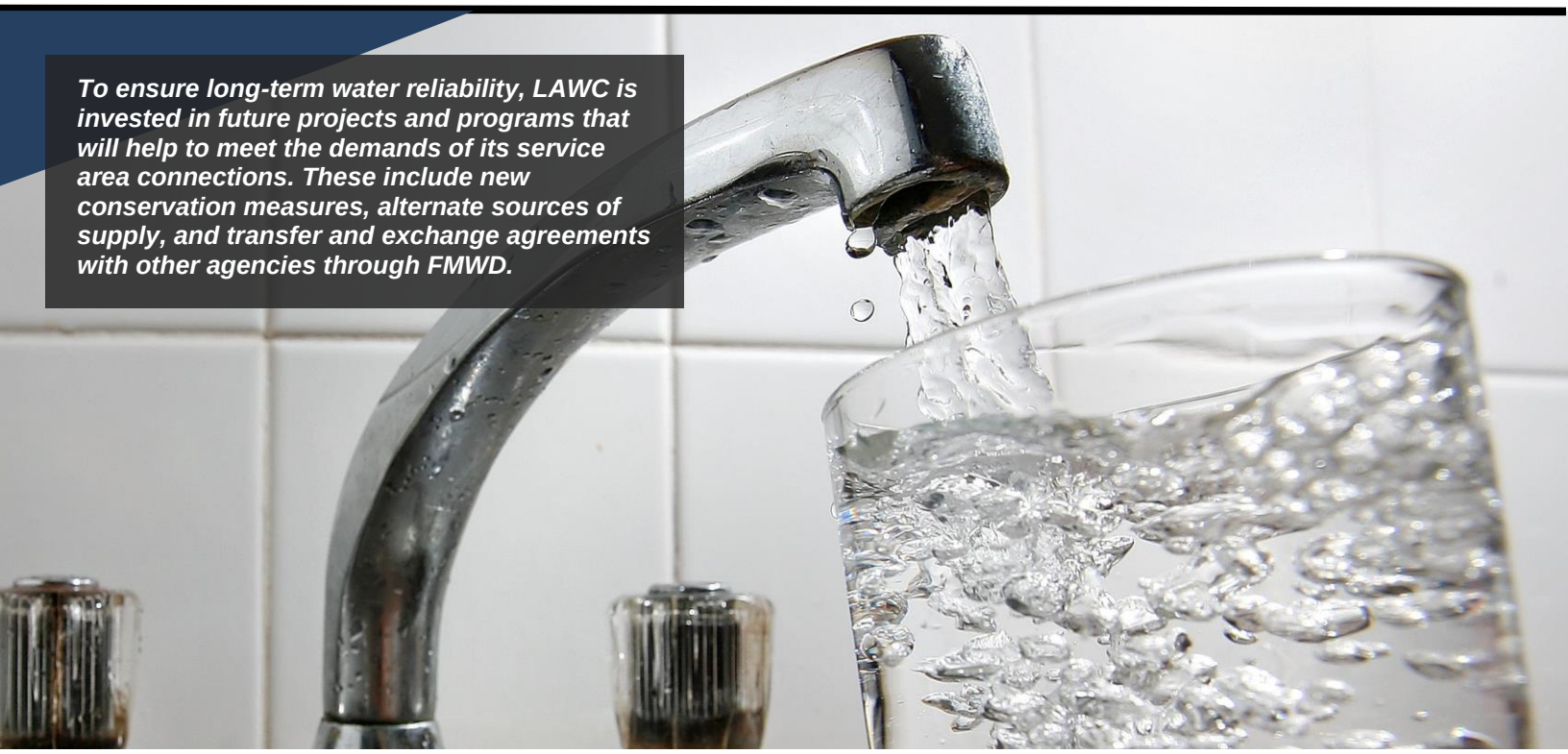

To ensure long-term water reliability, LAWC is invested in future projects and programs that will help to meet the demands of its service area connections. These include new conservation measures, alternate sources of supply, and transfer and exchange agreements with other agencies through FMWD.

SECTION 7: FUTURE SUPPLY PROJECTS & PROGRAMS

SECTION 7 FUTURE WATER SUPPLY PROJECTS & PROGRAMS

7.1 OVERVIEW

In general, LAWC continually reviews practices that will provide its customers with adequate and reliable supplies. As discussed in previous sections, LAWC is dedicated to maximizing its supply sources while reducing its dependency on imported supplies. LAWC 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 is currently updating its IRP; however, that process will not be completed until after submittal of this UWMP. The IRP projects demands and identifies a mix of supplies to meet those demands. These supplies include desalination, recycling, conservation, brackish groundwater recovery and conjunctive use. MWD has financial incentive programs in place

for local agencies to develop these supplies. FMWD, as a member agency of MWD, supports these incentive programs and contributes to these financial incentives through its payments for water from MWD.

7.3 WATER MANAGEMENT TOOLS

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

7.4 TRANSFER OR EXCHANGE OPPORTUNITIES

LAWC may pursue groundwater and surface water transfer or exchange opportunities with local water agencies in addition to leasing groundwater rights from the City of Pasadena as an additional water supply source.

7.5 PLANNED WATER SUPPLY PROJECTS AND PROGRAMS

NEW WELLS

In 2015, the National Aeronautics and Space Administration (NASA) constructed a new groundwater extraction well located in the rear parking lot area of the LAWC office. The new Well No. 6 was put into service in 2017. The Well enhances the groundwater cleanup efforts by removing contaminants in deeper levels of the aquifer, thus maintaining effective containment of the leading edge of groundwater chemicals originating from the Jet Propulsion Laboratory. The well also serves as a modern, reliable water source for LAWC's customers, ensuring continued clean drinking water supplies for many decades. This project was funded through NASA and is LAWC's third well within its service boundaries.

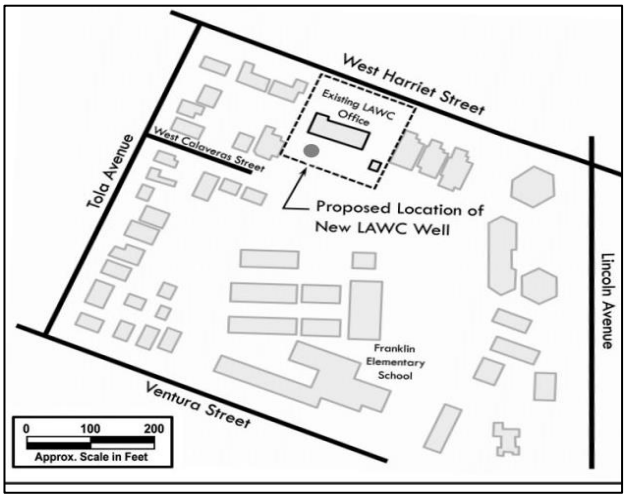

Figure 7.1: Location of New Well

REHABILITATION OF NORTH GLENROSE RESERVOIR

The Glenrose Reservoir site consists of two below grade concrete structures. The South Reservoir was built in 1891 and has a storage capacity of 2.7 million gallons. In response to the growing population and need for reliable drinking water, in 1937, LAWC built the North Reservoir adding an additional 1.8 million gallons of storage capacity to this site. In 2019, LAWC's proactive infrastructure repair and upgrade program focused on the rehabilitation of North Glenrose Reservoir. This project began with a structural evaluation. In order for the engineers to conduct a thorough inspection, it was necessary to drain the reservoir to fully expose the concrete floor and steel support columns in addition to providing access to the interior wood frame roof. The final project consisted of replacing the roof with a cast-in-place concrete roof slab. Unlike the prior roof system, a continuous roof slab provides a continuous diaphragm to resist lateral loads. The new concrete roof slab of around 9 inches thick was cast in place. Since the new slab was heavier than the prior roof system, strengthening of the existing concrete column footings was required for the new concrete columns. This option also required the stem wall and grade beam system to be constructed to help transferring the high seismic load. The new concrete roof system will require very little ventilation, as it is not affected by a buildup of condensation. It has an expected service life of at least 75 years.

7.6 DESALINATION OPPORTUNITIES

There are technologies in place to remove the salts in both brackish groundwater and ocean water for potable use. LAWC 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 LAWC's service area.

7.6.2 DESALINATION OF OCEAN WATER

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

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

SECTION 8: PLAN ADOPTION PROCESS

LINCOLN AVENUE WATER COMPANY | 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, LAWC worked closely with other entities to develop and update this planning document. LAWC provided 60-day notification letters to encourage agencies to participate in the UWMP preparation process. Copies of the draft UWMP and draft WSCP were made available for public review at the LAWC 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, LAWC adopted the 2020 UWMP and WSCP on June 18, 2021. Finally, as required by the UWMP Act, this 2020 UWMP and the WSCP are being provided by LAWC 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**.

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

Also in accordance with Article 3 of the CWC, LAWC 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 No. XXX (**Appendix E**) on June 18, 2021, LAWC 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	April 5, 2021
Public Hearing	Public Hearing Held at LAWC Headquarters (two-week and one-week notices published)	June 18, 2021
Board Adoption	Board Adoption of UWMP by Resolution	June 18, 2021

Table 8.2: UWMP & WSCP Distribution Following Adoption of Plans

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

8.2 DETAILS OF COORDINATION EFFORTS

8.2.1 GENERAL PUBLIC COORDINATION

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

- Encouraging attendance and participation in Board Meetings prior to the actual UWMP Public Hearing as part of LAWC's ongoing community outreach efforts
- Soliciting comments on the UWMP while providing copies of its Draft 2020 UWMP at the LAWC 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 18, 2021, LAWC 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 LAWC's draft UWMP was printed in a local newspaper, a copy of which is provided in **Appendix E**. 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

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

All of LAWC's water supply planning relates to the policies, rules, and regulations of its regional and local providers. LAWC 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. LAWC serves water to the northwestern portion of Altadena, an unincorporated area within the County of Los Angeles. In addition, LAWC consistently negotiates to lease groundwater rights, at a lower cost than imported water, from other water purveyors who cannot pump their groundwater. As such, LAWC 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	✓	✓	✓	✓	✓
Raymond Basin Management Board		✓		✓	
LA County		✓		✓	
General Public		✓		✓	

8.3 UWMP SUBMITTAL

LAWC's final 2020 UWMP and WSCP were approved by its Board of Directors on June 18, 2021. The final plans were submitted to DWR within 30 days of Board approval and includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

By June XX, 2021, LAWC's approved 2020 UWMP and WSCP were filed with DWR. By July 1, 2021, LAWC's plans were submitted to the California State Library, County of Los

Angeles, and cities within its service area. LAWC will make both plans available for public review during normal business hours and no later than 30 days after filing with DWR.