

2025 Urban Water Management Plan for Palmdale Water District

Final

Prepared by Kennedy Jenks

June 2026

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Palmdale Water District 2025 Urban Water Management Plan

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Prepared for

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KJ Project No. 2544222*00

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J 2025 Water Shortage Contingency Plan

List of Acronyms

AB	Assembly Bill
Ac	acre
AF	acre-feet
AFY	acre-feet-per-year
AIP	Agreement in Principle
AMI	Advanced Metering Infrastructure
AOP	Advanced Oxidation Process
AVEK	Antelope Valley East-Kern Water Agency
AVSWCA	Antelope Valley State Water Contractors Association
AWPF	Advanced Water Purification Facility
AWWA	American Water Works Association
Board	Palmdale Board of Directors
BMPs	Best Management Practices
Cal OES	California Office of Emergency Services
CCR	Consumer Confidence Report
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFS	cubic feet per second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information Systems
City	City of Palmdale, California
COA	Coordinated Operations Agreement
Corps	American Army Corps of Engineers
CWC	California Water Commission
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
DAC	Disadvantaged Communities
DCP	Delta Conveyance Project
DCR	Delivery Capability Report
DDW	Division of Drinking Water
DIER	Draft Environmental Impact Report
Delta	San Joaquin-Sacramento Bay Delta
DFW	Department of Fish and Wildlife
District	Palmdale Water District
DMMs	Demand Management Measures
DOF	Department of Finance
DRA	Drought Risk Assessment
DSOD	California Division of Safety of Dams
DWR	California Department of Water Resources
EIR	Environmental Impact Report

ESA	Federal Endangered Species Act
ETo	Evapotranspiration
FWS	United States National Fish & Wildlife Service
GAMA	Groundwater Ambient Monitoring and Assessment Program
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPF	Gallon per Flush
GPSCD	Gallons per Service Connection per Day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HET	High-Efficiency Toilet
INI	Irrigable Not Irrigated
IRWM	Integrated Regional Water Management Plan
ITP	Incidental Take Permit
LACSD	Los Angeles County Sanitation District
LCID	Littlerock Creek Irrigation District
LHMP	Local Hazard Mitigation Plan
LOC	Level of Concern
MCL	Maximum Contaminant Level
MF	Membrane Filtration
MGD	Million Gallons per Day
NMFS	National Marine Fisheries Service
Region	Antelope Valley Region
RO	Reverse Osmosis
Plan	Urban Water Management Plan
PBP	Priority Basin Project
PRWA	Palmdale Recycled Water Authority
PRWAP	Palmdale Regional Water Augmentation Project
PWA	Palmdale Water Authority; Public Water Agencies
PWAV	Pure Water Antelope Valley
PWD	Palmdale Water District
PWRP	Palmdale Water Reclamation Plant
PWS	Public Water System
SB	Senate Bill
SBx7-7	Senate Bill 7 of Special Extended Legislative Session 7
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SDACs	Severely Disadvantaged Communities
SGMA	Sustainable Groundwater Management Act
SLDMWA	San Luis & Delta Mendota Water Authority
SNMP	Salt & Nutrient Management Plan
SWP	State Water Project

SWRCB	State Water Resources Control Board
SWRP	Strategic Water Resources Plan
TDS	Total Dissolved Solids
US	United States
USBR	United States Bureau of Reclamation
US EPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
WMT	Water Management Tools
WRPP	Well Rehabilitation Prioritization Program
WRS	Water Rate Study
WSCP	Water Shortage Contingency Plan
WSMP	Water System Master Plan
WTP	Water Treatment Plant
WWLC	Water-wise Landscape Conservation
°F	Degrees Fahrenheit

Executive Summary

This document presents the 2025 Urban Water Management Plan (UWMP, Plan) for the Palmdale Water District (PWD) service area. The State of California mandates that all urban water suppliers prepare a UWMP. Detailed information on what must be included in these plans, as well as who is responsible for completing them, can be found in California Water Code Sections 10610 through 10657. This executive summary outlines the general purpose of the UWMP, discusses the implementation of the UWMP, and provides general information about PWD and its service area characteristics.

A UWMP is a planning tool that generally guides the actions of urban water suppliers. It provides managers and the public with a broad perspective on various water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a UWMP include a section which "…describes the opportunities for exchanges or water transfers on a short-term or long-term basis" (Wat. Code, § 10631, subd. [d]).

The identification of such opportunities and the inclusion of those opportunities in a UWMP's general water service reliability analysis neither commits an urban water supplier to pursue a particular water exchange/transfer opportunity, nor precludes it from exploring exchange/transfer opportunities never identified in its plan. Before an urban water supplier can implement any potential future water supply sources identified in a plan, detailed project plans are prepared and approved, financial and operational plans are developed, and all required environmental analyses are completed.

"A plan is intended to function as a planning tool to guide broad-perspective decision making by the management of water suppliers" (*Sonoma County Water Coalition v. Sonoma County Water Agency* (2010) 189 Cal. App. 4th 33, 39). It should not be viewed as an exact blueprint for supply and demand management. Water management in California must address uncertainty. Planning projections may change in response to several factors associated with uncertainty, such as climate change, population growth, and water demand.

The California Supreme Court has recognized the uncertainties inherent in long-term land use and water planning and observed that the generalized information required in the early stages of the planning process is replaced by firm assurances of water supplies at later stages" (*Id.*at 41). From this perspective, it is appropriate to view the UWMP as a general planning framework rather than a specific action plan. It is an effort to generally answer a series of planning questions, such as:

- What are the potential sources of supply, and what amounts are estimated to be available from them?
- What is the projected demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How do the projected supply and demand figures compare and relate to each other?

Using these "framework" questions and resulting answers, the implementing agency or agencies will pursue feasible, cost-effective options and opportunities to develop supplies and meet demands.

As further detailed in this UWMP, PWD will continue to explore enhancing and managing supplies from existing sources, such as imported water and other options. These may include groundwater extraction, water exchanges and transfers, water conservation, water recycling, brackish water desalination, and water banking/conjunctive use. Additional specific planning efforts may be undertaken for each option, involving detailed evaluations of how each would fit into the overall supply/demand framework, potential environmental impacts, and effects on customers.

The UWMP Act requires preparation of a plan that, among other things:

- Accomplishes water supply planning over a 20-year period in five (5)-year increments (PWD is going beyond the requirements of the UWMP Act by developing a plan that spans 25 years to 2050).
- Identifies and quantifies existing and projected water supplies and water supply opportunities, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.
- Implements conservation and efficient use of urban water supplies.

State legislation, Senate Bill 7 of Special Extended Session 7 (SBx7-7), was signed into law in November 2009, calling for progress towards a 20 percent reduction in per capita water use statewide by 2020. The legislation requires that retailers develop and report their 2020 and 2025 water use targets, their baseline daily per capita use, their 2020 and 2025 compliance daily per capita use, and the basis for determining those estimates. This UWMP reports on PWD's progress in meeting the SBx7-7 targets of a 20 percent reduction in per capita demand. This UWMP also includes projections consistent with legislative requirements of Making Conservation a California Way of Life Urban Water Use Objectives (UWUOs), and California Assembly Bill 1572 (AB 1527) regarding reductions in non-functional turf.

Palmdale Water District

PWD is a special district established in 1918, originally as the Palmdale Irrigation District, within the Antelope Valley of Los Angeles County, approximately 60 miles north of the City of Los Angeles. In 1973, the name Palmdale Water District (PWD) was adopted to reflect the growing population and the shift from an agricultural to a primarily municipal and industrial water supply. Encompassing the central and southern portions of the City of Palmdale and adjacent unincorporated areas of Los Angeles County, PWD has 27,178 active and 27,702 total connections. PWD has an approximate population of 126,804 and includes residential, commercial, industrial, and institutional customers. PWD is locally governed by a five (5)-member Board of Directors, with each Director residing in one of the five (5) divisions.

Water Use

This UWMP describes historic and current water usage and the methodology used to project future demands within the PWD service area. Water use is divided into the following sectors: single- and multi-family residential, commercial/industrial, irrigation, fire service, and construction. To undertake this evaluation, existing land use data and new housing construction information were compiled. Based on average water consumption, the projected potable water demand in 2050 will be approximately 22,400 AFY. When considering 4,900 AFY water conservation to meet the UWUO objectives, the resulting 2050 demand is anticipated to be 17,500 AFY (Table ES-1).

Table ES-1: Projected Potable Water Demands 2030 to 2050 (AFY)

Water Use	2030	2035	2040	2045	2050
Total Water Deliveries	15,830	15,960	16,020	16,070	16,110
Sales to Other Agencies	4,890	4,890	4,890	4,890	4,890
Water Losses	1,300	1,300	1,400	1,400	1,400
Total Demand	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Assumed Conservation	(3,010)	(4,410)	(5,110)	(5,020)	(4,900)
Total Demand with Conservation	**19,020**	**17,740**	**17,200**	**17,340**	**17,500**

Notes: Demands do not include non-potable water supplies. Chapter 2 provides more details on water use demands.

Actions to Manage Demand

PWD has uniquely low water use for a high desert area. However, PWD recognizes that conserving water is an integral component of a responsible water management strategy. PWD has a variety of programs to manage water demand, including prohibitions on water waste, public education and outreach, metering, monitoring, repairing system leaks, and rebate programs. These programs are part of PWD's water conservation program. PWD plans to expand this program over the next five (5) years and is dedicated to water conservation as a vital part of the water supply portfolio.

Compliance with Water Use Targets

From 1996 to 2004, average potable water use was approximately 231 gallons per capita per day (gpcd). The SBx7-7 Compliance Target for 2020 was 185 gpcd, and PWD's water use was 145 gpcd. In 2025, PWD continued to meet the 2020 target, with water use of 157 gpcd. PWD has exceeded the reductions required by the 2020 Compliance Target and plans to maintain efficient water use by continuing to implement demand management measures and to plan for water shortages.

Furthermore, PWD's UWUO for the reporting year 2024/2025 was 13,370 AFY, and PWD met this with an actual water use of 13,343 AFY calculated using the UWUO methods. However, based on demand trends, projected standards are expected to require a 16 percent reduction in water use by 2028. From 2030 through 2050, the required reduction for UWUO compliance is anticipated to be 22 to 37 percent. Actionable conservation strategies to manage water demand for future UWUO compliance include developing a phased conservation plan, maintaining up-to-date water-use and landscape-area data, and continuing to monitor water loss.

Water Supply

The water supplies for PWD include imported water, local and regional supplies, groundwater, and recycled water. As a State Water Contractor of the State Water Project (SWP), PWD purchases imported water from the Department of Water Resources (DWR). Each year, PWD receives an annual allotment based on available SWP supplies, with a total maximum contract amount of 21,300 AFY. Since 2010, PWD has received between five (5) and 100 percent of its annual allotment. PWD also has a long-term lease agreement with Butte County for up to 10,000 AFY of their SWP Table A Amount (2019 DCR). The amount available varies depending on the final annual allotment from DWR to its State Water Contractors.

The local water source for PWD includes groundwater pumped from the Antelope Valley Groundwater Basin. In late 2015, PWD and other parties agreed to a stipulated judgment for the adjudication of the Antelope Valley Groundwater Basin. Per the judgment, PWD began receiving a groundwater production right of 2,770 AFY starting in 2016. PWD also recently purchased permanent groundwater rights of 150 AFY from Calandri Farms, and PWD is temporarily entitled to a share of an unused Federal Reserved Water Right Production, which averaged 1,438 AFY from 2016 to 2025. PWD anticipates maintaining this level of pumping until 2030. Furthermore, PWD is entitled to a pumping allocation for the return flow credit of imported water used. Return flow credits averaged 3,840 AFY from 2016 to 2025 and are projected to be available through 2050.

PWD jointly owns and operates the Littlerock Dam Reservoir, which constitutes PWD's local surface water supply source, and is located in the hills southeast of the PWD service area. PWD anticipates being able to take approximately 4,000 AFY from Littlerock Dam Reservoir in normal, single-dry, and multiple-dry years.

PWD is actively working with the Sanitation Districts of Los Angeles County (LACSD) to develop recycled water supplies for its service-area customers and for future groundwater recharge projects. Recycled water will help PWD meet its future water demands. A summary of current and future supplies is provided in ES-2, ES-3, and ES-4. These supplies are anticipated to be available in a normal year, a single-dry year, and during multiple-dry years.

Table ES-2: Normal Year Water Supplies 2030 to 2050 (AFY)

Water Supply Source	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	11,250	10,990	10,740	10,480	10,220
Butte Transfer Agreement[(a)]	5,280	5,160	5,040	4,920	4,800
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies Normal Year	**30,330**	**35,000**	**34,630**	**34,250**	**33,870**
Total Demand[(b)]	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***8,310***	***12,850***	***12,320***	***11,890***	***11,470***
Excluding Sales to Other Agencies[(c)]	***13,200***	***17,740***	***17,210***	***16,780***	***16,360***

Notes: Values are rounded.
(a) For details, see Chapter 4, Section 4.3.1.
(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMM, water demands for irrigation do not increase in the PWD under single-dry and multiple-dry year conditions. Demands do not include conservation from Chapter 2, Table 2-6.
(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP were exceed 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

Table ES-3: Single-Dry Year Water Supplies 2030 to 2050 (AFY)

Water Supply Source	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	1,110	940	770	600	430
Butte Transfer Agreement[a]	520	440	360	280	200
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies Single Dry Year	**15,430**	**20,230**	**19,980**	**19,730**	**19,480**
Total Demand[b]	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***(6,590)***	***(1,920)***	***(2,330)***	***(2,630)***	***(2,920)***
Excluding Sales to Other Agencies[c]	***(1,700)***	***2,970***	***2,560***	***2,260***	***1,970***

Note: Values are rounded.
(a) For details, see Chapter 4, Section 4.3.1.
(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMMs, water demands for irrigation do not increase in the PWD under single-dry and multiple-dry year conditions. Demands do not include conservation from Chapter 2, Table 2-6.
(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP allocations were 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

Table ES-4: Multiple-Dry Year Water Supplies 2030 to 2050 (AFY)

Water Supply Source	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	3,150	3,110	3,070	3,070	3,020
Butte Transfer Agreement[a]	1,480	1,460	1,440	1,420	1,400
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies Multiple Dry Year	**18,430**	**23,420**	**23,360**	**23,340**	**23,270**
Total Demand[b]	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***(3,590)***	***1,270***	***1,050***	***980***	***870***
Excluding Sales to Other Agencies[c]	***1,300***	***6,160***	***5,940***	***5,870***	***5,760***

Note: Values are rounded.
(a) For details, see Section 4.3.1.
(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMM, water demands for irrigation do not increase in the PWD under single-dry and multiple-dry year conditions. Demands do not include conservation from Chapter 2, Table 2-6.
(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP allocations were 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

Water Quality

Based on current conditions and knowledge, water quality is not anticipated to affect water supply reliability. Nonetheless, water quality issues are constantly evolving. It is understood that water quality treatment can be costly. PWD is committed to, and will continue to work proactively, to address water quality concerns in a timely manner, ensuring that safe drinking water is available to its customers.

Fundamental Findings of the UWMP

The stated goal of PWD is to deliver a reliable and high-quality water supply to its customers, even during dry periods. Based on water supply and demand assumptions over the next 25 years, the UWMP successfully achieves this goal. PWD anticipates having adequate supplies to meet demands during normal years. However, PWD anticipates that during single-dry years, demand will exceed supply starting in 2030, unless additional demand conservation efforts are implemented.

During multiple-dry-year conditions, demand exceeds supply until after 2030, when the Pure Water Antelope Valley (PWAV) comes online and increased recycled water becomes available. During a consecutive five (5)-year drought, PWD also anticipates that demand will exceed supply from 2026 to 2030. Therefore, additional supplies or a reduction in demand are assumed to be needed to meet demand under those conditions.

Through the PWAV project, PWD plans to develop a recycled water supply from the Palmdale Water Reclamation Plant (WRP). The findings of this UWMP assume that PWAV comes online in 2031, as PWD expects. As shortages are estimated under single- and multi-year dry conditions until the PWAV comes online, this UWMP cannot be used in place of Water Supply Assessments and Water Supply Verifications.

PWD has planned actions to address the shortages, including identifying short- and long-term transfer and exchange opportunities to provide additional supplies. The Water Shortage Contingency Plan (WSCP) identifies opportunities to reduce customer demand during water shortages. Therefore, it is anticipated that existing supplies in combination with identified future and potential water supply opportunities will enable PWD to meet all future water demands under all hydrologic conditions through the end of the planning period.

Chapter 1: UWMP Introduction/Lay Description, Plan Preparation, and Service Area Description

1.1 Overview

This document presents the 2025 Urban Water Management Plan (UWMP, Plan) for the Palmdale Water District (PWD) service area. This chapter outlines the general purpose of the UWMP, describes its implementation, and provides general information about PWD and its service area characteristics. The State of California mandates that all urban water suppliers prepare a UWMP. Detailed information on who completes these plans and what must be included is in California Water Code Sections 10610 through 10657.

1.2 Purpose

A UWMP is a planning tool that generally guides the actions of urban water suppliers. It provides managers and the public with broad perspectives on water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a UWMP include a section which "…describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (Wat. Code, § 10631, subd. [d]).

The identification and inclusion of such opportunities in a UWMP's general water service reliability analysis neither commits an urban water supplier to pursue a particular water exchange/transfer opportunity, nor precludes it from exploring exchange/transfer opportunities not identified. Before an urban water supplier can implement any potential future water supply sources identified in an UWMP, detailed project plans are prepared and approved, financial and operational plans are developed, and all required environmental analyses are completed.

"A plan is intended to function as a planning tool to guide broad-perspective decision making by the management of water suppliers" (*Sonoma County Water Coalition v. Sonoma County Water Agency* (2010) 189 Cal. App. 4th 33, 39). The UWMP should not be viewed as an exact blueprint for supply and demand management. Water management in California must address uncertainty. Planning projections may change in response to factors associated with uncertainty, such as climate change, population growth, and water demand.

The California Supreme Court has recognized the uncertainties inherent in long-term land use and water planning and observed that the generalized information required in the early stages of the planning process is replaced by firm assurances of water supplies at later stages." (*Id.*, at 41.) From this perspective, it is appropriate to view the UWMP as a general planning framework, rather than a specific action plan. It is an effort to generally answer planning questions, such as:

- What are the potential sources of supply, and what amounts are estimated to be available from them?
- What is the projected demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How do the projected supply and demand figures compare and relate to each other?

Using these "framework" questions and their resulting answers, the implementing agency or agencies will pursue feasible, cost-effective options and opportunities to develop supplies and meet demand.

As further detailed in this UWMP, PWD will continue to explore managing supplies from existing sources, such as imported water, as well as other options. These may include groundwater extraction, water exchanges and transfers, water conservation, water recycling, brackish water desalination, and water banking/conjunctive use. Additional specific planning efforts may be undertaken for each option, including detailed evaluations of how each would fit into the overall supply/demand framework, potential environmental impacts, and how each would affect customers.

The UWMP Act requires preparation of a plan that, among other things:

- Accomplishes water supply planning over 20 years in five (5)-year increments (PWD is going beyond the requirements of the Act by developing a plan that spans 25 years to 2050).

- Identifies and quantifies existing and projected water supplies and water supply opportunities, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.

- Implements conservation and efficient use of urban water supplies.

The PWD 2025 UWMP revises the 2020 UWMP and incorporates changes enacted by legislation since that time. The Urban Water Management Plan Act has not undergone significant changes since 2020. However, the Act has been modified over the years in response to the state's water shortages, droughts, and other factors. The main changes since 2020 to note include:

1. UWMP Submittal Date: 2020 UWMP updates must be adopted and submitted to the California Department of Water Resources (DWR) by July 1, 2026.

2. Reporting on Compliance with SBx7-7 Targets: Senate Bill 7 of Special Extended Legislative Session 7 (SBx7-7) introduced standards for water use. These standards are based on gallons per capita per day and target a reduction per capita per day to be achieved by 2020. SBx7-7 was alternatively called "20 by 2020," which encapsulated the regulation intended to reduce water use by 20 percent by 2020. Despite the tie to 2020, SBx7-7 does not have a sunset clause, and suppliers must comply with SBx7-7 targets in the 2025 UWMP.

3. Reporting compliance with Water Loss Standard: Though the Urban Water Loss Standard is a separate regulation from the UWMP Act, within the 2025 UWMP, a supplier must report a summary of the past five (5) years of water loss audit reports, report total system water losses for the current year and projected losses for future years, describe programs to assess and manage distribution system real loss in the last five years, and provide data demonstrating whether the supplier will meet is water loss performance standard. Compliance with the Water Loss Standard must occur before January 1, 2027.

4. Five (5)-year Drought Risk Assessment: In past UWMPs, suppliers were to conduct a drought risk assessment assuming a period of drought lasting three (3) consecutive years. This requirement has changed, and suppliers must now conduct an assessment for a five (5)-year drought.

5. Sustainable Groundwater Management Act (AB 1739, SB1168, and SB1319): UWMPs must consistently meet Groundwater Sustainability Plan (GSP) supply projections, if applicable. Given that PWD overlies an adjudicated groundwater basin, this does not apply to PWD's UWMP.

6. Seismic Risk Assessment (SB 664): Similar to the 2020 UWMP, the 2025 UWMP must include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various water system facilities and mitigate those vulnerabilities. Compliance can be documented by submitting a copy of the most recently adopted local hazard mitigation plan (LHMP) or multi-hazard mitigation plan if that plan specifically addressed seismic risk to the water supplier's infrastructure. The 2020 UWMP included a thorough seismic evaluation of PWD's facilities. Additionally, an LHMP for PWD was developed in 2021, identifying potential hazards and formulating mitigation measures to protect PWD's critical infrastructure in the future. The 2025 UWMP will summarize the findings in the 2020 seismic evaluation and 2021 LHMP to meet this requirement.

7. Water Shortage Contingency Plan (WSCP) Updates: State requirements call for an update to the existing WSCP and that it be formally adopted as a stand-alone plan. The WSCP must be updated in parallel with the UWMP.

8. Making Water Conservation a California Way of Life (AB 1668 and SB 606): Making Water Conservation a California Way of Life concluded July 3, 2024. For simplicity, the Making Water Conservation a California Way of Life regulation is hereafter referred to as the Urban Water Use Objective (UWUO). The UWUO framework establishes individual efficiency goals for each urban retail water supplier based on the supplier's unique service area characteristics. The UWUO is a sum of efficient residential indoor water use, residential outdoor water use, real water loss, and efficient outdoor use in commercial, industrial, and institutional (CII) landscapes with dedicated irrigation meters. Starting in 2027, suppliers must meet the overall objective, not individual budgets for residential outdoor water use or CII water use.

9. Since 2022, Urban Water Suppliers have provided DWR with Annual Water Shortage Reports. The Annual Water Shortage Report is prepared in accordance with the current WSCP. Water supply and demand data and projections provided in the 2025 UWMP must be consistent with the past reporting. The update is also an opportunity to revise the WSCP and the drought response actions (demand reduction and/or supply enhancement) proposed by PWD. Items that were optional in the past but are now required include calculating water energy intensity, incorporating land-use changes into demand forecasting, and calculating water savings from codes and standards.

A checklist to ensure compliance with this UWMP's requirements under the UWMP Act is provided in Appendix A. The stated goal of PWD is to deliver a reliable and high-quality water supply to its customers, even during dry periods. Based on conservative water supply and demand assumptions over the next 25 years, combined with conservation of non-essential demands during normal and dry water years, the 2025 UWMP successfully achieves this goal.

1.3 Basis for Preparing a Plan

In accordance with the California Water Commission (CWC), urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet of water per year (AFY) are required to prepare a UWMP every five (5) years. The PWD qualifies as an urban water supplier, and its 2025 UWMP shall be updated and submitted to DWR by July 1, 2026. PWD is not part of a regional UWMP.

1.3.1 Relationship to Other Planning Efforts

Several other planning efforts related to the UWMP have been completed by PWD, including:

- **Palmdale Water District Water Rate Study (WRS) (2024):** The 2024 WRS analyzed current water rates and financial data at the PWD to determine whether the rates meet financial and strategic goals. The 2024 WRS projected revenues and expenses over 10 years, proposed five (5)-year revenue adjustments, and determined rates that can fund the projected financial needs of the PWD without impacting customers.

- **Strategic Water Resources Plan (SWRP) (2023):** The SWRP addresses current and future water demands for the PWD, water sources, required facilities, and water system costs. Through demand forecasting, the SWRP compiled historical water use in PWD and analyzed service demand. Supply forecasting involved assessing current water supplies within the PWD and identifying supply gaps. Furthermore, by evaluating supply options and alternatives, the SWRP identified supply reliability, identified new supplies, and supply alternatives using multi-criteria ranking. The SWRP also summarizes an implementation plan, including a schedule, estimated costs, and funding sources.

- **Local Hazard Mitigation Plan (LHMP) (2021):** The LHMP identified natural, technological, and anthropogenic-caused hazards that impact the PWD, assessed the risk posed by these hazards, and developed strategies for mitigating the identified hazards. The LHMP also presents future maintenance procedures and mitigation actions. The hazard mitigation steps outlined in this plan aim to reduce near and long-term risks to human life and property within the PWD.

- **Well Rehabilitation Prioritization Program (WRPP) (2020):** The WRPP outlined a roadmap to maximize local water supply sources and reduce reliance on imported water. The WRPP evaluated well histories and conditions, then prioritized the wells based on replacement needs and costs. This program guides PWD decision-making for future well maintenance and replacement projects to optimize production capacity and costs.

- **Water System Master Plan (WSMP) (2016, Revised 2018):** The WSMP was created to provide guidelines for planning the PWD potable water system through 2030 and under 2040 build-out conditions. The WSMP evaluated the potable water system under existing and future conditions.

- **Palmdale Recycled Water Authority (PRWA) Recycled Water Master Plan (2015):** The PRWA manages recycled water that is generated and used within the Palmdale area. The Recycled Water Master Plan updated and consolidated previous master planning documents and prepared a cost-of-service study to identify financial pathways for developing a recycled water system. Additionally, the Recycled Water Master Plan identified potential funding sources for planning and construction to help offset local costs.

1.3.2 Relationship to Water Shortage Contingency Plan

The CWC requires preparation of a separate WSCP as outlined in Making Water Conservation a California Way of Life (DWR and SWRCB, 2018):

> "The legislation…Requires each urban water supplier to prepare, adopt, and periodically review a WSCP as part of its UWMP to describe the method, procedures, response actions, enforcement, and communications during six levels of water supply shortage conditions (CWC §10620(d)(2) and §10632)."

Concurrently with the 2025 UWMP update, PWD will also update its WSCP consistent with the CWC. The 2025 WSCP expands on the WSCP contained within the 2020 UWMP, per the new requirements from the CWC. The WSCP will be adopted separately from the UWMP but will be submitted to DWR as an appendix to the UWMP (Appendix J).

1.4 Implementation of the Plan

This subsection outlines the cooperative framework for implementing the 2025 UWMP, including agency coordination, public outreach, and resource maximization.

1.4.1 Public Water Systems

Public water systems (PWS) provide drinking water for human consumption and are regulated by the State Water Resources Control Board Division of Drinking Water (SWRCB DDW). The PWSs are required to electronically file Annual Reports for the Drinking Water Program with the SWRCB DDW, which includes water usage and other information. Table 1-1 provides the name and number of the PWS (drinking water only) covered by this UWMP.

Table 1-1: Retail Public Water System (*DWR Table 2-1 R*)

Public Water System Number	Public Water System Name	Number of Total Municipal Connections 2025[a]	Volume of Water Supplied 2025 (AF)[b]
CA1910102	Palmdale Water District	27,702	22,072

Source: (a) District Public Water System Statistics, GIS Data; (b) District Public Water System Statistics, Production Data. Includes sales to other agencies and the average water loss from the 2020 to 2024 water loss audit reports. SWP allocations were 50 percent in 2025; therefore, PWD had surplus water. Through water sales, 4,000 AF of the surplus left the service area.

1.4.2 Fiscal or Calendar Year

A water supplier may report on a fiscal year or calendar year basis, but must clearly state in its UWMP the type of year used for reporting. The type of year should remain consistent throughout the UWMP.

The DWR prefers that agencies report on a calendar year basis to ensure that UWMP data is consistent with data submitted in other reports to the State. This UWMP provides data consistent with a calendar year, in AFY.

1.5 Cooperative Preparation of the Plan

The UWMP Act requires that the water agency identify its coordination with appropriate nearby agencies. The PWD 2025 UWMP addresses all aspects of the UWMP Act under the control of PWD, specifically water supply and water use. While preparing the 2025 UWMP, PWD coordinated with relevant agencies to ensure that data and issues were presented accurately.

Interested groups were informed about the development of the UWMP along with the schedule of public activities, and PWD has encouraged community participation in water planning. Table 1-2 presents a timeline for public participation during the development of the UWMP. Notices of public meetings were published in the local press and on PWD's website. Copies of the draft UWMP were sent to the City of Palmdale, the City of Lancaster, and Los Angeles County for review and comment, in addition to other local water agencies, as noted in Table 1-2.

Table 1-2: Agency Coordination Summary

	Participated in UWMP Development	Received Copy of Draft	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Sent Notice of Intent to Adopt
Angeles National Forest Supervisor's Office		X				X
Antelope Valley College		X				X
Antelope Valley-East Kern Water Agency		X				X
Antelope Valley Learning Academy		X				X
Antelope Valley State Water Contractors Association		X				X
Antelope Valley Union High School District		X				X
Antelope Valley Watermaster		X				X
California Water Service Co.		X				X
Canyons to Desert Resource Conservation District		X				X
City of Palmdale Planning Division		X				X
City of Lancaster Planning Department		X				X
Los Angeles County Department of Regional Planning		X				X
Littlerock Creek Irrigation District		X				X
Los Angeles World Airport		X				X

	Participated in UWMP Development	Received Copy of Draft	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Sent Notice of Intent to Adopt
Los Angeles Local Agency Formation Commission		X				X
Los Angeles County Farm Bureau		X				X
Palmdale Academy Charter School		X				X
Palmdale Aerospace Academy		X				X
Palmdale School District		X				X
Quartz Hill Water District		X				X
Rosamond Community Services District		X				X
Los Angeles County Farm Bureau		X				X
Los Angeles County Waterworks District No. 20		X				X
Los Angeles County Waterworks District No. 37		X				X
Los Angeles County Waterworks District No. 40		X				X
Wilsona School District		X				X

1.5.1 Public Hearing and Plan Adoption

Preparation of the UWMP began in winter 2025. Pursuant to 10621(b), the PWD provided interested parties with a 60-day notice of how the UWMP and WSCP could be reviewed, and when and where a public hearing would be held for adoption of the planning documents. The public hearing, held on June 8, 2026, was also noticed in the local newspaper. The final version of the UWMP was adopted by the PWD Board on June 8, 2026 and submitted to DWR, the California State Library, the City of Palmdale, the City of Lancaster, and Los Angeles County within 30 days of Board approval, by July 1, 2026.

This UWMP includes all information necessary to meet the requirements of the Water Conservation Act of 2009 (Wat. Code, §§ 10608.12-10608.64) and the Urban Water Management Planning Act (Wat. Code, §§ 10610-10656). Plan Adoption materials are provided in Appendix C.

1.5.2 Public Outreach

PWD encourages community participation in water planning. Interested groups, as identified in Table 1-2, were informed about the development of the UWMP along with the schedule of public activities. Notices of public meetings were published in the local press and on PWD's website. Copies of the draft UWMP were sent to the County of Los Angeles and the Cities of Palmdale and Lancaster for review and comment. Table 1-3 presents a timeline for public participation during the development of the UWMP. Copies of the public outreach materials are provided in Appendix D.

Table 1-3: Public Participation Timeline

Date	Event	Details
Sep. 2, 2025	Kick-off Meeting	Describe UWMP requirements and process
April 8, 2026	Public Draft UWMP	Public Draft released to solicit input
June 8, 2026	Public Hearing	Review contents of Public Draft UWMP and take comments
June 8, 2026, pending public hearing	Board Approval	UWMP and WSCP approved by the Board
July 1, 2026	Submittal	Submittal of UWMP and WSCP to DWR

1.5.3 Resources Maximization

Several documents have been developed to enable PWD to maximize the use of available resources, including the PWD Municipal Service Review (Hogel-Ireland 2012); Palmdale Recycled Water Authority Recycled Water Facilities Master Plan (Carollo 2015); PWD Water System Master Plan (MWH 2016); PWD 2021 Local Hazard Mitigation Plan (HDR 2021); PWD Well Rehabilitation Prioritization Program (KYLE 2020); Recycled Water Alternatives Evaluation (Stantec 2021); Palmdale Ditch Conversion Feasibility Study (Hazen 2021); City of Palmdale General Plan (2022); PWD Strategic Water Resources Plan (Woodard & Curran 2023); PWD 2024 Water Rate Study (RDN 2024). Chapter 4 provides a detailed description of the water resources available to PWD for the 25-year period covered by the UWMP. A complete reference list is provided in Chapter 10.

1.6 Water Management within PWD's Service Area

1.6.1 System Description

The PWD service area is located within the Antelope Valley in Los Angeles County, approximately 60 miles north of the City of Los Angeles, and includes the central and southern portions of the City of Palmdale and adjacent unincorporated areas of Los Angeles County, as shown in Figure 1-1. The City of Palmdale's nearest neighbor, Lancaster, is approximately 10 miles to the north.

The Antelope Valley Freeway (State Highway 14) runs north-south, and Pearblossom Highway (State Highway 138) meanders in an east-west direction through PWD. The primary function of the PWD is to provide retail water service within its service area. Under the provisions of the CWC relating to the establishment of irrigation districts, PWD has the power to carry out any act to

provide sufficient water for present and future beneficial uses, including the construction and operation of facilities to store, regulate, divert, and distribute water for use within its boundaries.

PWD was established in 1918 as the Palmdale Irrigation District. Until the 1950s, the Palmdale Irrigation District service area was primarily agricultural; however, with the activation of Air Force Plant 42 and the increased use of Edwards Air Force Base, agricultural water use diminished. As populations grew within the Antelope Valley, the shift to domestic water began. In 1963, the Palmdale Irrigation District agreed to purchase water from the newly planned State Water Project (SWP). This agreement ensures that PWD will have a sufficient imported water supply to meet projected population growth well into the future.

To accommodate the anticipated increase in water supply, bonds were sold to rebuild and expand Palmdale Lake (formerly known as Harold Reservoir) to a capacity of over 4,100 AF. This bond financing also allowed the construction of a new treatment facility adjacent to the Lake, allowing Palmdale Irrigation District to serve a broader area of Palmdale. In 1973, the Palmdale Irrigation District's name was changed to the more appropriate PWD. Founded as an irrigation district supplying water mainly to farms for agricultural use, PWD's boundaries expanded with Palmdale's rapid population growth, and PWD shifted to providing predominantly municipal and industrial water supply. PWD now acts as a retailer of water supplies for municipal, residential, irrigation, commercial, industrial, and institutional users.

As PWD continues to improve and add to its water distribution and storage facilities, PWD's primary service area now covers approximately 29,440 acres (46 square miles). The distribution system comprises approximately 400 miles of pipeline, multiple well sites, booster pumping stations, and water storage tanks, with a total potable water storage capacity exceeding 50 million gallons.

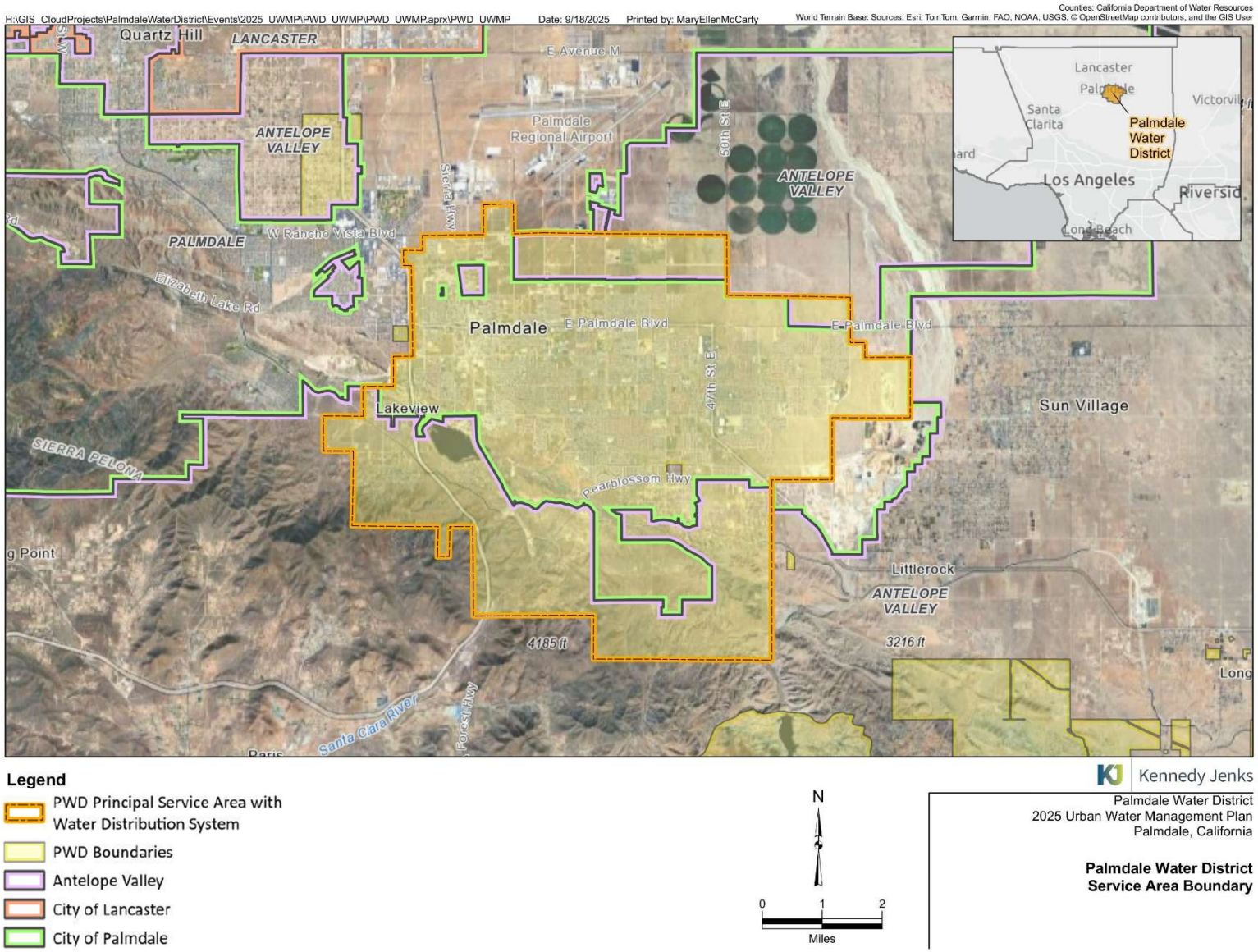


Figure 1-1: PWD Service Area

1.7 Population, Demographics, and Socioeconomics

1.7.1 Population

PWD currently serves 27,178 active connections out of 27,702 total connections, with the majority (97 percent) residential. Commercial and industrial connections account for approximately three (3) percent, fire service connections account for about 0.5 percent, and landscape irrigation connections account for about one (1) percent. Table 1-4 shows the historical service connections in 2020 and Table 1-5 shows the current service connections in 2025.

Table 1-4: Historical Service Connections (2020)

Customer Class	2020
Single Family Residential	25,240
Multi-Family Residential	543
Commercial/Institutional	670
Irrigation	244
Fire Service	151
Construction	21
Total	**26,869**

Source: District Public Water System Statistics.

Table 1-5: Existing Service Connections (2025)

Customer Class	2025
Single Family Residential	25,376
Multi-Family Residential	684
Commercial/Industrial	698
Irrigation	262
Fire Service	133
Construction	25
Total	**27,178**

Source: PWD 2025 Annual Consumption Data.

PWD has experienced a slight change in population growth over the past five (5) years, increasing by approximately 0.6 percent since 2020 (PWD 2020 UWMP). Table 1-6 shows the population of PWD from 2020 – 2025.

Table 1-6: Historical Population Estimates (2020 – 2025)

Year	2020[(a)]	2021	2022	2023	2024	2025[(b)]
Population Served[(c)]	126,062	126,210	126,359	126,507	126,656	126,804

Note:
(a) 2020 Census from the DWR online population tool (Appendix F).
(b) The 2025 population was derived from the 2024 PWD Electronic Annual Report and adjusted using the California Department of Finance population data.
(c) The population for 2021 through 2024 was interpolated from the 2020 and 2025 values.

Table 1-7 shows the current and projected service area population in five (5)-year increments to Year 2050. The current (2025) population estimate was determined using the most recent United States (US) census data and annually adjusted using the California Department of Finance (DOF) Demographic Research Unit's annual population change information. The population projections presented here for 2030 to 2050 are based on the 2024 Southern California Association of Governments (SCAG) population data for the City of Palmdale. Projections were determined by using the SCAG growth percentages for the City of Palmdale and applying them to the 2020 census population within the PWD boundary, as calculated with the DWR population tool.

Table 1-7: Population – Current and Projected *(DWR Table 3-1 R)*

Year	2025	2030	2035	2040	2045	2050
Population Served[(a)]	126,804	127,789	128,782	129,152	129,522	129,894

Notes:
(a) Source of 2030-2050 projections: City of Palmdale SCAG population data.

1.7.2 Demographics and Socioeconomics

Water service is provided to residential, commercial, industrial, and institutional customers. Water service is also provided for environmental and other uses, such as fire protection and landscaping. The total demand trend for water supplies is expected to continue to rise in the Antelope Valley (along with most of California) due to population growth, planned development, economic activity, environmental and water-quality needs, and regulatory requirements. Table 1-8 provides a breakdown of demographic and socioeconomic indicators for the City of Palmdale using the most recent US Census Bureau available. Furthermore, Disadvantaged Communities (DACs) are classified by average household income between $57,800 and $77,067, while Severely Disadvantaged Communities (SDACs) have average household incomes below $57,800. Figure 1-2 displays the portion of the PWD service area that is DACs and SDACs.

Table 1-8: Demographics for the City of Palmdale, CA[(a)]

Demographic Category	Value
Age and Sex	
Persons under 5 years, percent	6.4%
Persons under 18 years, percent	27.7%
Persons 65 years and over, percent	10.9%
Female persons, percent	52.2%
Race and Hispanic Origin	
White alone, percent	21.2%
Black or African American alone, percent	15.8%
American Indian and Alaska Native alone, percent	1.1%
Asian alone, percent	4.4%
Native Hawaiian and Other Pacific Islander alone, percent	0.1%
Two or More Races, percent	24.8%
Hispanic or Latino, percent	66.3%
Housing	
Owner-occupied housing unit rate, 2023	68.1%
Median value of owner-occupied housing units, 2023	$475,700
Median gross rent, 2023	$1,839
Families & Living Arrangements	
Households, 2023	47,380
Persons per household, 2023	3.5
Economy	
In civilian labor force, total, percent of population age 16 years+, 2023	64.1%
Persons in poverty, percent	16.4%

Note:
(a) Data taken from the US Census Bureau (census.gov)

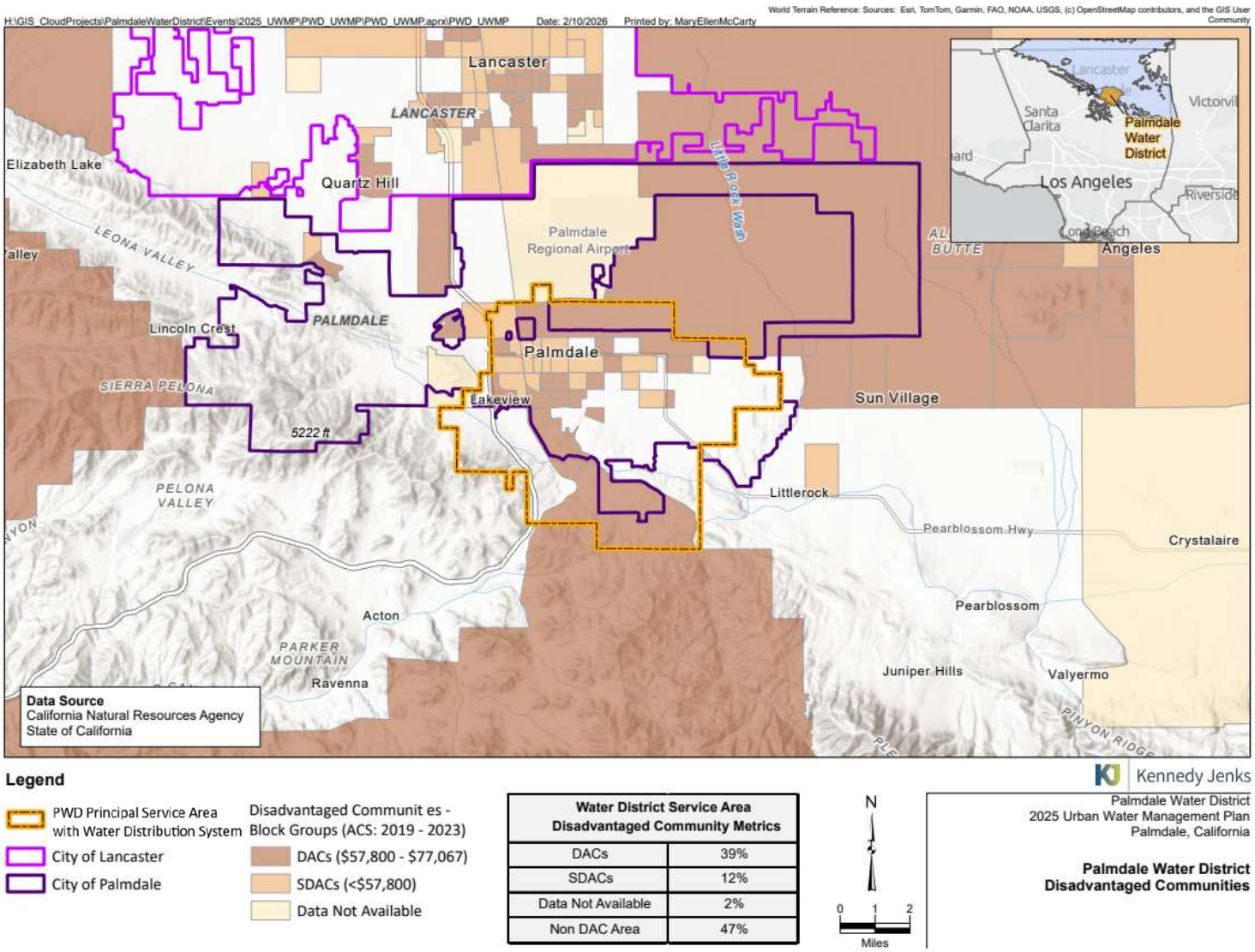


Figure 1-2: PWD Disadvantaged Communities

1.8 Land Uses in the Service Area

The breakdown of land uses in the service area was calculated using City of Palmdale land-use data. Existing land uses were determined from only developed parcels (not classified as "vacant"). Table 1-9 provides a breakdown of these land uses. Figure 1-3 shows the identified land use categories in the PWD service area and identifies which areas are developed/undeveloped.

Table 1-9: Existing Land Uses in PWD's Service Area[(a)]

Land Use Type	Acreage
Single Family Residential	13,814
Parks / Open Spaces	695
Multi-Family Residential	1,040
Agriculture / Natural Resources	2,836
Civil / Institutional	1,119
Industrial	5,895
Transportation / Utilities	2,851
Commercial	490
Total	**28,739**

Note:
(a) Data taken from the City of Palmdale land use data.

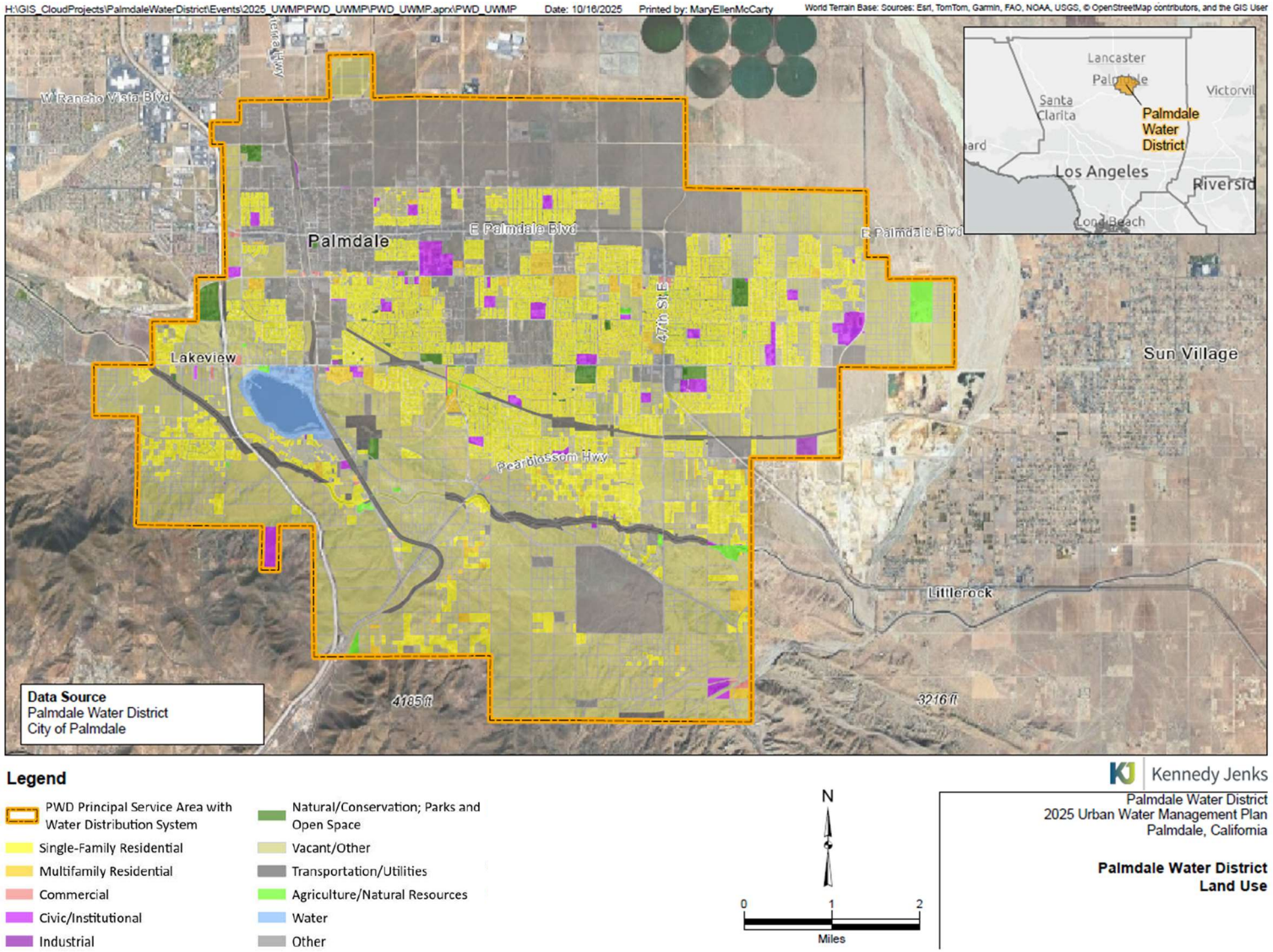


Figure 1-3: Land Use Map

1.9 Climate

The climate in the PWD service area is characterized by wide temperature fluctuations, hot summers, cold winters, strong winds, low humidity, and scant rainfall. Average temperatures in the summer months vary between 49 degrees Fahrenheit (°F) and 97°F. In the winter months, the average temperature ranges from 29 to 66°F. In any given year, temperatures can range from 6°F to 118°F. Most of the precipitation occurs during the winter and spring months. Over the last five years, monthly precipitation has averaged less than one (1) inch. Table 1-10 shows the average, monthly evapotranspiration (ETo), rainfall, and temperature data for PWD.

Table 1-10: Monthly Average Climate Data Summary

		Average Total	Average Temperature (°F)	
Month	Monthly ETo	Rainfall (inches)	Max	Min
January	2.62	0.84	60.26	30.71
February	3.12	1.01	63.68	31.78
March	4.71	0.98	66.17	36.51
April	6.82	0.52	75.91	42.62
May	8.31	0.07	81.95	49.36
June	9.23	0.05	91.77	56.59
July	10.04	0.01	97.89	63.32
August	8.91	0.46	97.74	61.90
September	6.45	0.15	91.45	54.21
October	4.54	0.05	81.65	43.44
November	2.98	0.27	68.79	32.23
December	2.09	0.64	59.95	29.4

Source: California Irrigation Management System (CIMIS) data provided from Station No. 197, Los Angeles Region, 2015 – 2025 http://www.cimis.water.ca.gov/cimis/welcome.jsp.

1.10 Potential Effects of Climate Change

A topic of growing interest and research for water planners and managers is climate change and the potential impacts on future water supplies in California. The DWR California Water Plan 2018 Update considers how climate change may affect water availability, water use, water quality, and ecosystem health, providing recommended actions, funding scenarios, and an investment strategy. The California Water Plan 2023 Update builds on previous updates by providing recommended actions to address climate urgency, strengthen watershed resilience, and achieve equity in water management.

Chapter 5 of the California Water Plan, “Focus on Supporting Watershed Resilience”, describes resilience planning and implementation through regional cross-sector initiatives, introducing a watershed resilience program administered by DWR that builds on existing collaborative relationships, planning, and investments to improve regional climate resilience. Chapter 8 of the California Water Plan, “Roadmap to Resilience,” provides recommendations and actions to develop resilient watershed planning, improve built and natural water infrastructure, incorporate

equitable solutions, and address a changing climate. This 2023 update increases understanding of uncertainties and vulnerabilities in California water management and outlines initiatives to address them. Future updates will continue testing response packages or combinations of resource management strategies for each scenario. These response packages help decision-makers, water managers, and planners develop Integrated Water Management (IRWM) plans that provide resource sustainability and investments in actions with more sustainable outcomes.

The 2023 Update provides recommended actions to support each of the identified goals of the plan. The goals are:

- Improve water data monitoring, reporting, and access
- Modernize observation and forecasting techniques
- Develop water accounting system, models, and decision-support tools
- Strengthen alignment of open data and analytical tools used by DWR, State agencies, and regional water programs
- Improve understanding of climate vulnerabilities and risks across the state
- Identify appropriate adaptation strategies

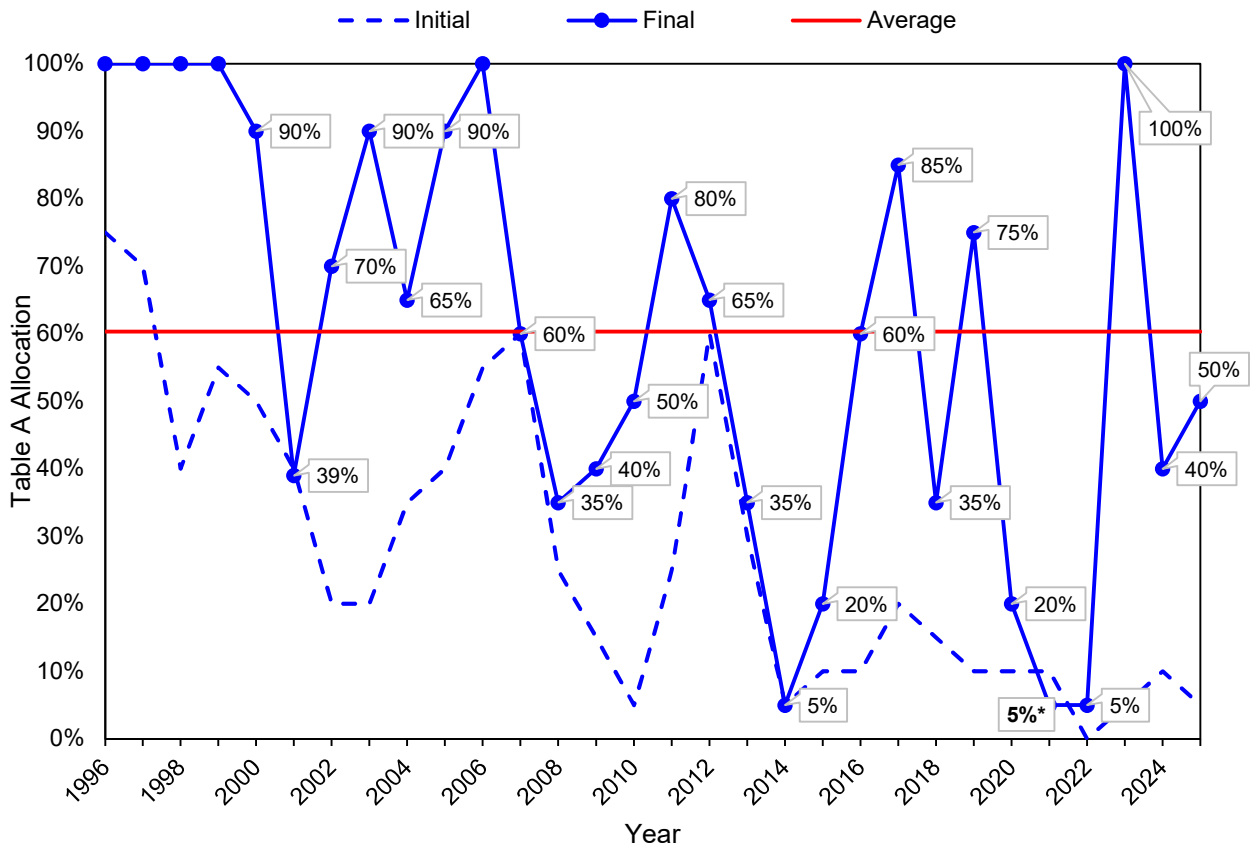
California faces additional water management challenges due to population growth, regulatory restrictions, and climate change. Climate change is of particular interest because of the range of possibilities and their potential impact on essential operations. The most likely scenarios involve increased temperatures, which will reduce the Sierra Nevada snowpack, shift more runoff to winter months, and accelerate sea level rise.

The other much-discussed climate change scenario is increased precipitation variability. Changes in precipitation patterns combined with the effects of sea level rise will especially compound the impacts on water supply reliability for the State Water Project and Central Valley Project supplies conveyed through the fragile levee system of the Sacramento-San Joaquin Delta. The primary factor identified as impacting Delta exports is “flow seasonal pattern shifts.” In addition to rising temperatures, precipitation timing and type will change, as will the volume of surface runoff. More precipitation will fall as rain rather than snow, resulting in increased runoff during winter and early spring.

Earlier snowmelt and more rain versus snow will also result in an increasing inability to capture that runoff for later use, and most of the extra flows in the winter and early spring in the Delta watershed will be released as floodwater, becoming the Delta outflow. Overall, water supply from snowpack is projected to decline by two-thirds in the State by 2050. Additionally, climate change may cause more frequent water quality degradation, such as salinity impacts from sea-level rise, which may also heavily affect delivery capability. By mid-century, Delta exports are anticipated to be considerably reduced, with possible reductions of up to 50 percent compared with historical droughts, and carryover storage may decline to one-fifth of levels during those droughts (Wang et al. 2018).

Over the past years, SWP supplies have become increasingly unreliable, with substantial curtailments occurring during dry years. As a result of increasing hydrologic variability

compounded with regulatory restrictions, the SWP is no longer capable of delivering full contractor entitlements on a routine basis. While 100 percent of SWP allocations were fulfilled in 2023, the general trend is downward. During recent droughts, SWP allocation was as low as five (5) percent (2014, 2021, 2022). Since then, deliveries have fluctuated, with lows of 20 percent in 2015 and 2020, and highs of 85 percent in 2017 and 100 percent in 2023 (Figure 1-4). While some of the reductions since 2005 were also driven by more stringent Delta regulations and operational changes, long-term projections indicate continued curtailments, largely due to climate influences.



Source: https://water.ca.gov/programs/state-water-project/management/swp-water-contractors

Figure 1-4: Initial versus Final Historical SWP Allocations from 1996-2025

Projections for future deliveries are outlined in the DWR State Water Project Delivery Capability Report (DCR) 2023 (DWR 2024) and the DCR Draft Delivery Capacity Report 2025. These reports consider the impacts on SWP deliveries due to climate change and other factors. In general, the 2023 DCR describes factors affecting the operation of the SWP, its long-term capability to provide water for beneficial use, and its current estimated delivery capability.

In addition, the DCR Technical Addendum includes information on climate change, hydrology, and sea-level rise in its analysis of SWP delivery capability under future conditions, specifically in a 2040 high-emissions scenario with 0.6 to 0.8 feet of sea-level rise. Under current conditions, the long-term average of SWP Table A water deliveries is estimated to be 54 percent, with deliveries of six (6) percent for a single dry year and 15 percent for multiple dry years (DCR 2025).

Deliveries reach up to 96 percent for a single wet year (DCR 2025). Under future conditions (2043, 50 percent level of concern (LOC), the minimum, average, and maximum SWP Table A amounts are two (2), 48, and 94 percent, respectively. Average delivery estimates are down from previous DCR estimates.

In addition to imported water supplies, climate change will also have increasing impacts on groundwater resources, which also serve as an important source of water supplies for PWD. While groundwater is often considered a drought-resistant water resource, warmer temperatures, changing precipitation patterns, and more extreme drought conditions can indeed impact groundwater supplies. These conditions can lead to reduced groundwater recharge and increased reliance on groundwater supplies when other sources, such as imported SWP supplies, are less available during drought. However, local impacts are uncertain, as average precipitation in the Antelope Valley may increase or decrease in the future, with implications for the sustainability of local groundwater operations.

Climate change impacts also affect water demand. Warmer temperatures and changes in precipitation patterns, as well as more frequent and extreme drought, are anticipated to increase water demand to support aquatic habitats and irrigation, including outdoor landscaping and irrigated agriculture, among other uses. Warmer temperatures increase plant evapotranspiration and reduce soil moisture, thereby increasing water demand. Outdoor water use is a critical component of water demand in Antelope Valley and in urban areas. On the other hand, drought conditions that impact water supply reliability may also require demand reductions to avoid shortages, thereby counteracting demand increases. Climate change impacts on water demand have been considered in this UWMP primarily based on demand trends during historical dry weather conditions.

Potential climate change effects on the Antelope Valley Region (Region) include an increase in average temperature by five (5) to six (6) degrees by 2050, extreme heat days above threshold by 2050 with 34 additional extreme heat days by 2100, 524 to 413 more hectares burned by 2050 due to wildfires, a slight 1.6 inch increased in annual precipitation by 2050, and a reduction in local snowpack from 0.7 inches to zero (0). These climate change impacts are expected to impact future water demands. Additional details on water demands are in Chapter 2 of this UWMP.

With a broad range of uncertainty facing the State and Antelope Valley regarding water supplies and demands, optimizing water resource management involves identifying combinations of resource management strategies for future scenarios of local and imported water supply and demand. This UWMP includes projections of water demands over the planning period as well as existing and future water supply options.

1.11 Climate Change Vulnerability Analysis

Identifying watershed characteristics that may be vulnerable to future climate change is the first step in assessing climate change vulnerabilities in the Region. In the context of this analysis, vulnerability is defined as the degree to which a system is exposed to, susceptible to, and able to cope with and adapt to the adverse effects of climate change, consistent with the definition in the Climate Change Handbook for Regional Water Planning (USEPA and DWR 2011).

Water-related resources considered important in the Region and potentially sensitive to future climate change include water demand, water supply, water quality, flooding, and ecosystems and

habitats. A qualitative assessment of each of these resources with respect to anticipated climate change impacts has been prepared in the 2019 Integrated Regional Water Management Plan for the Antelope Valley Region. The assessment identified high-priority vulnerability issues for the Region, including:

- Limited ability to meet summer demand decreases in seasonal reliability
- Increases in flash flooding due to more frequent and intense storms
- Lack of groundwater storage to buffer drought
- Decrease in imported water supply
- Invasive species can reduce the supply available
- Decreased water quality due to increased constituent concentrations

The assessment follows the climate change vulnerability checklist defined in the Climate Change Handbook for Regional Water Planning and highlights water-related resources important to the Region and sensitive to climate change.[1]

[1] Antelope Valley Integrated Regional Water Management Plan, 2019 update, Appendix H

Chapter 2: Water Use Characterization

2.1 Overview

This chapter describes historical and current water usage, including the methodology used to project future demands within the PWD service area. Water usage encompasses five (5) primary categories: residential, industrial/commercial, construction, irrigation, and fire service. To undertake this evaluation, existing land-use data and population projections were evaluated. This information was then compared with historical trends for new water service connections and customer water usage information. Additionally, the impacts of weather and water conservation are:

- Land use revisions
- New regulations
- Consumer choice
- Economic conditions
- Climate change
- Transportation needs
- Environmental factors
- Conservation programs
- Building and plumbing codes

The foregoing factors affect the amount of water needed, as well as the timing of when it is necessary and when it is available. During an economic recession, a downturn in development may lead to a subsequent slowdown in projected water demand. The projections in this UWMP do not attempt to forecast recessions or droughts, but to develop measures to help mitigate droughts. Likewise, there is no speculation about future building and plumbing codes or other regulatory changes; however, the projections include water conservation consistent with legislative requirements calling for a 20 percent reduction in per capita demand (SBx7-7), Making Conservation a California Way of Life, and California Assembly Bill 1572 (AB 1572) regarding reductions in non-functional turf.

Water use analysis combined growth projections with land-use and water-use data to forecast total water demand in future years. Water uses were separated into specific categories, and assumptions were made about each project's future use. Three (3) separate data sets were collected and included in the assessment: historical water use by land-use type, current population, and projected population.

2.2 Historical Water Use

The PWD only serves potable water supplies within its service area. A discussion on the availability and use of recycled water is provided in Chapter 5.

2.2.1 Historical Water Deliveries

Predicting future water use requires accurate historical water-use patterns and water usage records. PWD has meters on all residential, commercial, and landscape service connections in the service area and requires meters on all new connections. PWD provides potable water to customers within its service area and supplemental water to several customers outside its primary service area in accordance with agreements with the Antelope Valley-East Kern Water Agency (AVEK) and Littlerock Creek Irrigation District (LCID).

PWD water use categories are characterized as follows:

- Single-Family Residential – A single-family dwelling unit, generally a single lot containing a single home.
- Multi-Family Residential – Multiple dwelling units contained within one building or a complex of several buildings.
- Commercial/Industrial – Water customers conducting business, primarily reflecting water use for commercial retail. Industrial water users are typically manufacturers or processors of materials, and PWD serves one industrial customer.
- Irrigation – Water connections supplying water for landscape (residential, commercial, and institutional) and agricultural irrigation.
- Fire Service – Water users dedicated to fire mitigation and suppression, often provided by hydrants and water mains.
- Construction – Water required for construction, such as mixing concrete or for dust control.

Approximately 56 percent of water use in the PWD service area comes from the residential demand category based on average demand data from 2020 to 2025. Table 2-1 shows the historical (2020) and current (2025) water deliveries by demand category.

Table 2-1: Historical Water Deliveries (2020 and 2025) (AF)

Demand Category	2020	2025
Single Family	11,757	10,344
Multi-Family	1,555	2,030
Commercial and Industrial[(a)]	1,409	2,022
Irrigation	1,041	995
Fire Service	1,418	307
Construction	34	21
Sales to Other Agencies	1,300	5,305
Water Loss[(b)]	1,267	1,047
Total	**19,781**	**22,072**

Notes:
(a) Includes Institutional demands.
(b) Based on the average water loss from 2020 to 2024 from the annual Water Audit Reports.

Figure 2-1 displays that 2021 had the highest system demand that the PWD system has experienced in the past six (6) years. Since 2021, the system demand has trended downward. The demand projections discussed in Section 2.4 use the 2020-2025 average demand values rather than the 2025 historical demand. Figure 2-1 does not include water loss and sales.

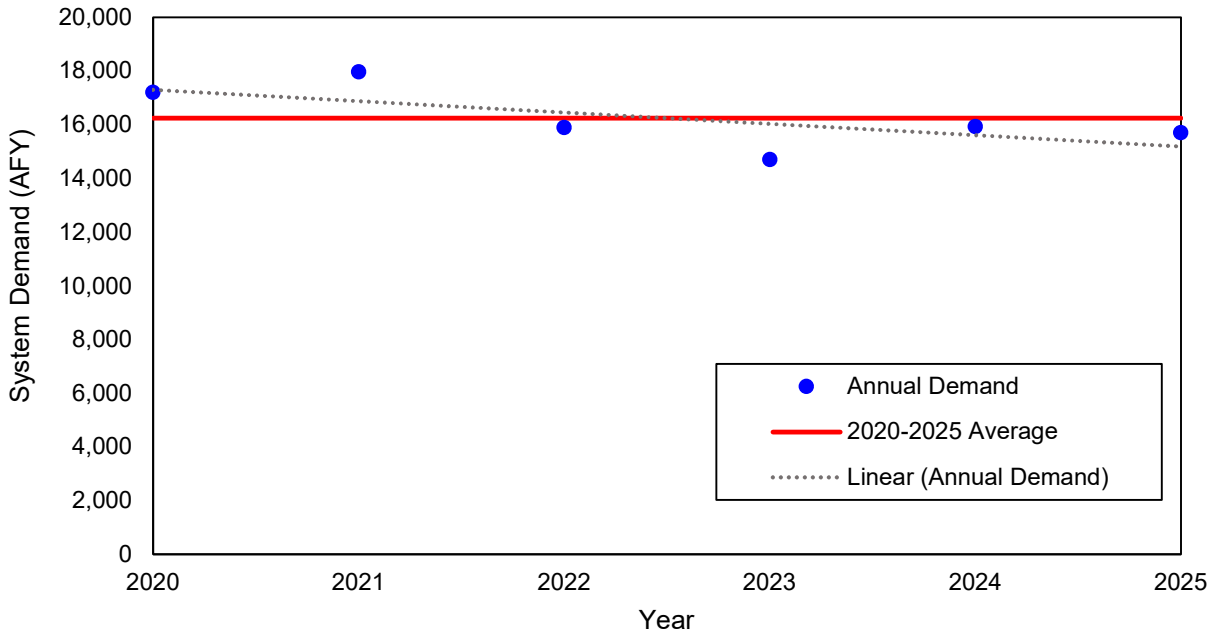


Figure 2-1: Historical Demands 2020 – 2025

2.2.2 Distribution System Losses

In addition to the traditional demand sources, system water losses impact water resources at PWD. This component is defined as the difference between water production and water sales. These water losses are from authorized, but unmetered sources, such as main flushing, or unauthorized sources, including leakage, illegal connections, and inaccurate flow meters.

The method suppliers use to estimate water loss is based on the American Water Works Association (AWWA) M36 Manual. Water loss estimates are available for calendar years 2020 – 2024. Table 2-2 summarizes water loss volumes. On average, over the last five (5) years, system water losses accounted for approximately six (6) percent of total production. Losses are expected to decline as PWD continues to replace old mainlines.

Table 2-2: Water Loss Audit Report Summary *(DWR Table 4-5 R)*

Reporting Year[(a)]	Volume of Water Losses[(b)] (AF)	Water Loss as % of Water Supplied
2020	1,267	6.6%
2021	1,063	5.6%
2022	982	5.8%
2023	805	5.0%
2024	1,118	6.3%

Notes:
(a) Calendar year.
(b) Sum of real and apparent losses based on AWWA water audit software output.

The Real Water Loss Standard has also been set by California Code of Regulations Title 23 Sections 980-986. The standard is based on either gallons per connection per day or gallons per mile of distribution system. Water loss has its own compliance deadline and is also part of the overall water use objective. Providing water-loss audits is already required, but compliance with the water-loss standard goes into effect on January 1, 2028.

In August 2025, the SWRCB released water-loss standards for all urban suppliers. The SWRCB Real Water Loss Standard for PWD is 20.5 gpscd, and the Apparent Water Loss Standard is 5.5 gpscd. From the most recent 2024 Water Loss Audit, PWD has a Total and Apparent Water Loss of 32.7 and 3.3 gpscd, respectively (DWR Table 4-6 R). Therefore, according to data from the SWRCB, PWD will be required to reduce its Real Water Loss by 37 percent by January 1, 2028, to comply with the standard.

2.2.3 Historical Sales and Deliveries to Other Water Agencies

Arrangements exist between PWD and both LCID and AVEK to provide treatment and delivery of raw water. Specifically, AVEK and LCID provide raw water to PWD, which is then treated and delivered to their customers. Additionally, an arrangement exists for PWD to sell SWP water to the Westside Water District. Table 2-3 summarizes the historical deliveries from 2020 to 2025.

As no additional PWD supplies are provided to these customers as part of these treatment and delivery arrangements, those deliveries do not affect PWD demands or supplies. Therefore, total PWD demands or supplies do not account for these deliveries. No other arrangements for delivery or sales to other agencies currently exist with PWD.

Table 2-3: Historical Water Deliveries to Other Systems (AF)

Agency	2020	2021	2022	2023	2024	2025
LCID	0	1	112	23	75	18
AVEK	1,300	1,497	1,281	600	753	1,287
Westside Water District	0	0	0	14,921	3,500	4,000
Total	**1,300**	**1,497**	**1,393**	**15,544**	**4,328**	**5,305**

Notes:
Data provided by PWD staff. As described above, these deliveries do not constitute sales to other agencies, and due to the pass-through nature of these supplies, they are not accounted for in total district demands. Values are rounded to the nearest whole number.

2.3 Projected Water Use

2.3.1 Water Delivery Projections Based on Land Use

Projected water deliveries in the PWD service area were estimated from historical and current demands, SCAG population projection data, and land-use data. Figure 1-3 shows the land use classifications of both the developed and undeveloped areas within the PWD service area.

A relationship was first developed between the projected population and the projected land uses of the undeveloped areas within the PWD service area, using the estimated 2025 population within the PWD service area and the total developed residential acreage within the PWD service area. The estimated 2025 population within the PWD service area is 126,804 based on California DOF data for the City of Palmdale (Table 1-6). Based on existing land-use data, there are approximately 14,854 developed residential acres within the PWD service area, equating to approximately nine (9) persons per acre of residential land. Therefore, for every nine (9) persons added to the PWD service area, one (1) acre of residential land will be developed. Approximately 93 percent of the existing developed residential acreage is single-family residential, and seven (7) percent is multi-family residential.

Using the average historical water deliveries by usage category from 2020 to 2025 (Table 2-1), combined with the existing developed land use data (Table 1-9), unit demand factors, with units of AFY per acre (AFY/Ac), for each usage category were developed. Table 2-4 shows the unit-demand factors developed for the demand projections analysis.

Table 2-4: Unit-Demand Factors

Usage Type	AFY/Ac[(a)]
Single Family Residential	0.79
Multi-Family Residential	1.71
Commercial and Industrial[(b)]	0.23
Irrigation[(c)]	0.35
Fire Service and Construction[(d)]	0.30

Notes:
(a) Based on 2020-2025 consumption and land use classifications.
(b) Includes Institutional demands.
(c) Includes Natural Resource Extraction demands.
(d) Includes Utility demands.

The land-use data of the remaining undeveloped parcels within the PWD service area were then analyzed to develop a ratio of undeveloped residential acreage to undeveloped commercial, industrial, and landscape acreage. Table 2-5 displays the undeveloped parcel acreages by land use and the area ratios.

Table 2-5: Remaining Undeveloped Acreage Within PWD Service Area by Usage Type

Usage Type	Acreage	Ratio to Residential Acreage
Single Family Residential	22,759	1.00
Multi-Family Residential	57	1.00
Commercial and Industrial[(a)]	23,379	1.02
Irrigation[(b)]	2,856	0.12
Fire Service and Construction[(c)]	500	0.02

Notes:
(a) Includes Institutional demands.
(b) Includes Natural Resource Extraction demands.
(c) Includes Utility demands.

Based on the land-use classifications of the remaining undeveloped parcels within the PWD service area, for each one (1) acre of residential area developed, approximately 1.02 acres of commercial and industrial, 0.12 acres of irrigation and natural resource extraction, and 0.02 acres of fire service and construction area will be developed. Since no specific timelines are available for when the various commercial, industrial, irrigation, or utility projects will be completed, this method assumes that acreages associated with each land use type will increase in parallel with one another from the year 2025 up to a projected "Buildout" of 2050, when all of the area inside of the PWD service area is assumed to be developed, at the ratios/rates identified above.

Given the projected population from Table 1-7, the calculated number of persons per residential acre, the unit demands from Table 2-4, and the area ratios for the remaining undeveloped parcels within the PWD service area from Table 2-5, water delivery projections were developed through 2050. Table 2-6 presents water delivery projections, assuming a linear growth rate for development between 2030 and 2050. Additionally, Table 2-6 includes a conservation allocation and projected demand, reflecting conservation resulting from recent reduction requirements described in Making Conservation a California Way of Life. Projected demand changes from AB 1572 were minimal and were not accounted for separately. Section 2.3.2 and Chapter 8 discuss conservation regulations and management efforts in greater detail.

Table 2-6: Projected Potable Water Deliveries (AF)

Demand Category	2030	2035	2040	2045	2050
Single Family Residential	10,430	10,510	10,550	10,580	10,610
Multi-Family Residential	2,040	2,060	2,060	2,070	2,070
Commercial and Industrial[(a)]	2,050	2,080	2,090	2,100	2,110
Irrigation[(b)]	1,000	1,000	1,010	1,010	1,010
Fire Service and Construction[(c)]	310	310	310	310	310
Sales to Other Agencies[(d)]	4,890	4,890	4,890	4,890	4,890
Water Loss©	1,300	1,300	1,400	1,400	1,400
Total Demand	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Assumed Conservation[(f)]	(3,010)	(4,410)	(5,110)	(5,020)	(4,900)
Total Demand with Conservation[(g)]	**19,020**	**17,740**	**17,200**	**17,340**	**17,500**

Notes: Values are rounded. Conservation is based on UWUO standards, and PWD will conduct additional analyses to evaluate necessary reductions for compliance. Adapted from DWR Table 4-2 R.
(a) Includes Institutional demands.
(b) Includes Natural Resource Extraction demands.
(c) Includes Utility demands.
(d) Projected sales to other agencies based on the average of 2020-2025.
(e) Based on average water loss from the past five (5) years of water audit reports.
(f) Difference between the projected demand and UWUO standard (Section 2.3.2 and Chapter 8).
(g) Projected demand resulting from UWUO standards.

The projected demand for 2050 is 22,400 AF. In comparison, the 2023 SWRP projected a slightly higher demand of 25,329 AF. The notably higher demand in the 2023 SWRP is likely due to the more aggressive population estimates. The 2023 SWRP predicts a population increase to 160,000 by 2045. The data from SCAG and DWR used in this UWMP suggest a slower population growth, reaching only about 129,522 by 2045. Population directly translates to projected demand. The methods used in this UWMP offer a more granular data analysis, providing more realistic population and demand estimates.

2.3.2 Effects of Codes, Standards, and Other Ordinances

Legislation provides that “if available and applicable” to PWD, demand projections must display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area. If such information is reported, the assessment will provide citations of the various codes, standards, ordinances, or transportation and land-use plans used to make the projections.

The SWRCB adopted the regulation “Making Conservation a California Way of Life” in July 2024 to establish standards for efficient water use. For compliance, PWD must develop an Urban Water Use Objective (UWUO) that equals the sum of residential water use (indoor and outdoor), commercial, industrial, and institutional (CII) landscape use, real water loss, incentives for potable reuse, temporary provisions, and approved variances. In the 2024/2025 reporting year, the UWUO for PWD was 13,370 AFY, and PWD met this with an actual water use of 13,343 AFY calculated using the UWUO methods. The 2025 UWMP overlaps with UWUO reporting beginning on January 1, 2025, and the UWUO standards become more stringent over time, as outlined in Appendix J of the PWD 2025 WSCP. Demand projections based on population and land use

alone do not allow PWD to comply with the UWUO standards; therefore, demand projections include a minimum conservation amount necessary for compliance. Chapter 8 discusses current and planned water demand management measures to enable PWD to adjust as required to comply with the UWUO in the future.

Additionally, water savings resulting from AB 1572 were considered when developing the demand projections. Per AB 1572, PWD must eliminate the use of potable water for irrigating non-functional turf, including medians, rights-of-way, and areas surrounding institutional, commercial, and industrial buildings. Single-family residential areas are not affected. Changes in projected demand due to AB 1572 are minimal.

Furthermore, the age of the housing stock and projected growth are expected to limit the potential for water savings from codes and standards. Most of the housing stock in the City of Palmdale is generally older, with approximately 48 percent of housing units built before 1990.[2] Figure 2-2 portrays an increase in the number of housing units in the City of Palmdale from 1990 to 2025. A rise occurred from 1990 to 2010, followed by a plateau, likely due to the economic recession and slowed growth. Standards and codes have increased the efficiency of water fixtures and appliances. PWD rebate programs, natural replacement of old or malfunctioning fixtures or appliances, retrofit upon resale, and remodels have also likely increased water efficiency in older housing units.

Overall, there is minimal projected growth within PWD. New developments would have to meet the latest water-efficiency standards, thereby presenting potential for water savings compared to the existing housing stock. However, anticipated minor growth will limit water savings from the new housing stock in the PWD service area.

[2] State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2020. Sacramento, California, May 2020. Available at: https://www.dof.ca.gov/Forecasting/Demographics/Estimates/

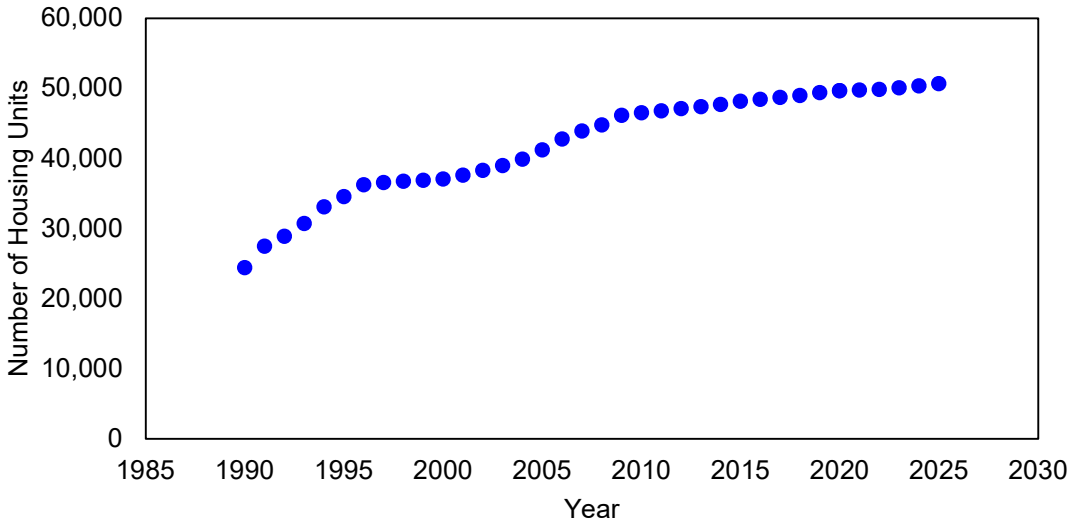


Figure 2-2: City of Palmdale Number of Housing Units From 1990 – 2025

2.3.3 Effects of Climate Change on Water Use

Climate change projections suggest that temperature and precipitation changes will impact water resources in California. For the Antelope Valley Region, climate change is expected to increase average temperatures by at least five (5) degrees (Antelope Valley IRWMP 2019), and precipitation is expected to remain relatively unchanged, with higher precipitation in the form of intense storms. Temperature increases with more precipitation falling as rain rather than snow can lead to reduced snowpack storage and reduced imported water deliveries, resulting in more frequent drought periods.

In response to past drought conditions, PWD implemented intensive conservation efforts and statewide conservation mandates in 2015 and has since maintained steady demands, with continued conservation efforts. PWD plans to continue implementing effective demand management measures, which are anticipated to impede major increases or rebounds in future per capita demand. Water conservation is the new normal for PWD customers, who continue to express interest in water conservation efforts and programs. Projected water demands based on the current population and existing land uses are therefore estimated to remain within the recent five (5)-year range.

Projections are based on historical demand, accounting for past dry periods, ongoing conservation efforts, and water savings resulting from conservation regulations within PWD and the City of Palmdale, such as the City's Water Conservation Ordinance (Ord. 1362), which outlines permanent, mandatory water conservation measures. As such, the baseline water use calculated over the recent five (5)-year period is considered to reasonably reflect regular water conservation practices and water savings related to codes and standards implemented to date.

2.4 Characteristic Five (5)-Year Water Use

As required for the 2025 UWMP cycle, the five (5)-year Drought Risk Assessment (DRA) mandates that water suppliers compare available water supplies with projected water use during a five (5)-year drought period. The first step in preparing the DRA is to estimate the expected gross water use without drought conditions over the next five (5) years (2026 to 2030). The DRA will not account for short-term demand reduction actions or other drought effects.

Table 2-7 presents estimated normal and dry year water use over the next five (5) years, based on factors anticipated to impact water use over the planning period, as described above. As noted above, baseline water demands account for ongoing water conservation programs and permanent water conservation measures in accordance with PWD ordinances. Increases in demand above 2025 levels and through 2030 are a result of anticipated growth in PWD's service area. System losses are assumed to be six (6) percent of total production, based on historical water-loss audit data.

Table 2-7: Projected Five-Year Water Use (2026 – 2030)

Use Type	2026	2027	2028	2029	2030
Single Family Residential	10,360	10,380	10,400	10,410	10,430
Multi-Family Residential	2,030	2,030	2,040	2,040	2,040
Commercial and Industrial[(a)]	2,030	2,030	2,040	2,040	2,050
Irrigation[(b)]	1,000	1,000	1,000	1,000	1,000
Fire Service and Construction[(c)]	310	310	310	310	310
Sales to Other Agencies[(d)]	4,890	4,890	4,890	4,890	4,890
Water Loss[(e)]	1,300	1,300	1,300	1,300	1,300
Total Demand	**21,920**	**21,940**	**21,980**	**21,990**	**22,020**
Assumed Conservation[(f)]	(950)	(1,900)	(2,100)	(2,550)	(3,010)
Total Demand with Conservation[(g)]	**21,000**	**20,040**	**19,880**	**19,440**	**19,020**

Notes: Values are rounded. Conservation is based on UWUO standards, and PWD will conduct additional analyses to evaluate necessary reductions for compliance.
(a) Includes Institutional demands.
(b) Includes Natural Resource Extraction demands.
(c) Includes Utility demands.
(d) Projected sales to other agencies based on the average of 2020-2025.
(e) Based on average water loss from the past five (5) years of water audit reports.
(f) Difference between the projected demand and UWUO standard (Section 2.3.2 and Chapter 8).
(g) Projected demand resulting from UWUO standards.

2.5 Lower Income Projected Water Demands

The UWMP Act requires that water use projections include projected water use for lower-income single- and multi-family residential households, as identified in the housing element of any city or county general plan in the service area of the supplier. Based on census data, households with an income less than 80 percent of the state's median household income made up approximately 51 percent of the PWD service area population from 2019 to 2023. For estimating water use projections, the proportion of lower-income households within PWD's service area is assumed to remain similar through 2050. Table 2-8 presents the related demands and is accounted for in the total water demands described in Section 2.4.

Table 2-8: Projections of Future Low-Income Household Water Use (AF)

Water Use	2030	2035	2040	2045	2050
Estimated Lower Income Water Use[(a)]	6,400	6,400	6,400	6,500	6,500

Notes: Values are rounded.
(a) Calculated as 51 percent of the single-family and multi-family residential demands presented in Table 2-6.

In addition, PWD will not deny or condition approval of water services, or reduce the number of services applied for by a proposed development that includes housing units affordable to lower-income households, unless one of the following occurs:

- PWD finds that it does not have sufficient water supply.
- PWD is subject to a compliance order issued by the SWRCB Division of Drinking Water (DDW) that prohibits new water connections.
- The applicant has failed to agree to reasonable terms and conditions relating to the provision of services.

2.6 UWUO Compliance

The 2018 Making Water Conservation a California Way of Life legislation requires urban water suppliers to comply with urban water-use objectives (UWUO) calculated by the SWRCB. The UWUO is based on a sum of six (6) major elements:

- Residential Indoor Standard
- Residential Outdoor Standard
- CII Outdoor Standard
- Real Water Loss
- Bonus Incentive for Potable Reuse
- Limited Approval Variances

The Residential Indoor Standard is currently set at 47 gallons per capita per day (gpcd), then will ramp down to 42 gpcd in 2030 and beyond. The Residential Outdoor Standard is 0.8 through 2030, then decreases to 0.63 in 2035. This standard drops again to 0.55 from January 1, 2040, onwards. Additionally, the CII Outdoor Standard aligns with the actual water use until 2028, after which it matches the Residential Outdoor Standard. Furthermore, the Real Water Loss Standard for PWD is 20.5 gallons per service connection per day (gpscd) for all evaluated years.

The UWUO from 2025 to 2050 was calculated using the Water Use Exploration Tool and DWR data. The Residential Indoor Water Use Budget was computed using the Residential Indoor Standard and projected population (eq. 1). The Residential Outdoor Water Use Budget was calculated using the Residential Outdoor Standard, anticipated residential landscape area, special landscape area, along with net reference and agricultural ETo. The net reference ETo and

agricultural ETo for PWD were 64.43 and 42.13 inches, respectively, from DWR data (eq. 2). The special landscape area includes pool area, spas, and similar water features, along with residential agriculture. It is also noted that the CII Water Use Budget only applies to CIIs with dedicated irrigation meters (DIMs). There is no available data on CIIs with DIMs for PWD; therefore, CIIs with DIMs are assumed to be equivalent to the actual water use.

Next, the Water Loss Budget was calculated using the Real Water Loss Standard and the number of connections (eq. 3). An additional 20 percent of irrigable not irrigated (INI) area, which is residential area that is not currently being irrigated but was in the past or can be in the future, based on DWR data, can also be included in the Residential Outdoor Water Use Budget, provided that the water supplier uses data from the DWR Landscape Area Measurements Project update released on December 6, 2023. This additional 20 percent INI is anticipated to be no longer allowed following recent updates to the DWR landscape measurement. Therefore, a 20 percent INI addition was applied to all years prior to 2028. Finally, the UWUO is calculated as the sum of the Residential Indoor Water Use Budget, Residential Outdoor Water Use Budget, and the Water Loss Budget (eq. 4).

(1) Residential Indoor Water Use Budget (AFY) = Residential Indoor Water Standard (gpcd) x population x days in a year x 3.1

(2) Residential Outdoor Water Use Budget (AFY) = Residential Outdoor Water Standard (gpcd) x [(residential landscape area (sf) x net ETo (in)) + (residential agricultural landscape x net agriculture ETo (in))] x 1.9

(3) Water Loss Budget (AFY) = Real Water Loss Standard (gpscd) x number of connections x days in a year x 3.1

(4) UWUO (AFY) = Residential Indoor Water Use Budget + Residential Outdoor Water Use Budget + CII Water Use Budget + Water Loss Budget + 20 percent INI Budget

The UWUO was then compared to the current and projected water demands in Table 2-6. Based on demand trends, projected standards are expected to require a 16 percent reduction in water use by 2028. From 2030 through 2050, the required reduction for UWUO compliance is anticipated to be 22-37 percent. Table 2-9 summarizes the calculated UWUO standard and estimated demand reductions required for compliance. Chapter 8 further describes these strategies and other actionable measures to manage water demand for compliance with UWUO standards. Recommended conservation strategies to ensure compliance through 2050 are to:

- Develop a phased conservation plan to reduce water demand 16-37 percent through 2050 via targeted conservation programs and customer outreach.
- Maintain updated landscape area data by coordinating with DWR to improve outdoor use estimates.
- Monitor water loss and prepare for 2028 standards.

Table 2-9: UWUO Standards, Compliance, and Water Savings Needed

Parameter (AFY)	2025	2028	2030	2035	2040	2045	2050
UWUO Standards[a, b]	12,680	11,650	11,080	10,330	10,007	10,120	10,236
Anticipated Residential Water Use[c]	13,390	13,470	13,540	13,670	13,730	13,800	13,860
Is UWUO Standard Met?[d]	No	No	No	No	No	No	No
Water Savings Needed	(760)	(2,100)	(3,010)	(4,410)	(5,110)	(5,020)	(4,900)

Notes: Values are rounded.

(a) The UWUO standards were calculated using equations 1-4, assuming growth in landscape area, connections, and residential demand is the same as population growth. CIIs with DIMs budget is assumed to be equivalent to reported actual water use. The Residential Indoor and Outdoor Water Use Standards use units of gallons per capita per day (gpcd). The Water Loss Standard uses the units of gallons per service connection per day (gpscd). The UWUO budget converts these standards to the common unit of acre-feet per year (AFY) by multiplying the Residential Indoor and Outdoor Water Use Standards by population (capita) and the Water Loss Standard by the number of service connections. Individual budgets are then multiplied to form the total UWUO budget.

(b) The 20 percent INI addition to the Residential Outdoor Water Use Budget is included until 2028, when DWR is anticipated to provide updated landscape measurements.

(c) These values include the estimated single and multi-family residential water use and water loss.

(d) UWUO standard includes the 20 percent INI addition before 2028.

(e) Difference between the UWUO standard with 20 percent INI addition and anticipated residential water use.

Chapter 3: SBx7-7 Baseline, 2020 Targets and 2025 Reporting

3.1 Existing and Targeted Per Capita Water Use

The Water Conservation Act of 2009 (SBx7-7) is one of four policy bills enacted as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). The Water Conservation Act of 2009 provides the regulatory framework to support the goal of achieving a statewide reduction in urban per capita water use of 20 percent by the year 2020, as described in the 20x2020 Water Conservation Plan (DWR, 2010). Consistent with SBx7-7, each water supplier must determine and report existing baseline water consumption, establish water-use targets in gallons per capita per day (gpcd), and compare actual water use against the target.

Baseline and target per capita water demand for PWD were calculated in accordance with Method No. 1 described in "*Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*" (DWR Methodologies, 2011). Despite the tie to 2020, SBx7-7 does not include a sunset clause, and PWD must continue to report on progress toward meeting water-use targets.

In the 2020 UWMP, PWD demonstrated that they met the 2020 Compliance Target by December 31, 2020. PWD has not experienced any changes to the service area that would modify the 2020 SBx7-7 Target. In the 2025 UWMP, PWD must show continued compliance with the 2020 targets. Compliance is done through review of the SBx7-7 Verification Tables and SBx7-7 Compliance Tables submitted with the 2020 UWMP (included as Appendix F in this UWMP).

3.2 Compliance Water Use Targets

Figure 3-1 visualizes the 2020 and 2025 SBx7-7 Compliance Targets and actual water use for PWD. The 2020 Compliance Target for PWD was 185 gpcd, and PWD met this target with an actual water use of 145 gpcd. The 2020 Compliance Target of 185 gpcd continues to apply in 2025. The calculated 2025 actual water use for PWD is 157 gpcd; therefore, PWD continues to comply. By continuing existing conservation methods and other approaches discussed in Chapter 8, Demand Management Measures, PWD plans to maintain progress of meeting the 20x2020 water use targets.

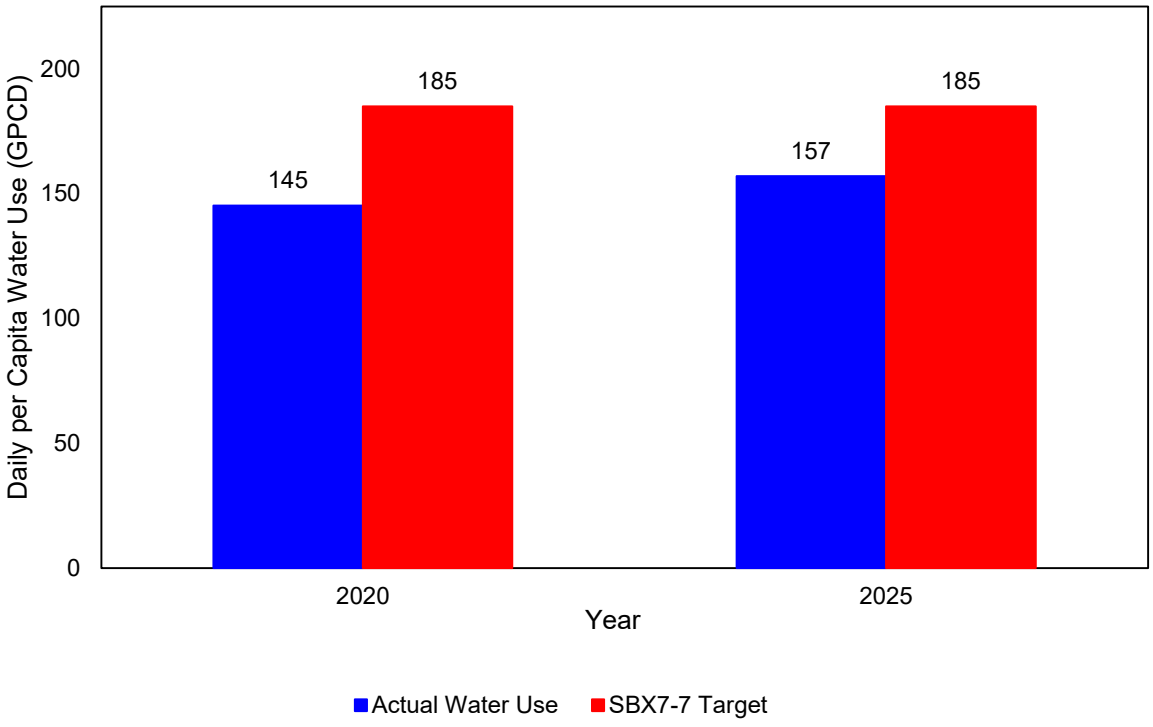


Figure 3-1: SBx7-7 Compliance Targets and Actual Water Use

Chapter 4: Water Supply

4.1 Overview

This section describes the water resources available to PWD for the 25 years covered by this UWMP. There are three (3) water sources for PWD: groundwater, local surface water from Littlerock Dam Reservoir, and imported water from the SWP. Groundwater is obtained from the Antelope Valley Groundwater Basin. This water is treated with chlorine disinfection and pumped directly into the PWD's potable distribution system. Imported water provided by the SWP is conveyed through the East Branch of the California Aqueduct to Lake Palmdale, which acts as a forebay for the PWD 35 million gallon per day (MGD) water treatment plant. Lake Palmdale can store approximately 4,129 AF of SWP and Littlerock Dam Reservoir water.

Recycled water supplies were developed to offset potable water demand and diversify the water supply. Additionally, PWD is exploring new sources of supply via groundwater banking and anticipates new supplies from transfer and exchange opportunities. There are no current or upcoming plans for PWD to use stormwater. Table 4-1 summarizes PWD supplies, which are discussed in more detail below. Both currently available and planned supplies are discussed.

This section also assesses supplies available to PWD in an average year, a single dry year, and during multiple dry years.

- An average year (also called a normal year) represents the median water supply available over a range of years.
- The single-dry year is the year with the lowest water supply available.
- The multiple-dry-year period is the lowest average available water supply for five (5) consecutive dry years.

The term "dry" is used throughout this section and in subsequent sections concerning water resources and reliability as a measure of supply availability. As used in this UWMP, dry years occur when supplies are lowest, and demands are highest, primarily when precipitation is below the long-term average. The impact each year on a particular source of supply may differ based on how low the precipitation is, or whether the year follows a high-precipitation year or another low-precipitation year.

For the SWP, a low-precipitation year may or may not affect supplies, depending on the volume of water in SWP storage at the beginning of the year. Also, dry conditions can differ geographically. For example, a dry year can be local to the Antelope Valley area (affecting local groundwater replenishment and production as well as yield from Littlerock Dam Reservoir), northern California (affecting SWP water deliveries), or statewide (affecting both local groundwater and the SWP). When the term "dry" is used in this UWMP, statewide drought conditions are assumed, impacting both local groundwater and SWP supplies concurrently.

Table 4-1: Summary of Current and Projected Supplies

		2025		2030	2035	2040	2045	2050
Existing Supplies	Detail	Actual Volume (AF)	Level of Treatment	Reasonably Available Volume (AF)	Reasonably Available Volume (AF)	Reasonably Available Volume (AF)	Reasonably Available Volume (AF)	Reasonably Available Volume (AF)
Groundwater[a] [b]	Antelope Valley Groundwater Basin	19,432	Drinking Water	4,360	4,360	4,360	4,360	4,360
Groundwater[c]	Return Flow Credit	3,844	Drinking Water	3,840	3,840	3,840	3,840	3,840
Groundwater[d]	Groundwater Augmentation	0	Drinking Water	0	5,050	5,050	5,050	5,050
Local Surface Water[e]	Littlerock Reservoir	3,687	Raw Water	4,000	4,000	4,000	4,000	4,000
Imported Water[f]	SWP Table A	9,770	Raw Water	11,250	10,990	10,740	10,480	10,220
Imported Water	Butte Transfer Agreement[g]	5,000	Raw Water	5,280	5,160	5,040	4,920	4,800
Recycled Water[g]	LACSD[i]	1	Recycled Water	1,600	1,600	1,600	1,600	1,600
	Total Supplies	**41,734**		**30,330**	**35,000**	**34,630**	**34,250**	**33,870**

Notes: Modified from DWR Table 6-9. Values are rounded.

(a) See Section 4.2.1.3 for details. These values are the sum of the groundwater production right and average federal allocation, assumed to extend through 2050. The 2025 volume includes 5,387 from groundwater pumping and 14,044 from the carryover balance, rounded.

(b) PWD's carryover balance of 13,666 AFY, which is an unused production right that can be carried forward through 2050 and is assumed to grow at an average of 1,800 AF annually. However, due to constraints on well infrastructure, the full amount is not reasonable to assume. Therefore, as stated in the 2020 UWMP, the reasonable available volume is assumed to remain at 4,210 AF.

(c) See Section 4.2.1.3 for details. These values represent the average return flows from 2016 to 2025.

(d) The Antelope Valley Pure Water Project is anticipated to come online by 2031.

(e) Projections based on an estimated 50 percent of average historical yield (50 percent of 8,000 AFY). See Section 4.2.2.2.

(f) Supplies are linearly adjusted between "existing" and "future conditions" found in the 2025 DCR Draft Technical Addendum.

(g) For details, see Chapter 5.

(h) Direct Reuse.

(i) See Chapter 5 for details.

4.2 Local Water Supplies

4.2.1 Groundwater

Groundwater pumping currently accounts for a significant proportion of PWD's water supply portfolio, about 31 percent of supplies over the last five (5) years. The groundwater supply for PWD is the Antelope Valley Groundwater Basin (DWR Basin No. 6-44, Bulletin 118) (Figure 4-1). There are 26 active wells currently drawing from the aquifer. This water is treated with chlorine disinfection and pumped directly into the potable distribution system. Since 2020, PWD has produced on average 6,870 AF of groundwater per year. The availability of groundwater supply for PWD shows minimal variation throughout the year.

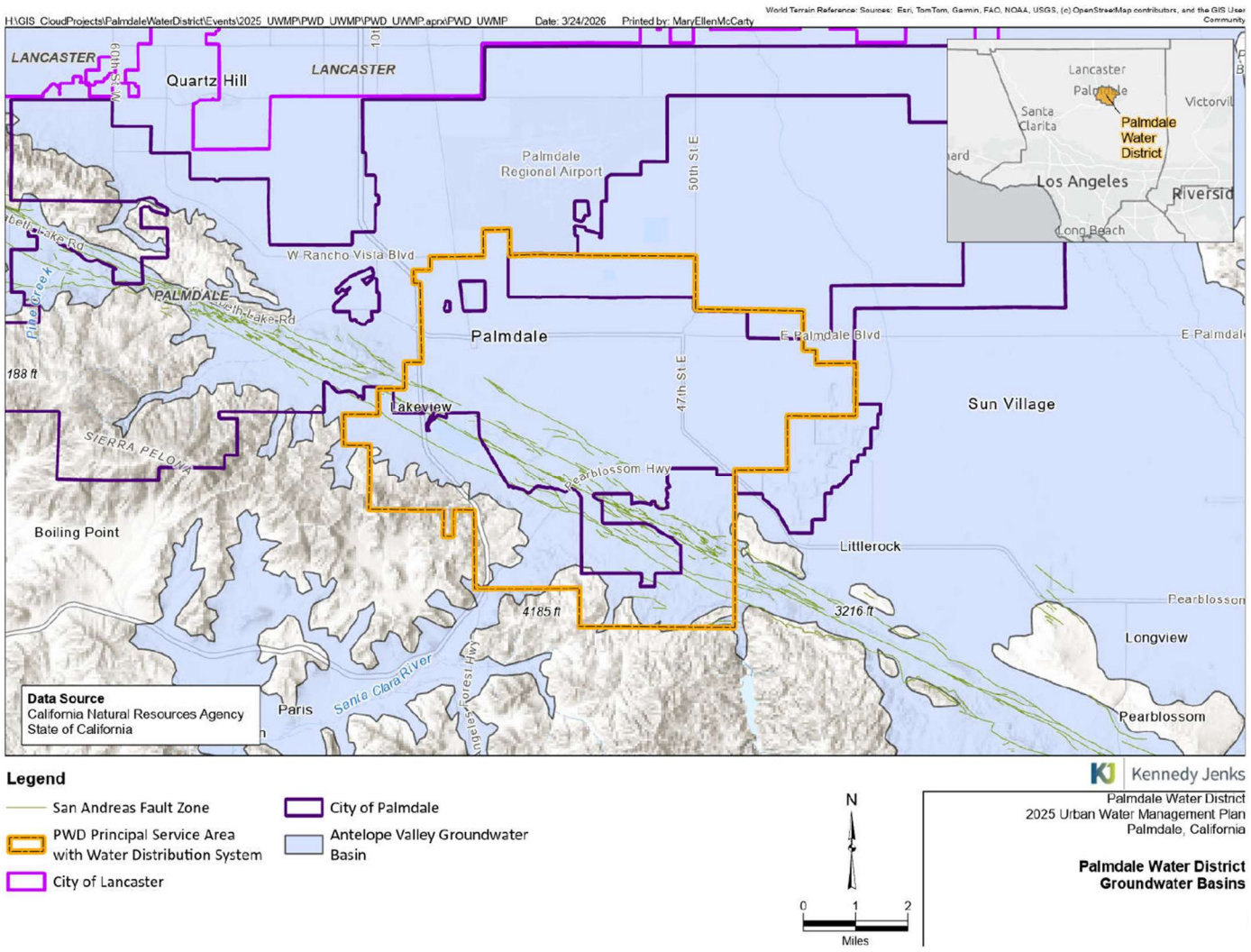
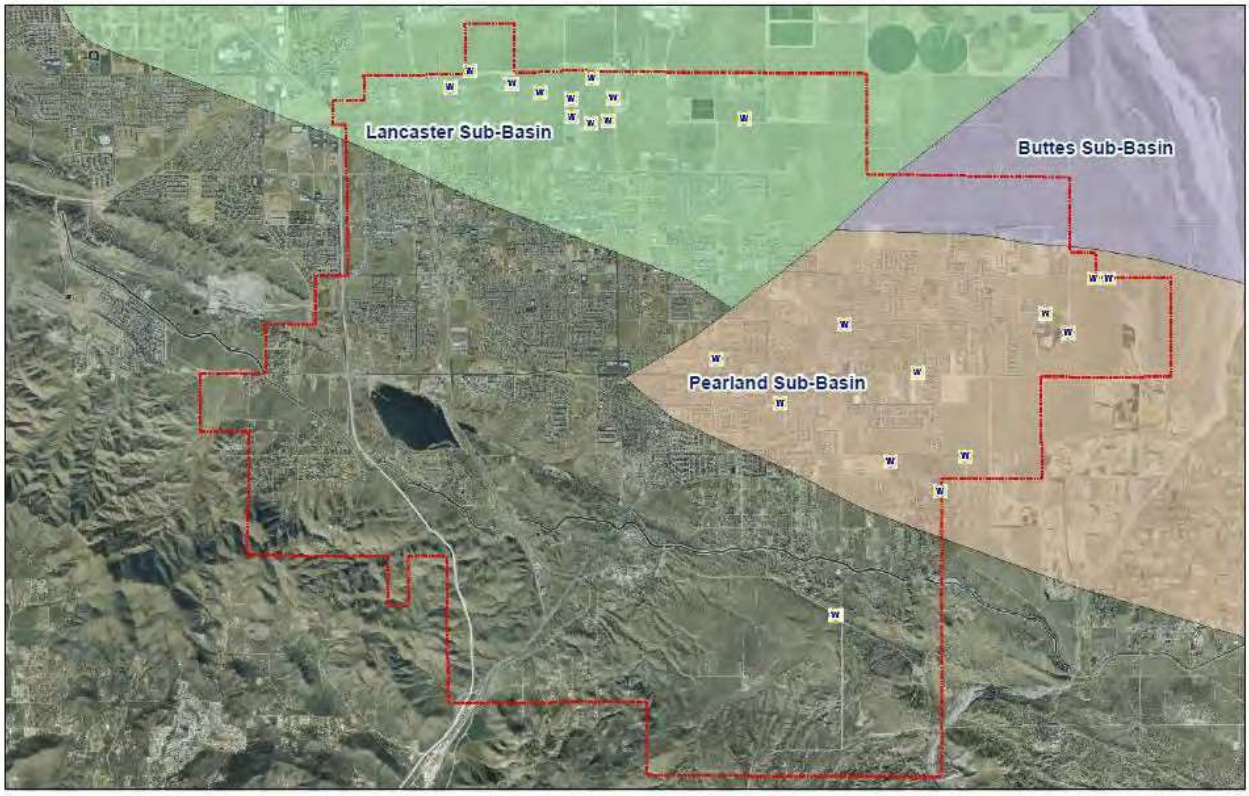


Figure 4-1: Groundwater Basins

4.2.1.1 Groundwater Subbasins

The US Geological Survey has identified a series of subbasins in the Antelope Valley Groundwater Basin. The PWD service area overlies the Lancaster, Buttes, and Pearland groundwater subbasins (Figure 4-2). The discontinuity or steepening of the groundwater surface as measured in wells determines the boundaries between the three (3) subbasins. Groundwater movement from the Pearland and Buttes subbasins to the Lancaster subbasin is slowed across these boundaries. The total amount of water transferred between these three (3) subbasins is unknown (RMC 2011).



Note: The red outline on this map is PWD's principal service area with a water distribution system. This map does not include the San Andreas Rift Zone.

Figure 4-2: Groundwater Subbasins

4.2.1.1.1 Lancaster Subbasin

The Lancaster subbasin is in the center of the Antelope Valley Groundwater Basin, with its southernmost portions lying within the PWD service area. Bedrock to the south and by the Buttes and Pearland subbasins to the east form a barrier along the Lancaster subbasin. Alluvium in this subbasin reaches a thickness of about 1,100 feet in the northern portion of the service area. Two (2) aquifer zones occur in this subbasin. The principal (upper) aquifer is confined and is several hundred feet thick within the PWD service area. Currently, PWD operates 11 wells in the Lancaster subbasin, pumping on average 5,623 AF annually from 2021-2025.

4.2.1.1.2 Buttes Subbasin

The Buttes subbasin is southeast of the Lancaster subbasin. A small portion underlies the PWD service area. PWD does not currently have any wells or pump water from the subbasin. The aquifer zone consists of approximately 150 feet of saturated alluvial deposits.

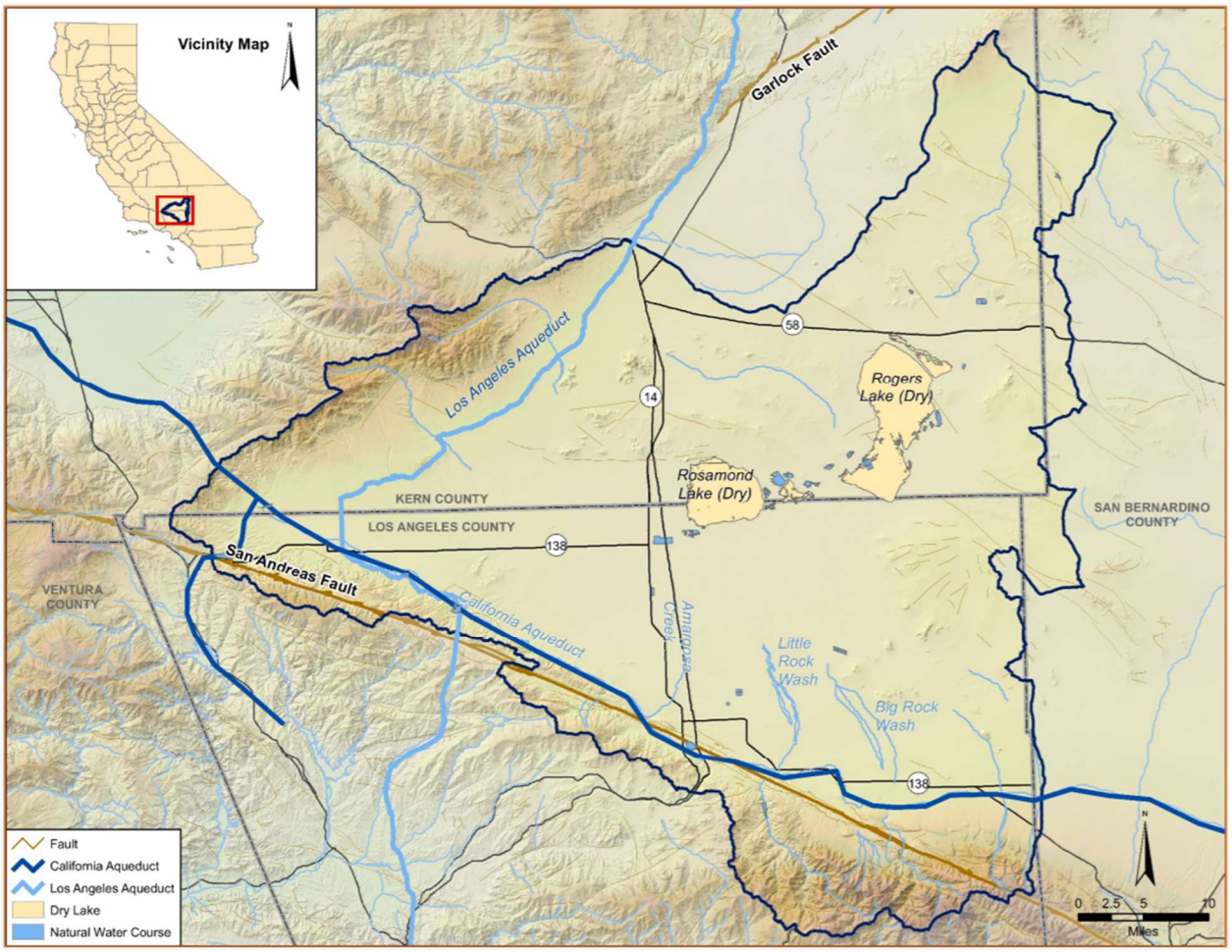
4.2.1.1.3 Pearland Subbasin

The Pearland subbasin is also southeast of the Lancaster Subbasin. This subbasin is bounded on the south by bedrock, on the north by a fault separating it from the Buttes subbasin, and on the west by the basin boundary. The northernmost portion of the subbasin lies within the PWD service area. A single aquifer zone occurs within the Pearland subbasin and consists of approximately 250 feet of saturated alluvial deposits. Currently, PWD operates 11 wells in the Pearland subbasin, pumping on average 1,067 AF annually from 2021-2025.

4.2.1.1.4 San Andreas Rift Zone

The San Andreas rift zone, known as the San Andreas Fault, has two (2) groundwater-bearing areas. These areas generally lie east and west of the intersection of Pearblossom Highway and Barrel Springs Road. The area to the east is a narrow valley with poor groundwater production potential. The area to the west is a broader valley with more extensive groundwater-bearing deposits. There are four (4) wells operated by PWD in the San Andreas rift zone, two (2) in the western area and two (2) in the eastern area, pumping on average 36 AF annually from 2021-2025.

The depth to water along the San Andreas rift zone is generally about 25 feet below ground surface, with a seasonal groundwater level fluctuation of 15 feet. Over the long term, groundwater levels in sediments within the fault zone have remained relatively stable, suggesting that the groundwater-bearing sediments have not been overdrawn. Figure 4-3 shows the San Andreas Fault, a rift zone.



Source: 2019 Antelope Valley Integrated Regional Water Management Plan

Figure 4-3: Antelope Valley Hydrologic Features

4.2.1.2 Historical Groundwater Pumping

Table 4-2 displays the total groundwater that PWD pumped from the Antelope Valley Groundwater Basin from 2020 to 2025. The PWD groundwater supplies accounted for an average of 31 percent of the PWD potable water supplies between 2020 and 2025. The projected groundwater pumping volumes are discussed in Section 4.2.1.3. As described in that section, no changes in the TPWD groundwater production right may occur for 17 years following the 2015 Antelope Valley Groundwater Basin Adjudication.

Table 4-2: Historical Pumping by PWD from the Antelope Valley Groundwater Basin (AF)

Basin Name	2021	2022	2023	2024	2025	Average
Lancaster	8,208	7,175	3,931	4,572	4,228	5,623
Pearland	1,606	1,333	542	740	1,117	1,067
San Andreas Rift Zone	29	32	33	42	42	36
Buttes	0	0	0	0	0	0
Total	9,844	8,540	4,506	5,354	5,387	6,726

Notes: Modified from DWR Table 6-1 R.
Source: PWD groundwater pumping spreadsheets; 2020-2025.

4.2.1.3 Adjudication and Projected Groundwater Pumping

Beginning in 2004, PWD became one of the entities involved in adjudicating groundwater rights for the Antelope Valley Groundwater Basin. As part of an adjudication process, the court determines all water rights in the basin and orders either groundwater extraction reduced to levels that will stabilize or reverse groundwater level declines, imported water purchased to replace over-extraction of groundwater, or both. The adjudication allows groundwater banking between entities and allows PWD to take any additional groundwater banked.

In late 2015, PWD and most parties involved agreed to a stipulatedjudgment for adjudicating the Antelope Valley Groundwater Basin. The adjudication resulted in a settlement and court-approved physical solution in March 2021. Per the judgment, PWD is receiving a groundwater production right of 2,770 AFY. The judgment remains under active appeal by one of the parties; however, PWD believes changes in its groundwater production rights will be insignificant due to the appeal. Prior to the judgment, PWD had an unquantified right to pump water for beneficial use and assumed projected pumping volumes of up to 12,000 AF based on pumping capacity.

PWD has fully complied with the judgment, pumping within its final adjudicated right since 2016. No changes to the PWD production right can be made for 10 years following the allowed ramp-down, resulting in 17 years with no changes to groundwater production rights.

Under the judgment (provided in Appendix G), PWD can purchase or lease groundwater rights from other parties. PWD purchased 150 AF of permanent production rights from Calandri Farms in 2026, increasing its groundwater production rights to 2,920 AFY. It is expected that additional rights will be available to the PWD throughout the period covered by this plan, if needed.

In addition to its groundwater production right, PWD is entitled to a share of the unused federal reserved right. The judgment grants the federal government the right to pump 7,600 AFY, but they do not use their full right. The amount that the federal government does not pump is allocated among certain public water suppliers. The average share of unused Federal Reserved Water Right Production allocated to PWD from 2016 to 2025 is 1,438 AFY. Although the federal government has the right to increase its pumping at any time, PWD believes it will be able to maintain this level of pumping until 2030. Table 4-3 displays projected groundwater pumping from the Antelope Valley Groundwater Basin.

Furthermore, PWD is entitled to a pumping allocation for the return flow credit of imported water used. The return flow credit is 39 percent of the SWP water utilized by PWD either for direct use

via the Leslie O. Carter Water Treatment Plant (WTP) or for recharge at existing or future banking projects. Return flows credits are available to PWD following delivery to Lake Palmdale or the Littlerock Creek Recharge Project. Return flow credits averaged 3,840 AFY from 2016 to 2025 and are projected to be available through 2050 for all water year types (Table 4-4).

A summary of the groundwater rights for PWD is listed below, and is assumed to be available through 2050:

- Adjudicated Right of 2,770 AFY
- Purchased Permanent Right of 150 AFY
- Share of unused Federal Reserved Water Right averaging 1,438 AFY
- Return Flow Credit averaging 3,840 AFY

Table 4-3: Projected Pumping of Adjudicated Right from the Antelope Valley Groundwater Basin (AF)

Antelope Valley	2030[(a)(b)]	2035	2040	2045	2050
Normal Year	4,360	4,360	4,360	4,360	4,360
Single Dry Year	4,360	4,360	4,360	4,360	4,360
Multiple Dry Year	4,360	4,360	4,360	4,360	4,360

Source: Adjudication Court Order Settlement, March 2021.
Notes: Modified from DWR Table 6-9 R. Values are rounded.
(a) PWD has complied with the lowered groundwater right, as stipulated by the adjudication judgment.
(b) Values include both the production right and the share of the unused federal reserved right.

Table 4-4: Projected Groundwater Return Flow Credits (AF)

Water Source	2030	2035	2040	2045	2050
Return Flow Credit[(a)]	3,840	3,840	3,840	3,840	3,840

Note: Modified from DWR Table 6-9.
(a) Assumes the same availability for all water year types.

4.2.1.4 Groundwater Management Plan

There is no regional groundwater management plan for the basin or PWD. The adjudication, however, involves a court-ordered physical solution, which is a plan for managing groundwater included in Appendix G. In 2014, the Sustainable Groundwater Management Act (SGMA) was passed. Under SGMA, local groundwater sustainability agencies must assess conditions in their local groundwater basins and adopt locally based management plans. For those basins DWR has identified as medium- to high-priority (the Antelope Valley Groundwater Basin is a low-priority basin), SGMA requires groundwater sustainability agencies to implement plans and achieve long-term groundwater sustainability. However, the legislation exempts the Antelope Valley Basin from the SGMA requirements.

4.2.1.5 Groundwater Reliability

The most recent version of the DWR Bulletin 118, California's Groundwater Update 2025, characterizes the Antelope Valley groundwater basin as high-priority and approved for a Groundwater Sustainability Plan (GSP). The 2015 version of Bulletin 118 listed the groundwater basin as not over-drafted and of low priority. Yet, prior versions of Bulletin 118 (1980 and 2003) identified the groundwater basin as over-drafted and high-priority. The court in the ongoing adjudication has determined that the basin is over-drafted, and PWD agrees with that finding. The adjudication judgment and physical solution will, over time, eliminate the long-term overdraft, either by reducing pumping or by purchasing replacement water. Section 4.2.1.3 provides additional details.

4.2.2 Local Surface Water

Littlerock Dam Reservoir was completed in 1924. This reservoir is the local surface water source for PWD and is in the southern region of the PWD service area. The design storage capacity of the Littlerock Dam Reservoir is approximately 2,800 AF.

The principal tributary streams supplying water to the PWD service area are Littlerock and Big Rock Creeks, flowing north from the San Gabriel Mountains along the southern boundary of PWD. Numerous intermittent streams also flow into the service area, but run-off is meager. The Littlerock Dam Reservoir intercepts flows from Littlerock and Santiago Canyons. Run-off from the 65-square-mile watershed in the Angeles National Forest to the reservoir is seasonal and varies widely from year to year. Although Littlerock Creek flows mainly during winter and spring months, Littlerock Dam Reservoir buffers these flows, making this water available year-round. An 8.5-mile-long open ditch transfers the water from the Littlerock Dam Reservoir to Lake Palmdale.

4.2.2.1 Local Surface Water Entitlements

Both PWD and LCID jointly hold long-standing water rights to divert 5,500 AFY from Littlerock Creek flows. Pursuant to an agreement between the two districts, the first 13 cubic feet per second (cfs) of creek flow is allocated to LCID, with the following modifications as described below. Any flow above 13 cfs is shared between the two districts, with 75 percent going to PWD and 25 percent to LCID. Each district is entitled to half of the reservoir storage capacity. From 2020 to 2025, PWD has drawn an average of 3,900 AF per year from Littlerock Dam Reservoir and anticipates continuing to use this amount (Table 4-5).

In 1992, a plan to rehabilitate the existing dam was implemented during renegotiations of the PWDs' Littlerock Creek Dam and Reservoir Rehabilitation, Operation and Maintenance agreement. The plan involved reinforcing the original multiple-arch construction with a roller-compacted concrete buttress, raising the dam by 12 feet to increase capacity, providing recreational facilities around the reservoir, and replacing the historic wooden trestle between the creek and the reservoir with an underground siphon. The entire project was completed by the end of 1995. This revised agreement gave PWD the authority to manage the reservoir.

Over the 50-year term of the agreement, LCID granted ownership of its water rights to PWD rather than contributing financial resources for the rehabilitation work. The most recent rehabilitation by PWD was a sediment removal project of over 1.16 million cubic yards of sediment that had built up behind the dam since 1992, reducing storage capacity by 500 AF. In any one calendar year,

LCID is currently entitled to purchase from PWD 1,000 AF of water or 25 percent of the yield from Littlerock Dam Reservoir, whichever is less.

4.2.2.2 Historical and Projected Local Surface Water Production

Table 4-5 displays historical and current production from the PWD at the Littlerock Dam Reservoir. Historically, local surface water production by PWD accounts for approximately three (3) to 24 percent of its water supply.

Table 4-6 projects the future local surface water production from Littlerock Dam Reservoir. For surface water from Littlerock Reservoir, PWD used the driest year on record, 2006. Thus, PWD expects to use 4,000 AF of its diversion rights under normal, single-dry, and multiple-dry year conditions. This amount is calculated as 50 percent of the average available yield from Littlerock Reservoir (50 percent of 8,000 AF) and is available for supply in all years.

Table 4-5: Historical Local Surface Water Supplies (AF)

Water Source	2020	2021	2022	2023	2024	2025	Average
Littlerock Reservoir	4,171	825	3,620	5,962	5,214	3,687	3,913

Source: PWD Public Water System Statistics.

Table 4-6: Projected Local Surface Water Supplies (AF)

Littlerock Reservoir	2030	2035	2040	2045	2050
Normal Year	4,000	4,000	4,000	4,000	4,000
Single Dry Year	4,000	4,000	4,000	4,000	4,000
Multiple Dry Year	4,000	4,000	4,000	4,000	4,000

Source: Personal Communication, PWD, April 2021.
Note: Modified from DWR Tables 6-9 R.

4.2.3 Imported Water

As one of 29 water agencies, commonly referred to as contractors, PWD has a SWP Water Supply Contract with DWR. The Water Supply Contract contains Table A, which lists the maximum amount of contract water supply that can be requested each year throughout the life of the contract. The total planned annual delivery capability of the SWP and the sum of all Contractors' maximum Table A amounts was originally 4.23 million AF. The initial SWP storage facilities were designed to meet Contractors' water demands in the early years of the SWP, with additional storage facilities planned as demands increased. However, essentially no additional SWP storage facilities have been constructed since the early 1970s.

The SWP conveyance facilities were generally designed to deliver maximum Table A amounts to all contractors. After the permanent retirement of some Table A amounts by agricultural contractors in 1996, the maximum Table A amounts of all SWP contractors now total about 4.13 million AF. Currently, PWD has a Table A amount of 21,300 AF. Over the last decade, PWD has

received between five (5) percent and 100 percent of its 21,300 AF contractual amount. In 2025, PWD has a 50 percent allocation of the Table A amount.

4.2.3.1 Historic Imported Water Deliveries

Table 4-7 outlines the recent SWP deliveries to PWD. Since 2020, imported water has accounted for an average of 43 percent of the PWD's water supply.

Table 4-7: Historical Imported Water Supplies (AF)

Water Source	2020	2021	2022	2023	2024	2025	Average
Imported SWP	8,348	10,126	4,205	7,290	7,196	9,770	7,823

Source: PWD Public Water System Statistics.

4.2.3.2 Projected Imported Water Supplies

Table 4-8 and Table 4-9 provide the projected imported water supplies for the planning period. The development of these projections is complex, and Sections 4.2.3.3 through 4.2.3.13 summarize the considerations used to develop imported water supply projections.

Table 4-8: PWD Imported Water Supply Reliability Average, Single-Dry Year, and Multiple-Dry Year Conditions

Imported SWP Supplies	2030	2035	2040	2045	2050
PWD Table A Allocation	21,300	21,300	21,300	21,300	21,300
Average Water Year[a]					
% of Table A Amount Available[b]	52.8%	51.6%	50.4%	49.2%	48.0%
Anticipated Deliverables (AF)	11,250	10,990	10,740	10,480	10,220
Single-Dry Year[c]					
% of Table A Amount Available	5.2%	4.4%	3.6%	2.8%	2.0%
Anticipated Deliveries (AF)	1,110	940	770	600	430
Multiple-Dry Year[d]					
% of Table A Amount Available	14.8%	14.6%	14.4%	14.2%	14.0%
Anticipated Deliveries (AF)	3,150	3,110	3,070	3,020	2,980

Note: Values are rounded.

(a) Supplies to the PWD are based on DWR analyses presented in its Draft 2025 State Water Project Delivery Capability Report, Technical Memorandum (2025 DCR), assuming existing SWP facilities and current regulatory and operational constraints.
(b) Supplies are linearly adjusted between "existing" and "future conditions" found in the 2025 DCR Draft Technical Memorandum.
(c) Based on a repeat of the worst-case historic single dry year of 1977 (2025 DCR).
(d) Supplies shown are annual averages over six (6) consecutive dry years, based on a repeat of the historic six (6)-year dry period of 1929-1934.

Table 4-9: Projected Imported SWP Water Supplies (AF)

Imported SWP Supplies	2030	2035	2040	2045	2050
Normal Year	11,250	10,990	10,740	10,480	10,220
Single-Dry Year	1,110	940	770	600	430
Multiple-Dry Year	3,150	3,110	3,070	3,020	2,980

Source: See Table 4-8.
Note: Modified from DWR Tables 6-9 R.

4.2.3.3 Imported Water Reliability

Supplies for SWP originate in Northern California, primarily from the Feather River watershed. The availability of these supplies depends on the amount of precipitation in the watershed and runoff into the Feather River, water use by others in the watershed, and the amount of water in storage in the SWP's Lake Oroville at the beginning of the year. Variability in the location, timing, amount, and form (rain or snow) of precipitation, as well as the dryness of the previous year, produces yearly variability in the amount of water that flows into Lake Oroville. However, Lake Oroville helps moderate that variability by storing high inflows in wetter years, which can supplement supplies in dry years with lower inflows.

As discussed in Section 1.9 and the DWR 2025 Delivery Capability Report (DCR), climate change adds further uncertainty to estimating the future availability of SWP source water. Current literature suggests that global warming may alter precipitation patterns in California. While various climate change models show differing effects, potential changes could include higher temperatures and more precipitation falling as rain rather than snow. Earlier snowmelt may also result in more runoff in winter rather than being spread out over winter and spring.

To assist SWP contractors, including PWD, and local planners in assessing the near and long-term availability of supplies from the SWP, DWR prepares its biennial SWP DCR. DWR issued its most recent update, the 2025 DCR, in December 2025. In this update, DWR provided SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their 2025 UWMPs. The 2025 DCR includes DWR's estimates of SWP water supply availability under both existing (2025) and future conditions (2043).

DWR's estimates of SWP deliveries are based on the CalSim 3 computer model that simulates monthly operations of the SWP and Central Valley Project systems. Key inputs to the model include the facilities included in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and contractor demands for both CVP and SWP water. In conducting its model studies, DWR must make assumptions regarding each of these key inputs.

In the draft 2025 DCR for its model study under existing conditions, DWR assumed: existing facilities, hydrologic inflows to the model based on 100 years of adjusted historical inflows (1921 through 2021) recent changes to climate, current regulatory and operational constraints including 2018 COA Amendment, 2024 biological opinions and 2024 SWP Incidental Take Permit, and SWP contractor demands at maximum Table A Amounts. The long-term average allocation reported in the draft 2025 DCR for the existing conditions study provides an appropriate estimate of the SWP water supply availability under current conditions.

To evaluate SWP supply availability under future conditions, the draft 2025 DCR included three (3) model studies representing hydrologic and sea-level rise conditions in 2043. The future condition studies used the same model assumptions as the study under existing conditions, but reflected changes expected from climate change, specifically projected temperature and precipitation changes centered around 2043 (2028 to 2057) and sea-level rise. The three (3) risk-informed climate scenarios (50 percent, 75 percent, and 95 percent level of concern (LOC)) for the year 2043 included in the draft 2025 DCR provide explicit representation of climate change uncertainties and improved transparency and information for local planners.

LOC is defined based on projected climate-informed system performance levels of April-to-July unimpaired runoff (Eight River Index) in the Delta watershed. The 50 percent LOC scenario represents a middle-of-the-road, or central-tendency, future for the SWP in 2043. The 75 percent LOC scenario represents a worse-than-average future for the SWP, and the 95 percent LOC represents much worse. In other words, a 95 percent LOC scenario depicts a future condition in which 95 percent of model-informed climate outcomes lead to improved SWP system reliability.

For long-term planning purposes of this UWMP, the long-term average allocations reported for the 50 percent LOC in the 2043 study from the draft 2025 DCR are the most appropriate estimate of average future SWP water supply availability. The 75 percent and 95 percent LOC studies can be used to better understand the sensitivity of the water supply portfolio to projected changes in future SWP supplies.

4.2.3.3.1 Lowest SWP Water Supply Allocation

DWR's 2023 Delivery Capability Report indicates that the modeled single dry year SWP water supply allocation is four (4) percent, and the draft 2025 Delivery Capability Report indicates six (6) percent under the existing conditions. Historically, the lowest SWP allocations were at five (5) percent in 2014, 2021, and 2022. Due to extraordinarily dry conditions in 2021 and 2022, the initial 2022 SWP allocation was a historically low zero (0) percent of Table A amounts, which later increased to five (5) percent in March 2022, resulting in the lowest-ever final total SWP water supply allocation. Historic dry conditions led to the low SWP water supply allocations in 2021 and 2022. Such conditions, although possible, are unlikely to occur. The draft 2025 Delivery Capability Report, which considers recent changes in the climate, indicates an 11 percent probability of annual SWP Table A deliveries between zero (0) and 500 AF, translating to allocations of 12 percent or less.

By October 1 each year, SWP contractors submit their requests for SWP supplies for the following calendar year. By December 1, DWR estimates the available water supply for the following year and sets an initial supply allocation based on the total of all contractors' requests, current reservoir storage, forecasted hydrology through the next year, and target reservoir storage for the end of the next year. The most uncertain of these factors is the forecasted hydrology. In setting water supply allocations, DWR uses a conservative 90 percent hydrologic forecast, in which nine (9) out of 10 years are wetter and one (1) out of 10 years drier than assumed.

DWR re-evaluates its estimate of available supplies throughout the winter and early spring runoff season, using updated reservoir storage and hydrologic forecasts, and revises SWP supply allocations as warranted. Since most of California's annual precipitation falls in the winter and early spring, by the end of spring, the supply available for the year is much more certain, and in most years, DWR issues its final SWP allocation by this time. While most of the water supply is

certain by this time, runoff in the late fall remains somewhat variable as the next year's runoff season begins. A drier-than-forecasted fall can result in missing end-of-year reservoir storage targets, leaving less water available the following year.

California is known to experience the highest inter-annual variability in hydrology across the entire United States. While droughts occur, with science-based adjustments to regulatory requirements and better water management, SWP water supply reliability is expected to improve, even in drought years. Thus, for SWP contractors such as PWD, the assumption is that a five (5) percent allocation represents the "worst-case" scenario.

4.2.3.3.2 SWP Contract Amendments for 2025 UMWP

Water supply is provided by DWR to 29 SWP contractors in exchange for contractor payment of all costs associated with providing that supply. Each contractor and DWR entered substantially uniform long-term water supply contracts in the 1960s with 75-year terms. The first contract terminates in 2035, and most of the remaining terminate within three (3) years after that.

Most of the capital costs associated with the development and maintenance of the SWP are financed using revenue bonds. These bonds have historically been sold with 30-year terms. It has become more challenging in recent years to finance capital expenditures for the SWP affordably because the bonds used to fund these expenditures have terms that end in 2035, less than 30 years from now. To ensure the continued affordability of debt service for contractors, it was necessary to extend the contract termination to allow DWR to continue selling 30-year term bonds.

Public negotiations to extend the contracts took place between DWR and the contractors during 2013 and 2014. An Agreement in Principle (AIP) was reached, meeting the requirements of the California Environmental Quality Act (CEQA) (Notice of Preparation dated September 12, 2014). On December 11, 2018, the DWR Director approved the Water Supply Contract Extension Project. In accordance with CEQA, DWR also filed its Notice of Determination for the project with the Governor's Office of Planning and Research. In addition, DWR filed an action in Sacramento County Superior Court to validate the Contract Extension Amendments (https://water.ca.gov/Programs/State-Water-Project/Management/Water-Supply-Contract-Extension). After CEQA was completed and contract language was finalized, DWR and 18 contractors executed the Extension Amendment. The Extension Amendment extends the contracts through 2085 and improves the overall financial integrity and management of the project. The Extension Amendment is subject to a validation action and two CEQA lawsuits.

4.2.3.3.3 Water Management Tools

In a December 2017 Notice to Contractors, DWR indicated its desire to supplement and clarify the water management tools through this public process. Seeking greater flexibility to manage the system in response to changes in hydrology and additional constraints on the operation of the SWP and PWAs, DWR conducted public negotiations in 2017 to enhance water management tools (WMT Amendment). The goal was to develop concepts to supplement and clarify the existing SWP water transfer and exchange provisions, thereby strengthening water management among the PWAs. Importantly, the transfers and exchanges provided for in the contract amendment are limited to those amongst the PWAs with SWP contracts.

In June 2018, PWAs and DWR completed an Agreement in Principle (AIP) that included specific principles to accomplish this goal. These principles included adding contract language that establishes a process for transparency in transfers and exchanges. The principles also include amending existing contract provisions to provide flexibility for single and multi-year non-permanent water transfers, allowing PWAs to set terms of compensation for transfers and exchanges, and providing for the limited transfer of carryover and Article 21 water.

The AIP for water management provisions was finalized on May 20, 2019, and a draft Environmental Impact Report (DEIR) was developed. In December 2023, the Final Environmental Impact Report (EIR) was circulated for the contract amendments. The Final EIR was prepared to comply with the requirements of the CEQA and includes information on (1) Decisions regarding the Delta Conveyance Project Final Environmental Impact Report, (2) Notice of Determination, (3) Delta Conveyance Project Findings of Fact and Statement of Overriding Considerations, and (4) Delta Conveyance Project Mitigation Monitoring and Reporting Program.

4.2.3.3.4 Delta Conveyance Project

Consistent with Executive Order N-10-19, in early 2019, the state announced a new single-tunnel project that proposed a set of new diversion intakes along the Sacramento River in the north Delta for SWP. In 2019, the California Department of Water Resources (DWR) initiated planning and environmental review for a single-tunnel Delta Conveyance Project (DCP) to protect the reliability of State Water Project (SWP) supplies from the effects of climate change and seismic events, among other risks. On December 21, 2023, DWR certified the Environmental Impact Report and approved the DCP, selecting “Bethany Reservoir Alignment” for further engineering, design, and permitting.

DWR received the Incidental Take Permit for the DCP from the California Department of Fish and Wildlife in February 2025. DWR is in the process of obtaining a change in point of diversion permit from the State Water Resources Control Board to add the two (2) proposed DCP diversion intakes to the SWP water rights. In October 2025, DWR certified that DCP is consistent with the Delta Plan. DWR is continuing with design refinements, environmental planning, and permitting through 2026-2027, including resolving appeals related to its Delta Plan certification. DCP will potentially be operational in 2045 following extensive planning, permitting, and construction.

DWR estimates of SWP supply reliability in its draft 2025 Delivery Capability Report are based on existing facilities and do not include the proposed DCP. Since this UWMP uses DWR’s draft 2025 Delivery Capability Report to estimate SWP supplies at 2045, any changes in SWP supply reliability that would result from the proposed DCP are not included in this UWMP. Most recent estimates from DWR indicate that DCP is expected to increase SWP Delta exports by about 467,000 AFY on a long-term average under current climate conditions.

4.2.3.3.5 Coordinated Operations Agreement (COA)

The Coordinated Operation Agreement (COA) was originally signed in 1986 and defines how the state and federal water projects share the available water supply, including senior water-right demands, water-quality requirements, and environmental flow requirements imposed by regulatory agencies. The agreement calls for periodic reviews to determine whether updates are needed, considering changed conditions. After completing a joint review process, DWR and

Reclamation agreed in December 2018 to an addendum to the COA to reflect updated water-quality regulations, biological opinions, and hydrology since the agreement was signed.

The COA Addendum included changes to the percentages for sharing responsibilities for in-basin uses and for sharing available export capacity, as well as to the periodic review process. The 1986 Agreement required CVP to meet 75 percent of the in-basin uses and the SWP to meet 25 percent. The COA Addendum now distinguishes responsibility by water year type, and CVP responsibilities range from 80 percent in wet years to 60 percent in critical years. SWP responsibility ranges from 20 percent in wet years to 40 percent in critical years.

Additionally, the COA Addendum changed the sharing of export capacity. Previously, export capacity was shared 50 percent to CVP and 50 percent to SWP. The COA addendum changed this formula to 65 percent CVP and 35 percent SWP during balanced conditions in the Delta, and 60 percent CVP and 40 percent SWP during excess conditions. Overall, based on modeling, these changes result in an average reduction of approximately 115,000 AFY in long-term SWP supplies. Finally, the 2018 COA Addendum updated the periodic review process to require review of the COA Agreement and Addendum every five (5) years.

4.2.3.3.6 Emergency Freshwater Pathway Description (Sacramento-San Joaquin Delta)

An estimate by DWR indicates that in the event of a major earthquake in or near the Delta, water supplies could be interrupted for up to three (3) years, posing a significant and unacceptable risk to the California business economy. A post-event strategy would provide the necessary water supply protection to avert this catastrophe. Such a plan has been coordinated by DWR, Corps of Engineers (Corps), United States Bureau of Reclamation (USBR), California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California, and the State Water Contractors.

4.2.3.3.7 DWR Delta Flood Emergency Management Plan

The Delta Flood Emergency Management Plan (DWR 2018) provides strategies responding to Delta levee failures, up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and saltwater intrusion is high, resulting in curtailment of export operations. Under these severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta, along the Middle River and Victoria Canal, to the export pumps in the south Delta.

The plan includes prepositioning emergency construction materials at existing and new stockpile and warehouse sites in the Delta and developing tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, levee repair timeline, and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal, and local emergency response agencies. DWR, in conjunction with local agencies, the Corps, and Cal OES, conducts tabletop and field exercises to test and revise the plan under real-time conditions.

The Corps and DWR provide vital Delta-region response to flood and earthquake emergencies, complementary to Cal OES operations. These agencies perform under a unified command structure and response and recovery framework. The Northern California Catastrophic Flood Response Plan (Cal OES 2018) incorporates the DWR Delta Flood Emergency Management

Plan. The Delta Emergency Operations Integration Plan (DWR and USACE 2019) integrates personnel and resources during emergency operations.

4.2.3.3.8 Pathway Implementation Timeline

The Delta Flood Emergency Management Plan has found that when using prepositioned stockpiles of rock, sheet pile, and other materials, multiple earthquake-generated levee breaches and levee slumping along the freshwater pathway can be repaired within six (6) months. A supplemental report (Levee Repair, Channel Barrier and Transfer Facility Concept Analyses to Support Emergency Preparedness Planning (M&N August 2007)) evaluated, among other options, the placement of sheet pile to close levee breaches, as a redundant method if competing uses limit available rock. The stockpiling of sheet pile is vital should more extreme emergencies warrant parallel and multiple repair techniques for deep levee breaches. Stockpiles of sheet pile and rock to repair deep breaches and an array of levee slumping restoration materials are stored at DWR and Corps stockpile sites and warehouses in the Delta.

4.2.3.3.9 Emergency Stockpile Sites and Materials

Land acquired by DWR at Rio Vista and Stockton serves as major emergency stockpile sites, which are located and designed for rapid response to levee emergencies. The sites provide large loading facilities, open storage areas, and new and existing warehousing for emergency flood-fighting materials, which augment existing warehousing facilities throughout the Delta. The Corps maintains warehousing facilities in the Delta to store materials for levee-freeboard restoration, which can be supplemented upon request with other stockpiles in the US. Prepositioned rock and sheet piles are used to close deep levee breaches. Warehoused materials for rapid restoration of slumped levees include muscle (k-rail) walls, super sacks, caged rock containers, sandbags, stakes, and plastic tarps. Stockpiles will be augmented as materials are used.

4.2.3.3.10 Emergency Response Drills

Earthquake-initiated multiple island failures will mobilize DWR and Corps resources to perform flood-fighting activities in the Delta region within an overall Cal OES framework. In these events, DWR and the Corps integrate personnel and resources to execute flood fight plans through the Delta Emergency Operations Integration Plan (DWR and USACE 2019). The Corps, DWR, and local agencies perform emergency exercises focusing on communication readiness and testing mobile apps for information collection and dissemination. The exercises train personnel, test the readiness of emergency preparedness and response capabilities under unified command, and provide information to help revise and improve plans.

4.2.3.3.11 Levee Improvements and Prioritization

The DWR Delta Levees Subventions and Special Projects Programs have prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta. These efforts complement the Delta Flood Emergency Management Plan, which, along with prepositioned emergency flood-fighting materials, ensure reasonable seismic performance of levees and timely restoration after a severe earthquake. These programs successfully implement a coordinated emergency preparedness strategy to benefit SWP and CVP export systems.

Significant improvements to the central and south Delta levee systems along the Old and Middle Rivers began in 2010 and continue to the present. These complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria and Union Islands. Levee improvements along the Middle River emergency freshwater pathway and Old River include crest raising, crest widening, landside slope fill, and toe berms, which enhance seismic stability, reduce levee slumping, and create a more robust flood-fighting platform. Urban agencies, including the Metropolitan, Contra Costa Water District, East Bay Municipal Utility District, and others, have participated in levee improvement projects along or near the Old and Middle River corridors.

4.2.3.3.12 B. F. Sisk Dam Raise and San Luis Reservoir Expansion

The USBR and San Luis & Delta Mendota Water Authority (SLDMWA) are proposing to raise Sisk Dam and increase storage capacity in San Luis Reservoir. The proposed 10-foot dam raise is in addition to the ongoing 12-foot raise of Sisk Dam to improve dam safety and would expand San Luis Reservoir storage by 130,000 AF. The final supplemental EIR and the Record of Decision were issued in October 2023 and estimated that SWP exports could be reduced by about 23,000 AF per year on average under the preferred alternative. This project is currently in the design, environmental planning, and permitting phases. DWR estimates of SWP supply reliability in the 2025 DCR are based on existing facilities and do not include this project.

4.2.3.3.13 Sites Reservoir

Sites Reservoir is a proposed new 1,500,000 AF off-stream storage reservoir in northern California near Maxwell. During excess flow events, Sacramento River flows will be diverted, stored in the off-stream reservoir, and released for use during dry periods. Sites Reservoir is expected to provide water supply, environmental, flood, and recreational benefits. The proponents of Sites Reservoir include 30 entities, including several individual SWP Public Water Agencies (PWAs). Sites Reservoir is expected to provide approximately 205,000 AF (Sites Reservoir Final EIR/EIS Table 5-30, Alternative 3) of additional deliveries on average to participating agencies under existing conditions.

Sites Reservoir is currently undergoing environmental planning and permitting. The Sites Reservoir project has filed a water rights petition and is expected to receive a water right permit from the State Water Resources Control Board in 2026. DWR estimates of SWP supply reliability in its 2025 DCR are based on existing facilities, and do not include the proposed Sites Reservoir.

4.2.3.3.14 SWP Seismic Improvements

The recent SWP seismic resiliency efforts by DWR have focused heavily on SWP Dam Safety. The most prominent is the joint USBR/DWR corrective action study of Sisk Dam, which will result in a massive seismic stability alteration, which began construction in June 2022. Similarly, Perris Dam underwent a major foundation modification and added a stability berm to the downstream face, removing the California Division of Safety of Dams (DSOD)-imposed storage restriction. Several analyses have been conducted on SWP dam outlet towers/access bridges, resulting in seismic upgrades (some completed/some ongoing). Updated dam seismic safety evaluations are being performed on the Oroville Dam embankment and the radial gate control structure on the flood control spillway.

In addition to the dam safety elements, DWR has procured and stockpiled spare pipe sections for the South Bay Aqueduct to increase recovery times following seismic-induced damage as part of the 2015 South Bay Aqueduct Reliability Improvement Project. Seismic retrofits have also been completed on SWP bridges. The DWR has also updated the earthquake notification procedures and has replaced and expanded instrumentation for the SWP's seismic network.

4.2.3.3.15 2019 Biological Opinion / 2020 Incidental Take Permit Litigation

In September 2021, USBR and DWR reinitiated consultation with NMFS and USFWS on the Coordinated Long-term Operations of the Central Valley Project (CVP) and State Water Project (SWP) due to anticipated modifications to the proposed action that may cause effects to species listed under the California Endangered Species Act (CESA) and/or designated critical habitat not analyzed in the 2019 biological opinions. In late 2024, the US Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) issued new Biological Opinions for the Long-Term Operation of the CVP and SWP.

Additionally, in late 2024, the California Department of Fish and Wildlife (DFW) issued to DWR a new Incidental Take Permit for the Long-Term Operation of the SWP pursuant to the CESA with regard to state-protected white sturgeon[3] and state- and federally-protected delta smelt, longfin smelt, winter-run Chinook, and spring-run Chinook. The operational restrictions in the federal 2024 Biological Opinions and the state Incidental Take Permit were consistent in 2024. In December 2025, the Bureau of Reclamation issued a revised Record of Decision (ROD) that adopted modified operational requirements for the CVP, called "Action 5". Some of the operational restrictions in the Action 5 differ from those in the 2024 state Incidental Take Permit for the SWP.

In 2025, DWR received two (2) state Incidental Take Permit amendments to its 2024 state permit, but there continues to be some misalignment between state and federal operation plans. DWR and Reclamation are committed to minimizing potential misalignments and relying on existing mechanisms for accounting under the state and federal Coordinated Operations Agreement (COA) to minimize any redirected water supply impacts.

Currently, there is no litigation challenging the 2024 Biological Opinions or the modification to the ROD that adopted Action 5 for CVP operations. Certain federal water contractors filed litigation challenging the State Incidental Take Permit. The previous legal challenges to the 2019 Biological Opinions have been dismissed.

4.2.3.3.15.1 ESA Biological Opinion Litigation

Two (2) cases were filed challenging the Biological Opinions under the ESA, Administrative Procedure Act, and National Environmental Policy Act. The first case filed, *Pacific Coast Federation of Fisherman's Association, et al. v. Ross (Case No. 1:20-CV-00431-DAD-SAB ("PCFFA v. Ross")*, was brought by six environmental organizations. The second case, *California Natural Resources Agency, et al. v. Ross* (Case No. 1:20) ("*CNRA v. Ross"*), was brought by the California Natural Resources Agency, the California Environmental Protection Agency, and the California Attorney General. The State's case includes a cause of action under CESA alleging

[3] Candidate species under CESA and currently being evaluated for listing under CESA.

that the federal CVP must comply with CESA. The cases were coordinated and transferred to the Eastern District. State and federal water contractors have intervened as defendants in both cases.

In the spring of 2020, plaintiffs in both cases brought motions for preliminary injunction. The environmental organizations sought broad relief, asking the court to require the federal defendants to abide by the 2008 and 2009 Biological Opinions pending a determination on the merits. The State sought a narrow injunction requiring the federal defendants to operate pursuant to the inflow to export ratio in the 2009 National Marine Fisheries Service (NMFS) Biological Opinion for the final 20 days of May based on alleged irreparable harm to delta smelt, longfin smelt, and San Joaquin River steelhead.

The court issued an order on May 11, 2020, granting the State's narrow injunction on limited grounds to protect steelhead. The court denied the other elements of the *PCFFA v. Ross* plaintiffs' motion for preliminary injunction, finding the evidence presented was insufficient to show irreparable harm to the species or that the requested injunction was likely to materially improve conditions for the species during the specified period.

In *CNRA v. Ross*, the Federal Defendants and several intervenors filed motions to dismiss the State's CESA cause of action for lack of subject matter jurisdiction or, alternatively, failure to state a claim. As of this date, the court has not scheduled a hearing or ruled on the motion.

4.2.3.3.15.2 CESA Incidental Take Permit Litigation

Eight (8) cases, listed below, have been filed in state court by public agencies, environmental organizations, and a Native American tribe challenging DWR's approval of the Long-Term Operations of the SWP and associated environmental review. Most of the cases also challenge CDFW's issuance of an Incidental Take Permit for the SWP.

- *North Coast Rivers Alliance, et al. v. Department of Water Resources, et al.*, County of San Francisco Superior Court Case No. CPF-20-517078, filed April 28, 2020.
- *State Water Contractors, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01302, electronically filed April 28, 2020.
- *Tehama-Colusa Canal Authority, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01303, electronically filed April 28, 2020.
- *The Metropolitan Water District of Southern California, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01347, electronically filed April 28, 2020.
- *Sierra Club, et al. v. California Department of Water Resources*, County of San Francisco Superior Court Case No. CPF-20-517120, filed April 29, 2020.
- *Central Delta Water Agency, et al. v. California Department of Fish and Wildlife, et al.*, County of Sacramento Superior Court Case No. 34-2020-80003368, filed May 6, 2020.

- *San Bernardino Valley Municipal Water District v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01556, filed May 28, 2020.

- *San Francisco Baykeeper, et al. v. California Department of Water Resources, et al.*, County of Alameda Superior Court Case No. RG20063682, filed June 5, 2020.

The challenges are raised on several legal grounds, including CESA, CEQA, the Delta Reform Act, the Public Trust Doctrine, area-of-origin statutes, breach of contract, and breach of the covenant of good faith and fair dealing. These cases have been coordinated in Sacramento County Superior Court.

Litigation over the 2019 Biological Opinions and 2020 Incidental Take Permit will likely take several years. The projects began operating in accordance with the new requirements in 2020. Throughout implementation, any party may seek preliminary injunctive relief during litigation, as the plaintiffs did in the 2019 Biological Opinion cases. It is likely that the 2019 Biological Opinions and 2020 Incidental Take Permit will govern operations until final judicial determinations on the merits are made. Thus, it is unlikely that SWP water supply would increase beyond that resulting from the limitations in the 2019 Biological Opinion and 2020 Incident Take Permit (ITP) during this timeframe.

4.2.3.3.16 Water Quality Control Plan/Voluntary Agreement

The State Water Resource Control Board (SWRCB) is responsible for adopting and updating the Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary (Bay-Delta Plan), which establishes water quality control objectives and flow requirements needed to provide reasonable protection of beneficial uses in the watershed. The SWRCB has been engaged in updating the Bay Delta Plan for many years.

The Bay-Delta Plan is being updated through phases. Phase 1 has updated the Bay-Delta Plan objectives for the San Joaquin River and its major tributaries, as well as the southern Delta salinity objectives. Phase 2 involves updating the objectives for the Sacramento River and the Delta, as well as their major tributaries. On December 12, 2018, through Resolution No. 2018-0059, the SWRCB adopted the Phase 1 Bay-Delta Plan amendments and Final SED establishing the Lower San Joaquin River flow objectives and revised southern Delta salinity objectives. On February 25, 2019, the Office of Administrative Law approved the Bay-Delta Plan amendments.

This Bay-Delta Plan requires maintaining an adaptive range of 30-50 percent of the unimpaired flow from February through June in the Stanislaus, Tuolumne, and Merced Rivers, with a starting point of 40 percent. During this same time, the flows at Vernalis on the San Joaquin River, as provided by the unimpaired flow objective, are required to be no lower than a base flow of 1,000 cfs, with an adaptive range between 800 and 1,200 cfs, inclusive. The Bay-Delta Plan also updated the south Delta salinity standards for protecting beneficial agricultural uses. While this part of the Bay-Delta Plan was updated, there is ongoing litigation challenging the updated plan, and it has not yet been implemented.

The SWRCB is also considering Phase 2 Bay-Delta Plan amendments focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne rivers), Delta outflows, and interior Delta flows. Staff is

recommending an adaptive range of 45-65 percent unimpaired flow objective with a starting point of 55 percent. After adopting Phase 2 Bay-Delta Plan amendments, the SWRCB will need to conduct hearings to determine, consistent with water rights, water users' responsibilities for meeting the objectives in both Phases 1 and 2. At this time, the potential impacts to the SWP are unknown, but this objective would have a large impact on water users, including SWP PWAs, in the Phase 2 planning area.

The State and several water users proposed an alternative to the staff recommendation for the Phase 2 Bay-Delta Plan update in 2018, known as the Program for Implementing Healthy Rivers and Landscapes (HRL) (previously called Voluntary Agreements). The HRL offers an alternative to the SWRCB staff's flow-only approach. The HRL, if agreed to by the SWRCB, would be a substitute for the unimpaired flow approach and would become the Program of Implementation for the Bay-Delta Plan amendments. The SWRCB staff included the HRL as an alternative in their draft Program of Implementation.

Implementing the HRL would not require water rights hearings because the parties are agreeing to take the actions. The HRL includes flow commitments, funding for flow commitments, habitat actions, and a robust science program. The HRL provides an opportunity to combine flow and habitat actions to protect public trust resources, while providing certainty for water users. It also offers the opportunity to avoid years of hearings and litigation and to begin implementing the updated Bay-Delta Water Quality Control Plan upon its adoption by the SWRCB.

If the HRL is adopted by the SWRCB, one of the key operational requirements for spring outflow in the 2024 SWP Incidental Take Permit will be replaced and aligned with the flow commitments in the HRL. The draft 2025 Delivery Capability Report assumed that this would occur and hence shows minor improvements in the SWP allocations compared to the 2023 Delivery Capability Report.

4.2.3.4 Delta Reliance

A portion of the water received by the PWD comes from the Sacramento-San Joaquin Delta (Delta). The 2025 UWMP Guidebook describes how urban water suppliers that anticipate participating in or receiving water from a "covered action" related to the Delta should provide information in their 2025 UWMPs to demonstrate consistency with *Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (Reduced Reliance Policy). Any entity receiving imported water from the SWP should anticipate being part of a "covered action" as requested by DWR.

Information was gathered by PWD to determine the volume of SWP received in past years. In Appendix H PWD:

- Establishes a base period for evaluation of Delta water use in the PWD service area.
- Provides data on past service area demands and population.
- Provides data on SWP water received in the past.
- Provides a projection of service area demands through 2050.

- Provides information on supplier contribution to regional self-reliance (local supplies brought online 2015-2050 in five (5)-year increments).
- Projects SWP water that will be received by PWD through 2050.

4.2.4 Potential Supply Inconsistency

Many factors can impact the reliability of supplies, discussed in detail in Chapter 7, including changes in climate or infrastructure, prolonged drought, and use efficiency during both average and dry periods. These factors can result in acute impacts (facility failures), short-term impacts (SWP limitations), or long-term (drought) impacts on the reliability of its supplies. Table 4-10 identifies the factors resulting in water supply incontinency by source.

Table 4-10: Factors Resulting in Water Supply Inconsistency

Water Source	Description	Limitation	Legal	Environmental	Water Quality	Climatic
Groundwater	Antelope Valley Groundwater Basin	Limited by well production capacity and adjudication	X		X	
Local Surface Water	Littlerock Reservoir	Limited by hydrology and diversion rights	X			X
Imported Water	SWP (California Aqueduct)	Limited by Table A allocation and hydrologic conditions and/or regulatory constraints	X	X		X

4.3 Other Supplies

4.3.1 Transfers, Exchanges, and Groundwater Banking Programs

In addition to SWP water supplies, local surface water, and groundwater, PWD is currently exploring opportunities to utilize recycled water, groundwater banking, and other anticipated new sources.

4.3.1.1 Existing Transfer Agreements

There is a long-term lease agreement between PWD and Butte County for up to 10,000 AFY of their SWP Table A Amount. The amount available under this lease varies primarily based on the final annual allocation from DWR to the State Water Contractors, which is roughly calculated by multiplying the final allocation percentage by 10,000 AF. This lease has been amended and extended through 2031. Butte and PWD anticipate renegotiating the agreement to extend past 2031.

The supply for this plan is assumed to continue through the planning period to 2050. Supplies from this agreement are accounted for in PWD planned supplies and are anticipated to be available in future years based on SWP Table A Amounts projected for the PWD under normal,

single-dry, and multiple-dry year scenarios as described in Section 4.2.3.2. Accordingly, 53 percent or 5,280 AFY is anticipated to be available in 2030, to 48 percent or 4,800 AFY past 2050 (Table 4-1); 5.2 percent or 520 AFY is anticipated in a single-dry year in 2030 to 2.0 percent or 200 AF in a single-dry year after 2050; and 14.8 percent or 1,480 AF in a multi-dry year in 2030 to 14 percent or 1,400 AF in a multi-dry year after 2050.

In addition, a Memorandum of Understanding (MUO) between PWD, LCID, and AVEK was adopted in March 2024 for the Little Rock Creek Recharge Project. This MUO allows PWD and AVEK to use a Change in Point of Delivery to deliver up to 15,000 AF of SWP water for recharge to Little Rock Creek at the LCID Turnout, Reach 21 of the California Aqueduct. The Turnout is split 50 percent to PWD and 50 percent to AVEK, with the option to offer unused capacity. Table 4-11 summarizes the historical transfers that PWD contributed to the Little Rock Creek Recharge Project. Projected supplies from the Little Rock Creek Recharge Project are subject to SWP percent allocation.

Table 4-11: Historical Transfers to the Little Rock Creek Recharge Project

	2020	2021	2022	2023	2024	2025
Total Supplies	0	0	0	8,055	2,000	4,418

Notes: From communication with PWD.

4.3.1.2 Transfer and Exchange Opportunities

Various transfer and exchange opportunities were evaluated by PWD to facilitate meeting projected water demands. Furthermore, PWD has participated in numerous water transfers over the last several years. Anticipated new sources include additional water supply transfer and exchange opportunities. Then, PWD will utilize a combination of transfer and exchange opportunities, if necessary, to meet its projected water demands. Also, PWD recently completed and adopted its Strategic Water Resources Plan (PWD 2023), which identified additional local surface water acquisitions and transfers as a component of its overall water supply strategy. Table 4-12 describes these potential water transfer and acquisition opportunities.

Table 4-12: Transfer and Exchange Opportunities

Transfer Agency	Transfer or Exchange	Short Term or Long Term	Proposed Volume (AF)
DWR	Excess Wet Year Water (Article 21)	Short Term	1,000-5,000
SWP	Wet-Year (1 Year)	Short Term	26,000
SWC/DWR	Dry year	Short Term	4,000-10,000
		Subtotal	***31,000-41,000***
SWP	Long-Term Lease	Long Term	12,000
SWP/Central Valley Project (CVP)	Permanent Transfer	Long Term	10,000
		Subtotal	***22,000***
SWP	Table A SWP Water	Short Term/ Permanent	10,000
CVP	CVP Water	Short Term/ Permanent	10,000
PRE-14	Non-SWP Water	Short Term/ Permanent	5,000-10,000
		Subtotal	***25,000-30,000***

For transfer and exchange strategic purposes, PWD will:

- Establish the ability to bank available imported water and develop supply reliability within the Antelope Valley Groundwater Basin as soon as possible.
- Pursue partners to participate in developing storage facilities, including other Antelope Valley State Water Contractors Association (AVSWCA) members.
- Consider water banking in locations outside the PWD if they are cost-effective and the project produces a value-added benefit (such as additional aqueduct delivery capacity).

At this time, these options are being explored and are not included in the future supplies shown in Section 4.5.

4.3.2 Groundwater Programs

4.3.2.1 Pure Water Antelope Valley

While PWD does not operate a banking program, PWD is actively pursuing this future water supply reliability option. Recently, PWD completed a preliminary feasibility study for a project that would utilize recycled water for groundwater injection. The Pure Water Antelope Valley (PWAV), formerly known as the Palmdale Regional Water Augmentation Project (PRWAP), would help meet future water demands and improve the water supply reliability of PWD.

As described in Chapter 5, PWD has an existing agreement with Sanitation Districts of Los Angeles County (LACSD) and is entitled to a maximum of 5,050 AFY of tertiary water from the Palmdale WRP. The PWAV would utilize recycled water from the Palmdale WRP for groundwater injection, and PWD would utilize complete advanced treatment, including Reverse Osmosis (RO) and Advanced Oxidation Process (AOP) to treat the tertiary water to Title 22 standards. This

agreement includes the construction of a five (5) MGD Advanced Water Purification Facility (AWPF) with chemical storage, parking, and access roads, and pipelines to convey the water from the Palmdale WRP to the new AWPF. For groundwater augmentation, the advanced-treated water would be pumped from the AWPF to one (1) or more new groundwater injection wells for direct injection into the aquifer.

PWAV is a drought-resilient solution that provides local control over water resources and helps PWD meet future water demands. The project is anticipated to provide at least 5,050 AFY of water for groundwater augmentation starting in 2031. More information can be found in the Final Technical Memorandum Recycled Water Alternatives Evaluation – Surface Water and Groundwater Augmentation Feasibility Study (Stantec 2021) and Project Implementation Prioritization Plan (Stantec 2024).

4.3.2.2 Groundwater Banking Opportunities

Water banks are operating in a variety of locations throughout the state and in various forms. Within and outside the Antelope Valley, PWD is currently exploring banking opportunities. The list below includes potential groundwater banking options for PWD.

- **Storage North of Delta**: This would consist of an exchange or transfer with agricultural entities north of the Delta in site-specific areas for an interim or short-term basis. Storage capacity is 5,000 to 10,000 AF, and recovery is 2,500 to 5,000 AF.

- **San Joaquin Valley Storage**: This would consist of purchasing shares in the Semitropic Water Bank, which is currently in operation. Storage capacity is over 60,000 AF, and recovery is 10,000 to 20,000 AFY. Other banking programs may also be available.

- **Storage within the Antelope Valley**: This would consist of banking above-average SWP allocations in planned water banking projects in locations within the Antelope Valley. Storage capacity is over 60,000 AF, and recovery is 10,000 to 15,000 AFY.

- **Storage South of Delta**: This would consist of banking above-average SWP allocations by providing these supplies to SWP contractor agencies for groundwater recharge or in-lieu recharge within their service areas, and in turn, during dry years, the PWD would receive SWP water from these agencies. This groundwater banking opportunity could store 10,000 to 30,000 AF and recover 5,000 to 15,000 AFY.

4.3.3 Development of Desalination

4.3.3.1 Brackish Water and/or Groundwater Desalination

The groundwater that underlies the PWD service area is not brackish and does not require desalination. However, PWD could provide financial assistance to other SWP contractors to construct brackish desalination facilities in exchange for SWP supplies delivered via the East Branch of the Aqueduct. Communities near a brackish desalination plant would receive the desalinated water, and an equivalent volume of SWP supplies would be exchanged and allocated to the PWD. Should the need arise, PWD may consider this option in the future.

4.3.3.2 Seawater Desalination

Since PWD is not located in a coastal area, it is neither practical nor economically feasible to implement a seawater desalination program. However, PWD could provide financial assistance to other SWP Contractors to construct seawater desalination facilities in a coastal location in exchange for SWP supplies delivered via the East Branch of the Aqueduct. Currently, PWD has determined that desalination is not a cost-effective solution for water supply needs, as local projects and water resource opportunities are available at a lower cost.

4.3.4 Recycled Water

Currently, PWD and LACSD are working together to develop recycled water supplies for customers in the service area. Further details on the PWD's recycled water plans are in Chapter 5.

4.4 Planned Supplies

As part of regularly updating their supplies, PWD prepared the 2023 Strategic Water Resources Plan, the 2016 Water System Master Plan, and the PRWA Recycled Water Master Plan. These plans aim to assist PWD in developing a long-term water supply strategy that meets demands from now through 2050. These planned sources intend to maximize local resources and minimize the need to import water. As described above, PWD has performed the appropriate planning and arranged financing for the water supply projects summarized in Table 4-13.

Table 4-13: Water Supplies (AFY)

Name of Future Project/Program	Joint Project with other suppliers? Y/N	Joint Project with other suppliers? If Yes, Agency Name	Description	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
Pure Water Antelope Valley (PWAV)	No		The goal of PWAV is the beneficial use of recycled water for groundwater augmentation, benefiting the region. PWAV is a solution that is drought-resilient, provides local control over water resources, and helps meet future PWD demands.	2031	All Year Types	5,050 AFY

Note: Modified from DWR Table 6-6 R.

4.5 Anticipated Water Supply Sources in Normal, Single Dry, and Multiple Dry Years

Table 4-14 and Table 4-15, and provide details on supplies anticipated to be available to PWD in normal, single-dry, and multiple-dry years.

Table 4-14: Water Supply Estimates – Normal Year (AFY)

	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation[(a)]	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	11,250	10,990	10,740	10,480	10,220
Butte Transfer Agreement[(b)]	5,280	5,160	5,040	4,920	4,800
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies	**30,330**	**35,000**	**34,630**	**34,250**	**33,870**

Notes: Modified from DWR Table 7-2. Values are rounded.
(a) PWAV to come online in 2031.
(b) For details, see Section 4.3.1.

Table 4-15: Water Supply Estimates – Single-Dry Year (AFY)

	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation[(a)]	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	1,110	940	770	600	430
Butte Transfer Agreement[(b)]	520	440	360	280	200
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies	**15,430**	**20,230**	**19,980**	**19,730**	**19,480**

Note: Modified from DWR Table 7-3. Values are rounded.
(a) PWAV to come online in 2031.
(b) For details, see Section 4.3.1.

Table 4-16: Water Supply Estimates – Multiple-Dry Years (AFY)

	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation[(a)]	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	3,150	3,110	3,070	3,070	3,020
Butte Transfer Agreement[(b)]	1,480	1,460	1,440	1,420	1,400
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies	**18,430**	**23,420**	**23,360**	**23,340**	**23,270**

Note: Modified from DWR Table 7-4. Values are rounded.
(a) PWAV to come online in 2031.
(b) For details, see Section 4.3.1.

4.6 Embedded Energy Current Supply Portfolio

Water energy intensity is the amount of energy, calculated on a whole-system basis, required to use water in a specific location, such as the PWD service area. DWR provides guidance for calculating the operational energy intensity of water, defined as the total energy expended by the urban water supplier per AF to take water from the source to its point of delivery. Additionally, DWR requires that urban water suppliers report only the energy intensity associated with water management processes under their operational control, excluding energy embedded in water supplies purchased from a wholesale water agency. Table 4-17 uses a multiple water-delivery approach to estimate the energy intensity of the PWD potable water system.

Table 4-17: Energy Intensity of the Water System – Total Utility Approach (2024)

Parameter	Total Utility	Units
Volume of Water Entering Process[(a)]	18,595	AF
Energy Consumed[(b)]	11,567,467	kWh
Energy Intensity[(c)]	1,909	kWh/MG

Notes:
(a) Total volume of water supplied in 2024 uses production that corresponds to PWD's energy billings for 2024.
(b) Data is sourced from utility bills covering January 1, 2024, through December 31, 2024. For all sites—including wells, boosters, and the Treatment Plant—kWh usage and related metadata are extracted from each bill. Production data is aligned with the service period referenced in the corresponding bill.
(c) Calculated by total energy consumed divided by volume of water entering process (volume converted to million gallons.

Chapter 5: Recycled Water

5.1 Overview

This chapter of the UWMP describes the existing and future recycled water opportunities available to the PWD service area. The description includes estimates of potential recycled water supply and demand for 2025 to 2050, presented in five (5)-year increments, as well as the proposed incentives and implementation plan for recycled water use.

5.2 Recycled Water Planning

Due to current and anticipated growth, as well as increasing uncertainty about their ability to meet local water demands with imported water and groundwater, PWD is taking proactive steps to expand the use of non-potable water to meet a variety of non-potable and indirect potable uses. PWD has been actively working with the Los Angeles County Waterworks Districts, City of Palmdale, City of Lancaster, and LACSD to develop a regional recycled water system.

In 2012, the PRWA was established to manage recycled water generated and used within the PWD service area, which coincides with the PRWA boundaries. PRWA is a joint entity comprised of the PWD and City of Palmdale, which manages all aspects of recycled water use, including agreements to obtain recycled water from sanitation districts, planning, designing, constructing, and financing the supporting facilities and efforts.

Among the initial efforts of the PRWA, the 2015 Recycled Water Facilities Master Plan was created (Carollo 2015). This document updates and consolidates existing master planning documents and details efforts to optimize the use of recycled water in the PWD service area. Implementation of the Recycled Water Facilities Master Plan, which is currently in the planning phase, would involve expanding the existing non-potable distribution system. Projected recycled water supplies would be provided to PWD customers, primarily for landscape irrigation at parks, schools, and golf courses, as well as for recharge in the Lancaster subbasin.

Additionally, the 2023 SWRP evaluated indirect potable reuse alternatives of 5,050 AFY of recycled water for PWD, including the construction of an AWPF. PWD is moving forward with the AWPF, which will receive tertiary effluent from the Palmdale Water Reclamation Plant (PWRP) for advanced treatment, including low-pressure membrane filtration (MF), RO, and AOP. The advanced treated water will then be injected into the aquifer for groundwater augmentation.

Recycled water planning aims to maximize the use of recycled water within the PWD service area, thereby reducing the need for imported water. For several years, PWD has been advancing towards implementing the AWPF for recycled water. PWD is currently developing the Pure Water Antelope Valley Demonstration Project as a pilot step towards an AWPF with the goal of production in 2031.

5.3 Existing Wastewater Treatment Facilities

Wastewater collection and treatment for the City of Palmdale and City of Lancaster are provided by LACSD, which serves the Antelope Valley through its Districts No. 14 and 20. The two districts have a combined wastewater service area of approximately 76 square miles and approximately 310,000 people. Collection is provided through a network of 104 miles of trunk sewers, all designed to convey wastewater by gravity.

The PWRP is operated by the LACSD District No. 20 and provides tertiary treatment for approximately 12,200 AFY of wastewater generated in and around the City of Palmdale. The PWRP has a treatment capacity of 12 MGD and produces an average of 10,800 AFY of Title 22 recycled water. Table 5-1 presents influent and effluent flows at the PWRP.

Table 5-1: **Wastewater Flows at PWRP (AF)**

PWRP Flows	2020[(a)]	2025[(b)]
Influent	12,140	12,210
Effluent	10,770	10,840

Note:
(a) PWRP Annual Monitoring Report 2020.
(b) Projected using 2025 population data.

All wastewater treated at the PWRP is tertiary-treated and used, discharged, or stored. Furthermore, Antelope Valley is a closed basin without an outlet to the ocean, and so treated wastewater either evaporates, is reused, or infiltrates into the Antelope Valley Groundwater Basin. LACSD anticipates reducing the amount of recycled water that it provides for agriculture as higher beneficial uses are developed. However, until these alternative uses become effective, the recycled water must still be disposed of via agricultural irrigation (Carollo 2015; ESA 2014).

5.4 Recycled Water Supply

Recycled water available for use within the PWD service area is supplied from the LACSD PWRP. The contract with LACSD allows PWD up to 5,050 AF. The City of Palmdale had an agreement with the LACSD for 2,000 AFY of recycled water to provide to customers throughout the City's service area, which has since been transferred to PRWA (SWRP 2023). Recycled water entitlement within the PWD service area is assumed to remain the same through 2050; however, as noted above, uses for this recycled water are still being developed.

Currently, the PWRP produces about 10,800 AFY of Title 22 recycled water. For future recycled water supply projections, it was assumed that recycled water production would grow linearly at the same rate as potable demand, estimated at an average of 0.3 percent per year over the period 2025 to 2050. As a result, the total recycled water supply is estimated to grow to about 11,000 AFY by 2050, as shown in Table 5-2.

Table 5-2: Effluent Flow Projections for PWRP (AF)

	2025	2030	2035	2040	2045	2050
PWRP Effluent Flows	10,840	10,870	10,900	10,930	10,970	12,400
Total Recycled Water Available to PWD	10,770	11,320	11,900	12,500	13,140	13,810

5.5 Recycled Water Demand – Current and Projected

Recycled water from PWRP is used by the City of Palmdale for landscape irrigation at McAdams Park and by Soar High School. This demand makes up a small portion of the total recycled water produced at the PWRP. The remaining portion of PWRP recycled water is agricultural irrigation at agronomic rates on an agricultural site leased by the LACSD from Los Angeles World Airports. Seasonal storage ponds are used when more effluent water is produced than demanded. The stored recycled water is typically used in the spring and summer months when agronomic needs exceed recycled water production from the PWRP. Table 5-3 summarizes the actual use of recycled water in 2025.

Table 5-3: Actual Recycled Water Use In 2025 (AF)

Water Use	Actual 2025 Recycled Water Use
PRWA/City of Palmdale Direct Reuse[(a)]	1
Total Recycled Water Use[(b)]	**1**

Notes:
(a) Based on correspondence from PWD.
(b) Total recycled water demand within the PWD service area. Values are rounded.

Market assessments by the PRWA have identified numerous potential customers for recycled water, including schools, parks, landscape maintenance districts, and other users. It is anticipated that the recycled water use for landscape irrigation will not exceed 1,600 AFY at buildout. Additional primary future uses of recycled water include groundwater augmentation via direct injection through the Pure Water Antelope Valley Project.

Among the potential options to augment water supplies with local recycled water is using recycled water for groundwater augmentation through groundwater injection within the Antelope Valley Groundwater Basin. The project involves constructing pipelines to convey tertiary treated water from the PWRP to an advanced water purification facility. New pipelines would convey the advanced-treated water to new injection wells, where it would be injected into the aquifer. Table 5-4 shows the projected recycled water uses.

Table 5-4: Projected Recycled Water Demands (AF)

Water Use	2030	2035	2040	2045	2050
Pure Water Antelope Valley (PWAV)[(a)]	0	5,050	5,050	5,050	5,050
Landscape Irrigation[(b)]	1,600	1,600	1,600	1,600	1,600
Total Recycled Water Demands	**1,600**	**6,650**	**6,650**	**6,650**	**6,650**

Source: Based on correspondence from PWD.
(a) Volume available for groundwater augmentation.
(b) Includes City direct demands and other potential landscape irrigation demands.

5.5.1 Recycled Water Use Comparisons

The 2020 UWMP anticipated 2025 recycled water use at 500 AF and assumed it would be used only for landscape and agricultural irrigation. Actual recycled water use within the PWD service area totaled one (1) AFY in 2025, as shown in Table 5-5.

Table 5-5: Recycled Water Use Compared to Projected Use

User Type	2020 Projected for 2025[(a)]	2025 Actual
Municipal and Industrial, and Agricultural Irrigation	500	1
Groundwater Recharge	5,325	0
Total	**5,825**	**1**

Note:
(a) From 2020 PWD UWMP.

5.5.2 Encouraging Recycled Water Use

Future recycled water projects have the potential to use all available recycled water supplies through 2050, as described above. PWRA has stopped building new purple pipe; therefore, only potential customers adjacent to the existing mains can be converted. As necessary, PWD intends to use financial incentives to assist and encourage these adjacent landscape irrigation users to connect to and utilize recycled water. These incentives will consist of recycled water rates at 75 percent of the potable rate. A lower rate provides an incentive for existing and future customers to use recycled water instead of potable water. Additionally, PWD plans to expand its non-potable reuse through the PWAV, set to come online in 2031, which will enable groundwater augmentation.

Chapter 6: Water Quality

6.1 Overview

Water quality is a crucial factor in determining overall supply reliability; if adequate drinking water quality cannot be maintained, the supply will become unusable. Water quality is dynamic in nature and can vary over the course of a year. This is true for both the SWP and the local groundwater of the Basin. During periods of intense rainfall or snowmelt, the pathways of surface water movement change, and new constituents are mobilized and enter the water, while others are diluted or eliminated. The quality of water changes over the course of a year.

These same basic principles apply to groundwater. Depending on water depth, groundwater will pass through layers of rock and sediment, potentially leaching different materials from those strata. Water depth is a function of recharge from local rainfall and snowmelt, as well as groundwater withdrawal from pumping. During droughts, the mineral content of groundwater increases. Water quality is not a static property; therefore, these dynamic variables must be recognized.

PWD understands that the quality of supply sources can change over time and is therefore constantly working to anticipate and mitigate those changes. Water quality regulations also change. This is the result of the discovery of new contaminants, the evolving understanding of the health effects of both previously known and newly identified contaminants, the advancement of new analytical technologies, and the introduction of innovative treatment technologies. All retail water purveyors are subject to drinking water standards set by the US EPA and the California Division of Drinking Water (DDW).

PWD regularly monitors water supply quality and understands current and potential regulations to respond promptly to any quality-related reliability issues. This chapter provides a general description of the quality of the three water sources used by PWD: groundwater from the Antelope Valley Groundwater Basin, imported water from the SWP, and seasonal supply from Littlerock Reservoir. SWP water is conveyed directly from the PWD turnout into Lake Palmdale, which feeds the Leslie O. Carter WTP.

Flows from Littlerock Reservoir are also conveyed into Lake Palmdale via an 8.5-mile earthen canal with sections of concrete lining and, for approximately one (1) mile, enclosed in a pipe, referred to as the Palmdale Ditch. The intake for the WTP is located along the north shore of Lake Palmdale. All three (3) sources are constantly tested and treated in compliance with all applicable regulations to ensure high water quality and dependability. This chapter provides a general description of the water quality of imported water, groundwater, and surface water supplies. A discussion of potential water quality impacts on the reliability of these supplies is also provided.

6.2 Groundwater Protection and Quality

PWD obtains groundwater from the Antelope Valley Groundwater Basin through 22 wells. This water is treated with chlorine at the wellhead and pumped directly into the distribution system. Groundwater from the Antelope Valley Groundwater Basin has proven suitable for municipal,

irrigation, and most industrial uses. The primary goal of groundwater protection activities is to maintain the groundwater and the aquifer, ensuring a reliable, high-quality supply. Activities to meet this goal include continued and increased monitoring, data sharing, education, and coordination with other agencies that have local or regional authority or programs. As part of its protection activities, PWD has been taking the following actions:

- Water quality monitoring
- Wellhead protection
- Participation in the regional salt and nutrient management plan

6.2.1 Water Quality Monitoring

PWD monitors drinking water constituents consistent with federal and state laws. PWD annually provides a Consumer Confidence Report (CCR) detailing the water quality of its sources to its customers. This CCR includes details about the water source, quality, and comparison to Drinking Water standards. Stringent water-quality testing is conducted before the water is delivered to consumers. In 2024 (2024), PWD conducted over 15,000 tests for over 80 regulated contaminants to ensure that PWD water meets or exceeds all Federal and State guidelines. Of the primary standard contaminants detected in 2024, all were below the State-set Maximum Contaminant Level (MCL).

In the Antelope Valley region, the groundwater basin is primarily used for private and public water supply and irrigation. The predominant sources of groundwater are from runoff recharge from surrounding mountains and water from direct infiltration by irrigation, sewer, and septic systems. The primary discharge sources include pumping wells and evapotranspiration areas near dry lakebeds. Groundwater quality is assessed through the Groundwater Ambient Monitoring and Assessment (GAMA) Priority Basin Project (PBP), which involves analyzing raw groundwater that supplies drinking water to the public in the region. PBP sampled a large number of wells in the area and analyzed organic constituents, as well as chromium, lead, molybdenum, sulfate, and chloride, all detected at moderate concentrations. Additionally, volatile organic compounds were detected at low concentrations.

Two primary constituents that present concerns for groundwater quality in the Antelope Valley Groundwater Basin are Total Dissolved Solids (TDS) and nitrate. Past groundwater sampling (2022-2024) has shown TDS concentrations ranging from 150 to 470 milligrams per liter (mg/L) (2024 CCR). Nitrate levels have ranged from non-detect to seven (7) mg/L. Arsenic and copper have also emerged as potential concerns but remain well below the MCLs of 0.01 mg/L and 1.3 mg/L, respectively. Water quality data is regularly reported on in the annual CCR; the most recent is the 2024 CCR.

The drinking water sources for PWD are considered most vulnerable to the following activities associated with contaminants detected in the water supply: illegal dumping, recreation, highways, railroads, and sewer collection systems. A comprehensive source water protection program can prevent contaminants from entering the public water supply, reduce treatment costs, and increase public confidence in the reliability and safety of drinking water.

6.2.2 Wellhead Protection

PWD has developed a Sanitary Survey of its water sources, including a Source Water Assessment of surface waters, which was updated in 2017 in compliance with State of California regulations. The assessment of surface water sources included Littlerock Reservoir and Palmdale Lake. A Groundwater Assessment and Protection Program was completed in January of 1999, and a Wellhead Protection Plan was completed in November 2000. The goal of local source water protection is to identify, develop, and implement local measures that protect the drinking water supply. Wellhead protection provides an additional barrier against contamination within a multi-barrier protection treatment train.

6.2.3 Participation in the Antelope Valley Salt and Nutrient Management Plan

In February 2009, the SWRCB adopted the Recycled Water Policy to encourage and provide guidance for the use of recycled water in California. The Recycled Water Policy requires local water and wastewater entities, along with local stakeholders, to develop a Salt and Nutrient Management Plan (SNMP) for each groundwater basin in California. The SNMPs are intended to help streamline the permitting of new recycled water and stormwater projects while ensuring compliance with water quality objectives, and beneficial uses of the groundwater basin are protected.

Los Angeles County Department of Public Works (District 40), LACSD (Districts No. 14 and 20), and the Antelope Valley SNMP planning stakeholders' group (which includes PWD) prepared the Antelope Valley SNMP in 2014. As a stakeholder in the SNMP, PWD assisted with the provision of water quality data for the plan, reviewed the modeling and other analyses of salt and nutrient assimilative capacity of local groundwater, and helped develop a plan to track the long-term impacts to groundwater quality resulting from past, current, and future land uses.

6.3 Imported Water Quality

PWD receives nearly 50 percent of its raw water supplies from SWP via the California Aqueduct. This water source begins in Northern California, flows into the Sacramento-San Joaquin Delta, and is pumped south through the California Aqueduct to Palmdale Lake. PWD has a maximum contractual Table A Amount of 21,300 AFY. The annual allocations based on this contractual amount can vary based on the amount of stored water in Northern California, demands by other SWP Contractors, and various hydrologic factors. Imported water is generally of acceptable quality and receives treatment from the WTP. Currently, PWD does not experience or foresee issues with the imported water quality, given the controls on the incoming water and the treatment process.

Mineral content is a key property of SWP water. SWP water is generally low in dissolved minerals, such as calcium, magnesium, sodium, potassium, iron, manganese, and sulfate. Most of these minerals do not have health-based concerns. Nitrate is the main exception, as it has significant health effects for infants; however, the nitrate content of SWP water is very low.

Furthermore, salinity content, measured as TDS, is a consideration. Only at very high concentrations is TDS a health hazard; however, TDS can cause aesthetic issues, limit crop

productivity, and shorten the useful life of pipes and water-based appliances in homes and businesses. Although the quality of SWP water varies seasonally, the PWD does not foresee issues with imported water quality as it receives adequate treatment from the WTP.

6.4 Local Surface Water Quality

Surface water for PWD is stored at Littlerock Creek Dam Reservoir and Lake Palmdale. The PWD Sanitary Survey assessed surface water sources from Littlerock Reservoir and Lake Palmdale and was updated in 2017 to comply with State of California regulations. Littlerock Dam Reservoir has a current capacity of approximately 3,000 AF and is filled by natural runoff from the local San Gabriel Mountains. When the Littlerock Sediment Removal Project is completed, the Reservoir will have a capacity of 3,500 AFY. Water from Littlerock Reservoir is transferred to Palmdale Lake via the Palmdale Ditch, which is primarily an open channel connecting the reservoirs. This local surface water supply accounts for 10 percent of the raw water supply for PWD. PWD has noticed higher levels of TDS in the Littlerock Reservoir along with impacts of wildfires in the Littlerock Creek Watershed. This water receives treatment at the Leslie O. Carter WTP.

6.5 Water Quality Impacts on Reliability

The quality of water dictates numerous management strategies a retail water purveyor will implement, including, but not limited to, the selection of raw water sources, treatment alternatives, blending options, and modifications to existing treatment facilities. Maintaining and utilizing high-quality water sources simplifies management by increasing water supply options, improving reliability, and reducing treatment costs. The source-water supplies are generally of good quality for PWD. Emerging contaminants and treatment costs are operational considerations for PWD rather than supply-limiting factors. Maintaining high-quality source water allows for efficient management of water resources by minimizing costs.

Maintaining the quality of water supplies increases the reliability of each source by ensuring that deliveries are not interrupted by water quality issues. A direct result of a water supply source degrading is an increase in treatment costs. The poorer the quality of the source water, the greater the treatment cost. Water may degrade to the point that treatment becomes economically infeasible. In this scenario, the degraded source water is taken offline. This, in turn, can decrease water supply reliability by potentially reducing the total supply and increasing demands for alternative water supplies.

Overall, water supply management will allow PWD to meet near-term and long-term demands within its service area. Therefore, no change in reliability or supply due to water quality issues is anticipated based on the present data, as shown in Table 6-1.

Table 6-1: Projected Water Supply Changes Due to Water Quality

Water source	2030	2035	2040	2045	2050
Groundwater	0%	0%	0%	0%	0%
Imported Water	0%	0%	0%	0%	0%
Local Surface Water	0%	0%	0%	0%	0%

Chapter 7: Water Service Reliability and Drought Risk Assessment

7.1 Overview

The UWMP Act requires urban water suppliers to assess water service reliability by comparing total projected water use with the expected water supply over the next 20 years in five (5)-year increments. The UWMP Act also requires assessments for single-dry and multiple-dry years. This section presents the reliability assessment for the PWD service area.

Many factors can impact the reliability of the PWD water service, including changes in supply availability due to climatic or infrastructure changes, as well as the efficient use of those supplies in both average and dry periods. These factors can result in immediate (facility failures), short-term (SWP allocation limitations), or long-term (climate change) impacts on reliability and must therefore be considered in future planning.

The impacts of these factors on supply reliability increase under single-dry and multiple-dry year hydrologic conditions. Although not all shortages can be prevented, diversifying the PWD supply portfolio is the critical factor in improving the immediate, near- and long-term reliability of supplies. If shortages occur, PWD has and will implement its Water Shortage Contingency Plan (WSCP). The reliability within the PWD service area is a composite of the reliability of each source of supply.

7.1.1 Groundwater Reliability

Groundwater is traditionally considered a highly reliable supply that is immediately affected by changes in climate or surface flows. However, the main factors that impact the reliability of groundwater supplies are legality and water quality. Chapter 4 provides further discussion of the groundwater resources in the region.

Legal Factors

On December 23, 2015, PWD agreed to a stipulated judgment for the adjudication of the Antelope Valley Groundwater Basin.[4] This resulted in PWD receiving a groundwater production right of 2,770 AFY. Before the judgment, PWD had an unquantified right to pump water for beneficial use and assumed projected pumping volumes at 12,000 AF based on pumping capacity. The judgment is on appeal, but PWD believes it is unlikely that its groundwater production rights will change significantly as a result. Furthermore, PWD purchased 150 AFY of permanent production rights from Calandri Farms in early 2026. In addition to the pumping allocation, return flow credits, averaging 3,840 AFY, and unused federal reserve rights, averaging 1,440 AFY, will be available to PWD, as described in Chapter 4, Section 4.2.1.3.

[4] Judgment, *Antelope Valley Groundwater Cases*, Los Angeles County Superior Court, Judicial Council Coordination Proceeding No. 4408 (filed Dec. 28, 2015) (provided in Appendix G).

Water Quality Factors

The water quality of groundwater supplies is a factor in the reliability of PWD, as groundwater quality must meet drinking water standards. As PWD relies on groundwater for a large portion of its water supply, measures have been taken to ensure the continued protection of groundwater quality. Chapter 6 discusses these measures in detail.

Climatic Factors

Regional climatic factors were considered in the 2015 adjudication process for the Antelope Valley Groundwater Basin.

7.1.2 Imported Water Reliability

PWD receives imported water from the SWP. Factors affecting the reliability of imported water supplies from the SWP include legal, environmental, water-quality, and climatic factors.

Legal Factors

Legal factors include DWR policies and contract stipulations. Any legal actions can impact SWP water supplies in various ways, such as court decisions limiting SWP pumping due to perceived impacts on endangered fish in the Sacramento-San Joaquin Delta (Delta) estuary.

Environmental Factors

Environmental factors, including impacts on endangered species and their habitats, can affect SWP water supplies.

Water Quality Factors

The quality of SWP water sources can impact the treatment processes needed to ensure compliance with drinking water standards; however, no impact on water supply availability is projected.

Climatic Factors

Imported water supplies rely heavily on runoff from rainfall and snowpack. If annual snowpack and rainfall amounts change significantly without corresponding investment in infrastructure or management practices, the quantity of water available from the SWP in any given year is subject to potential reductions. Currently, the impacts of climate change on imported water supplies are uncertain; however, climate models suggest a future reduction in water supplies due to decreased snowpack from higher temperatures and increased precipitation falling as rain rather than snow. These preliminary assumptions from climate models validated by the Department of Water Resources are included in the supply reliability section below.

7.1.3 Local Surface Water Reliability

A certain amount of water supply from the Littlerock Dam Reservoir is expected to be available for PWD in all years. The total watershed annual inflow to Littlerock Dam Reservoir averages 14,500 AF, while average annual outflow from below the dam averages 8,000 AF (Woodward-Clyde 1992). Therefore, the available water supply from the Littlerock Dam Reservoir is estimated to be 50 percent of the average available historical yield (8,000 AF), resulting in 4,000 AF being available in all years.

PWD is also replacing the existing Palmdale Ditch, a 7.2-mile earthen or concrete-lined ditch conveying water from Littlerock Dam to Lake Palmdale, with a pipeline (Hazen 2021). When complete, the pipeline will increase flow capacity from 25 cfs to 60 cfs and reduce water losses. Estimated water savings from loss reduction are 93 to 115 percent of the average normalized water loss over five (5) years (2013-2015, 2017, 2019).

Climatic Factors

Littlerock Dam Reservoir, which receives flows from Littlerock Creek, is a surface water source for PWD. Littlerock Creek flows can be variable due to changes in local precipitation and ETo. Most Littlerock Creek flows occur seasonally during the winter months and decrease significantly during the dry months, and PWD recognizes that annual climatic changes can impact the reliability of the Littlerock Dam Reservoir.

7.2 Projected Water Service Reliability

There are two (2) aspects of service and supply reliability. The first relates to immediate service needs and is primarily a function of the availability and adequacy of supply facilities. The second aspect is climate-related and involves the availability of water during varying dry periods. Modeled supply deficits in single dry and early multiple dry years are planning indicators that trigger WSCP actions and demand curtailment, not projected service failures. This section examines the reliability of PWD water supply during three (3) water scenarios: a normal water year, a single-dry water year, and multiple-dry water years. These scenarios are defined as follows:

- **Normal Year**: The normal year is a year in the historical sequence that most closely represents median runoff levels and patterns. The supply quantities for this condition are derived from historical average yields.

- **Single-Dry Year**: The year with the minimum usable supply. The supply quantities for this condition are derived from the minimum historical annual yield.

- **Multiple-Dry Years**: The five (5) consecutive years with the minimum cumulative usable supply. Water systems are more vulnerable to these longer-duration droughts because they deplete water storage in local and state reservoirs and in groundwater basins. The supply quantities for this condition are derived from historical five (5)-year running minimum average yields.

For groundwater, it is assumed that PWD will receive a groundwater allocation of approximately 2,920 AFY (see Chapter 4, Section 4.2.1.3). It is expected that these supplies will be consistently

available in both normal and dry years, including single-dry and multiple-dry years. For Littlerock Dam Reservoir, PWD used the driest year on record, 2006, to estimate reliable availability. Accordingly, PWD expects to have up to 4,000 AF of its diversion rights under normal, single-dry year, and multiple-dry years. This amount is calculated as 50 percent of the average available yield from the Littlerock Dam Reservoir (50 percent of 8,000 AF) and is considered to be available for supply in all years.

For SWP water, PWD used the 2025 SWP DCR to identify its single-dry and multiple-dry water years. A single-year drought, such as the one that occurred in 1977, would result in a yield of approximately six (6) percent of the Table A Amount for PWD. During an extended drought, such as the one that occurred from 1929 to 1934, PWD expects to receive an average of 15 percent of its Table A Amount. Groundwater pumping and Littlerock Dam Reservoir diversions are expected to remain the same during a normal water year, single-dry year, and multiple-dry years. SWP water is the only water source PWD expects to be variable during single-dry and multiple-dry years.

7.3 Normal Water Year

This section summarizes the water supplies available to PWD for meeting demands over the 25-year planning period during an average/normal year and compares them to the demands for the same period. Assumptions regarding supplies and demand are presented in Chapters 2 and 4. Table 7-1 demonstrates that PWD anticipates adequate supplies for years 2030 to 2050 under normal hydrologic conditions.

Table 7-1: Comparison of Supplies and Demands – Normal Year (AF)

Water Supply Source	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	11,250	10,990	10,740	10,480	10,220
Butte Transfer Agreement[a]	5,280	5,160	5,040	4,920	4,800
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies Normal Year	**30,330**	**35,000**	**34,630**	**34,250**	**33,870**
Total Demand[b]	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***8,310***	***12,850***	***12,320***	***11,890***	***11,470***
Excluding Sales to Other Agencies[c]	***13,200***	***17,740***	***17,210***	***16,780***	***16,360***

Notes: Values are rounded. Adapted from DWR Table 7-2 R.
(a) For details, see Chapter 4, Section 4.3.1.
(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMM, water demands for irrigation do not increase in the PWD under single-dry and multiple-dry year conditions. Demands do not include conservation from Chapter 2, Table 2-6.
(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP allocations were 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

7.4 Single-Dry Year

The water supply and demand for the PWD service area over the 25-year planning period were analyzed under a single-dry-year scenario, similar to the 1977 drought in California. Table 7-2 summarizes the existing and planned supplies available to meet demands during a single-dry year (six (6) percent of the SWP supply from the 2025 DCR). Table 7-2 shows that PWD anticipates demand exceeding existing supplies starting in 2030 under single-dry-year hydrologic conditions. A discussion on how PWD anticipates addressing supply deficits is presented in Section 7.7 below.

Table 7-2: Comparison of Supplies and Demands – Single-Dry Year (AF)

Water Supply Source	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	1,110	940	770	600	430
Butte Transfer Agreement[a]	520	440	360	280	200
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies Single Dry Year	**15,430**	**20,230**	**19,980**	**19,730**	**19,480**
Total Demand[b]	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***(6,590)***	***(1,920)***	***(2,330)***	***(2,630)***	***(2,920)***
Excluding Sales to Other Agencies[c]	***(1,700)***	***2,970***	***2,560***	***2,260***	***1,970***

Note: Values are rounded. Adapted from DWR Table 7-3 R.
(a) For details, see Chapter 4, Section 4.3.1.
(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMMs, water demands for irrigation do not increase in the PWD under single-dry and multiple-dry year conditions. Demands do not include conservation from Chapter 2, Table 2-6.
(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP allocations were 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

7.5 Multiple-Dry Year (Five (5)-year)

Water supply and demand for the PWD service area over the 25-year planning period were analyzed for a five (5)-year multiple-dry-year event, similar to the drought that occurred from 1931 to 1934. Table 7-3 summarizes the existing and planned supplies available to meet demands during multiple-dry years. PWD anticipates demands to exceed existing supplies starting in 2035 under multiple-dry-year hydrologic conditions. A discussion on how PWD anticipates addressing supply deficits is presented in Section 7.7 below.

Table 7-3: Comparison of Supplies and Demands – Multiple-Dry Year (AF)

Water Supply Source	2030	2035	2040	2045	2050
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	5,050	5,050	5,050	5,050
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	3,150	3,110	3,070	3,070	3,020
Butte Transfer Agreement[(a)]	1,480	1,460	1,440	1,420	1,400
Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Supplies Multiple Dry Year	**18,430**	**23,420**	**23,360**	**23,340**	**23,270**
Total Demand[(b)]	**22,020**	**22,150**	**22,310**	**22,360**	**22,400**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***(3,590)***	***1,270***	***1,050***	***980***	***870***
Excluding Sales to Other Agencies[(c)]	***1,300***	***6,160***	***5,940***	***5,870***	***5,760***

Note: Values are rounded. Adapted from DWR Table 7-4 R.
(a) For details, see Section 4.3.1.
(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMM, water demands for irrigation do not increase in the PWD under single-dry and multiple-dry year conditions. Demands do not include conservation from Chapter 2, Table 2-6.
(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP allocations were 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

7.6 Drought Risk Assessment

The Water Code requires that every urban water supplier include a drought risk assessment in the UWMP for its water service to customers. This is to inform and benefit the development of demand management measures, water supply projections, and programs to be included in the UWMP.

7.6.1 Data and Methodologies Used

7.6.1.1 Water Demands

The water demands for this UWMP are based on a water demand forecast developed in January 2026, using extensive data on existing land use and water demand, as well as projected land uses. Water demand estimates change due to shifts driven by water conservation and evolving codes and standards. Using the anticipated land uses and associated water demand factors, PWD has estimated water demands from 2026 through 2030, as shown in Table 7-4, below and in Chapter 2, Section 2.4.

7.6.1.2 Water Supplies

This Drought Risk Assessment examines the water supplies anticipated to be available during a five (5)-year consecutive drought, from 2026 to 2030, including any limitations resulting from infrastructure and regulatory constraints.

Imported Water

The PWD directly contracts with the SWP and has a contractual maximum annual allocation of 21,300 AF. The DWR 2025 DCR estimates that supplies vary by 14 to 15 percent in a consecutive dry year scenario under current and future conditions, respectively, based on a repeat of the historic five (5)-year dry period from 1929 to 1934. The maximum amount allowed under the Butte Transfer Agreement is 10,000 AF. Table 7-4 assumes the Butte Transfer Agreement available SWP supplies will also vary by this amount in a consecutive five (5)-year drought.

Groundwater

PWD receives its groundwater from the Antelope Valley Groundwater Basin. In 2015, the basin was adjudicated, and PWD received a pumping right of 2,770 AFY. PWD has been in full compliance since 2016. Furthermore, PWD is entitled to a portion of the unused federal share, approximately 1,440 AFY, until the year 2030. PWD can also receive return flows, averaging 3,480 AFY, and can purchase production rights, such as the additional 150 AFY from Calandri Farms in 2026. These values are reflected in Table 7-4.

Surface Water

PWD anticipates being able to supply up to 4,000 AF of surface water from Littlerock Reservoir from 2026 through 2030.

Recycled Water

PWD anticipates being able to deliver up to 100 AF of recycled water in 2026, even in a drought year. With the planned recycled water projects, this is expected to increase to 1,600 AF by 2031, assuming drought years. These volumes assumed reduced inflows to the wastewater treatment plant, due to drought, and decreased normal recycled water production.

Table 7-4: Anticipated Supplies and Demand Consecutive Dry Years (2026 - 2030)

	2026	2027	2028	2029	2030
Groundwater	4,360	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits	3,840	3,840	3,840	3,840	3,840
Groundwater Augmentation	0	0	0	0	0
Local Surface Water	4,000	4,000	4,000	4,000	4,000
Imported SWP Water	3,190	3,180	3,170	3,160	3,150
Butte Transfer Agreement[a]	1,500	1,490	1,490	1,480	1,480
Recycled Water	100	500	1,000	1,300	1,600
Total Supplies Single Dry Year	**16,980**	**17,370**	**17,860**	**18,140**	**18,430**
Total Demand[b]	**21,920**	**21,940**	**21,980**	**21,990**	**20,020**
Difference (Supply-Demand)					
Including Sales to Other Agencies	***(4,940)***	***(4,570)***	***(4,120)***	***(3,850)***	***(3,590)***
Excluding Sales to Other Agencies[c]	***(150)***	***110***	***440***	***670***	***920***

Notes: Values are rounded. Adapted from DWR Table 7-5 R.

(a) See Chapter 4, Section 4.3.1 for details.

(b) Demands are not expected to change during drought conditions; the region typically receives little rain, and with the implementation of DMMs, water demands for irrigation do not increase under single-dry and multiple-dry year conditions. Demands do not include conservation from Table 2-6.

(c) Average water sales from 2020 to 2025 were 4,890 AF. PWD has allowed sales to other agencies during periods of surplus water, such as when SWP allocations were 50 percent in 2025. PWD may reduce its sales to other agencies depending on SWP allocations and anticipated drought years.

7.7 Summary of Comparisons

As shown in the analyses above, PWD projects adequate supplies to meet demands during normal years throughout the planning period. However, PWD anticipates that, during single-dry-year conditions, demand will exceed existing supplies starting in 2030. During multiple-dry-year conditions, demand exceeds supply until after 2030, when PWAV comes online and increased recycled water becomes available. During a consecutive five (5)-year drought, PWD anticipates demand exceeding supply from 2026 to 2030. Therefore, additional supplies or a reduction in demand are assumed to be needed to meet demand under those conditions.

As described in Chapter 4, PWD is currently developing PWAV, which is anticipated to provide 5,050 AFY of recycled water for groundwater augmentation. In addition, PWD has identified numerous short- and long-term transfer and exchange opportunities, as described in Chapter 4, Section 4.3.3.2, that would provide additional supplies to help overcome supply shortages. The WSCP discussed in Chapter 9 and provided in Appendix J identifies potential demand-reduction actions to address shortage gaps.

As a result, it is anticipated that existing supplies, combined with identified future and potential water supply opportunities and demand reduction responses, will enable PWD to meet all future water demands under all hydrologic conditions through the end of the planning period.

Chapter 8: Water Demand Management Measures

8.1 Demand Management 2021-2025

This section describes the Demand Management Measures (DMMs) that PWD is currently implementing and plans to implement to meet its urban water use reduction targets described in Chapter 3.

PWD recognizes that conserving water is an integral component of a responsible water management strategy. PWD has a uniquely low water use for a high desert area, located in the South Lahontan Hydrologic Region. Based on data reported in the 2010 UWMP, the South Lahontan Hydrologic Region had a population-weighted baseline five (5)-year average water use of 258 gpcd with an average population-weighted 2020 target of 207 gpcd (California Water Plan 2023). PWD's water use is notably lower than the rest of the South Lahontan Hydrologic Region, at 145 and 157 gpcd for 2020 and 2025, respectively. PWD has largely achieved its goals by focusing on system performance, rate increases, and fostering a community culture of conservation and small-scale landscapes. PWD will maintain this level of demand and reduce demand even further to comply with Making Water Conservation a California Way of Life.

For the purposes of this UWMP, the DMMs are categorized as "Foundational" and "Other." Foundational DMMs, listed below, are those DMMs that the UWMP Act and Water Code specifically mention for retail water suppliers such as PWD:

1. Water waste prevention ordinances
2. Metering
3. Conservation pricing
4. Public education and outreach
5. Programs to assess and manage distribution system real loss
6. Water conservation program coordination and staff support

Activities outside of the Foundational DMMs that encourage less water use in PWD's service area fall in the "Other" category.

8.1.1 Foundational DMMs

8.1.1.1 Water Waste Prevention Ordinances and Prohibition

In 2001, the Board of Directors adopted the Waste of Water Policy, which outlines actions to be taken by PWD to prevent and address waste and unreasonable use of water, including penalties for violations. The Waste of Water Policy was updated in March 2026 and is included as Appendix B in the WSCP.

Penalties include:

1st Notice of Violation – Notification and warning in writing.

2nd Notice of Violation – Fine up to $50.

3rd Notice of Violation – Fine up to $250.

4th Notice of Violation – Fine up to $500.

5th Notice of Violation – May result in termination of service.

8.1.1.2 Metering

PWD is fully metered, with all customers having metered accounts. PWD is replacing all meters in its service area with a new Advanced Metering Infrastructure (AMI) system to ensure more accurate readings and data capture. This initiative is considered both a water conservation measure and a financial best management practice.

8.1.1.3 Conservation Pricing

PWD uses a four (4)-tiered budget-based rate approach for water pricing. PWD customers pay a monthly fixed charge based on the customer's meter size, and customers with a dedicated private fire connection pay a monthly fee. Customers with higher usage levels are billed at higher rates, reflecting the rising cost of water from various sources, incremental supply costs, and conservation costs. There are also drought surcharges intended to recover revenue lost during periods of reduced usage. In 2024, PWD updated its rates in compliance with Proposition 218 to establish equitable means of recovering the cost of providing service and apportioning costs to each customer. Tier 1 is considered essential use, including all residential activities inside the home. Tier 2 is considered efficient use, including outdoor landscape water use. Pricing varies across the five tiers, with Tier 1 being the least expensive and Tier 2 increasing in price due to higher irrigation water usage. The cost per unit in the remaining tiers increases progressively.

8.1.1.4 Public Education and Outreach

PWD has school programs in place that provide educational materials and instructional assistance. These programs aim to reach the youngest water users and emphasize the importance of engaging them in water conservation.

To provide PWD customers with the tools to maintain water conservation goals, public education efforts have included radio spots, bill inserts, newsletters, press releases, rebate programs, such as the Water Wise Landscape Conversion Program, workshops, booths at local events, public speaking engagements, web-based presentations, and school interaction. PWD is committed to providing its customers with the education and tools to maintain their low water usage, all of which can be found on PWD's website at: http://www.palmdalewater.org/conservation/.

8.1.1.5 Programs to Assess and Manage Distribution System Real Loss

PWD regularly checks and evaluates the mainline piping system to detect leaks. Mainline and pump performance is also monitored through the Supervisory Control and Data Acquisition (SCADA) system. In addition, PWD booster stations and wells also have pressure monitoring. Through a GIS-supported leak registry, PWD assesses distribution system losses. The move to AMI infrastructure is expected to further help to identify and repair customer leaks in a timely manner and limit the extent of real water loss. Distribution system loss is discussed in Chapter 2, Section 2.2.2, and reported in Appendix E.

8.1.1.6 Consistency with State Water Loss Standards

Water Code Section 10608.34 requires compliance with a water loss standard. The State Water Resources Control Board (State Water Board) Water Loss Performance Standard is composed of the real water loss standard and the apparent water loss standard. The water loss standard does not have to be met until 2028; however, pursuant to Water Code Section 10631(d)(3)(C), retail water suppliers are required to include data in their 2025 UWMPs demonstrating whether they meet the water loss standard.

A comparison of results from the most recent 2024 AWWA Water Loss Audit to the 2028 standard is shown in Table 8-1. Based on the audit results, PWD meets its Apparent Water Loss Performance Standards but will need to take additional action to comply with the Real Water Loss Standard. Compliance will be re-evaluated with future annual Water Loss Audits for PWD once those are available.

Table 8-1: Progress Towards 2028 Water Loss Standard *(DWR Table 4-6)*

Real Water Loss (gpscd)		Apparent Water Loss (gpscd)	
State Water Board 2028 Standard	**Real Water Loss based on 2024 Audit**	**State Water Board 2028 Standard**	**Apparent Water Loss based on 2024 Audit**
20.5	32.7	5.5	3.3

8.1.1.7 Water Conservation Program Coordination and Staffing Support

Water conservation activities include significant public outreach efforts as described earlier. Additionally, there are two (2) full-time Water Use Efficiency Specialists, supported by a moderate budget. Contact information: Robert Rosati, Water Use Efficiency Specialist, 661-456-5943; Maria Avelar, Water Use Efficiency Specialist, 661-456-1001.

8.1.2 Other DMMs

8.1.2.1 Rebate Programs

PWD launched several rebate programs for customers in the latter part of the 1990s and continues to offer them. Rebate credits are applied directly to the water bill of the customer after they install a water-saving appliance and submit an application form, the original receipt, and a copy of the water bill to PWD. Customers can also earn rebate credit by participating in the PWD

Water-wise Landscape Conservation (WWLC) program. Rebate programs to encourage water conservation include:

1. High-Efficiency Toilet (HET)/Dual Flush Toilet: Customers who install a 1.28-gallon-per-flush (GPF) HET or 1.0-1.6 GPF dual flush toilet may receive a $100 credit on their water bill. Approximately 326 rebates were given out between 2021 and 2025.

2. High-Efficiency Clothes Washer: A washing machine rebate program is available for customers wishing to purchase a water-efficient washing machine with a water factor of 3.7 or less. The rebate amount is a $150 credit on the customer's account for each washer purchased. Approximately 154 rebates were given out between 2021 and 2025.

3. High-Efficiency Urinal: A urinal rebate program is available for residential and commercial customers who installed a urinal with a use of 0.125 GPF or less. Customers may receive $300 for each urinal installed.

4. Weather-Based Irrigation Controller: This rebate offers a $4 credit per water-sense labeled rotating sprinkler nozzle, up to $150 on the customer's water bill $4. Approximately 103 rebates were given out between 2021 and 2025.

5. Micro-Irrigation Conversion: Customers who use micro-irrigation at a minimum of 1,000 linear feet qualify for a rebate credit of $0.25 per linear foot.

6. Moisture Retaining Soil Additive: Customers may receive a rebate credit of $40 per bag purchased. Approximately 516 rebates were given out between 2021 and 2025.

7. Hot Water Recirculating Pump: Customers who install a hot water recirculating pump qualify for a $125 credit to their water bill.

In addition to rebate programs, PWD encourages customers to participate in the WWLC program, which involves replacing grass with water-smart landscaping, or xeriscapes, to conserve water. PWD offers property owners $1.50 per foot of residential land (up to $2,250), with an additional $0.50 incentive for quick completion (up to $750), in the form of a cash rebate to remove any grass and/or convert their front yard to a drought-friendly, water-wise, xeriscape landscape. Commercial and industrial customers may receive $2.00 per square foot. Approximately 195 WWLC rebates were given out between 2021 and 2025, converting 279,263 sq ft of grass.

8.1.2.2 Non-Functional Turf

The March 2026 updated Waste of Water Policy includes the prohibition on water use for non-functional turf pursuant to AB 1572. Potable water may continue to be used for:

- Irrigation to sustain trees and perennial non-turf landscape plants.
- Health and safety purposes, including fire suppression and erosion control.
- Cemeteries, parks, sports fields, and other public assembly or recreation areas.
- Agricultural irrigation.

8.1.3 Planned Implementation of DMMs to Achieve Water Use Targets

PWD currently has a water conservation program that will continue to expand over the next five (5) years. PWD is dedicated to water conservation as a vital part of its water supply portfolio. Several water conservation programs have been implemented over the past few decades, including classroom education, public outreach, and various rebate programs. PWD will continue to provide these programs annually as part of its conservation efforts.

PWD will continue to implement its conservation program and the DMMs described in this UWMP. These programs, taken together, will help maintain progress toward meeting the State's water efficiency regulations described in Chapter 3 of this UWMP.

Chapter 9: Water Shortage Contingency Planning

PWD has prepared a separate, stand-alone Water Shortage Contingency Plan (WSCP), which is contained in Appendix J. The WSCP was adopted on June 8, 2026, at the regular Board of Directors meeting. This chapter includes a brief description of the WSCP required by the UWMP Guidelines.

9.1 Purpose of the WSCP

PWD has developed this WSCP to provide guidance in the event of triggering events, such as reduced supply, increased demand, or an emergency declaration, and to identify corresponding actions to be taken during the various stages of a water shortage. The WSCP comprises both voluntary and mandatory stages, designed to be fair to all water customers and users while minimizing the impact on business, employment, and the quality of life for residents.

The purpose of this WSCP is to:

1. Monitor and compare anticipated supplies and demands consistent with Water Code Section 10632(a)(2).
2. Keep water use within supply and delivery capability.
3. Define procedures to be used when supply cannot meet demand.
4. Identify procedures to be implemented when voluntary or mandatory water restrictions are in effect.

Using the procedures and protocols described in Chapter 2: Annual Water Supply and Demand Assessment Procedures (Annual Assessment), the PWD General Manager, or designated representative, shall keep the PWD Board of Directors informed of the conditions of water supply, system usage, delivery capacity and the estimated water shortage stage (if any) and the enactment of initial restrictions or change to an appropriate stage in the WSCP.

9.2 Annual Assessment

Provisions in Water Code Section 10632.1 require that an urban water supplier, such as PWD, conduct an annual water supply and demand assessment (Annual Assessment) on or before July 1 of each year, to be submitted to DWR. As part of the WSCP, PWD has identified the timeline, staff, outside agency coordination, and other actions necessary to conduct the Annual Assessment.

9.3 Shortage Stages

The WSCP describes water shortage stages corresponding to progressive ranges of up to 10, 20, 30, 40, 50, and over 50 percent shortages.

9.4 Water Shortage Response Actions

The WSCP identifies water shortage response actions, including:

- Water supply augmentation
- Operational Changes
- Demand Reduction Actions

The full 2025 WSCP is provided as Appendix J.

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Appendix A: UWMP Checklist

Summary as Applies to UWMP	Relevant Submittal Table	2025 UWMP Location
A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	n/a	ES, Chapter 4, 5, 8
Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	n/a	ES, every Chapter
Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	n/a	NA
Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	2-1	Section 1.4.1, Table 1-1
Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	2-2	Section 1.3
Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	2-3	Section 1.4.2
Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	n/a	Section 1.5
Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	n/a	Section 1.5
Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	2-4 R	NA
Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	2-4 W	NA
Describe the Supplier service area.	n/a	Section 1.6
Describe the climate of the Supplier's service area.	n/a	Section 1.9, 1.10, 1.11
Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	3-1	Section 1.7, Table 1-7
Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	n/a	Section 1.7.2
Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	n/a	Section 1.8, Table 1-9
Quantify past, current, and projected water use, identifying the uses among water use sectors.	4-1 and 4-2	Section 2.2.1, Section 2.2.3, Section 2.3.1
Report the distribution system water loss for each of the five years preceding the plan update.	4-5	Section 2.2.2, Table 2-2
Retail Suppliers shall provide data to show the distribution loss standards were met.	4-6	Section 2.2.2, Table 2-2, Table 8-1
Include projected water use needed for lower income housing projected in the service area of the Supplier.	4-3	Section 2.5, Table 2-8
In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	4-3	Section 2.3.2, Table 2-6
Provide citations of codes, standards, ordinances, or plans used to make water use projections.	4-3	Section 2.3.2, Table 2-6
To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	4-3	Section 2.3.2, Table 2-6
Demands under climate change considerations must be included as part of the drought risk assessment.	n/a	Section 7.6
Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	n/a	NA
Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	5-1	Chapter 3
When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	n/a	Chapter 4
Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	n/a	Chapter 7
Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	6-1	Section 4.3.2.1
Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	n/a	Section 4.2.1.4
Describe the groundwater basin.	n/a	Section 4.2.1
Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	n/a	NA
For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	n/a	Section 4.2.1.4
For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	n/a	Section 4.2.1.5
If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	n/a	Section 4.2, 4.2.1.2 Table 4-2
Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	6-9	Section 4.2, 4.2.1.2 Table 4-3
Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	6-8 and 6-9	Chapter 7, Tables 7-1, 7-2, 7-3

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	n/a	Section 4.3.1
Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	6-2	Chapter 5, 5.3, Table 5-1, Table 5-2
Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	6-3	Chapter 5, 5.3, Table 5-1, Table 5-2
Describe the recycled water currently being used in the Supplier's service area.	6-4	Chapter 5
Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	6-4	Chapter 5, 5.2
Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	6-4 and 6-5	Section 5.5
Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	6-6	Section 5.2
Provide a plan for optimizing the use of recycled water in the Supplier's service area.	n/a	Chapter 5
Describe desalinated water project opportunities for long-term supply.	6-7	Section 4.3.3
Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	6-7	Section 7.5, Table 7-4
The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	O-1A, O-1B, O-1C, and O-2	Section 4.6, Appendix I
Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	n/a	Chapter 6, 6.5
Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	7-2, 7-3, and 7-4	Chapter 7, 7.2
Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	n/a	Section 1.10, 2.6, 4.2.3.3.3, 7.6, 8.1.1.4
Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	n/a	Section 7.6
Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	n/a	Section 7.6.1
Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	n/a	Chapter 7
Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	7-5	Section 7.6, Table 7-4
Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	n/a	Sections 1.6 - 1.11
Provide a water shortage contingency plan (WSCP) with specified elements below.	n/a	WSCP, UWMP Appendix J
Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	n/a	WSCP, UWMP Appendix J
Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	n/a	WSCP, UWMP Appendix J, Chapter 2
Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	n/a	WSCP, UWMP Appendix J
Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	n/a	WSCP, UWMP Appendix J, Section 4.1
Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	8-1	WSCP, UWMP Appendix J, Section 4.1
Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	8-2	WSCP, UWMP Appendix J, Chapter 4
Specify locally appropriate demand reduction actions to adequately respond to shortages.	8-3	WSCP, UWMP Appendix J, Section 5.2.1
Specify locally appropriate operational changes.	8-2	WSCP, UWMP Appendix J, Section 5.2.2, 5.2.3
Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Table 8-3	WSCP, UWMP Appendix J, Section 5.3.3.1
Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	8-2 and 8-3	WSCP, UWMP Appendix J, Tables 5-2, 5-3
The UWMP shall include a seismic risk assessment and mitigation plan.	n/a	WSCP, UWMP Appendix J, Section 3.2
Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	n/a	WSCP, UWMP Appendix J, Section 5.3.1
Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	n/a	WSCP, UWMP Appendix J, Section 5.3.1
Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	n/a	WSCP, UWMP Appendix J, Section 5.3.2
Describe the legal authority that empowers the Supplier to enforce shortage response actions.	n/a	WSCP, UWMP Appendix J, Section 4.2
Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. *Water Shortage Emergencies* .	n/a	WSCP, UWMP Appendix J, Chapter 3
Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	n/a	WSCP, UWMP Appendix J, Section 1.4
Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	n/a	WSCP, UWMP Appendix J, Section 7.1.1

Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	n/a	WSCP, UWMP Appendix J, Section 7.1.1
Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought* .	n/a	WSCP, UWMP Appendix J, Section 7.1.1
Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	n/a	WSCP, UWMP Appendix J, Section 5.2
Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	n/a	WSCP, UWMP Appendix J, Section 1.3
Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	n/a	WSCP, UWMP Appendix J, Section 2.3
Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	n/a	UWMP Chapter 1
Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	n/a	UWMP Chapter 8
Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	n/a	NA
Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	n/a	Section 1.5, 1.5.1 and Appendix D
Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	10-1	Section 1.5, 1.5.1 and Appendix D
Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6.	n/a	Section 1.5, 1.5.1 and Appendix D
Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	n/a	Section 1.5.1 and Appendix D
The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	10-1	Section 1.5.1 and Appendix D
Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	n/a	Section 1.5.1 and Appendix C
Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	n/a	Appendix D
Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	n/a	Section 1.5.1 and Appendix D
The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	n/a	UWMP Chapter 1
If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	n/a	NA
Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	n/a	Section 1.5.1 and Appendix D
Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	n/a	Section 1.5.1 and Appendix D
If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	n/a	NA

Appendix B: DWR Submittal Tables

Templates of Submittal Tables for the Urban Water Management Plan 2025

Workbook Contents: This workbook contains the templates for Submittal Tables that Suppliers use to organize information as part of their Urban Water Management Plans 2025 (due July 1, 2026). Table numbers correspond to the chapter number where they are described in the UWMP Guidebook. If the table name is followed by a letter, the letter corresponds to whether the table is specific for Wholesale Suppliers or Retail Suppliers only (W and R, respectively). For those table names that are not followed by a letter, these are Submittal Tables for all Suppliers.

Where to submit? Suppliers submit the completed table data and UWMPs (including the Water Shortage Contingency Plan) electronically through the WUEdata Portal (https://wuedata.water.ca.gov/). The portal will be updated and will be announced to the Urban Suppliers listserv, DWR webpage and WUEdata Portal opening page when it is available for plan and table submittals.

Unlocked templates (use with caution): The templates provided in this workbook are formatted to mirror the structure of information that is submitted through the WUEdata Portal for the electronic submission of Submittal Tables in the UWMP. The tables are offered in an unprotected (unlocked) version. If needed, Suppliers may adjust the tables for their own planning needs beyond the Submittal Tables. However, preparers will still need to submit the information using the original template structure provided for their UWMP. Make changes to the tables with caution, as there are formulas, automatically filled cells, and drop-downs present throughout. To redownload the templates in their original format, visit https://wuedata.water.ca.gov in the Resources button of the Urban Water Management Plan section (no login necessary).

NOTES FOR REGIONAL URBAN WATER MANAGEMENT PLANS (RUWMPs)

RUWMPs will report data for each agency in the RUWMP, requiring duplicates of the submittal tables. The supplier will copy the needed tables and notate each of the copies with the name of the agency, or some other designation, identifying the table with the corresponding agency.

WUEdata upload tool for RUWMPs

RUWMPs will submit data to the WUEdata upload tool on an individual agency basis.

Submittal Table 2-1 Retail: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
Add additional rows as needed			
CA1910102	Palmdale Water District	27,702	22,072
	Total	27,702	22,072

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

NOTES:

Submittal Table 2-2: Plan Identification		
Select One	**Type of Plan**	**Name of Regional Alliance or RUWMP** (Drop Down List)
☑	**Individual UWMP**	
	If Water Supplier is also a member of a SB X7-7 Regional Alliance, select name from the drop-down.	
☐	**Regional Urban Water Management Plan (RUWMP)**	
	If Supplier selected RUWMP, select name from the drop-down.	
NOTES:		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesale supplier
☑	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP (Select from the drop down list).	
Unit	AF
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES: See UWMP Section 1.4.2.	

Submittal Table 2-4 Retail: Water Supplier Information Exchange Water Code Section 10631(h)
The retail Supplier has informed the following wholesale supplier(s) of projected water use.
Wholesale Water Supplier Name
Add additional rows as needed
NOTES: Not applicable. PWD does not receive water from a wholesale supplier. PWD is a direct contractor of the State Water Project.

10631(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available.

Submittal Table 2-4 Wholesale: Water Supplier Information Exchange Water Code Section 10631(h)	
☐	Check the box if the Supplier has informed more than 10 other water suppliers of water supplies available. **Completion of the table below is optional. If not completed, include a list of the water suppliers that were informed.**
	Provide page number for location of the list.
☐	Check the box if the Supplier has informed 10 or fewer other water suppliers of water supplies available. **Complete the table below.**
Water Supplier Name	
Add additional rows as needed	
NOTES:	

10631(h) ... The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five year increments, and during various water-year types in accordance with subdivision (f).

Submittal Table 3-1 Retail: Population - Current and Projected Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050(opt)
	126,804	127,789	128,782	129,152	129,522	129,894

NOTES: The current (2025) population estimate was determined using the most recent United States (US) census data and annually adjusted using the California's Department of Finance (DOF) Demographic Research Unit's annual population change information. Population projections presented here for the years 2030-2050 are based on the 2024 Southern California Association of Governments (SCAG) population data for the City of Palmdale. Projections were determined by using the SCAG growth percentages for the City of Palmdale and applying them to the 2020 census population within the PWD boundary, as calculated with the DWR population tool.

CWC 10631(a) describe the current and projected population of the service area including current and projected population…

Submittal Table 3-1 Wholesale: Population - Current and Projected Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050(opt)
NOTES:						

CWC 10631(a) describe the current and projected population of the service area…

Submittal Table 4-1 Retail: Total Uses for Potable and Non-Potable Water — Actual Water Code Section 10631(d)(1)			
Use Type	Additional Description (as needed)	2025 Actual Water Use	
Drop down list May select each use multiple times These are the only use types that will be recognized by the WUEdata online submittal tool		**Potable or Non-Potable** (OPTIONAL) Drop down list	Volume (AF)
Add additional rows as needed			
Single Family		Potable	10,344
Multi-Family		Potable	2,030
Commercial		Potable	2,022
Agricultural		Potable	995
Other (optional)		Non-Potable	329
Sales/Transfers/Exchanges to other Suppliers		Potable	5,305
Distribution System Water Loss		Non-Potable	1,047
		Subtotal Potable	20696
		Subtotal Non-Potable	1376
		Total	22,072
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.			
NOTES: Industrial uses included in the Commercial category. Water losses are the average of 2020 to 2024 from the annual Water Audit Rreports			

CWC 10631(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use…identifying the uses among water use sectors including but not limited to:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.
(J) Distribution system water loss

Optional **Submittal Table 4-1 Wholesale: Total Uses for Potable and Non-Potable Water — Actual** **Water Code Section 10631(d)(1)**			
Use Type		2025 Actual Water Use	
Drop down list May select each use multiple times These are the only use types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	**Potable or Non-Potable** (OPTIONAL) Drop down list	Volume (AF)
Add additional rows as needed			
		Subtotal Potable	0
		Subtotal Non-Potable	0
		Total	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.			
NOTES:			

10631(d) (1) for an urban retail water supplier, quantify to the extent records are available, past and current water use...

Submittal Table 4-2 Retail: Total Uses for Potable, and Non-Potable Water — Projected
Water Code Section 10631(d)(1)

Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		**Potable or Non-Potable** (OPTIONAL) Drop down list	**2030 (AF)**	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 opt (AF)**
Add additional rows as needed.							
Single Family		Potable	10,430	10,510	10,550	10,580	10,610
Multi-Family		Potable	2,040	2,060	2,060	2,070	2,070
Commercial	(a)	Potable	2,050	2,080	2,090	2,100	2,110
Agricultural	(b)	Potable	1,000	1,000	1,010	1,010	1,010
Other (optional)	(c)	Non-Potable	310	310	310	310	310
Sales/Transfers/Exchanges to other Suppliers	(d)	Potable	4,890	4,890	4,890	4,890	4,890
Distribution System Water Loss	(e)	Potable	1,300	1,300	1,400	1,400	1,400
		Subtotal Potable	21,710	21,840	22,000	22,050	22,090
		Subtotal Non-Potable	310	310	310	310	310
		Total	22,020	22,150	22,310	22,360	22,400

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

NOTES: Values are rounded.
(a)Includes Institutional demands.
(b)Includes Natural Resource Extraction demands.
(c)Includes Fire Service, Construction, and Utility demands.
(d)Projected sales to other agencies based on the average of 2020-2025.
(e)Based on average water loss from the past five (5) years of water audit reports.

CWC 10631(d)(1) For an urban retail water supplier, quantify, to the extent records are available... projected water use…identifying the uses among water use sectors…

Optional **Submittal Table 4-2 Wholesale: Total Uses for Potable and Non-Potable Water — Projected** **Water Code Section 10631(d)(1)**							
Use Type		**Projected Water Use** (Report To the Extent that Records are Available)					
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool.	Additional Description (as needed)	**Potable or Non-Potable** (OPTIONAL) Drop down list	**2030 (AF)**	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 opt (AF)**
Add additional rows as needed							
		Subtotal Potable	0	0	0	0	0
		Subtotal Non-Potable	0	0	0	0	0
		Total	0	0	0	0	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES:							

10631(d) (1) for an urban retail water supplier, quantify to the extent records are available, past and current water use...

Submittal Table 4-3 Retail: Inclusion in Water Use Projections Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)	
Are Future Water Savings Included in Projections? **Drop down list (y/n)**	No
If "Yes" to above, **state the section or page number**, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found. ***Optional*** Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings.	Savings included separately in Table 4-4R
Are Lower Income Residential Demands Included In Projections? **Drop down list (y/n)**	Yes
Optional If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found.	Section 2.5 Table 2-8
DWR NOTES: Additional guidance is provided in Appendix K.	
NOTES:	

CWC10631 (d) (4) (A) Water use projections, where available, shall display and account for water savings estimated to result from adopted codes, standards, ordinances, or transpotation and land use plans identified by the urban water supplier, as applicable to the service area.

CWC 10631 (d) (4) (B) to the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances or transportation and land use plans utilized in making the projections.
(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.
CWC 10631(a) Water use projections required by section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county, in the service area of the supplier .

Optional Submittal Table 4-4 Retail: Passive Water Savings Projections Water Code Section 10631(d)(4)(A)					
Description (Codes, Standards, Ordinances, or Plans)	Passive savings				
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 opt (AF)**
Add additional rows as needed					
Making Conservation a California Way of Life	3010	4410	5110	5020	4900
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.					
NOTES: Difference between the projected demand and UWUO standard					

Water Code Section 10631(d)(4)(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)		
Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. Add rows as needed		
CA1910102	**2020**	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
DWR NOTES: Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports.		
NOTES: **https://wuedata.water.ca.gov/public/awwa_uploads/1651692032/AWWA%20Water%20Audit%20CY2020%2Drevised%2Exlsx;** **https://wuedata.water.ca.gov/public/awwa_uploads/7064930558/AWWA%20Water%20Audit%20CY2021%2Exlsx;** **https://wuedata.water.ca.gov/public/awwa_uploads/2217252433/AWWA%20Water%20Audit%20CY2022%2Exlsx;** **https://wuedata.water.ca.gov/public/awwa_uploads/2448926627/AWWA%20Water%20Audit%20CY2023%2Exlsx;**		

CWC 10631(d)(3) (A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

Optional **Submittal Table 4-5 Wholesale: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)**		
Public Water System ID #	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. Add rows as needed		
	2020	
	2021	
	2022	
	2023	
	2024	
DWR NOTES: Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports.		
NOTES:		

CWC 10631(d)(3) (A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard
Water Code Section 10631(d)(3)(C)

Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss Drop down list	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit) (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit) (AF)	Apparent Water Loss Per Unit per Day
Add additional rows as needed.											
CA1910102	Yes	20.5	Gallons per Service Connection per Day (GPSCD)	27708	1015.853	32.7	5.5	Gallons per Service Connection per Day (GPSCD)	27708	102.212	3.3
								Gallons per Service Connection per Day (GPSCD)			
								Gallons per Service Connection per Day (GPSCD)			

Water Board's Calculated Water Loss Standards

DWR NOTES: Units of measure (AF, CCF, MG) for Water Loss **MUST** remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations.

NOTES: AWWA 2024 Water Loss Audit

CWC 10631(d)(3)(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress Water Code Section 10608.40						
☐	**Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.**					
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	**Only for suppliers that did not meet the Target in 2020** **See DWR NOTES below.**	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	185	145	Yes		NA

DWR NOTES:
Suppliers calculating a 2025 GPCD will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies.
Suppliers that were part of a merger or consolidation since 2020 see Chapter 5 and Appendix P for guidance.
NA=Not Applicable

NOTES:

10608.40 Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631.

Submittal Table 6-1 Retail: Groundwater Volume Pumped Water Code Section 10631(4) and 10631(4)(c)							
☐	Check the box if the Supplier does not pump groundwater. Proceed to the next table.						
☐	Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)						
Groundwater Type **Drop Down List** May use each category multiple times	Potable or Non-Potable (OPTIONAL) **Drop down list**	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Add additional rows as needed							
Alluvial Basin	Potable	Lancaster	8208	7175	3931	4572	4228
Alluvial Basin	Potable	Pearland	1606	1333	542	740	1117
Alluvial Basin	Potable	San Andreas Rift Zone	29	32	33	42	42
Alluvial Basin	Potable	Buttes	0	0	0	0	0
		Total	9,844	8,540	4,506	5,354	5,387
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES							

10631(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:
(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Submittal Table 6-1 Wholesale: Groundwater Volume Pumped							
☐	Check the box if the Supplier does not pump groundwater.						
☐	Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)						
Groundwater Type **Drop Down List** May use each category multiple times	Potable or Non-Potable (OPTIONAL) Drop down list	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Add additional rows as needed							
		Total	0	0	0	0	0
DWR NOTES:							
NOTES:							

10631(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:
(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area Water Code Section 10633(a)				
☐	Check the box if there is no wastewater collection system. Proceed to the next table.			
	Percentage of 2025 service area served by wastewater collection system (OPTIONAL)			
	Percentage of 2025 service area population served by wastewater collection system (OPTIONAL)			
Wastewater Collection			**Recipient of Collected Wastewater**	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? OPTIONAL **Drop Down List**	Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number **Drop down list**	Is WWTP Located Within UWMP Area? **Drop Down List**
Add additional rows as needed				
Los Angeles County Sanitation Districts (LACSD	Metered	12,210	Palmdale Water Reclamation Plant, Place ID 247448	Yes
Total Wastewater Received from UWMP Service Area in 2025:		12,210		
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. **Additional Guidance**: See Appendix M, Section M.21 for detailed guidance on this table.				
NOTES:				

CWC 10633(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area
Water Code Section 10633(b)

☐ **Check the box if no wastewater is treated or disposed of within the UWMP service area.**
Proceed to the next table.

Wastewater Treatment Plant Name and Place ID Number **Drop down list**	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL) **Drop down list**	2025 Volume of Wastewater Received from UWMP Service Area (As Reported in Submittal Table 6-2 R) (AF)	Total 2025 Volume of Water Treated (AF)	2025 Outcomes of Treated Wastewater										
				Water Recycled Within UWMP Service Area (enter data as applicable)		**Water Recycled Outside of UWMP Service Area** (enter data as applicable)		**Effluent Discharge that is not a Permitted Recycled Water Use** (enter data as applicable)		**Required Discharge for Instream Flow** (enter data as applicable)		**Delivered to Another Entity for Additional Treatment** (enter data as applicable)		
				Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Name of other entity
Add additional rows as needed														
Palmdale Water Reclamation Plant, Place ID 247448	Yes	12210	10,840	Tertiary	1									
Total		12,210	10,840		1		0		0		0		0	

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
IPR: Indirect Potable Reuse would have the treatment level of its end use requirement in the Level of Treatment drop-down.
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.

NOTES:

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier...and shall include all of the following:
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Submittal Table 6-3 Wholesale: Wastewater Treatment and Discharge Within Service Area
Water Code Section 10633(b)

☐ Check the box if the Wholesale Supplier neither distributes nor provides supplemental treatment to recycled water. Proceed to the next table.

Wastewater Treatment Plant Name and Place ID Number **Drop down list**	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL) **Drop down list**	2025 Volume of Wastewater Received from UWMP Service Area (AF)	Total 2025 Volume of Water Treated (AF)	2025 Outcomes of Treated Wastewater										
				Water Recycled Within UWMP Service Area (enter data as applicable)		**Water Recycled Outside of UWMP Service Area** (enter data as applicable)		**Effluent Discharge that is not a Permitted Recycled Water Use** (enter data as applicable)		**Required Discharge for Instream Flow** (enter data as applicable)		**Delivered to Another Entity for Additional Treatment** (enter data as applicable)		
				Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Name of other entity
Add additional rows as needed.														
Total		0	0		0		0		0		0		0	

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
IPR: Indirect Potable Reuse would have the treatment level of its end use requirement in the Level of Treatment drop-down.
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.

NOTES:

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. ...and shall include all of the following:
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area
Water Code Section 10633 (c),(d),(e)

☐	Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.

Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL) :	Los Angeles County Sanitation District (LACSD)
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL) :	
Volume of Supplemental Water Added in 2025 (OPTIONAL) :	
Source of 2025 Supplemental Water (OPTIONAL) :	

Use Type **Drop down list**	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop down list	Additional Information (as needed)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)	**Potential Recycled Water Use**	
									Volume	Narrative page number (OPTIONAL)
Add additional rows as needed										
Groundwater recharge (IPR)			0	0	5050	5050	5050	5050		
Landscape irrigation (exc golf courses)			1	1600	1600	1600	1600	1600		
		Subtotal Potable	0	0	0	0	0	0	0	
		Subtotal Non-Potable	0	0	0	0	0	0	0	
		Total	1	1600	6650	6650	6650	6650	0	0

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.
Potential recycled water use: a description of the feasibility of these uses must be included in the narrative.
Multiple Producers: If you have multiple recycled water producers, submit a separate table for each.

NOTES:

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier... and shall include...
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use
d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Submittal Table 6-4 Wholesale: Current and Projected Recycled Water Uses
Water Code Section 10633(c),(d),(e)

☐	Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.
Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL) :	
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL) :	
Volume of Supplemental Water Added in 2025 (OPTIONAL) :	
Source of 2025 Supplemental Water (OPTIONAL) :	

Name of Receiving Supplier or Direct Use by Wholesale Supplier	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop down list	Additional Information (as needed)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)	Potential Recycled Water Use	
									Volume (AF)	Narrative page number (OPTIONAL)
Add additional rows as needed										
		Subtotal Potable	0	0	0	0	0	0	0	
		Subtotal Non-Potable	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the unit of measure selected in Submittal Table 2-3.
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.
Potential recycled water use: a description of the feasibility of these uses must be included in the narrative.
Multiple Producers: If you have multiple recycled water producers, submit a separate table for each.

NOTES:

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier... and shall include...
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use
d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual Water Code Section 10633(e)		
☐	Check the box if recycled water was not used in 2025 nor previously projected for use in 2020. Proceed to the next table.	
Use Type Drop Down list	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Add additional rows as needed		
Landscape irrigation (exc golf courses)	500	1
Groundwater recharge (IPR)	5,325	0
Total	5,825	1

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3

Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.

NOTES:

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following: (e) ...a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision

Submittal Table 6-5 Wholesale: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual Water Code Section 10633(e)		
☐	Check the box if recycled water was not used or distributed by the supplier in 2025, nor projected for use or distribution in 2020. Proceed to the next table.	
Name of Receiving Supplier or Direct Use by Wholesale Supplier	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Add additional rows as needed		
Total	0	0
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. **Additional Guidance:** See Appendix M, Section M.21 for detailed guidance on this table.		
NOTES:		

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the serv`ice area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following: (e) ...a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision

Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use Water Code Section 10633(f)			
☐	Check the box if the Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in the UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Add additional rows as needed			
Pure Water Antelope Valley (PWAV)	The goal of the PWAV is the beneficial use of recycled water for either surface or groundwater augmentation to benefit the region. PWAV is a solution that is drought resilient, provides local control of water resources, and helps meet the future demands of PWD	2031	5,050
		Total (AF)	5,050
		Unit Conversion to AF	5,050

DWR NOTES:

Units of measure (AF, CCF, MG) MUST remain consistent with units reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

The unit conversion to Acre Feet addresses the Water Code's requirement that this value be provided in acre-feet.

NOTES:

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(f) a description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre feet of recycled water used per year.

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs Water Code Section 10631(f)							
☐	Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Proceed to the next table.						
☐	Check the box if some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.						
	Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Planned Implementation Year	Planned for Use in Year Type **Drop Down List**	Expected Increase in Water Supply to Supplier (This may be a range) (AF)
	Drop Down List (yes/no)	If Yes, Supplier Name					
Add additional rows as needed							
Pure Water Antelope Valley (PWAV)	No		The goal of PWAV is the beneficial use of 5,325 AFY of recycled water for groundwater augmentation, benefiting the region. PWAV is a solution that is drought-resilient, provides local control over water resources, and helps meet future PWD demands.	Potable	2031	All Year Types	5,050
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3.							
NOTES:							

10631 (f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Submittal Table 6-7 Wholesale: Expected Future Water Supply Projects or Programs Water Code Section 10631(f)							
☐	Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Proceed to the next table.						
☐	Check the box if some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.						
	Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop down list	Planned Implementation Year	Planned for Use in Year Type **Drop Down list**	Expected Increase in Water Supply to Supplier (This may be a range) (AF)
	Drop Down List (yes/no)	If Yes, Supplier Name					
Add additional rows as needed							
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3.							
NOTES:							

10631 (f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Submittal Table 6-8 Retail: Water Supplies — Actual Water Code Section 10631(b)				
Water Supply		**2025**		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Actual Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed				
Groundwater (not desalinated)	Antelope Valley Groundwater Basin	Potable	19,432	
Groundwater (not desalinated)	Return Flow Credit	Potable	3,844	
Groundwater (not desalinated)	Groundwater Augmentation	Potable	0	
Surface water (not desalinated)	Littlerock Reservoir	Potable	3,687	
Purchased or Imported Water	SWP Table A	Potable	9,770	
Purchased or Imported Water	Butte Transfer Agreement	Potable	5,000	
Recycled Water	LACSD	Potable	1	
		Subtotal Potable	41,734	0
		Subtotal Non-Potable	0	0
		Total	41,734	0

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

NOTES:

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following... (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information...

Submittal Table 6-8 Wholesale: Water Supplies — Actual
Water Code Section 10631(b)

Water Supply	Additional Description (as needed)	2025		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Actual Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed				
		Subtotal Potable	0	0
		Subtotal Non-Potable	0	0
		Total	0	0

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

NOTES:

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following... (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information

Optional **Table 6-8DS: Source Water Desalination by Urban Water Supplier**											
☑	Check the box if the Supplier does not reduce salinity in either groundwater or surface water prior to distribution.										
Desalination Facility **Drop Down list**	Plant Capacity	Intake Type **Drop down list**	Source Water Type **Drop down list**	Influent TDS	Brine Discharge **Drop down list**	Volume of Water Desalinated					Name(s) of Agencies that Receive this Water
						2021 (AF)	**2022 (AF)**	**2023 (AF)**	**2024 (AF)**	**2025 (AF)**	
Add additional rows as needed											
					Total	0	0	0	0	0	
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submital Table 2-3. This table identifies the units of measure reported in Submittal Table 2-3.											
NOTES:											

Submittal Table 6-9 Retail: Water Supplies — Projected
Water Code Section 10631 (b)

Water Supply			Projected Water Supply (Report to the Extent Practicable)									
			2030		2035		2040		2045		2050 (opt)	
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed												
Groundwater (not desalinated)	Antelope Valley Groundwater Basin	Potable	4,360		4,360		4,360		4,360		4,360	
Groundwater (not desalinated)	Return Flow Credit	Potable	3,840		3,840		3,840		3,840		3,840	
Groundwater (not	Groundwater	Potable	0		5,050		5,050		5,050		5,050	
Surface water (not	Littlerock	Potable	4,000		4,000		4,000		4,000		4,000	
Purchased or Imported Water	SWP Table A	Potable	11,250		10,990		10,740		10,480		10,220	
Purchased or Imported Water	Butte	Potable	5,280		5,160		5,040		4,920		4,800	
Recycled Water	LACSD	Potable	1,600		1,600		1,600		1,600		1,600	
		Subtotal Potable	30,330	0	35,000	0	34,630	0	34,250	0	33,870	0
		Subtotal Non-Potable	0	0	0	0	0	0	0	0	0	0
		Total	30,330	0	35,000	0	34,630	0	34,250	0	33,870	0

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

NOTES:

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following... (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year

Submittal Table 6-9 Wholesale: Water Supplies — Projected
Water Code Section 10631 (b)

Water Supply			Projected Water Supply (Report to the Extent Practicable)									
			2030		2035		2040		2045		2050 (opt)	
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed												
		Subtotal Potable	0	0	0	0	0	0	0	0	0	0
		Subtotal Non-Potable	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in a Submittal Table 2-3.

Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

NOTES:

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following... (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year

Optional Submittal Table O-1A: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - WATER SUPPLY PROCESS APPROACH

Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)		**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**								
Start Date of Reporting Period		**Water Management Process**							**Non-Consequential Hydropower (if applicable)**	
End Date of Reporting Period										
Is upstream embedded energy included in the values reported?										
		Units for Water Volume	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	**Total Utility** See DWR NOTES	Hydropower	Net Utility
Volume of Water Entering Process										0
Energy Consumed (kWh)		N/A						0		0
Energy Intensity (kWh/vol. converted to MG)		N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

DWR NOTES: Total Utility: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

Quantity of Self-Generated Renewable Energy

0 kWh

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Data Quality Narrative:

Narrative:

NOTES:

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:

(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.

(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies though its distribution systems.

(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.

(7) Any other energy-related information the urban water supplier deems appropriate.

10631.2 (b) The Department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems.

Optional Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH

Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**		
Start Date of Reporting Period	1/1/2024	**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
End Date of Reporting Period	12/31/2024			
Is upstream embedded energy in the values reported?	No			
Units of Measure for Water	AF	**Total Utility** See DWR NOTES	**Hydropower**	**Net Utility**
Volume of Water Entering Process		18,595		18,595
Energy Consumed (kWh)		11,567,467		11,567,467
Energy Intensity (kWh/vol. converted to MG)		1,909	-	1,909

DWR NOTES:
Total Utility: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

Quantity of Self-Generated Renewable Energy

0 kWh

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Data Quality Narrative:

Data is sourced from utility bills covering January 1, 2024 through December 31, 2025. For all sites—including wells, boosters, and the Treatment Plant—kWh usage and related metadata are extracted from each bill. Production data is aligned with the service period referenced in the corresponding bill.

Narrative:

NOTES:

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier

(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies though its distribution systems.

(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.

(7) Any other energy-related information the urban water supplier deems appropriate.

10631.2 (b) The Department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems.

Optional Submittal Table O-1C: Recommended Energy Reporting - MULTIPLE WATER DELIVERY PRODUCTS - WATER PROCESS APPROACH

Start Date of Reporting Period	
End Date of Reporting Period	
Is upstream embedded energy in the values reported?	
Units of Measure for Water	

Only for Water Delivery Products Under the Urban Water Supplier's Operational Control

	Water Management Processes						Non-Consequential Hydropower (if applicable)	
	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	**Total Utility See DWR NOTES**	**Hydropower**	**Net Utility**
Total Volume of Water Entering Each Process for All Product Types								N/A
Retail Potable Deliveries (%)						Enter in Column C of table below		
Retail Non-Potable Deliveries (%)								
Wholesale Potable Deliveries(%)								
Wholesale Non-Potable Deliveries (%)								
Agricultural Deliveries (%)								
Environmental Deliveries (%)								
Other (%)								
Total Percentage [must equal 100%]	0%	0%	0%	0%	0%	N/A	0%	N/A
Total Energy Consumed by Each Process for All Product Types (kWh)						0		0
Energy Intensity (kWh/vol. converted to MG)	0.0	0.0	0.0	0.0	0.0	N/A	0.0	N/A

DWR NOTES: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

Product Type	Delivery Volume by Product (volume units defined above)	Total Energy Intensity (kWh/volume)	Net Energy Intensity (kWh/volume)
Retail Potable		-	-
Retail Non-Potable		-	-
Wholesale Potable		-	-
Wholesale Non-Potable		-	-
Agricultural		-	-
Environmental		-	-
Other		-	-
Total of All Products	**0**	**0.0**	**-**

DWR NOTES: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from the volume reported in Table O1-C..

Quantity of Self-Generated Renewable Energy

kWh

Data Quality (drop down)

Data Quality Narrative:

Narrative:

NOTES:

Optional Submittal Table O-2: Recommended Energy Reporting - WASTEWATER AND RECYCLED WATER					
Start Date of Reporting Period		Only for Water Delivery Products Under the Urban Water Supplier's Operational Control			
End Date of Reporting Period					
Is upstream embedded energy in the values reported?		Water Management Process			
Units of Measure for Water		Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Wastewater Entering Process (volume units selected above)					0
Wastewater Energy Consumed (kWh)					0
Wastewater Energy Intensity (kWh/volume converted to MG)		0.0	0.0	0.0	0.0
Volume of Recycled Water Entering Process (volume units selected above)					0
Recycled Water Energy Consumed (kWh)					0
Recycled Water Energy Intensity (kWh/volume converted to MG)		0.0	0.0	0.0	0.0

Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations

kWh

Data Quality (drop down)

Data Quality Narrative:

Narrative:

NOTES:

Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available (AF)	**% of Average Supply**
Average Year			100%
Single-Dry Year			
Consecutive Dry Years 1st Year			
Consecutive Dry Years 2nd Year			
Consecutive Dry Years 3rd Year			
Consecutive Dry Years 4th Year			
Consecutive Dry Years 5th Year			

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.

NOTES:

OPTIONAL Submittal Table 7-1 Wholesale: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available (AF)	**% of Average Supply**
Average Year			100%
Single-Dry Year			
Consecutive Dry Years 1st Year			
Consecutive Dry Years 2nd Year			
Consecutive Dry Years 3rd Year			
Consecutive Dry Years 4th Year			
Consecutive Dry Years 5th Year			

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 W if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 W, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 W are being used and identify the particular water source that is being reported in each submittal table.
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the unit of measure selected in Submittal Table 2-3.

NOTES:

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 (AF)**
Supply totals (autofill from Submittal Table 6-9 R)	30,330	35,000	34,630	34,250	33,870
Use totals (autofill from Submittal Table 4-2 R)	22,020	22,150	22,310	22,360	22,400
Surplus/(shortfall)	8,310	12,850	12,320	11,890	11,470
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: Includes sales to other agencies. See UWMP Table 7-1 for details.					

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment **shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments,** for a

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison - POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 R)	30,330	35,000	34,630	34,250	33,870
Use totals (autofill from Submittal Table 4-2 R)	21,710	21,840	22,000	22,050	22,090
Surplus/(shortfall)	8,620	13,160	12,630	12,200	11,780
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
NOTES:					

OPTIONAL Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison - NON-POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 R)	0	0	0	0	0
Use totals (autofill from Submittal Table 4-2 R)	310	310	310	310	310
Surplus/(shortfall)	(310)	(310)	(310)	(310)	(310)
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
NOTES:					

Submittal Table 7-2 Wholesale: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 (AF)**
Supply totals (autofill from Submittal Table 6-9 W)	0	0	0	0	0
Use totals (see OPTIONAL Submittal Table 4-2 W)					
Surplus/(shortfall)	0	0	0	0	0
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-2 Wholesale: Normal Year Supply and Use Comparison - POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 W)	0	0	0	0	0
Use totals (see OPTIONAL Submittal Table 4-2 W)					
Surplus/(shortfall)	0	0	0	0	0
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
NOTES					

OPTIONAL Submittal Table 7-2 Wholesale: Normal Year Supply and Use Comparison - NON-POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 W)	0	0	0	0	0
Use totals (see OPTIONAL Submittal Table 4-2 W)					
Surplus/(shortfall)	0	0	0	0	0
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
NOTES					

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 (AF)**
Supply totals	15,430	20,230	19,980	19,730	19,480
Use totals	22,020	22,150	22,310	22,360	22,400
Surplus/(shortfall)	(6,590)	(1,920)	(2,330)	(2,630)	(2,920)
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: Includes sales to other agencies. See UWMP Table 7-2 for details.					

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment **shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments,** for a normal water year, a **single dry water year**, and a drought

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison - POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals					
Use totals					
Surplus/(shortfall)					
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES					

OPTIONAL Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison - NON-POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals					
Use totals					
Surplus/(shortfall)					
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES					

Submittal Table 7-3 Wholesale: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 (AF)**
Supply totals					
Use totals					
Surplus/(shortfall)					
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-3 Wholesale: Single Dry Year Supply and Use Comparison - POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals					
Use totals					
Surplus/(shortfall)					
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

OPTIONAL Submittal Table 7-3 Wholesale: Single Dry Year Supply and Use Comparison - NON-POTABLE					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals					
Use totals					
Surplus/(shortfall)					
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison
Water Code Section 10635(a)

		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals	18,430	23,420	23,360	23,340	23,270
	Use totals	22,020	22,150	22,310	22,360	22,400
	Surplus/(shortfall)	(3,590)	1,270	1,050	980	870
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals	18,430	23,420	23,360	23,340	23,270
	Use totals	22,020	22,150	22,310	22,360	22,400
	Surplus/(shortfall)	(3,590)	1,270	1,050	980	870
	OPTIONAL WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals	18,430	23,420	23,360	23,340	23,270
	Use totals	22,020	22,150	22,310	22,360	22,400
	Surplus/(shortfall)	(3,590)	1,270	1,050	980	870
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals	18,430	23,420	23,360	23,340	23,270
	Use totals	22,020	22,150	22,310	22,360	22,400
	Surplus/(shortfall)	(3,590)	1,270	1,050	980	870
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals	18,430	23,420	23,360	23,340	23,270
	Use totals	22,020	22,150	22,310	22,360	22,400
	Surplus/(shortfall)	(3,590)	1,270	1,050	980	870
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES: Includes sales to other agencies. See UWMP Table 7-3 for details.

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment **shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments,** for a normal water year, a single dry water

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison - POTABLE

		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES:

OPTIONAL Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison - NON-POTABLE

		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES:

Submittal Table 7-4 Wholesale: Multiple Dry Years Supply and Use Comparison Water Code Section 10635(a)						
		2030 (AF	2035 (AF	2040 (AF	2045 (AF	2050 (AF
First year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.						
NOTES:						

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-4 Wholesale: Multiple Dry Years Supply and Use Comparison - POTABLE

		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES:

OPTIONAL Submittal Table 7-4 Wholesale: Multiple Dry Years Supply and Use Comparison - NON-POTABLE

		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals					
	Use totals					
	Surplus/(shortfall)	0	0	0	0	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES:

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)	
2026	**Total**
Total Water Use (AF)	21,920
Total Supplies (AF)	16,980
Surplus/Shortfall w/o WSCP Action	(4,940)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	0
WSCP - use reduction savings benefit (AF)	4,940
Revised Surplus/(shortfall)	0
2027	**Total**
Total Water Use (AF)	21,940
Total Supplies (AF)	17,370
Surplus/Shortfall w/o WSCP Action	(4,570)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	0
WSCP - use reduction savings benefit (AF)	4,570
Revised Surplus/(shortfall)	0
2028	**Total**
Total Water Use (AF)	21,980
Total Supplies (AF)	17,860
Surplus/Shortfall w/o WSCP Action	(4,120)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	0
WSCP - use reduction savings benefit (AF)	4,120
Revised Surplus/(shortfall)	0
2029	**Total**
Total Water Use (AF)	21,990
Total Supplies (AF)	18,140
Surplus/Shortfall w/o WSCP Action	(3,850)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	0
WSCP - use reduction savings benefit (AF)	3,850
Revised Surplus/(shortfall)	0
2030	**Total**
Total Water Use (AF)	22,020
Total Supplies (AF)	18,430
Surplus/Shortfall w/o WSCP Action	(3,590)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	0
WSCP - use reduction savings benefit (AF)	3,590
Revised Surplus/(shortfall)	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES: Includes sales to other agencies. See UWMP Table 7-4 for details	

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment -	
2026	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2027	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2028	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2029	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2030	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	

OPTIONAL Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment	
2026	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2027	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2028	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2029	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2030	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	

10635 (b) Every urban water supplier shall include, as part of its urban water management plan, a **drought risk assessment** for its water service... The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, ...

Submittal Table 7-5 Wholesale: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)	
2026	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2027	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2028	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2029	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2030	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES:	

If you choose to fill these optional tables, please paste the combined information in the submittal table to the left.

OPTIONAL Submittal Table 7-5 Wholesale: Five-Year Drought Risk	
2026	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2027	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2028	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2029	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2030	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout	
NOTES:	

OPTIONAL Submittal Table 7-5 Wholesale: Five-Year Drought Risk	
2026	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2027	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2028	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2029	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2030	**Total**
Total Water Use (AF)	
Total Supplies (AF)	
Surplus/Shortfall w/o WSCP Action	0
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout	
NOTES:	

10635 (b) Every urban water supplier shall include, as part of its urban water management plan, a **drought risk assessment** for its water service... The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, ...

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels Water Code Section 10632(a)(3)(B)			
☐	Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.		
Standard Shortage Levels	**Percent Shortage Range**	**Suppliers Shortage Levels**	**Percent Shortage Range**
1	Up to 10%	1	Up to 10%
2	Up to 20%	2	Up to 20%
3	Up to 30%	3	Up to 30%
4	Up to 40%	4	Up to 40%
5	Up to 50%	5	Up to 50%
6	>50%	6	>50%
NOTES:			

10632 (a) Every urban water supplier shall prepare and adopt a water shortage contingency plan as part of its urban water management plan that consists of each of the following elements:

(3)(A)Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. **Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use.** Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagaph (A) by developing and including a cross-reference relating its existing categores to the six standard water shortage levels.

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions Water Code Section 10632(a)(4)(A),(C) and (E)				
	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
3	Other Actions (describe)	Volume	500	Pump Additional Groundwater
4	Other Actions (describe)	Volume	1,000	Pump Additional Groundwater
5	Other Actions (describe)	Volume	1,000	Pump Additional Groundwater
6	Other Actions (describe)	Volume	2,000	Pump Additional Groundwater
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.				
NOTES:				

10632(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions.

(C) Locally appropriate operational changes.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Submittal Table 8-2 Wholesale: Supply Augmentation and Other Actions Water Code Section 10632(a)(4)(A),(C) and (E)				
	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.				
NOTES:				

10632(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions.

(C) Locally appropriate operational changes.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B),(D), and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? **For Retail Suppliers Only** Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
Add additional rows as needed					
1	Expand Public Information Campaign	Percentage	7%		No
2	Implement or Modify Drought Rate Structure or Surcharge	Percentage	10%		Yes
3	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	4%		Yes
4	Expand Public Information Campaign	Percentage	22%		Yes
5	Implement or Modify Drought Rate Structure or Surcharge	Percentage	15%		Yes
6	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	52%		Yes
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: WSCP Table 5-3					

10632(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(B) Locally appropriate demand reduction actions to adequately respond to shortages.

(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Submittal Table 8-3 Wholesale: Demand Reduction Actions Water Code Section 10632(a)(4)(B) and (E)				
	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.				
NOTES:				

10632(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(B) Locally appropriate demand reduction actions to adequately respond to shortages.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Submittal Table 10-1 Retail: Notification to Cities and Counties Water Code Section 10621(b) and 10642		
City Name	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
Palmdale	Yes	Yes
Lancaster	Yes	Yes
County Name **Drop Down List**	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
Los Angeles County	Yes	Yes
NOTES:		

CWC 10621 (b)Notify at least 60 days prior to the public hearing any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments
CWC 10642 The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.

Submittal Table 10-1 Wholesale: Notification to Cities and Counties Water Code Section 10621(b) and 10642		
☐	Check the box if the Supplier has notified more than 10 cities or counties. **Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.**	
	Provide the page or location of this list in the UWMP.	
☐	Check the box if the Supplier has notified 10 or fewer cities or counties. **Complete the table below.**	
City Name	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
County Name **Drop Down List**	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
NOTES:		

CWC 10621 (b)Notify at least 60 days prior to the public hearing any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

CWC 10642 The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.

Appendix C: Adoption of UWMP and WSCP

To be provided with Final UWMP/WSCP

RESOLUTION NO. 2026-2

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE PALMDALE WATER DISTRICT ADOPTING, DIRECTING FILING OF, AND IMPLEMENTING THE PALMDALE WATER DISTRICT 2025 URBAN WATER MANAGEMENT PLAN AND THE 2025 WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 during the 1983-1984 Regular Session of the California Legislature (Water Code Section 10610 et.seq.) known as the Urban Water Management Plan Act (the Act).

WHEREAS, the California Water Code Section 10632 requires that every urban water supplier shall prepare and adopt a Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan (UWMP); and

WHEREAS, the WSCP is consistent with the California Water Code Sections 350 through 359 and Section 10632 and guidance provided by the California Department of Water Resources Urban Drought Guidebook; and

WHEREAS, the Act mandates that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare, and every five (5) years thereafter update, its UWMP, the primary objective of which is to plan for the conservation and efficient use of water.

WHEREAS, the 2025 UWMP and the 2025 WSCP (together known as the Plans) must be adopted by July 1, 2026, and filed with the California Department of Water Resources, within thirty days of adoption; and

WHEREAS, the Palmdale Water District prepared and filed a UWMP with the California Department of Water Resources in December 1985, December 1990, December 1995, December 2000, December 2005, December 2010, December 2020, and December 2020; and

WHEREAS, the Act further requires that the adopted UWMP and WSCP be available for public review during normal business hours for thirty (30) days following its submission to the Department of Water Resources; and

WHEREAS, as an urban water supplier providing water service to over 3,000 customers, Palmdale Water District is subject to the Act and has, therefore, prepared and circulated for public view a draft 2025 UWMP and a draft 2025 WSCP in compliance with the requirements of the Act,

and a properly noticed public hearing regarding the proposed Plan was duly held by the Palmdale Water District on June 8, 2026.

NOW, THEREFORE, BE IT RESOLVED by the Board of the Directors of the Palmdale Water District as follows:

1. The 2025 Urban Water Management Plan and the 2025 Water Shortage Contingency Plan are hereby approved and adopted.
2. The General Manager is hereby authorized and directed to file the Plans with the California Department of Water Resources, the California State Library, and the City of Palmdale within thirty days of adoption in accordance with the Act.
3. When required by conditions contained in the Plans, the General Manager is authorized to declare a Water Shortage Emergency and to implement water conservation programs as detailed in the Plans, including recommendations to the Board of Directors regarding necessary procedures, rules, and regulations to carry out effective and equitable water conservation programs.
4. The General Manager and staff are hereby further authorized and directed to take such other and further actions as may be reasonably necessary to carry out the purposes and intent of the Plan.

I certify that this is a true copy of Resolution No. 2026-2 as passed by the Board of Directors of the Palmdale Water District at its meeting held June 8, 2026 in Palmdale, California.

Date: June 8, 2026

Kathryn Mac Laren-Gomez, President,
Board of Directors

ATTEST:

Cynthia Sanchez, Secretary, Board of Directors

APPROVED AS TO FORM:

BY:

Aleshire & Wynder, LLP, General Counsel

Appendix D: Public Outreach Materials

RECEIVED
MAY 26 2026
By

AFFIDAVIT OF PUBLICATION

(2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Los Angeles } ss

The space above for file stamp only

PUBLIC NOTICE
2025 URBAN WATER MANAGEMENT PLAN & 2025 WATER SHORTAGE CONTINGENCY PLAN

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer of the **Antelope Valley Press**, a newspaper of general circulation, printed and published **daily** in the city of **Palmdale**, County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under date of October 24, 1931, Case Number 328601; Modified Case Number 657770 April 11, 1956; also operating as the Ledger-Gazette, adjudicated a legal newspaper June 15, 1927, by Superior Court decree No. 224545; also operating as the Desert Mailer News, formerly known as the South Antelope Valley Foothill News, adjudicated a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California on May 29, 1967, Case Number NOC564 and adjudicated a newspaper of general circulation for the **City of Lancaster,** State of California on January 26, 1990, Case Number NOC10714, Modified October 22, 1990; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

May 9, 16, 2026

I certify (or declare) under penalty of perjury that the fore-going is true and correct.

Signature

Dated: May 18, 2026
Executed at Palmdale, California

Valley Press

37404 SIERRA HWY., PALMDALE CA 93550
Telephone (661)267-4112/Fax (661)947-4870

PUBLIC NOTICE

2025 Urban Water Management Plan & 2025 Water Shortage Contingency Plan

Public Hearing and Board Actions

June 8, 2026, 6:00 p.m.
2029 East Avenue Q., Palmdale CA 93550

The Palmdale Water District Board of Directors will hold a public hearing and take action on the 2025 Urban Water Management Plan and 2025 Water Shortage Contingency Plan. An electronic version of the plan is accessible at https://www.palmdalewater.org/about-pwd/reports-and-studies/engineering-reports/. Comments may be submitted by email to: pclerk@palmdalewater.org. The public is welcome to participate and provide public comments.

Questions/Comments:
pclerk@palmdalewater.org

Published: May 9 and 16, 2026

PUBLIC NOTICE

2025 Urban Water Management Plan & 2025 Water Shortage Contingency Plan

Public Hearing and Board Actions

June 8, 2026, 6:00 p.m.
2028 East Avenue Q., Palmdale CA 93550

The Palmdale Water District Board of Directors will hold a public hearing and take action on the 2025 Urban Water Management Plan and 2025 Water Shortage Contingency Plan. An electronic version of the plan is accessible at https://www.palmdalewater.org/about-pwd/reports-and-studies/engineering-reports/. Comments may be submitted by email to: pclark@palmdalewater.org. The public is welcome to participate and provide public comments.

Questions/Comments:
pclark@palmdalewater.org

Published: May 9 and 16, 2026

Valley Press
CLASSIFIEDS
661.441.6389
EVERYTHING UNDER THE SUN!

0990 Public Notice

Superior Court of California,
County of Los Angeles
42011 4th Street West
Lancaster, CA 93534
North District
Michael D. Antonovich
Antelope Valley Courthouse
PETITION OF: CHESSLY INDIRA CIFUENTES MENJIVAR FOR CHANGE OF NAME
ORDER TO SHOW CAUSE FOR CHANGE OF NAME
CASE NUMBER: 26AVCP00093
TO ALL INTERESTED PERSONS: Petitioner: CHESSLY INDIRA CIFUENTES MENJIVAR filed a petition with this court for a decree changing names as follows:

Present name
CHESSLY INDIRA CIFUENTES MENJIVAR
to:
Proposed name
CHESSLY MENJIVAR

THE COURT ORDERS that all persons interested in this matter shall appear before this court at the hearing indicated below to show cause, if any, why the petition for change of name should not be granted. Any person objecting to the name changes described above must file a written objection that includes the reasons for the objection at least two court days before the matter is scheduled to be heard and must appear at the hearing to show cause why the petition should not be granted. If no written objection is timely filed, the court may grant the petition without a hearing.
NOTICE OF HEARING
Date: June 8, 2026 Time: 8:30 a.m. Dept.: A14 The address of the court is same as noted above.
A copy of this Order to Show Cause shall be published at least once each week for four successive weeks prior to the date set for hearing on the petition in the following newspaper of general circulation, printed in this county: Antelope Valley Press
Date: April 15, 2026
JUDGE MICHELLE E. DECASAS
JUDGE OF THE SUPERIOR COURT
Publish: 4/25/26, 5/2/26, 5/9/26, 5/16/26

Superior Court of California,
County of Los Angeles
42011 4th Street West
Lancaster, CA 93534
North District
Michael D. Antonovich
Antelope Valley Courthouse
PETITION OF: ZAIRUS ISRAEL MARTINEZ/MERARI DARLING MARTINEZ FOR CHANGE OF NAME
ORDER TO SHOW CAUSE FOR CHANGE OF NAME
CASE NUMBER: 26AVCP00094
TO ALL INTERESTED PERSONS: Petitioner: ZAIRUS ISRAEL MARTINEZ/MERARI DARLING MARTINEZ filed a petition with this court for a decree changing names as follows:

Present name
ZAIRUS ISRAEL MARTINEZ
to:
Proposed name
ZAIRUS ISRAEL MARTINEZ HERNANDEZ

0990 Public Notice

appear before this court at the hearing indicated below to show cause, if any, why the petition for change of name should not be granted. Any person objecting to the name changes described above must file a written objection that includes the reasons for the objection at least two court days before the matter is scheduled to be heard and must appear at the hearing to show cause why the petition should not be granted. If no written objection is timely filed, the court may grant the petition without a hearing.
NOTICE OF HEARING
Date: June 17, 2026 Time: 8:30 a.m. Dept.: A14 The address of the court is same as noted above.
A copy of this Order to Show Cause shall be published at least once each week for four successive weeks prior to the date set for hearing on the petition in the following newspaper of general circulation, printed in this county: Antelope Valley Press
Date: April 15, 2026
JUDGE MICHELLE E. DECASAS
JUDGE OF THE SUPERIOR COURT
Publish: 4/18/26, 4/25/26, 5/2/26, 5/9/26

Superior Court of California,
County of Los Angeles
42011 4th Street West
Lancaster, CA 93534
North District
Michael D. Antonovich
Antelope Valley Courthouse
PETITION OF: LEONARDO FERNANDO HEREDIA JR FOR CHANGE OF NAME
ORDER TO SHOW CAUSE FOR CHANGE OF NAME
CASE NUMBER: 26AVCP00105
TO ALL INTERESTED PERSONS: Petitioner: LEONARDO FERNANDO HEREDIA JR filed a petition with this court for a decree changing names as follows:

Present name
LEONARDO FERNANDO HEREDIA JR
to:
Proposed name
LEONARDO HEREDIA VILLICANA

THE COURT ORDERS that all persons interested in this matter shall appear before this court at the hearing indicated below to show cause, if any, why the petition for change of name should not be granted. Any person objecting to the name changes described above must file a written objection that includes the reasons for the objection at least two court days before the matter is scheduled to be heard and must appear at the hearing to show cause why the petition should not be granted. If no written objection is timely filed, the

0990 Public Notice

court may grant the petition without a hearing.
NOTICE OF HEARING
Date: June 3, 2026 Time: 8:30 a.m. Dept.: A14 The address of the court is same as noted above.
A copy of this Order to Show Cause shall be published at least once each week for four successive weeks prior to the date set for hearing on the petition in the following newspaper of general circulation, printed in this county: Antelope Valley Press
Date: April 30, 2026
JUDGE MICHELLE E. DECASAS
JUDGE OF THE SUPERIOR COURT
Publish: 5/9/26, 5/16/26, 5/23/26, 5/30/26

Superior Court of California,
County of Los Angeles
42011 4th Street West
Lancaster, CA 93534
North District
Michael D. Antonovich
Antelope Valley Courthouse
PETITION OF: MELANIE ADRIANNA CASILLAS FOR CHANGE OF NAME
ORDER TO SHOW CAUSE FOR CHANGE OF NAME
CASE NUMBER: 26AVPB00106
TO ALL INTERESTED PERSONS: Petitioner: MELANIE ADRIANNA CASILLAS filed a petition with this court for a decree changing names as follows:

Present name
MELANIE ADRIANNA CASILLAS
to:
Proposed name
MELANIE ADRIANNA KLOTZ

THE COURT ORDERS that all persons interested in this matter shall appear before this court at the hearing indicated below to show cause, if any, why the petition for change of name should not be granted. Any person objecting to the name changes described above must file a written objection that includes the reasons for the objection at least two court days before the matter is scheduled to be heard and must appear at the hearing to show cause why the petition should not be granted. If no written objection is timely filed, the court may grant the petition without a hearing.
NOTICE OF HEARING
Date: June 17, 2026 Time: 8:30 a.m. Dept.: A15 The address of the court is same as noted above.
A copy of this Order to Show Cause shall be published at least

HOT CLASSIFIEDS
661-940-1000
Mon-Fri 8am-4pm

Have you bookmarked the new **avpress.com** on your computer or mobile device?
DO IT TODAY!

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once each week for four successive weeks prior to the date set for hearing on the petition in the following newspaper of general circulation, printed in this county: Antelope Valley Press
Date: April 30, 2026
JUDGE MICHELLE E. DECASAS
JUDGE OF THE SUPERIOR COURT
Publish: 5/9/26, 5/16/26, 5/23/26, 5/30/26

Extra Space Storage, on behalf of itself or its affiliates, Life Storage or Storage Express, will hold a public auction to satisfy Extra Space's lien, by selling personal property belonging to those individuals listed below at the location indicated.
45615 23rd St West Lancaster, CA. 93536 (661) 341-0768 5/20/2026 @10:00AM
Shayla Shelley
Andrea Napoleon
Elijah Myers
Jacklyn Soliz
Vanesha Hunt
maxim frazier
2103 W. Ave J Lancaster, CA. 93536 (661) 512-5119 5/20/2026 @10:00AM
Christopher Morales
Nathan Seeman
Brodrick Simmons
Patricia Hammond
380 W. Palmdale Blvd Palmdale, CA. 93551 (661) 512-5117 5/20/2026 @10:00AM
Joey Ambriz
Geoffery Klingman
Asia Pitts
Neftali Rodriguez
Juan Magallon
Sheneva Roberts
Sophia Solis
Juan Magallon
Taliyah Nelson
Heriberto Moringlane Ramos
1722 W Ave J8, Lancaster, CA. 93534 (661) 341-1605 5/20/2026 @10:15AM
Melvin Debose
Wyshawn Boyd
Ashlee Perry
Sylvia Holguin
Esther Samudio
David Reyes
Grace Goss
43633 20th St. West, Lancaster, CA. 93534 (661) 310-2855 5/20/2026 @10:30AM
Adja Houidjihounde
Alex Bradberry
42654 10th Street West, Lancaster, CA. 93534 (661) 902-9415 5/20/2026 @11:00AM
Margarita Katalan
Johnny James
37352 Sierra Hwy Palmdale, CA 93550 (661) 233-1857 5/20/2026 @12:00PM
Symone Booker
Danny Blais
Renessa Mcgrue
Danny Blais
Alberto Garcia
Gary Oszaszy
38910 30th St E. Palmdale, CA 93550 (661) 495-5705 5/20/2026 @12:15PM
Pino Tenerelli (Affordable Pro Homes & Investm)
Shana Harvey
Alexandra Ramirez
42133 Challenger Way Lancaster, CA 93535 (661) 418-7190 5/20/2026 @12:15PM
Evrett Foreman
Christina Dolan
Makushla Singh
The auction will be listed and advert-

0990 Public Notice

2026067514
FICTITIOUS BUSINESS NAME STATEMENT
The following person(s) is/are doing business as: **TREBOR FINANCIAL SOLUTIONS**, 37874 VESSING TER, PALMDALE, CA 93552 County of: Los Angeles
Al #ON: -
REGISTERED OWNER(S): ROBERT AVEGE, 37874 VESSING TER, PALMDALE, CA 93552
State of Incorporation/Organization: -
This Business is conducted by AN INDIVIDUAL
The date registrant commenced to transact business under the fictitious business name or names listed above on 03/2026.
I declare that all information in this statement is true and correct. (A registrant who declares as true any material matter pursuant to Section 17913 of the Business and Professions Code that the registrant knows to be false is guilty of a misdemeanor punishable by a fine not to exceed one thousand dollars ($1,000).)
s/ROBERT AVEGE, OWNER
This statement was filed with the County Clerk of LOS ANGELES on the date indicated by the filed stamp on 03/26/2026.
NOTICE - In accordance with subdivision (a) of section 17920, a fictitious name statement generally expires at the end of five years from the date on which it was filed in the office of the county clerk, except, as provided in subdivision (b) of section 17920, where it expires 40 days after any change in the facts set forth in the statement pursuant to section 17913 other than a change in the residence address of a registered owner. A new fictitious business name statement must be filed before the expiration. Effective January 1, 2014, the Fictitious Business Name Statement must be accompanied by the Affidavit of Identity form. The filing of this statement does not of itself authorize the use in this state of a fictitious business name in violation of the rights of another under federal, state, or common law (see section 14411 et seq., Business and Professions Code).
Published in the Antelope Valley Press: 4/18/26, 4/25/26, 5/2/26, 5/9/26

NOTICE OF PETITION TO ADMINISTER ESTATE OF SEAN KYLE SWAYZE aka SEAN K. SWAYZE
Case No. 26STPB02665
To all heirs, beneficiaries, creditors, contingent creditors, and persons who may otherwise be interested in the will or estate, or both, of SEAN KYLE SWAYZE aka SEAN K. SWAYZE
A PETITION FOR PROBATE has been filed by Cassie L. Swayze in the Superior Court of California, County of LOS ANGELES.
THE PETITION FOR PROBATE requests that Cassie L. Swayze be appointed as personal

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representative to administer the estate of the decedent.
THE PETITION requests authority to administer the estate under the Independent Administration of Estates Act. (This authority will allow the personal representative to take many actions without obtaining court approval. Before taking certain very important actions, however, the personal representative will be required to give notice to interested persons unless they have waived notice or consented to the proposed action.) The independent administration authority will be granted unless an interested person files an objection to the petition and shows good cause why the court should not grant the authority.
A HEARING on the petition will be held on June 5, 2026 at 8:32 AM in Dept. No. 44 located at 111 N. Hill St., Los Angeles, CA

PUBLIC NOTICE

2025 Urban Water Management Plan & 2025 Water Shortage Contingency Plan

Public Hearing and Board Actions

June 8, 2026, 6:00 p.m.
2028 East Avenue Q., Palmdale CA 93550

The Palmdale Water District Board of Directors will hold a public hearing and take action on the 2025 Urban Water Management Plan and 2025 Water Shortage Contingency Plan. An electronic version of the plan is accessible at https://www.palmdalewater.org/about-pwd/reports-and-studies/engineering-reports/. Comments may be submitted by email to: pclark@palmdalewater.org. The public is welcome to participate and provide public comments.

Questions/Comments:
pclark@palmdalewater.org

Published: May 9 and 16, 2026

LEGAL NOTICE
CALIFORNIA CHOICE ENERGY AUTHORITY
NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that at the meeting to be held at 1:00 p.m. on Tuesday May 19, 2026, in the Lancaster City Council Chambers located at 44933 Fern Avenue, Lancaster, CA, the Board of Directors of California Choice Energy Authority will conduct a public hearing pursuant to Assembly Bill 2561 (Government code Section 3502.3) to report on current status of job vacancies with the Authority and to discuss recruitments and retention efforts.

DATE OF HEARING:	Tuesday May 19, 2026
TIME OF HEARING:	1:00 p.m.
PLACE OF HEARING:	Lancaster City Council Chambers 44933 Fern Avenue

All persons having information relevant to the proposed subject are hereby invited to appear at the time and place stated above to present such information to the Board Members; or, prior to the hearing, any written correspondence may be submitted to the Lancaster City Clerk at 44933 Fern Avenue, Lancaster California, 93534, or by calling the California Choice Energy Authority Office at (888) 639-2411 with comments relative to this public hearing.

In compliance with the Americans with Disabilities Act, this meeting will be held at a location accessible to persons with disabilities; if you need special assistance to participate in this public meeting, please contact the Lancaster City Clerk at (661)723-6020. TDD users may call the California TDD Relay Service at 1-800-735-2922. Services such as American Sign Language interpreters, a reader during the meeting, auxiliary aids, large print copies of the agenda, and/or translation assistance for non-English speakers are available upon reasonable and timely request. To ensure availability, you are advised to make your request at least 72 hours prior to the meeting/event you wish to attend. Due to difficulties in securing sign language interpreters, five or more business days' notice is strongly recommended. For additional information, please contact the Lancaster City Clerk at (661)723-6020.

DATED: May 9, 2026

KEVIN TONOIAN
Interim Board Secretary
California Choice Energy Authority

Published: Saturday, May 9, 2026, Thursday, May 14, 2026 - Antelope Valley Press

Posted: Friday May 15, 2026 - Lancaster City Hall

NOTICE INVITING BIDS

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

October 28, 2025

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
Division 1

DON WILSON
Division 2

CYNTHIA SANCHEZ
Division 3

KATHY MAC LAREN-GOMEZ
Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

City of Lancaster – Planning Department
44933 Fern Avenue
Lancaster, CA 93534

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

To Whom It May Concern:

The Palmdale Water District (PWD) is undertaking the review, update, and revision of its Urban Water Management Plan (UWMP). PWD is located in Los Angeles County and serves the residents of the City of Palmdale. The Urban Water Management Planning Act requires every "urban water supplier" of a certain size to prepare and adopt an UWMP at least once every five years. The UWMP is a planning document in which water suppliers evaluate and compare their water supply and reliability to their existing and projected demands. A complete UWMP is necessary for PWD to remain eligible for state drought water bank assistance and is a requirement of state grant and loan funding programs.

The 2025 UWMP will include an update of anticipated water demands in the PWD service area. Concurrently with the UWMP update, PWD will also revise its Water Shortage Contingency Plan (WSCP). PWD is encouraging participation by land use agencies, water use agencies, and other interested parties in the UWMP and WSCP and would like to extend to your agency an opportunity to meet with us and review the various elements of the two documents including assumptions about future population, future water demand, future water supplies, and upcoming water conservation programs.

We anticipate that a draft UWMP and WSCP will be available for public review starting in April 2026. PWD will hold a public hearing in May 2026, prior to adoption of the UWMP and WSCP. Hence, we would like to solicit your input in the near future.

If you have any questions, comments, or your agency would like to learn more about the UWMP and WSCP, please contact me at 661-456-1084 or pclark@palmdalewater.org.

Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

October 28, 2025

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

City of Palmdale – Planning Division
38300 Sierra Hwy
Palmdale, CA93550

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Los Angeles County Department of Regional Planning
320 W Temple Street
Los Angeles, CA 90012

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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Pam Clark
Resource and Analytics Supervisor

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Los Angeles LAFCO
80 S Lake Ave #870
Pasadena, CA 91101

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Antelope Valley State Water Contractors Association
Attn: Peter Thompson
6500 W Avenue N
Palmdale, CA 93551

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

To Whom It May Concern:

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

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A CENTURY OF SERVICE

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Littlerock Creek Irrigation District
Attn: James Chaisson
35141 87th St E
Littlerock, CA 93543

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

To Whom It May Concern:

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Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Antelope Valley-East Kern Water Agency
Attn: Matthew Knudson
6500 W Avenue N
Palmdale, CA 93551

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

To Whom It May Concern:

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Waterworks District 20
900 S. Fremont Ave.
Alhambra, California 91803

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Los Angeles County Waterworks District 37
900 S. Fremont Ave.
Alhambra, California 91803

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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Attorneys

ACWA
PROUD MEMBER

Los Angeles County Waterworks District 40
900 S. Fremont Ave.
Alhambra, California 91803

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

To Whom It May Concern:

The Palmdale Water District (PWD) is undertaking the review, update, and revision of its Urban Water Management Plan (UWMP). PWD is located in Los Angeles County and serves the residents of the City of Palmdale. The Urban Water Management Planning Act requires every "urban water supplier" of a certain size to prepare and adopt an UWMP at least once every five years. The UWMP is a planning document in which water suppliers evaluate and compare their water supply and reliability to their existing and projected demands. A complete UWMP is necessary for PWD to remain eligible for state drought water bank assistance and is a requirement of state grant and loan funding programs.

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If you have any questions, comments, or your agency would like to learn more about the UWMP and WSCP, please contact me at 661-456-1084 or pclark@palmdalewater.org.

Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

October 28, 2025

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Rosamond Community Services District
Attn. Kim Domingo
3179 35th Street West
Rosamond, CA 93560

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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General Manager

ALESHIRE & WYNDER LLP
Attorneys

Quartz Hill Water District
Attn: Chad Reed
5034 W. Avenue L
Quartz Hill, CA 93536

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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DENNIS D. LaMOREAUX
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ALESHIRE & WYNDER LLP
Attorneys

California Water Service Co
5015 Ave L-14 #12
Lancaster, CA 93536

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley Watermaster
Attn: Peter Thompson
6500 W Avenue N
Palmdale, CA 93551

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Farm Bureau
Attn: Richard Miner
41228 12th Street West, Suite A
Palmdale, CA 93551

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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ALESHIRE & WYNDER LLP
Attorneys

ACWA
PROUD MEMBER

Angeles National Forest Supervisor's Office
Attn: Roman Torres
701 N. Santa Anita Avenue
Arcadia, CA 91006

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Los Angeles World Airport
Airport Environmental Manager
7301 World Way West, 3rd Floor
Los Angeles, CA 90045

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General Manager

ALESHIRE & WYNDER LLP
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Canyons to Desert Resource Conservation District
10148 West Avenue I
Lancaster CA 93536

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Antelope Valley College
3041 W Ave K
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DENNIS D. LaMOREAUX
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ALESHIRE & WYNDER LLP
Attorneys

Palmdale School District
39139 10th St E
Palmdale, CA 93550

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ALESHIRE & WYNDER LLP
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Antelope Valley Union High School District
176 Holston Dr
Lancaster, CA 93535

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General Manager

ALESHIRE & WYNDER LLP
Attorneys

Palmdale Aerospace Academy
3300 E Palmdale Blvd
Palmdale, CA 93550

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ALESHIRE & WYNDER LLP
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Palmdale Academy Charter School
3838 E Ave R
Palmdale, CA 93550

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ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley Learning Academy
37212 47th St E
Palmdale, CA 93552

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

To Whom It May Concern:

The Palmdale Water District (PWD) is undertaking the review, update, and revision of its Urban Water Management Plan (UWMP). PWD is located in Los Angeles County and serves the residents of the City of Palmdale. The Urban Water Management Planning Act requires every "urban water supplier" of a certain size to prepare and adopt an UWMP at least once every five years. The UWMP is a planning document in which water suppliers evaluate and compare their water supply and reliability to their existing and projected demands. A complete UWMP is necessary for PWD to remain eligible for state drought water bank assistance and is a requirement of state grant and loan funding programs.

The 2025 UWMP will include an update of anticipated water demands in the PWD service area. Concurrently with the UWMP update, PWD will also revise its Water Shortage Contingency Plan (WSCP). PWD is encouraging participation by land use agencies, water use agencies, and other interested parties in the UWMP and WSCP and would like to extend to your agency an opportunity to meet with us and review the various elements of the two documents including assumptions about future population, future water demand, future water supplies, and upcoming water conservation programs.

We anticipate that a draft UWMP and WSCP will be available for public review starting in April 2026. PWD will hold a public hearing in May 2026, prior to adoption of the UWMP and WSCP. Hence, we would like to solicit your input in the near future.

If you have any questions, comments, or your agency would like to learn more about the UWMP and WSCP, please contact me at 661-456-1084 or pclark@palmdalewater.org.

Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

October 28, 2025

BOARD OF DIRECTORS

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Wilsona School District
18050 E Ave O
Palmdale, CA 93591

Subject: 2025 Urban Water Management Plan for the Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
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Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Angeles National Forest Supervisor's Office
Attn: Roman Torres
701 N. Santa Anita Avenue
Arcadia, CA 91006

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

To Whom It May Concern:

Palmdale Water District (PWD) is undertaking several important planning efforts to ensure adequate long-term water quality and supplies for today and tomorrow. As part of this effort, PWD has released the draft Urban Water Management Plan (UWMP) update, and draft Water Shortage Contingency Plan (WSCP) for public review and comment.

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A 30-day public comment period will begin on April 8, 2026, and close on May 8, 2026, at 5:00 p.m. A copy of the Draft 2025 UWMP and draft 2025 WSCP will be available for public review on or before April 8, 2026, Monday through Friday, during normal business hours at Palmdale Water District Administrative Office located at 2029 E. Avenue Q, Palmdale, CA. 93550. In addition, an electronic version of the plan will be accessible at: https://www.palmdalewater.org/about-pwd/reports-and-studies/engineering-reports/.

On June 8, 2026 at 6:30 p.m. in the meeting room of the Board of Directors of Palmdale Water District, the Board of Directors will conduct a public hearing pursuant to California Water Code sections 10642 and 10608.26 to consider and receive comments and input on the 2025 UWMP for Palmdale Water District, including the updated WSCP, serving as another opportunity for the public to provide input to the Board prior to their consideration of approving the plans.

Questions regarding the public hearing or the 2025 UWMP for Palmdale Water District, including the WSCP, should be directed to Pam Clark at 661-456-1084.

Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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W. SCOTT KELLERMAN
Division 1

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Division 4

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley College
3041 W Ave K
Lancaster, CA 93536

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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W. SCOTT KELLERMAN
Division 1

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Division 3

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Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley-East Kern Water Agency
Attn: Matthew Knudson
6500 W Avenue N
Palmdale, CA 93551

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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W. SCOTT KELLERMAN
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Division 3

KATHY MAC LAREN-GOMEZ
Division 4

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley Learning Academy
37212 47th St E
Palmdale, CA 93552

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
Division 1

DON WILSON
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Division 4

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley State Water Contractors Association
Attn: Tom Barnes
6500 W Avenue N
Palmdale, CA 93551

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
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Division 2

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Division 3

KATHY MAC LAREN-GOMEZ
Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley Union High School District
176 Holston Dr
Lancaster, CA 93535

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
Division 1

DON WILSON
Division 2

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Division 3

KATHY MAC LAREN-GOMEZ
Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Antelope Valley Watermaster
Attn: Angel Fitzpatrick
6500 W Avenue N
Palmdale, CA 93551

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 1

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Division 2

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Division 3

KATHY MAC LAREN-GOMEZ
Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

California Water Service Co
5015 Ave L-14 #12
Lancaster, CA 93536

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 1

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KATHY MAC LAREN-GOMEZ
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DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Canyons to Desert Resource Conservation District
10148 West Avenue I
Lancaster CA 93536

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PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

City of Lancaster – Planning Department
44933 Fern Avenue
Lancaster, CA 93534

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Department of Regional Planning
320 W Temple Street
Los Angeles, CA 90012

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
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Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Littlerock Creek Irrigation District
Attn: James Chaisson
35141 87th St E
Littlerock, CA 93543

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

To Whom It May Concern:

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Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles World Airport
Airport Environmental Manager
7301 World Way West, 3rd Floor
Los Angeles, CA 90045

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles LAFCO
80 S Lake Ave #870
Pasadena, CA 91101

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 4

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Farm Bureau
Attn: Richard Miner
41228 12th Street West, Suite A
Palmdale, CA 93551

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Palmdale Aerospace Academy
3300 E Palmdale Blvd
Palmdale, CA 93550

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Palmdale School District
39139 10th St E
Palmdale, CA 93550

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Palmdale Academy Charter School
3838 E Ave R
Palmdale, CA 93550

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Quartz Hill Water District
Attn: Chad Reed
5034 W. Avenue L
Quartz Hill, CA 93536

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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April 8, 2026

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DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Rosamond Community Services District
Attn: Kim Domingo
3179 35th Street West
Rosamond, CA 93560

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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Division 1

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DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Waterworks District 20
900 S. Fremont Ave.
Alhambra, California 91803

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

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DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Waterworks District 37
900 S. Fremont Ave.
Alhambra, California 91803

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PALMDALE WATER DISTRICT

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April 8, 2026

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ALESHIRE & WYNDER LLP
Attorneys

Los Angeles County Waterworks District 40
900 S. Fremont Ave.
Alhambra, California 91803

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A 30-day public comment period will begin on April 8, 2026, and close on May 8, 2026, at 5:00 p.m. A copy of the Draft 2025 UWMP and draft 2025 WSCP will be available for public review on or before April 8, 2026, Monday through Friday, during normal business hours at Palmdale Water District Administrative Office located at 2029 E. Avenue Q, Palmdale, CA. 93550. In addition, an electronic version of the plan will be accessible at: https://www.palmdalewater.org/about-pwd/reports-and-studies/engineering-reports/.

On June 8, 2026 at 6:30 p.m. in the meeting room of the Board of Directors of Palmdale Water District, the Board of Directors will conduct a public hearing pursuant to California Water Code sections 10642 and 10608.26 to consider and receive comments and input on the 2025 UWMP for Palmdale Water District, including the updated WSCP, serving as another opportunity for the public to provide input to the Board prior to their consideration of approving the plans.

Questions regarding the public hearing or the 2025 UWMP for Palmdale Water District, including the WSCP, should be directed to Pam Clark at 661-456-1084.

Sincerely,

Pam Clark
Resource and Analytics Supervisor

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

April 8, 2026

BOARD OF DIRECTORS

W. SCOTT KELLERMAN
Division 1

DON WILSON
Division 2

CYNTHIA SANCHEZ
Division 3

KATHY MAC LAREN-GOMEZ
Division 4

DEBBIE DINO
Division 5

DENNIS D. LaMOREAUX
General Manager

ALESHIRE & WYNDER LLP
Attorneys

Wilsona School District
18050 E Ave O
Palmdale, CA 93591

Subject: Notice of Public Release and Public Hearing 2025 Urban Water Management Plan and Water Shortage Contingency Plan for Palmdale Water District

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Palmdale Water District (PWD) is undertaking several important planning efforts to ensure adequate long-term water quality and supplies for today and tomorrow. As part of this effort, PWD has released the draft Urban Water Management Plan (UWMP) update, and draft Water Shortage Contingency Plan (WSCP) for public review and comment.

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Sincerely,

Pam Clark
Resource and Analytics Supervisor

Appendix E: Water System Audit Output

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.

? Click to access
+ Click to add a

Water Audit Report for: Palmdale Water District (CA1910102)
Reporting Year: 2020 | 1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	7	20,510.837	acre-ft/yr	8		-80.801	acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	3	1,300.390	acre-ft/yr	4			acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 19,291.248 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option

				Pcnt:	Value:	
Billed metered:	8	17,459.574	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	10	525.730	acre-ft/yr			
Unbilled unmetered:	7	38.730	acre-ft/yr		38.730	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 18,024.034 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 1,267.215 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		48.228	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	8	-28.731	acre-ft/yr	-0.16%		acre-ft/yr
Systematic data handling errors:	7	43.649	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 63.147 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 1,204.068 acre-ft/yr

WATER LOSSES: 1,267.215 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,831.675 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	433.0	miles
Number of active AND inactive service connections:	7	27,465	
Service connection density:		63	conn./mile main
Are customer meters typically located at the curbstop or property line?		Yes	
Average length of customer service line:			

(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	9	73.9	psi

COST DATA

Total annual cost of operating water system:	10	$37,726,686	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$1.62	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$279.61	$/acre-ft	▫ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 74 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Variable production cost (applied to Real Losses)
3: Unauthorized consumption

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.

? Click to access
+ Click to add a

Water Audit Report for: Palmdale Water District (CA1910102)
Reporting Year: 2021 | 1/2021 - 12/2021

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	7	20,839.523	acre-ft/yr		8	-139.574	acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	3	1,862.022	acre-ft/yr		4		acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 19,117.075 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option

				Pcnt:	Value:	
Billed metered:	8	17,820.963	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	10	194.340	acre-ft/yr			
Unbilled unmetered:	7	38.730	acre-ft/yr		38.730	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 18,054.033 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 1,063.042 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		47.793	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	8	25.257	acre-ft/yr	0.14%		acre-ft/yr
Systematic data handling errors:	7	44.552	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 117.602 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 945.440 acre-ft/yr

WATER LOSSES: 1,063.042 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,296.112 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	433.0	miles
Number of active AND inactive service connections:	7	27,511	
Service connection density:		64	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line:

(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 9 | 74.4 | psi

COST DATA

Total annual cost of operating water system:	10	$44,793,795	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$1.75	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	5	$436.21	$/acre-ft ▫ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 74 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Variable production cost (applied to Real Losses)
3: Unauthorized consumption

AWWA Free Water Audit Software: Worksheet

FWAS v6.0

American Water Works Association.
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Water Audit Report for: Palmdale Water District
Audit Year: 2022 | Jan 01 2022 - Dec 31 2022 | Calendar

Click 'n' to add notes
Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: ACRE-FEET PER YEAR

WATER SUPPLIED

Water Supplied Error Adjustments — choose entry option:

VOS	Volume from Own Sources:	n	g	9	18,279.760	Acre-ft/Yr	n	g	10	volume	51.487	acre-ft/yr	under-registration VOSEA
WI	Water Imported:	n	g	n/a	0.000	Acre-ft/Yr							WIEA
WE	Water Exported:	n	g	3	1,393.290	Acre-ft/Yr	n	g	10		percent		WEEA

WATER SUPPLIED: 16,937.957 Acre-ft/Yr

AUTHORIZED CONSUMPTION

choose entry option:

BMAC	Billed Metered:	n	g	9	15,790.000	Acre-ft/Yr			
BUAC	Billed Unmetered:	n	g	n/a	0.000	Acre-ft/Yr			
UMAC	Unbilled Metered:	n	g	10	127.570	Acre-ft/Yr			
UUAC	Unbilled Unmetered:	n	g	6	38.130	Acre-ft/Yr	custom	38.130	acre-ft/yr

AUTHORIZED CONSUMPTION: 15,955.700 Acre-ft/Yr

WATER LOSSES

982.257 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

SDHE	Systematic Data Handling Errors:	n	g	3	39.475	Acre-ft/Yr	0.25%	default	
CMI	Customer Metering Inaccuracies:	n	g	10	22.316	Acre-ft/Yr	0.14%	percent	under-registration
UC	Unauthorized Consumption:	n	g	3	39.475	Acre-ft/Yr	0.25%	default	

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 101.266 Acre-ft/Yr

Real Losses

Real Losses: 880.991 Acre-ft/Yr

WATER LOSSES: 982.257 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,147.957 Acre-ft/Yr

SYSTEM DATA

Lm	Length of mains:	n	g	10	413.6	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	10	27,632		(active *and* inactive)
	Service connection density:				67	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp: n g 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP	Average Operating Pressure:	n	g	9	77.0	psi	

COST DATA

CRUC	Customer Retail Unit Charge:	n	g	5	$1.78	$/100 cubic feet (ccf)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n	g	4	$397.93	$/acre-ft	$43,280,438	$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. *****

go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Variable Production Cost (VPC)
2: Volume from Own Sources (VOS)
3: Customer Retail Unit Charge (CRUC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[A]:		gal/conn/day
Unit Real Losses[B]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

AWWA Free Water Audit Software: Worksheet

FWAS v6.0

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Water Audit Report for: Palmdale Water District
Audit Year: 2023 | Jan 01 2023 - Dec 31 2023 | Calendar

Click 'n' to add notes
Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: ACRE-FEET PER YEAR

Water Supplied Error Adjustments

WATER SUPPLIED

choose entry option:

VOS	Volume from Own Sources:	n	g	9	16,775.334	Acre-ft/Yr	n	g	10	percent	VOSEA
WI	Water Imported:	n	g	n/a	0.000	Acre-ft/Yr					WIEA
WE	Water Exported:	n	g	3	623.110	Acre-ft/Yr	n	g	10	percent	WEEA
	WATER SUPPLIED:				16,152.224	Acre-ft/Yr					

AUTHORIZED CONSUMPTION

BMAC	Billed Metered:	n	g	9	14,754.495	Acre-ft/Yr					
BUAC	Billed Unmetered:	n	g	n/a	0.000	Acre-ft/Yr					
UMAC	Unbilled Metered:	n	g	10	553.365	Acre-ft/Yr					
UUAC	Unbilled Unmetered:	n	g	6	39.170	Acre-ft/Yr					
	AUTHORIZED CONSUMPTION:				15,347.029	Acre-ft/Yr					

choose entry option:

custom | 39.170 acre-ft/yr

WATER LOSSES

805.195 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

SDHE	Systematic Data Handling Errors:	n	g	3	36.886	Acre-ft/Yr	0.25%	default
CMI	Customer Metering Inaccuracies:	n	g	10	21.461	Acre-ft/Yr	0.14%	percent
UC	Unauthorized Consumption:	n	g	3	36.886	Acre-ft/Yr	0.25%	default

Default option selected for Unauthorized Consumption, with automatic data grading of 3

under-registration

Apparent Losses: 95.234 Acre-ft/Yr

Real Losses

Real Losses: 709.962 Acre-ft/Yr

WATER LOSSES: 805.195 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,397.730 Acre-ft/Yr

SYSTEM DATA

Lm	Length of mains:	n	g	10	413.6	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	10	27,632		(active *and* inactive)
	Service connection density:				67	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp: n | g | 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP	Average Operating Pressure:	n	g	9	74.8	psi

COST DATA

CRUC	Customer Retail Unit Charge:	n	g	5	$1.99	$/100 cubic feet (ccf)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n	g	4	$603.20	$/acre-ft	$45,835,975	$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. *****

go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Variable Production Cost (VPC)
2: Volume from Own Sources (VOS)
3: Customer Retail Unit Charge (CRUC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[A]:		gal/conn/day
Unit Real Losses[B]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

AWWA Free Water Audit Software: Worksheet

FWAS v6.1

American Water Works Association.
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Water Audit Report for: Palmdale Water District
Audit Year: 2024 | Jan 01 2024 - Dec 31 2024 | CY

Click 'n' to add notes
Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: ACRE-FEET PER YEAR

Water Supplied Error Adjustments

WATER SUPPLIED

choose entry option:

VOS	Volume from Own Sources:	n	g	9	18,551.720	Acre-ft/Yr	n	g	10	volume	95.325	acre-ft/yr	under-registration VOSEA
WI	Water Imported:	n	g	n/a		Acre-ft/Yr							WIEA
WE	Water Exported:	n	g	3	827.900	Acre-ft/Yr	n	g	5		percent		WEEA

WATER SUPPLIED: 17,819.145 Acre-ft/Yr

AUTHORIZED CONSUMPTION

choose entry option:

BMAC	Billed Metered:	n	g	9	16,099.000	Acre-ft/Yr						
BUAC	Billed Unmetered:	n	g	n/a		Acre-ft/Yr						
UMAC	Unbilled Metered:	n	g	2	584.560	Acre-ft/Yr						
UUAC	Unbilled Unmetered:	n	g	6	17.520	Acre-ft/Yr				custom	17.520	acre-ft/yr

AUTHORIZED CONSUMPTION: 16,701.080 Acre-ft/Yr

WATER LOSSES

1,118.065 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

SDHE	Systematic Data Handling Errors:	n	g	3	40.248	Acre-ft/Yr	0.25%	default	under-registration
CMI	Customer Metering Inaccuracies:	n	g	10	21.717	Acre-ft/Yr	0.13%	percent	
UC	Unauthorized Consumption:	n	g	3	40.248	Acre-ft/Yr	0.25%	default	

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 102.212 Acre-ft/Yr

Real Losses

Real Losses: 1,015.853 Acre-ft/Yr

WATER LOSSES: 1,118.065 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,720.145 Acre-ft/Yr

SYSTEM DATA

Lm	Length of mains:	n	g	10	434.5	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	10	27,708		(active *and* inactive)
	Service connection density:				64	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp: n | g | 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP: Average Operating Pressure: n | g | 7 | 78.3 psi

COST DATA

CRUC	Customer Retail Unit Charge:	n	g	5	$2.22	$/100 cubic feet (ccf)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n	g	4	$443.06	$/acre-ft	$39,903,428	$/yr (optional input)

Click here to calculate carbon emissions ---> carbon

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. *****

go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Variable Production Cost (VPC)
2: Volume from Own Sources (VOS)
3: Customer Retail Unit Charge (CRUC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[A]:		gal/conn/day
Unit Real Losses[B]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

Appendix F: SBX7-7 & DWR Population Tool

(From the 2020 UWMP Submittal)

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Submittal Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	25,339	Acre Feet
	2008 total volume of delivered recycled water		Acre Feet
	2008 recycled water as a percent of total deliveries	0%	**See Note 1**
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range[3]	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1] *If the 2008 recycled water delivery is less than 10 percent of total water deliveries, then the 10-15year baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater of total deliveries, the 10-15 year baseline period is a continuous 10- to 15-year period.*

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		Population
10 to 15 Year Baseline Population		
Year 1	1995	79,578
Year 2	1996	88,785
Year 3	1997	89,675
Year 4	1998	90,540
Year 5	1999	91,375
Year 6	2000	92,172
Year 7	2001	98,516
Year 8	2002	99,649
Year 9	2003	100,788
Year 10	2004	104,237
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	100,788
Year 2	2004	104,237
Year 3	2005	104,120
Year 4	2006	105,754
Year 5	2007	107,396
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *								
			Deductions					Acre Feet
Baseline Year *Fm SB X7-7 Table 3*		**Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Exported Water**	**Change in Dist. System Storage** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use**	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	**Annual Gross Water Use**
10 to 15 Year Baseline - Gross Water Use								
Year 1	1995	22,233			-		-	22,233
Year 2	1996	23,514			-		-	23,514
Year 3	1997	23,152			-		-	23,152
Year 4	1998	20,626			-		-	20,626
Year 5	1999	23,398			-		-	23,398
Year 6	2000	25,901			-		-	25,901
Year 7	2001	25,220			-		-	25,220
Year 8	2002	25,670			-		-	25,670
Year 9	2003	24,909			-		-	24,909
Year 10	2004	26,684			-		-	26,684
Year 11	0	-			-		-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**24,131**
5 Year Baseline - Gross Water Use								
Year 1	2003	24,909			-		-	24,909
Year 2	2004	26,684			-		-	26,684
Year 3	2005	26,128			-		-	26,128
Year 4	2006	27,934			-		-	27,934
Year 5	2007	28,152			-		-	28,152
5 year baseline average gross water use								**26,761**

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Enter Name of Source 1
This water source is:	
☐	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System[1]	Meter Error Adjustment[2] *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995	22,233		22,233
Year 2	1996	23,514		23,514
Year 3	1997	23,152		23,152
Year 4	1998	20,626		20,626
Year 5	1999	23,398		23,398
Year 6	2000	25,901		25,901
Year 7	2001	25,220		25,220
Year 8	2002	25,670		25,670
Year 9	2003	24,909		24,909
Year 10	2004	26,684		26,684
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	24,909		24,909
Year 2	2004	26,684		26,684
Year 3	2005	26,128		26,128
Year 4	2006	27,934		27,934
Year 5	2007	28,152		28,152

[1] ***Units of measure*** *(AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.*

[2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

SB X7-7 Table 4-C.1: Process Water Deduction Eligibility					
Criteria 1 Industrial water use is equal to or greater than 12% of gross water use					
Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction	Industrial Water Use *	Percent Industrial Water	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1995	22,233		0%	NO
Year 2	1996	23,514		0%	NO
Year 3	1997	23,152		0%	NO
Year 4	1998	20,626		0%	NO
Year 5	1999	23,398		0%	NO
Year 6	2000	25,901		0%	NO
Year 7	2001	25,220		0%	NO
Year 8	2002	25,670		0%	NO
Year 9	2003	24,909		0%	NO
Year 10	2004	26,684		0%	NO
Year 11	0	-			NO
Year 12	0	-			NO
Year 13	0	-			NO
Year 14	0	-			NO
Year 15	0	-			NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2003	24,909		0%	NO
Year 2	2004	26,684		0%	NO
Year 3	2005	26,128		0%	NO
Year 4	2006	27,934		0%	NO
Year 5	2007	28,152		0%	NO
*** Units of Measure** *(AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.*					

SB X7-7 Table 4-C.2: Process Water Deduction Eligibility					
Criteria 2 Industrial water use is equal to or greater than 15 GPCD					
Baseline Year *Fm SB X7-7 Table 3*		Industrial Water Use *	Population	Industrial GPCD	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1995		79,578	-	NO
Year 2	1996		88,785	-	NO
Year 3	1997		89,675	-	NO
Year 4	1998		90,540	-	NO
Year 5	1999		91,375	-	NO
Year 6	2000		92,172	-	NO
Year 7	2001		98,516	-	NO
Year 8	2002		99,649	-	NO
Year 9	2003		100,788	-	NO
Year 10	2004		104,237	-	NO
Year 11	0		-		NO
Year 12	0		-		NO
Year 13	0		-		NO
Year 14	0		-		NO
Year 15	0		-		NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2003		100,788	-	NO
Year 2	2004		104,237	-	NO
Year 3	2005		104,120	-	NO
Year 4	2006		105,754	-	NO
Year 5	2007		107,396	-	NO
**** Units of Measure*** *(AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.*					

SB X7-7 Table 4-C.3: Process Water Deduction Eligibility							
Criteria 3 Non-industrial use is equal to or less than 120 GPCD							
Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	Industrial Water Use *	Non-industrial Water Use	Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility							
Year 1	1995	22,233		22,233	79,578	249	NO
Year 2	1996	23,514		23,514	88,785	236	NO
Year 3	1997	23,152		23,152	89,675	230	NO
Year 4	1998	20,626		20,626	90,540	203	NO
Year 5	1999	23,398		23,398	91,375	229	NO
Year 6	2000	25,901		25,901	92,172	251	NO
Year 7	2001	25,220		25,220	98,516	229	NO
Year 8	2002	25,670		25,670	99,649	230	NO
Year 9	2003	24,909		24,909	100,788	221	NO
Year 10	2004	26,684		26,684	104,237	229	NO
Year 11	0	-		-	-		NO
Year 12	0	-		-	-		NO
Year 13	0	-		-	-		NO
Year 14	0	-		-	-		NO
Year 15	0	-		-	-		NO
5 Year Baseline - Process Water Deduction Eligibility							
Year 1	2003	24,909		24,909	100,788	221	NO
Year 2	2004	26,684		26,684	104,237	229	NO
Year 3	2005	26,128		26,128	104,120	224	NO
Year 4	2006	27,934		27,934	105,754	236	NO
Year 5	2007	28,152		28,152	107,396	234	NO

SB X7-7 Table 5: Baseline Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	79,578	22,233	249
Year 2	1996	88,785	23,514	236
Year 3	1997	89,675	23,152	230
Year 4	1998	90,540	20,626	203
Year 5	1999	91,375	23,398	229
Year 6	2000	92,172	25,901	251
Year 7	2001	98,516	25,220	229
Year 8	2002	99,649	25,670	230
Year 9	2003	100,788	24,909	221
Year 10	2004	104,237	26,684	229
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**231**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	100,788	24,909	221
Year 2	2004	104,237	26,684	229
Year 3	2005	104,120	26,128	224
Year 4	2006	105,754	27,934	236
Year 5	2007	107,396	28,152	234
5 Year Average Baseline GPCD				**229**

SB X7-7 Table 6: Baseline GPCD *Summary* *From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	231
5 Year Baseline GPCD	229
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		**Supporting Tables**
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator *Located in the WUE Data Portal at wuedata.water.ca.gov* Resources *button*

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
231	**185**
NOTES:	

SB X7-7 Table 7-C: Target Method 2

Target CII Water Use

Baseline Year *Fm SB X7-7 Table 3*		CII Water Use [1,2]	Process Water Exclusion (Optional) *Fm SB X7-7 Table 4*	CII Water Use Minus Process Water	Population *Fm SB X7-7 Table 3*	CII GPCD
Unit of Measure						**Acre Feet**
Year 1	1995		0	0	79,578	0
Year 2	1996		0	0	88,785	0
Year 3	1997		0	0	89,675	0
Year 4	1998		0	0	90,540	0
Year 5	1999		0	0	91,375	0
Year 6	2000		0	0	92,172	0
Year 7	2001		0	0	98,516	0
Year 8	2002		0	0	99,649	0
Year 9	2003		0	0	100,788	0
Year 10	2004		0	0	104,237	0
Year 11	0		0	0	-	
Year 12	0		0	0	-	
Year 13	0		0	0	-	
Year 14	0		0	0	-	
Year 15	0		0	0	-	
Average Annual 10 to 15 Year Baseline CII Water Use (GPCD)						0
10% Reduction						0.0
2020 Target CII Water Use						**0**

[1] *CII water use for each year of the baseline period must be provided by the user.*

[2] *Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.*

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target					
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	**Calculated 2020 Target [2]**			**Confirmed 2020 Target[4]**
		As calculated by supplier in this SB X7-7 Verification Form	**Special Situations[3]**		
			Prorated 2020 Target	Population Weighted Average 2020 Target	
229	217				**217**

[1] ***Maximum 2020 Target*** *is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.*

[2] ***Calculated 2020 Target*** *is the target calculated by the Supplier based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target. Supplier may only enter one calculated target.*

[3] ***Prorated targets and population weighted target*** *are allowed for special situations only. These situations are described in Appendix P, Section P.3*

[4] ***Confirmed Target*** *is the lesser of the Calculated 2020 Target (C5, D5, or E5) or the Maximum 2020 Target (Cell B5)*

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☐	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	126,002
NOTES:	

SB X7-7 Table 4: 2020 Gross Water Use							
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**2020 Deductions**					**2020 Gross Water Use**
		Exported Water *	**Change in Dist. System Storage*** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	23,245			-		-	**23,245**

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	SWP Water - Table A Amounts
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	5,695	-	5,695

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment

Complete one table for each source.

Name of Source	SWP Water - Butte Transfer Agreement
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	1,320		1,320

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Littlerock Dam Reservoir - Surface Water

This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	4,540		4,540

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Groundwater Return Flows

This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	4,090		4,090

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Groundwater - Antelope Valley Basin

This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	7,600		7,600

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-C.1: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 1)*

Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction	2020 Industrial Water Use	Percent Industrial Water	**Eligible for Exclusion Y/N**
	23,245		0%	NO

NOTES:

SB X7-7 Table 4-C.2: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 2)*

Criteria 2
Industrial water use is equal to or greater than 15 GPCD

2020 Compliance Year	2020 Industrial Water Use	2020 Population	2020 Industrial GPCD	**Eligible for Exclusion Y/N**
		126,002	-	NO

NOTES:

SB X7-7 Table 4-C.3: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 3)*

Criteria 3
Non-industrial use is equal to or less than 120 GPCD

2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	2020 Industrial Water Use	2020 Non-industrial Water Use	2020 Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
	23,245		23,245	126,002	165	NO

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD (Enter "0" if Adjustment Not Used)			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
	Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]				
165	-	-	-	-	165		**NO**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES:

Please print this page to a PDF and include as part of your UWMP submittal.

Confirmation Information

Generated By	Water Supplier Name	Confirmation #	Generated On
Lauren Everett	Palmdale Water District	6940412223	1/29/2021 1:14:15 PM

Boundary Information

Census Year	Boundary Filename	Internal Boundary ID
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464
1990	PWD_Boundary_1990.kml	462
2000	PWD_Boundary_2000.kml	463
2010	PWD_Boundary_2010.kml	464

Baseline Period Ranges

10 to 15-year baseline period

Number of years in baseline period:	10
Year beginning baseline period range:	1995
Year ending baseline period range[1]:	2004

5-year baseline period

Year beginning baseline period range:	2003
Year ending baseline period range[2]:	2007

[1] The ending year must be between December 31, 2004 and December 31, 2010.

[2] The ending year must be between December 31, 2007 and December 31, 2010.

Persons per Connection

Year	Census Block Level Total Population	Number of Connections *	Persons per Connection
1990	66,477	19619	3.39
1991	-	-	3.46
1992	-	-	3.53
1993	-	-	3.60
1994	-	-	3.67
1995	-	-	3.74
1996	-	-	3.80
1997	-	-	3.87
1998	-	-	3.94
1999	-	-	4.01
2000	92,172	22595	4.08
2001	-	-	4.11
2002	-	-	4.13
2003	-	-	4.16
2004	-	-	4.18
2005	-	-	4.21

2006	-	-	4.23
2007	-	-	4.25
2008	-	-	4.28
2009	-	-	4.30
2010	112,468	25959	4.33
2011	-	-	4.36
2012	-	-	4.38
2013	-	-	4.41
2014	-	-	4.43
2015	-	-	4.46
2020	-	-	4.59 **

Population Using Persons-Per-Connection

Year		Number of Connections *	Persons per Connection	Total Population
10 to 15 Year Baseline Population Calculations				
Year 1	1995	21306	3.74	79,578
Year 2	1996	23340	3.80	88,785
Year 3	1997	23154	3.87	89,675
Year 4	1998	22968	3.94	90,540
Year 5	1999	22781	4.01	91,375
Year 6	2000	22595	4.08	92,172
Year 7	2001	23999	4.11	98,516
Year 8	2002	24128	4.13	99,649
Year 9	2003	24257	4.16	100,788
Year 10	2004	24937	4.18	104,237
5 Year Baseline Population Calculations				
Year 1	2003	24257	4.16	100,788
Year 2	2004	24937	4.18	104,237
Year 3	2005	24761	4.21	104,120
Year 4	2006	25001	4.23	105,754
Year 5	2007	25240	4.25	107,396
2020 Compliance Year Population Calculations				
2020		27479	4.59 **	126,062

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Appendix G: Groundwater Adjudication Court Order

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF LOS ANGELES – CENTRAL DISTRICT

ANTELOPE VALLEY GROUNDWATER CASES Included Actions: Los Angeles County Waterworks District No. 40 v. Diamond Farming Co., Superior Court of California, County of Los Angeles, Case No. BC 325201; Los Angeles County Waterworks District No. 40 v. Diamond Farming Co., Superior Court of California, County of Kern, Case No. S-1500-CV-254-348; Wm. Bolthouse Farms, Inc. v. City of Lancaster, Diamond Farming Co. v. City of Lancaster, Diamond Farming Co. v. Palmdale Water Dist., Superior Court of California, County of Riverside, Case Nos. RIC 353 840, RIC 344 436, RIC 344 668 RICHARD WOOD, on behalf of himself and all other similarly situated v. A.V. Materials, Inc., et al., Superior Court of California, County of Los Angeles, Case No. BC509546	Judicial Council Coordination Proceeding No. 4408 CLASS ACTION Santa Clara Case No. 1-05-CV-049053 Assigned to the Honorable Jack Komar ~~(PROPOSED)~~ **JUDGMENT**

The matter came on for trial in multiple phases. A large number of parties representing the majority of groundwater production in the Antelope Valley Area of Adjudication ("Basin") entered into a written stipulation to resolve their claims and requested that the Court enter their [Proposed] Judgment and Physical Solution as part of the final judgment. As to all remaining parties, including those who failed to answer or otherwise appear, the Court heard the testimony of witnesses, considered the evidence, and heard the arguments of counsel. Good cause appearing, the Court finds and orders judgment as follows:

1. The Second Amended Stipulation For Entry of Judgment and Physical Solution among the stated stipulating parties is accepted and approved by the Court.

2. Consistent with the December 23 2015 Statement of Decision ("Decision"), the Court adopts the Proposed Judgment and Physical Solution attached hereto as Exhibit A and incorporated herein by reference, as the Court's own physical solution ("Physical Solution"). The Physical Solution is binding upon all parties.

3. In addition to the terms and provisions of the Physical Solution the Court finds as follows:

   a. Each of the Stipulating Parties to the Physical Solution has the right to pump groundwater from the Antelope Valley Adjudication Area as stated in the Decision and Physical Solution.

   b. The following entities are awarded prescriptive rights from the native safe yield against the Tapia Parties, defaulted parties identified in Exhibit 1 to the Physical Solution, and parties who did not appear at trial identified in Exhibit B attached hereto, in the following amounts:

Los Angeles County Waterworks District No. 40	17,659.07 AFY
Palmdale Water District	8,297.91 AFY
Littlerock Creek Irrigation District	1,760 AFY
Quartz Hill Water District	1,413 AFY
Rosamond Community Services District	1,461.7 AFY
Palm Ranch Irrigation District	960 AFY

Desert Lake Community Services District		318 AFY
California Water Service Company		655 AFY
North Edwards Water District		111.67 AFY

No other parties are subject to these prescriptive rights.

c. Each of the parties referred to in the Decision as Supporting Landowner Parties has the right to pump groundwater from the Antelope Valley Adjudication Area as stated in the Decision and in Paragraph 5.1.10 of the Physical Solution in the following amounts:

i.	Desert Breeze MHP, LLC	18.1 AFY
ii.	Milana VII, LLC dba Rosamond Mobile Home Park	21.7 AFY
iii.	Reesdale Mutual Water Company	23 AFY
iv.	Juanita Eyherabide, Eyherabide Land Co., LLC and Eyherabide Sheep Company, collectively	12 AFY
v.	Clan Keith Real Estate Investments, LLC., dba Leisure Lake Mobile Estates	64 AFY
vi.	White Fence Farms Mutual Water Co. No. 3	4 AFY
vii.	LV Ritter Ranch LLC	0 AFY
viii.	Rotar Enterprises, Inc., Hi-Grade Materials Co., and CJR, a General Partnership	200 AFY

d. Each member of the Small Pumper Class can exercise an overlying right pursuant to the Physical Solution. The Judgment Approving Small Pumper Class Action Settlements is attached as Exhibit C ("Small Pumper Class Judgment") and is incorporated herein by reference.

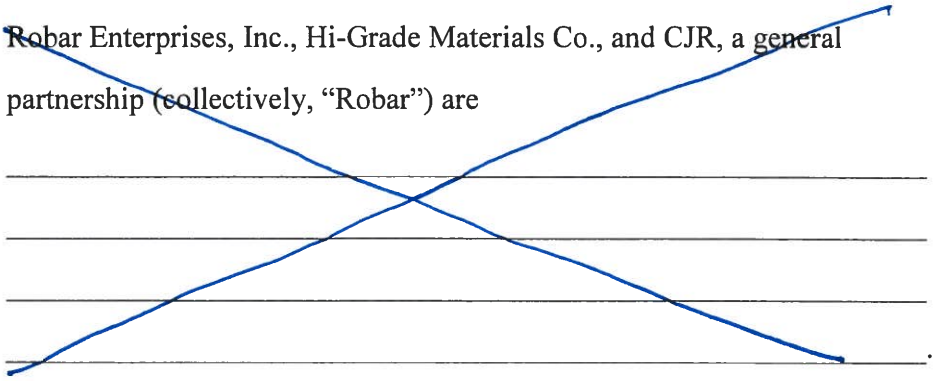
e. Cross-defendant Charles Tapia, as an individual and as Trustee of Nellie Tapia Family Trust (collectively, "The Tapia Parties") has no right to pump groundwater from the Antelope Valley Adjudication Area except under the terms of the Physical Solution.

f. Phelan Piñon Hills Community Services District ("Phelan") has no right to pump groundwater from the Antelope Valley Adjudication Area except under the terms of the Physical Solution.

g. The Willis Class members have an overlying right that is to be exercised in accordance with the Physical Solution.

h. All defendants or cross-defendants who failed to appear in any of these coordinated and consolidated cases are bound by the Physical Solution and their overlying rights, if any, are subject to the prescriptive rights of the Public Water Suppliers. A list of the parties who failed to appear is attached hereto as Exhibit D.

i. Robar Enterprises, Inc., Hi-Grade Materials Co., and CJR, a general partnership (collectively, "Robar") are



.

4. Each party shall designate the name, address and email address, to be used for all subsequent notices and service of process by a designation to be filed within thirty days after entry of this Judgment. The list attached as Exhibit A to the Small Pumper Class Judgment shall be used for notice purposes initially, until updated by the Class members and/or Watermaster. The designation may be changed from time to time by filing a written notice with the Court. Any party desiring to be relieved of receiving notice may file a waiver of notice to be approved by the Court. The Court will maintain a list of parties and their respective addresses to whom notice or service of process is to be sent. If no designation is made as required herein, a party's designee shall be deemed to be the attorney of record or, in the absence of an attorney of record, the party at its specified address.

5. All real property owned by the parties within the Basin is subject to this Judgment. It is binding upon all parties, their officers, agents, employees, successors and assigns. Any party, or executor of a deceased party, who transfers real property that is subject to this Judgment shall notify any transferee thereof of this Judgment.

This Judgment shall not bind the parties that cease to own real property within the Basin, and cease to use groundwater, except to the extent required by the terms of an instrument, contract, or other agreement.

The Clerk shall enter this Judgment.

Dated: Dec 23, 2015

JUDGE OF THE SUPERIOR COURT

Appendix H: Data to Document Consistency with Delta Plan Policy WR P1

As stated in the UWMP Guidebook Appendix C (January 2026):

> "An urban water supplier (Supplier) that anticipates participating in or receiving water supply benefits from a proposed project (covered action[1)] 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 Sacramento-San Joaquin Delta (Delta) should provide information in their Urban Water Management Plans (UWMPs) beginning in 2015 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)."

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

> "(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:
>
> (A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;
>
> (B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and
>
> (C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the

[1] Cal. Code Regs., tit. 23, § 5001, subd. (j): A "Covered action" is defined as "an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, or a reasonably foreseeable indirect physical change in the environment … "directly undertaken by any public agency""(Pub. Resources Code, § 21065) that (i) will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh, (ii) will be carried out, approved, or funded by the state or a local public agency, (iii) is covered by one or more provisions of the Delta Plan, and (iv) will have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and state interest in the Delta."

reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a)."

Preparation of UWMPs and Implementation of Projects from the UWMP

PWD completed and submitted to DWR, 2005, 2010, 2015, and 2020 Urban Water Management Plans, in addition to this 2025 UWMP. PWD has identified, evaluated and implemented projects that are locally cost effective and technically feasible which improve local reliability and reduce reliance on the Delta.

Expected Outcomes for Measurable Reduction in Delta Reliance

The expected outcomes for PWD's Delta reliance and regional self-reliance were developed based on the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook (January 2026) and are summarized in Tables H-1 to H-3 (attached). This involves setting a baseline and evaluating normal year water demands (potable and non-potable), estimating service area population and water use in gallons per capita per day, evaluating and projecting water supply sources to meet estimated normal year demands including supplies from the Delta, local groundwater, conjunctive use projects, surface water, transfers and exchanges, and non-potable supplies. Inputs to Table C-1, C-2, and C-3 include:

- **Baseline**. In order to calculate the expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance, a baseline is needed to compare against. For consistency with conversations had with DWR, PWD is using year 2010 as the baseline year, as was done in the Consistency with the Delta Plan Appendix in the 2020 UWMP. This analysis uses a normal water year representation of 2010 as the baseline. Data for the 2010 baseline were taken from PWD's 2005 UWMP as the UWMPs generally do not provide normal water year data for the year that they are adopted (i.e., 2005 UWMP forecasts normal year 2010, 2010 UWMP forecasts normal year 2015, and so on).

- **Service Area Demands**. Service area demands, including demands for non-potable water, for 2010, 2015, 2020 and 2025 were taken from projections from the previous (2005, 2010, 2015, and 2020) UWMPs. Service area demands for 2025 to 2050 were taken from projections developed as part of this 2025 UWMP.

- **Service Area Population**. Consistent with the methodology for service area demands (using normal year projections from the previous UWMP), service area population for 2010 were taken from the previous (2005) UWMP (as was done in the Consistency with the Delta Plan Appendix). Consideration was given to using 2010 UWMP service area population projections for 2015 but because the 2015 UWMP had the benefit of complete Census data, year 2015 population data was taken from the 2015 UWMP. 2020 service area population projections were taken from the 2015 UWMP. Year 2025-2050 service area demands were taken from this 2025 UWMP.

The outcome of Table C-1 is a calculation of water use efficiency since the baseline year (2010). The calculation uses the change in gallons per capita per day and service area

population to estimate water use efficiency in years 2015 through 2050 compared to the baseline year of 2010.

- **Supplies Not Contributing to Regional Self-Reliance**. In Table C-2, the estimate of water use efficiency is taken from Table C-1. Other water supplies, such as recycled water and groundwater augmentation were taken from previous UWMPs (2005 projections were supplied for 2010 etc.). For years 2025-2050 local supplies were taken from projections prepared for the 2020 UWMP.

The outcome of Table C-2 is an estimate of the supplies contributing to regional self-reliance.

- **CVP/SWP Contract Supplies**. CVP/SWP contract supplies were estimated based on the percentage of Delta supplies provided as a percent of overall imported supplies from the State Water Project. Given that all of PWD's imported supplies come directly from DWR, data provided in the 2025 Delivery and Capability Report was utilized to estimate the percentages of supplies from the Delta watershed.

The outcome of Table C-3 is a calculation of the percent change in supplies from the Delta watershed relative to the 2010 Baseline.

Table C-3 illustrates that from 2010 to 2015, PWD reduced reliance on the Delta and is projected to have a net reduction in reliance on the Delta from the baseline, through year 2050.

Table C-1: Optional Calculation of Water Use Efficiency -To be completed if Water Supplier does not specifically estimate Water Use Efficiency as a supply

Service Area Water Use Efficiency Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Water Demands with Water Use Efficiency Accounted For	31,034	35,000	22,720	19,720	20,310	21,480	22,780	24,250
Non-Potable Water Demands	2,500	1,000	2,500	500	1,000	1,500	2,000	2,000
Potable Service Area Demands with Water Use Efficiency Accounted For	28,534	34,000	20,220	19,220	19,310	19,980	20,780	22,250

Total Service Area Population	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Population	132,801	164,312	131,200	126,804	127,789	128,782	129,152	129,522

Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Per Capita Water Use (GPCD)	192	185	138	135	135	139	144	153
Change in Per Capita Water Use from Baseline (GPCD)		(7)	(54)	(57)	(57)	(53)	(48)	(38)
Estimated Water Use Efficiency Since Baseline		1,305	7,970	8,025	8,147	7,690	6,970	5,579

Table C-2: Calculation of Service Area Water Demands Without Water Use Efficiency

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Water Demands with Water Use Efficiency Accounted For	31,034	35,000	22,720	19,720	20,310	21,480	22,780	24,250
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline		1,305	7,970	7,853	8,407	9,790	10,582	10,789
Service Area Water Demands without Water Use Efficiency Accounted For	31,034	36,305	30,690	27,573	28,717	31,270	33,362	35,039

Table C-3: Calculation of Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Use Efficiency	-	1,305	7,970	7,853	8,407	9,790	10,582	10,789
Water Recycling	2,500	1,000	2,500	500	1,600	1,600	1,600	1,600
Antelope Valley Groundwater Basin		12,000	6,280	4,220	4,360	4,360	4,360	4,360
Groundwater Return Flow Credits			5,000	5,000	3,840	3,840	3,840	3,840
Groundwater Augmentation From Purewater AV (PWAV)		-	-	5,325	5,050	5,050	5,050	5,050
Local Surface Water		4,000	4,000	4,000	4,000	4,000	4,000	4,000
Butte Transfer Agreement			6,200	5,650	5,280	5,160	5,040	4,920
Water Supplies Contributing to Regional Self-Reliance	2,500	18,305	31,950	32,548	32,537	33,800	34,472	34,559

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Water Demands without Water Use Efficiency Accounted For	31,034	36,305	30,690	27,573	28,717	31,270	33,362	35,039

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	2,500	18,305	31,950	32,548	32,537	33,800	34,472	34,559
Change in Water Supplies Contributing to Regional Self-Reliance		15,805	29,450	30,048	30,037	31,300	31,972	32,059

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Water Supplies Contributing to Regional Self-Reliance	8.1%	50.4%	104.1%	118.0%	113.3%	108.1%	103.3%	98.6%
Change in Percent of Water Supplies Contributing to Regional Self-Reliance		42.4%	96.0%	110.0%	105.2%	100.0%	95.3%	90.6%

Table C-4: Calculation of Reliance on Water Supplies from the Delta Watershed

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
CVP/SWP Contract Supplies	15,123	12,800	13,200	12,030	11,720	11,400	11,080	11,080
Delta/Delta Tributary Diversions								
Transfers and Exchanges	2,104	2,600	6,200	5,700	5,200	5,200	5,200	5,200
Other Water Supplies from the Delta Watershed								
Total Water Supplies from the Delta Watershed	17,227	15,400	19,400	17,730	16,920	16,600	16,280	16,280

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Water Demands without Water Use Efficiency Accounted For	31,034	36,305	30,690	27,573	28,717	31,270	33,362	35,039

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies from the Delta Watershed	17,227	15,400	19,400	17,730	16,920	16,600	16,280	16,280
Change in Water Supplies from the Delta Watershed		(1,827)	2,173	503	(307)	(627)	(947)	(947)

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Water Supplies from the Delta Watershed	55.5%	42.4%	63.2%	64.3%	58.9%	53.1%	48.8%	46.5%
Change in Percent of Water Supplies from the Delta Watershed		-13.1%	7.7%	0	0	(0)	-6.7%	-9.0%

Appendix I: Energy Intensity of Water System

Optional Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH

Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**		
Start Date of Reporting Period	1/1/2024	**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
End Date of Reporting Period	12/31/2024			
Is upstream embedded energy in the values reported?	no			
Units of Measure for Water	Acre Feet	**Total Utility** See DWR NOTES	**Hydropower**	**Net Utility**
Volume of Water Entering Process		18,595	-	18,595
Energy Consumed (kWh)		11,567,467	-	11,567,467
Energy Intensity (kWh/vol. converted to MG)		-	-	-

DWR NOTES:

Total Utility: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

Quantity of Self-Generated Renewable Energy

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Data Quality Narrative:

Data is sourced from utility bills covering January 1, 2024 through December 31, 2025. For all sites—including wells, boosters, and the Treatment Plant—kWh usage and related metadata are extracted from each bill. Production data is aligned with the service period referenced in the corresponding bill.

Narrative:

NOTES:

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:
(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies though its distribution systems.

(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.

(7) Any other energy-related information the urban water supplier deems appropriate.

10631.2 (b) The Department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems.

Appendix J: 2025 Water Shortage Contingency Plan



2025 Water Shortage Contingency Plan for Palmdale Water District

Public Draft

Prepared by Kennedy Jenks

April 2026

Kennedy Jenks

2775 North Ventura Road, Suite 202
Oxnard, California 93036
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Public Draft
Water Shortage Contingency Plan

Palmdale Water District
Draft

7 April 2026

Prepared for

Palmdale Water District
2029 E. Ave Q.
Palmdale, CA 93550

KJ Project No. 2044225*00

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D Local Hazard Mitigation Plan

List of Acronyms

Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
ASR	aquifer storage and recovery
AWWA	American Waterworks Association
BMP	Best Management Practice
Board	Board of Directors
DAB	Development Advisory Board
DCR	Delivery Capability Report
DDW	California Division of Drinking Water
District	Palmdale Water District
DMM	Demand Management Measure
DWR	California Department of Water Resources
ENSO	El Niño Southern Oscillation
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ET	evapotranspiration
GPCD	gallons per capita per day
HOA	homeowners association
LHMP	Local Hazard Mitigation Plan
NIMS	National Incident Management System
PWD	Palmdale Water District
RRA	Risk Resilience Assessment
SWP	State Water Project
SWRCB	State Water Resources Control Board
US	United States
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
%	percent

DWR Checklist Table for WSCP

Water Code Section	Summary as Applies to UWMP	2025 WSCP Location
Subject: Water Shortage Contingency Planning | 2020 UWMP Guidebook Location: Chapter 8		
10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Full Document
10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Chapter 2
10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Chapter 2
10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Section 4.1
10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Section 4.1
10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Section 5.2
10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Section 5.2.1
10632(a)(4)(C)	Specify locally appropriate operational changes.	Section 5.2.3
10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state- mandated prohibitions are appropriate to local conditions.	Section 5.3.3.1
10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Table 5-2 and 5-5
10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Section 5.3.1
10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Chapter 7
10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Section 4.2
10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Section 2.6
10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Section 1.4
10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Chapter 9
10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Chapter 9
10632(a)(8)(C)	Describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought.	Chapter 9
10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Chapter 6
10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Section 1.7
10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Section 5.2.1

Chapter 1: Introduction

1.1 Overview

Water supplies may be interrupted or reduced significantly in several ways, such as a drought that limits supplies, an earthquake that damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. The California Water Code Section 10632 requires that every urban water supplier shall prepare and adopt a Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan (UWMP). This WSCP serves as a guide for the intended actions by Palmdale Water District (PWD, the District) during water shortage conditions to improve preparedness for droughts and other impacts on water supplies by describing the process used to address varying degrees of water shortages.

Since the 1991 drought, PWD has approved and adopted numerous conservation resolutions, including establishing a voluntary water conservation program, implementing a water waste policy, declaring water shortage emergency conditions, identifying stages of action and response requirements, and establishing emergency water conservation regulations. Moreover, due to recent drought conditions and the emergency declaration by the Governor of California requiring a statewide reduction in potable urban water use, PWD developed ordinances and other planning documents to incentivize individual customer conservation and reduce overall water demand. Budget-based tiered water rates were introduced in May 2009 and were further refined in the 2014, 2019, and 2024 Water Rate Studies (RDN 2024).

This WSCP describes the actions PWD will take to identify and respond to water shortages. Ultimately, this WSCP reflects on the commitment of PWD to long-term water sustainability, regulatory compliance, and community stewardship. It ensures that even in times of scarcity, water resources are managed responsibly and transparently for the benefit of all users.

1.2 Declaration of Purpose of WSCP

PWD has developed this WSCP to provide guidance in the event of triggering events, whether from reduced supply, increased demand, or an emergency declaration, and to identify corresponding actions to take during the various stages of a water shortage. The WSCP includes voluntary and mandatory stages intended to be fair to all water customers and users while having the least impact on business, employment, and quality of life.

The purpose of this WSCP is to:

1. Monitor and compare anticipated supplies and demands for consistency with the Water Code Section 10632(a)(2).

2. Keep water use within supply and delivery capability.

3. Define procedures to be used when supply cannot meet demand.

4. Identify procedures to be implemented when voluntary or mandatory water restrictions are in effect.

Using the procedures and protocols described in Chapter 2, the PWD General Manager, or designated representative, shall keep the PWD Board of Directors (Board) informed of the

conditions of water supply, system usage, delivery capacity, and the estimated water shortage stage, if any, and the enactment of initial restrictions or change to an appropriate stage in the WSCP.

1.3 Reduced Water Use During Water Shortage Events

This WSCP and other legal actions by PWD establish changes that may be imposed on water users during water shortage events. Such events may include a prolonged drought that has limited local water supplies or an emergency condition caused by an earthquake, fire, or other interruption in water delivery to the system. These actions are discussed in later sections of this WSCP.

1.4 Coordination with Other Entities

PWD coordinates with other entities to ensure that significant water users operate in a water-efficient manner. Examples of coordination activities include the PWD Water Conservation and Energy Efficiency Programs, which coordinate multiple agencies and integrate a wide range of customers.

1.5 Plan Preparation, Adoption, Submittal, and Availability

PWD began preparation for this WSCP in October 2025. The public hearing for the WSCP was noticed in local newspapers, as prescribed by Government Code 6066, including the time and place of the hearing (June 8, 2026, at the PWD office located at 2029 E Ave Q, Palmdale, CA), as well as the location where the plan was available for public inspection. Interested parties, including other local agencies, were notified of the public hearing.

The final draft of the WSCP was adopted by the PWD Board of Directors by Resolution No. X *[to be filled in after adoption]* (Appendix A) and was submitted to the Department of Water Resources (DWR) within 30 days of approval. Additionally, the WSCP was made available for public review in accordance with the Water Code. Urban water suppliers are required to report and submit WSCP information in standardized tables developed by DWR. These standardized tables are provided as Appendix C of this document.

1.6 Relationship with the Urban Water Management Plan

Water Code Section 10632(a) requires that every urban water supplier prepare and adopt a WSCP as part of its UWMP. While the water shortage contingency plan is a stand-alone document, it is updated and adopted in concert with the UWMP. The content of the water shortage is informed by the analysis of water supply reliability conducted pursuant to Water Code Section 10635, contained in the UWMP. The reliability analysis of the UWMP considers “normal”, “single-dry”, and “five (5)-year drought”.

The reliability of PWD supply depends heavily on local groundwater sources, imported water, and local surface water. According to the 2025 UWMP, in the near term, the total supplies are less than demand in the years 2026 to 2030 (Table 1-1). The WSCP identifies actions to reduce shortages and augment supplies.

Table 1-1: Near-Term Water Supply Reliability Assuming a Five (5)-Year Drought

Parameter	2026	2027	2028	2029	2030
Gross Water Use (AFY)	21,920	21,940	21,980	21,990	20,020
Total Supplies (AFY)	16,980	17,370	17,860	18,140	18,430
Surplus/Shortfall w/o WSCP Action (AFY)	(4,940)	(4,570)	(4,120)	(3,850)	(3,590)
WSCP - supply augmentation benefit	N/A	N/A	N/A	N/A	N/A
WSCP - use reduction savings benefit	4,940	4,570	4,120	3,850	3,590
Revised Surplus/(shortfall)	N/A	N/A	N/A	N/A	N/A
Resulting Use Reduction from WSCP action	12%	12%	12%	12%	12%

Note: Reformatted from UWMP Guidebook, Table 7-5 Five (5)-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

1.7 Water Shortage Contingency Plan Refinement Procedures

PWD will convene the following departmental staff as needed to re-evaluate and improve procedures for systematically monitoring and evaluating the functionality of the WSCP to ensure that the shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed:

- Water Use Efficiency Staff
- Administrative Staff
- Operational Staff

The WSCP will be reviewed, revised, and refined as appropriate and following significant changes to the PWD supply portfolio, but no less than every five (5) years.

Chapter 2: Procedures for the Annual Water Supply and Demand Assessment

The California Water Code Division 1, Section 350, states:

"The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection."

New provisions in Water Code Section 10632.1 require that an urban water supplier, such as PWD, conduct an annual water supply and demand assessment ("Annual Assessment") on or before July 1 of each year to be submitted to DWR. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its Annual Assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later. The requirement to perform the Annual Assessment begins in July 2022. The procedures for performing the Annual Assessment are to be detailed in the WSCP of the urban supplier. This chapter of the WSCP provides the written procedure for the Annual Assessment. A copy of the most recent assessment is provided in Appendix C.

2.1 Timeline for Conducting the Annual Assessment

Table 2-1 provides targets for performing the Annual Assessment and outlines actions for a normal year and a single year of drought. The 2025 Annual Assessment for PWD is provided in Appendix C. The next annual assessment is due July 1, 2026.

Table 2-1: Timeline for the Decision-Making Process to Perform the Annual Assessment

Target Date	Action
January	• Confirm anticipated weather (e.g., National Weather Service Climate Prediction Center, La Niña, US Drought Seasonal Outlook) • Confirm State Water Project (SWP) initial allocation • Confirm available groundwater • Confirm groundwater production capacity • Evaluate storage in Littlerock Dam Reservoir available to PWD • Prepare initial assessment of Supplies
February	• Prepare informational items for the Board of Directors
March	• Make an initial assessment of unconstrained demand • Make an initial estimate of the shortage • If shortage anticipated, form Water Shortage Task Force • Confirm current SWP allocation • Confirm groundwater production capacity • Estimate the supply/storage in the Littlerock Dam Reservoir available to PWD
April	• Start public outreach • Complete Draft Annual Assessment and present to the Board of Directors • If necessary, prepare notices of public hearing on water shortage
May-July	• Continue public outreach • Update Annual Water Assessment, present to Board of Directors • Finalize Annual Water Assessment and submit to DWR • If necessary, declare a water shortage and implement supply mitigations and demand reduction actions • Monitor customer response to water shortage messaging and other actions

2.2 Factors Affecting Demand and Supply

2.2.1 Weather Outlook

Weather affects PWD supplies in many ways. For many of the supplies, the effects of weather are long-term and are reflected in reservoir and groundwater levels. There are some resources and phenomena that can be considered when looking at the sources of supply:

Potential for La Niña – ENSO (El Niño Southern Oscillation) is the warming and cooling of the ocean water along the Equator in the Eastern Pacific Ocean near South America. The warm phase is called El Niño, and the cold phase is called La Niña. When the Eastern Pacific Ocean is 0.5 degrees Celsius above normal for five (5) consecutive three (3)-month average periods, an El Niño is declared. When the Eastern Pacific Ocean is 0.5 degrees Celsius below normal for five (5) consecutive three (3)-month average periods, a La Niña is declared. El Niño and La Niña are classified as Weak, Moderate, or Strong based on how far the ocean temperature is from normal. When the temperature is above 1.5 degrees Celsius, it is declared as strong. When the temperature is above 1.0 degrees Celsius, it is declared as Moderate. When the temperature is

above 0.5 degrees Celsius, it is declared as Weak. With an El Niño, the High Desert tends to experience increased precipitation, and with a La Niña, decreased precipitation. The National Weather Service Climate Prediction Center provides information on the potential for La Niña conditions.

United States (US) Drought Information Seasonal Outlook – The National Weather Service Climate Prediction Center provides information geographically on drought conditions and categorizes geographies as "Drought Persists", "Drought Remains but Improves", "Drought Removal Likely", and "Drought Development Likely."

DWR 2025 Delivery Capability Report (DCR) – The 2025 DCR estimates the near and long-term availability of SWP water supplies based on a computer model that simulates monthly operations of the SWP system. The 2025 DCR includes the DWR estimates of SWP water supply availability under both current and future conditions. Key inputs to the model include the facilities in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and contractor demands for SWP water.

DWR's model also accounts for anticipated climate change impacts on imported water availability. Climate change adds uncertainty to estimates of future availability of SWP source water, as it may alter existing precipitation patterns in California. While different climate change models show differing effects, potential changes could include higher temperatures, more precipitation falling as rain rather than snow, and earlier snowmelt, which would result in more winter runoff rather than spreading out over winter and spring. In the 2025 DCR, Table A water deliveries are estimated at 54 percent, with six (6) percent for a single dry year. Deliveries reach up to 96 percent for a single wet year. In the DCR 2025 report, the minimum, average, and maximum SWP Table A amounts are two (2), 48, and 94 percent, respectively.

Climate change – While groundwater is often considered a drought-resistant water resource, warmer temperatures, changing precipitation patterns, and more extreme drought conditions can affect rainfall and streamflow and, in turn, groundwater recharge. Climate change data developed by DWR for the California Water Commission's Water Storage Investment Program for hydrology in the region estimates streamflow may decrease groundwater recharge by eight (8) percent by 2070 (Woodard and Curran, 2023 [2023 PWD Strategic Plan]).

Surface water runoff to the Littlerock Dam Reservoir is seasonal and varies widely from year to year. Although Littlerock Creek flows mainly during winter and spring months, this is somewhat buffered by Littlerock Dam Reservoir, which keeps water available throughout the year. Climate change is expected to affect streamflow as precipitation patterns change and drought conditions become more extreme, resulting in a projected reduction of approximately 4.4 percent in streamflow by 2050 (Woodard and Curran, 2023 [2023 PWD Strategic Plan]).

2.3 Current Year Unconstrained Demand

DWR guidance for the Annual Assessment is to consider the expected water use in the upcoming year, based on recent water use, and to consider any projected response actions an urban supplier may trigger under its WSCP before any such actions.

2.3.1 Land Use

To evaluate water demand, PWD must examine current and projected land uses. PWD incorporates land use information from the City of Palmdale in its Master Plan Updates and is part of the City's Development Advisory Board (DAB). DAB participation will assist with relatively short-term forecasting of upcoming land-use development. Using the known built and pending connections, a summary of the existing land use within the service area and potential future land use can be used to assess total land-use development.

2.3.2 Current Demand

In the Annual Assessment, PWD will create a table summarizing total water consumption within the service area for the previous calendar year, by month (Appendix C).

2.3.3 Potential Demand

In the Annual Assessment, PWD will create a table showing anticipated demands from "Under Construction and Approved Projects" (Appendix C) derived from the issuance and conditions of the Water Service Availability Letters. Anticipated water use is forecasted by month using calculations that incorporate recently developed demand factors, including water loss, and a contingency to account for annual demand variations. Demand increases due to dry weather conditions will be estimated using the production for customer service during the last hydrologically dry year. The Annual Assessment reflects anticipated demands for the current and subsequent calendar years. For the purposes of the analysis, the subsequent year is assumed to be a drought year.

2.3.4 Total Near-Term Demands

Near-term water demands will be the sum of baseline demand conditions, plus the anticipated demands in the current calendar year and subsequent year as documented in the Annual Assessment. The evaluation of near-term demand may consider multiple baseline demand conditions (e.g., single-year, three (3)-year average, five (5)-year average, 10-year average).

2.4 Assessing Supply in the Current Year and Single Dry Year

PWD will evaluate the total water sources available, including imported water, local groundwater, local surface water, recycled water, and other sources as they are put into service. The Annual Assessment (Appendix C) shows a quantified summary of each anticipated supply source for the upcoming year, assuming the current and subsequent year are considered dry years. Anticipated water supply is forecasted by month using past supply patterns.

2.5 Assessing Water Supply Reliability

PWD will compare supply and demand to determine whether a supply shortage is anticipated, the level of the shortage, and prepare to implement its WSCP.

2.6 Steps Following the Annual Assessment

PWD has the power and authority to implement and enforce its shortage response actions, including mandatory water conservation measures within its boundaries, per Division 11 of the California Water Code, as previously exercised by Resolution No. 09-04, which was adopted in March 2009. Shortage response actions are described in Chapter 5 of this WSCP. PWD will declare the appropriate stage of a water shortage emergency, commencing with Section 350, of Division 1 of the California Water Code. Should a water shortage be declared, PWD may coordinate with the City of Palmdale and the County of Los Angeles for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code. Table 2-2 summarizes the factors to be considered in projecting supplies.

Table 2-2: **Annual Assessment of Supply**

Source	Factors to be Evaluated in Current Year	Establishing Supply in Assumed Subsequent Dry Year
Local Groundwater	• Regulatory limitations • Groundwater level • Any constraints on supply due to infrastructure or water quality • Consider if supply would be managed differently if it is known subsequent year will be dry year	• Regulatory limitations • Groundwater level • Any constraints on supply due to infrastructure or water quality
Local Surface Water	• Regulatory limitations • Any constraints on supply due to infrastructure or water quality	• Regulatory limitations • Any constraints on supply due to infrastructure or water quality
Imported Water (SWP)	• Water supply available under contract with DWR and any existing transfers and exchanges • Any constraints on supply due to infrastructure or water quality • Consider if supply would be managed differently if it is known subsequent year will be dry year	• Water supply available under contract with DWR and any existing transfers and exchanges • Any constraints on supply due to infrastructure or water quality
Recycled Water	• What is current annual recycled water production capability • What is current annual demand + new (12 months) demand	• What is current annual recycled water production capability • What is current annual demand + new (24 months) demand

Chapter 3: Water Supply Interruptions

Water supply interruptions pose a risk to the water reliability of PWD. These interruptions may result from natural disasters such as earthquakes or wildfires, infrastructure failures, power outages, or contamination events. This chapter outlines preparedness strategies and response protocols for managing catastrophic events that disrupt water delivery. It includes an overview of conservation reserves, emergency planning efforts, and coordination with regional partners. By establishing clear actions and resilience assessments, PWD ensures that essential water services can be maintained during emergencies while minimizing impacts on public health and safety.

3.1 Actions to Prepare for Catastrophic Interruption

PWD has a water conservation program with procedures to mitigate the limited supply. Each year, PWD sets a physical storage target to be achieved by May 1 to prepare for the months of highest demand (May – September) and the subsequent months (October – April). In the event of a catastrophic event, potable water is stored via aquifer storage and recovery (ASR) to meet regular water demands and address water supply interruptions. Regional water retailers have numerous fuel-driven generators to provide backup power for production wells, pump stations, and treatment plants.

3.1.1 Emergency Response Plan

To prepare for catastrophic events, the PWD has prepared an Emergency Response Plan (ERP) in accordance with other state and federal regulations. The purpose of the ERP is to design actions to minimize the impacts of supply interruptions caused by catastrophic events. The ERP includes standardized response and recovery procedures to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters. The ERP includes, or is planned to include, incident response procedures for the following incidents:

- Evacuation
- Earthquake
- Fire
- Wildfire
- Flood
- Power Outage
- Drought
- HazMat Release
- Security Incidents
- Bomb Threat
- Single-Employee Security Incident
- Personnel Injury
- Contamination
- Transmission/Main Break
- Distribution Line Break
- Pandemic

The ERP considers various aspects of potential malevolent threats or actual terrorism. The information contained in the ERP is intended to guide staff and inform other emergency responding agencies and includes plans, procedures, lists, and identification of equipment, emergency contacts, etc.

3.1.2 PWD Local Hazard Mitigation Plan

In 2021, PWD developed a Local Hazard Mitigation Plan (LHMP) to reduce or prevent injury and damage from hazards (HDR 2021). It identifies past and present mitigation activities, current

policies and programs, and future mitigation strategies. This LHMP also guides hazard mitigation activities by establishing hazard mitigation goals and objectives. The LHMP describes the seismic conditions within and around PWD and addresses how a seismic event could impact PWD's infrastructure. The LHMP is provided as Appendix D.

3.2 Seismic Risk Assessment and Mitigation Plan

PWD owns and operates water storage and distribution, treatment, and groundwater pumping facilities. The water distribution system comprises two separate systems – one for potable water and the other for recycled water. In 2021, PWD performed the following to understand, plan, and mitigate seismic risk:

- Evaluated seismic risk zone for the PWD service area.
- Identified critical water facilities and seismic and building deficiencies.
- Identified mitigation measures to reduce seismic risk at facilities.

This section summarizes the 2021 seismic risk assessment and provides an update on the seismic vulnerability of drinking water supply, treatment, storage, and distribution facilities, as well as the mitigation plan for the water system (Kennedy/Jenks 2021). The Seismic Evaluation Report is included in Appendix C in the 2025 UWMP.

3.2.1 Steel Tanks

Geotechnical work was conducted for the above-ground potable water reservoirs located on 19 sites in the Palmdale area, to classify sites for repair and retrofit needs. Design-level earthquake values were identified for each tank evaluation, corresponding to the appropriate American Society of Civil Engineers design-level earthquake.

A seismic evaluation was conducted to identify seismic deficiencies and recommend strengthening measures for each welded carbon-steel tank. Work included a written description for each tank summarizing the results of the interior and exterior inspections and condition assessments, as well as the desktop evaluation findings.

Several tanks were found to have deficiencies due to one or more of the following:

- Age of the tank
- Code that was applicable at the time the tank was designed
- Dimensions of the tank diameter to height ratio
- Lack of anchorage to foundations

The tank structural and seismic evaluation investigated several mitigation concepts to bring the tanks into code compliance. These mitigation concepts included arranging for a civil or structural engineer to inspect PWD facilities, consulting with a geotechnical engineering firm to perform site investigations and provide a more detailed analysis, increasing freeboard height to accommodate wave action, and combinations of these. PWD will prioritize tanks for repairs and replacement based on the likelihood and consequences of various types of damage associated with code compliance issues identified.

3.2.2 Pump Stations, Pressure Reducing Valves, and Wells

Seismic assessments were performed for the booster pump stations, wells, and booster pump buildings. Work included documentation of facility descriptions, seismic deficiencies, and seismic mitigation measures. Many of these facilities had identified deficiencies associated with anchorage to foundations and walls, inadequate load paths to transfer later loads, and thin slabs. Similar to the tank evaluation, additional analysis is recommended.

Chapter 4: Water Shortage Stages

PWD will implement water supply shortage stages that are increasingly restrictive and promote conservation, as needed, during periods of low supply. PWD will determine which water supply shortages may be triggered when evaluating supply and demand conditions, indicating the potential for shortage. The following sections define the water shortage stages and outline actions to prepare for and respond to reductions in water supply, including catastrophic service interruptions.

4.1 Six (6) Standard Shortage Stages

As required by California Water Code Section 10632(a)(3)(A), this WSCP is structured around six (6) standard water shortage stages, corresponding to progressively increasing supply reductions from zero (0) to more than 50 percent. Table 4-1 presents a description of the six (6) water supply shortage stages, defined as Stages I to VI.

Each stage may be triggered by a declaration from federal or state authorities, or from PWD, in response to events that result in a water shortage. The stages and applicable water supply conditions are summarized in Table 4-2 and Table 5-1.

Table 4-1: Rationing and Reduction Goals

Deficiency or State Mandated Reduction	Stage	Demand Reduction Goal	Type of Program	Water Shortage Condition
1-10%	I	10%	Voluntary	Minor Shortage
11-20%	II	20%	Voluntary/Mandatory	Moderate Shortage
21-30%	III	30%	Mandatory	Severe Shortage
31-40%	IV	40%	Mandatory	Critical Shortage
41-50%	V	50%	Mandatory	Emergency Shortage
>50%	VI	>50%	Mandatory	Catastrophic Failure

Note: DWR Table 8-1.

Table 4-2: Stages of PWD Water Shortage Contingency Plan

Stage	Percent Supply Reduction	Triggers
I	Up to 10%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State declaration due to drought or system maintenance • Unplanned PWD water system maintenance
II	Up to 20%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State declaration due to drought or system maintenance • Unplanned PWD water system maintenance requiring more time to repair
III	Up to 30%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure; and/or • Unplanned PWD water system failure or emergency
IV	Up to 40%	• Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure; and/or • Unplanned PWD water system failure or emergency
V	Up to 50%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure; and/or • Advanced PWD water system failure or emergency
VI	50% or higher	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure • Natural or human-caused catastrophe disrupting the delivery of water to, or within the service area • Severe PWD water system failure

4.1.1 Procedures for Water Shortage Level Determination

The results of the Annual Assessment will be used to determine the water shortage level. In the event of an emergency, a special meeting may be called by a majority of the Board of Directors on less than 24 hours' notice, without an agenda, to address service disruptions. If an emergency arises that would ordinarily be brought to the attention of the Board of Directors, but for which insufficient time exists, the General Manager has administrative authority to act as deemed appropriate and reasonable.

4.2 Legal Authorities

The enabling legislation of PWD provides the legal authority for the PWD Water Conservation Program, which aims to reduce water consumption 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 the PWD service area to avoid and minimize the effect and hardship of water shortage to the greatest extent possible.

Regulation XV establishes permanent water conservation standards intended to alter behavior related to water use efficiency and further establishes water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to conditions and decreasing supplies. Per Regulation XV, all water users within the PWD service area are required to comply with the PWD Water Waste Prohibitions and Rules 160-167. The PWD enforcement authority is exercised in coordination with Cal-Am's tariff-based conservation rules outlined in Rule 14.1.1.

Chapter 5: Water Shortage Response Actions

This chapter outlines the suite of actions PWD will implement to respond to water shortages, ranging from mild supply reductions to catastrophic interruptions. These response actions are designed to reduce demand, augment supply, and adjust operations to protect public health, sustain essential services, and support long-term water reliability. The strategies include both voluntary and mandatory measures, tailored to each shortage stage, and are supported by enforcement mechanisms and public outreach efforts. By quantifying the anticipated benefits of each action, PWD ensures that its response is both effective and equitable across its service area.

5.1 Water Shortage Response Actions

Once a shortage stage is declared, PWD may implement shortage response actions required by the customer and, through operational changes, as listed in Table 5-1. These actions will be supported by enforcement actions (Chapter 5), monitoring and reporting efforts (Chapter 6), and communication protocols (Chapter 7) appropriate to each shortage stage.

Table 5-1: Customer and PWD Water Shortage Actions

Stage	District Actions	Customer Actions
I	• Initiate public information campaign • Increase awareness of conservation measures and water use efficiency programs • Conduct focused outreach to large water users • Consider coordination of public outreach with the cities and the County • Publish Water Shortage Event Contingency Plan stages and actions per stage • Consider implementation of drought factor for customer bill calculation • Consider enforcement of conservation measures	• Comply with PWD Water Waste Policy (see Table 5-1 and Appendix B) • Voluntary water conservation • Adhere to conservation measures • Consider conversion to more efficient irrigation methods • Consider turf removal and conversion to Water Wise Landscape • Patronize local carwashes that recycle their water • Consider PWD Water Use Efficiency Rebate Programs
II	• Continue previous action • Expand public information campaign • Commence enforcement of conservation measures • Implement a 20% drought surcharge on customer bills • Suspend issuance of potable construction meters • Deactivate fill station	• Comply with PWD Water Waste Policy (see Table 5-1 and Appendix B) • Comply with mandatory conservation regulations • Continue previous actions
III	• Continue previous actions • Intensify public information campaign • Expand enforcement of conservation measures • Provide regular media public briefings • Activate emergency connections with mutual aid agencies • Evaluate the size of monetary fines for water waste • Begin water waste patrols • Recall existing temporary construction meters	• Comply with PWD Water Waste Policy (see Table 5-1 and Appendix B) • Continue previous actions • Limit washing of sidewalks, driveways, walkways, parking lots, or any other hard-surfaced area by hose or flooding unless otherwise necessary • Comply with prohibited outdoor irrigation of ornamental landscape or turf with potable water through an irrigation system between 9:00 am and 6:00 pm and two (2) days a week
IV	• Continue previous actions • Implement a 30% drought surcharge on customer bills	• Comply with PWD Water Waste Policy (see Table 5-1 and Appendix B) • Continue previous actions • Obligation to fix leaks, breaks, or malfunctions within 48 hours

Stage	District Actions	Customer Actions
V	• Continue previous actions • Enforce mandatory water consumption goals and allocations for all customers and users	• Comply with PWD Water Waste Policy (see Table 5-1 and Appendix B) • Continue previous actions
VI	• Continue previous actions • Implement a 40% drought surcharge on customer bills • Implement crisis communication plan • Activate Emergency Operations Center • Coordinate actions with regulatory agencies • Coordinate actions with public safety agencies to address enforcement and fire protection • Suspend issuance of new development approvals and new water connections other than those required to be processed by state law	• Continue previous actions • Terminate outdoor water use for irrigation, pools and fountains • Water may only be used outdoors for public health and safety purposes • Be on alert for Boil Water Orders if they become necessary

5.2 Supply Augmentation Actions

Any water shortage event should trigger a review of potential supplemental water sources. Potential sources for supplemental water include increasing the allocation of SWP water (infrastructure is not currently available) or using water from the Palmdale Regional Water Augmentation Project. Any supplemental water supply project or improvements to existing facilities to allow for entitled flows should be a priority for consideration in immediate capital projects if a shortage (e.g., demands exceeding supplies) exceeding 10 percent is anticipated, or if a Stage III Water Shortage Event continues for more than 18 months. Additional supply sources for consideration include replacement or rehabilitated wells, increased use of reclaimed water, and other alternatives based on the actual circumstances at that time. Supply augmentation in the near term is presented in Table 5-2.

Table 5-2: Supply Augmentation Actions

Stage	Supply Augmentation Methods and Other Actions by Water Supplier *(based on DWR's WUE database categories)*	How much is this going to reduce the shortage gap?	Additional Explanation or Reference
III	Groundwater	500 AF	Pump Additional Groundwater
IV	Groundwater	1,000 AF	Pump Additional Groundwater
V	Groundwater	1,000 AF	Pump Additional Groundwater
VI	Groundwater	2,000 AF	Pump Additional Groundwater

5.2.1 Demand Reduction Actions

PWD permanently implements general water conservation measures and irrigation practices to increase everyday water-use efficiency. Those measures, plus those to be enacted in the various stages, are presented in Table and are also indicated in the PWD Water Waste Policy.

As described in Table 5-3, prohibitions and restrictions on water features that are artificially supplied with water, such as ornamental lakes, ponds, and decorative fountains, are treated differently from swimming pools and spas, as defined in Section 115921 of the California Health and Safety Code.

Table 5-3: Prohibitions During Different Shortage Stages

Stage	Prohibition/Requirement
In Effect at All Times	Water waste is prohibited at all times. Water waste includes, but is not limited to: • Application of potable water to outdoor landscapes in a manner that causes runoff • Water leaks shall be repaired in a timely manner, and sprinklers shall be adjusted to eliminate over-spray • Hosing of hardscape surfaces, except where health and safety needs dictate, is prohibited • No watering of outdoor landscapes within 48 hours of measurable rainfall • Car washing and outside cleaning activities are prohibited except when performed with buckets and automatic hose shutoff devices • The serving of drinking water other than upon request in eating or drinking establishments is prohibited • Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guest room Other • 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
I	• Same as 'In Effect At All Times'
II	• All restrictions/prohibitions/initiatives from Stage I are in effect • Landscape watering between 10:00 am and 6:00 pm is prohibited. This includes watering in athletic fields, turf used for recreation, and turf used for community purposes • Outdoor watering is limited to three (3) days per week • Irrigation with potable water outside of newly constructed homes and buildings not delivered by drip or microspray is prohibited • Suspend issuance of potable water construction meters
III	• All restrictions/prohibitions/initiatives from Stage I and Stage II are in effect and are mandatory • Irrigation with potable water of ornamental turf on public street medians is prohibited • Outdoor watering is limited to two (2) days per week • Potable water cannot be used to maintain fountains, reflection ponds, and decorative water bodies for aesthetic or scenic purposes, except where necessary to support aquatic life
IV	• All restrictions/prohibitions/initiatives from Stage I, Stage II, and Stage III are in effect and are mandatory • Outdoor watering is limited to one (1) day per week • Filling of new swimming pools, spas, hot tubs, or the draining and refilling of existing pools, etc is prohibited. Topping off is allowed to the extent that the designated water allocation is not exceeded • Meters will be installed only for new accounts where the building permit was issued prior to the declaration of the shortage

Stage	Prohibition/Requirement
V	• Filling of new swimming pools, spas, hot tubs, or the draining and refilling of existing pools, etc is prohibited. Topping off is allowed to the extent that the designated water allocation is not exceeded • Meters will be installed only for new accounts where the building permit was issued prior to the declaration of the water shortage
VI	• All restrictions/prohibitions/initiatives from previous Shortage Stages are in effect and are mandatory • No meters will be installed for new accounts • Outdoor irrigation is prohibited, except for drip or hand watering to preserve established trees

5.2.2 Operational Changes

PWD shall comply with the restrictions similar to those implemented for the public to the extent possible. Hydrant flushing shall be limited except as deemed necessary by the General Manager to enhance water quality or to conduct fire flow and large meter tests. Other actions include efficient water use practices identified in Table , such as minimizing water waste in construction, following a modified outdoor landscape watering schedule for PWD facilities based on the shortage stage, and fixing any identified leaks in the distribution system or other related water infrastructure components.

5.3 Benefit of Shortage Response Actions

Implementing shortage response actions under the WSCP enables PWD to proactively manage limited water supplies while minimizing harm to the community, economy, and environment. Key benefits include:

1. Public Health and Safety Protection

- Prioritizes essential uses such as drinking water, sanitation, and fire suppression.
- Ensures that vulnerable populations retain access to safe, reliable water during shortages.

2. Environmental Stewardship

- Reduces groundwater and surface water stress, helping prevent long-term ecological degradation.

3. Regulatory Compliance

- Aligns with California Water Code §10632 and the Urban Water Management Planning Act.
- Supports PWD's obligations under State Water Resources Control Board orders and regional drought response coordination.

4. Demand Reduction and Supply Extension

- Encourages conservation through tiered actions (e.g., voluntary reductions, irrigation limits, non-essential use bans).
- Helps stretch available supplies across all customer classes and service areas.

5. Economic Resilience

- Minimizes abrupt service disruptions that could impact tourism, agriculture, and small businesses.
- Provides clear expectations for water users, reducing uncertainty and enabling better planning.

6. Community Trust and Transparency

- Demonstrates PWD's commitment to equitable, data-driven drought response.
- Builds public confidence through consistent communication and phased implementation.

7. Operational Readiness

- Activates pre-defined actions and enforcement mechanisms, reducing response time during emergencies.
- Supports coordination with Cal OES, local jurisdictions, and mutual aid partners.

5.3.1 Public Information

Without exception, experience has shown that a well-informed public is generally more willing to voluntarily conserve or alter water-use patterns and is more likely to comply if mandatory water-use restrictions become necessary. DWR (2008) estimates that public information campaigns alone have reduced demand by five (5) to 20 percent, depending on the time, money, and effort spent. Public information supports voluntary and mandatory measures by educating and convincing the public that a critical water shortage exists, and provides information on how water is used and how they can help. The DWR Drought Guidebook highlights that when the public perceives a drought to be severe, they change their behavior (such as flushing the toilet less often).

The information provided to the public should include a description of the conditions that will trigger implementation of shortage stages as well as a description of what the plan entails (restrictions, enforcement provisions, etc.). It is also advisable to provide practical "consumer" information that will help water users comply with the plan. For example, information about lawn watering restrictions might be accompanied by guidance on proper lawn watering practices. Based on past experience, with minimal public outreach, a water savings of five (5) percent is assumed; with extensive public outreach, a water savings of seven (7) percent is assumed; and with public information combined with enforcement, a water savings of up to 22 percent is assumed.

5.3.2 Enforcement

A study examining the effectiveness of drought management programs in reducing residential water use (Virginia Polytechnic Institute 2006) found considerable variation in their impact and highlighted the importance of public information and enforcement. Results, shown in Table , indicate that overall reductions in residential water use ranged from zero (0) to 7 percent for voluntary restrictions and zero (0) to 22 percent for mandatory restrictions. The observed differences were statistically attributed to information efforts for voluntary restrictions and both information and enforcement efforts for mandatory restrictions.

Table 5-4: Drought Program Management Variables Effect on Residential Water Use

Classification	Estimated Change in Water Use	Statistically Different than No Effect?
Voluntary Restrictions		
Little or no information disseminated	-2%	No
Moderate level of information	-2%	No
Aggressive information dissemination	-7%	Yes
Mandatory Restrictions		
Low information and low enforcement	-5%	No
Moderate information and low enforcement	-6%	Yes
Aggressive information and low enforcement	-12%	Yes
Low information and moderate enforcement	-4%	No
Moderate information and enforcement	-9%	Yes
Aggressive information and moderate enforcement	-15%	Yes
Moderate information and aggressive enforcement	-20%	Yes
Aggressive information and enforcement	-22%	Yes

Source: Virginia Polytechnic Institute, 2006.

The analysis highlights the key role that public outreach and information play in the success of drought response actions. Voluntary restriction programs with little to moderate levels of information dissemination had no appreciable effect on water use. Voluntary restriction programs with active promotional efforts, however, reduced water use by an estimated seven (7) percent compared with what would have occurred without any restriction program. Thus, among voluntary restrictions, only the most intensive programs achieved even moderate success in reducing water use.

Mandatory restriction programs without a significant enforcement component broadly mirrored the outcomes achieved by the voluntary programs. Programs with mandatory restrictions that invested minimal effort in information dissemination did not appreciably reduce residential water use. Programs with no active enforcement efforts but with moderate to high levels of informational dissemination achieved six (6) and 12 percent reductions in water use, respectively. These estimated reductions are similar to those achieved by voluntary programs with aggressive informational campaigns.

The City of Santa Cruz's experience implementing its Drought Contingency Plan and successfully achieving its reduction goals underscores the importance of a strong public information program. Analysis of the implementation program identified the key ingredient to its success was "the public's understanding, awareness, and belief that the City of Santa Cruz was confronted with a true water shortage problem. Media coverage of water problems across California reinforced the situation. Without that sense of a real and imminent problem, it's likely the level of cooperation and willingness demonstrated by the community in making changes they did might have been considerably reduced" (Santa Cruz 2010).

Delivering accurate and timely information to water users, news media, and local governments with updates on conditions, restrictions, and helpful contact information is key. With aggressive

information dissemination and enforcement, it's assumed PWD could achieve 22 percent water savings.

5.3.3 Restrictions on Non-Essential Water Uses

The PWD water waste policy focuses on curtailing water waste and non-essential water use. Outdoor water use, including washing sidewalks and watering ornamental landscapes, is targeted. These uses are typically considered discretionary or nonessential, are highly visible, are therefore relatively easy to monitor, and often constitute a substantial component of water demand, particularly during the summer months when drought conditions are likely to be most severe.

Given the significance and visibility of lawn watering as the predominant component of seasonal use, best management practices in drought contingency plans typically prescribe time-of-use and other restrictions on lawn watering. This often involves scheduling water users to stagger lawn watering days, as well as restricting the times during the day when lawns can be watered. Additionally, this may include suspending potable water construction meters.

The American Waterworks Association (AWWA) estimates that voluntary outdoor water use limits can achieve up to 10 percent water savings, and mandatory outdoor water use limits can achieve up to 56 percent reductions (AWWA 2008; AWWA 2011). Specifically, case studies found that:

- Restricting water use to every third day reduced water use by 22 percent.
- Restricting water use to twice a week reduced water use by 33 percent.
- Restricting water use to once a week saved 56 percent.

PWD performed a detailed review of water use as part of its 2019 Financial Planning Study (PWD 2019). This analysis estimated that approximately 52 percent of residential customers' water use occurred outdoors. Residential water demand makes up approximately 77 percent of PWD's overall demand. Therefore:

- Voluntary outdoor water limits that saved 10 percent of outdoor residential demands would reduce overall water demand by four (4) percent (0.1*0.52*0.77).
- Restricting water use to twice a week could reduce outdoor water use by 33 percent, reducing overall water demand by 13 percent (0.33*0.52*0.77).
- Restricting water use to once a week could reduce outdoor water use by 56 percent, reducing overall water demand by 22 percent (0.56*0.52*0.77).

5.3.4 Additional Mandatory Restrictions

In 2017, the State Water Board identified statewide water conservation emergency regulations. As of June 5, 2024, these emergency regulations have expired. Local authorities may adopt different and/or stricter water conservation measures than the statewide regulations. Further:

- For urban water suppliers, statewide Level 2 demand reduction actions are not required: the requirement for urban water suppliers to implement demand-reduction actions that correspond to at least Level 2 of their water shortage contingency plans has not been in effect since June 5, 2023.

- For commercial, institutional, and homeowners association (HOA) common areas, the decorative grass watering emergency ban has expired: The Emergency Regulation to Ban Decorative Grass Watering (non-functional turf irrigation) in commercial, industrial, and institutional areas, including HOA common areas, expired by operation of law on June 5, 2024. In October 2023, however, the California State Legislature passed Assembly Bill 1572, which permanently phases in a ban on decorative grass watering in commercial, industrial, and institutional areas.

- Emergency prohibition on wasteful water uses has expired: The Emergency Regulation to Prohibit Wasteful Water Uses (such as refilling fountains without recirculating pumps, overwatering landscapes, watering grass within 48 hours of rainfall, etc.) expired on December 21, 2023.

As directed by Executive Order B-40-17, the State Water Board is conducting a rulemaking to establish permanent prohibitions on wasteful water-use practices. This rulemaking is part of the broader legislation Making Water Conservation a California Way of Life. Chapter 2 of the UWMP describes the water use standards currently in place, such as the indoor residential water use standard, as well as the still-to-be-developed Commercial, Industrial, and Institutional landscape standards. An evaluation of PWD's trajectory toward meeting legislative standards is also provided.

5.3.5 Drought Surcharge Rates

PWD has a drought rate structure to recover costs related to increased effort during drought. While not specifically intended to reduce water demand, drought surcharge rates are expected to do so.

Past studies reveal that water use decreases when utilities install water meters and impose commodity charges. AWWA (2008) estimates that water use decreases between 15 to 40 percent when customers are charged a commodity rate rather than a flat rate. This indicates that customers are price-sensitive and will adjust their habits to reduce their water costs. The extent to which increasing rates during a drought can reduce water use is uncertain.

The effectiveness of pricing to reduce water use depends heavily on the affluence of the water utility customer base. As a rule of thumb, AWWA estimates that marginal price increases in water (up to 10 percent) reduce water use by 1.5 to 7 percent; price increases above 10 percent are necessary to achieve reductions greater than 10 percent (AWWA 2008). Based on the data presented in these studies, water use reductions of 10 to 15 percent are expected during drought conditions.

Table 5-5: Effectiveness Demand Reduction and Other Actions

Stage	Demand Reduction Actions	Reduction in Shortage Gap	Explanation	Penalty or Enforcement?
I	Expand Public Information Campaign	7%	Based on AWWA 2008 assumes savings of 7%	No
II	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
II	Implement or Modify Drought Rate Structure or Surcharge	10%	Based on AWWA 2011 assumes savings of 10%	Yes
III	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
III	Implement or Modify Drought Rate Structure or Surcharge	10%	Based on AWWA 2011 assumes savings of 10%	Yes
III	Landscape - Other landscape restriction or prohibition	4%	Outdoor water limited to 3 days a week. Based on AWWA 2011	Yes
IV	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
IV	Implement or Modify Drought Rate Structure or Surcharge	15%	Based on AWWA 2011 assumes savings of 15%	Yes
IV	Landscape - Other landscape restriction or prohibition	13%	Outdoor water limited to 2 days a week. Based on AWWA 2011	Yes
V	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
V	Implement or Modify Drought Rate Structure or Surcharge	15%	Based on AWWA 2011 assumes savings of 15%	Yes
V	Landscape - Other landscape restriction or prohibition	22%	Outdoor water limited to 1 day a week. Based on AWWA 2011	Yes
VI	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
VI	Implement or Modify Drought Rate Structure or Surcharge	15%	Based on AWWA 2011 assumes savings of 15%	Yes
VI	Landscape - Other landscape restriction or prohibition	52%	Outdoor water use prohibited	Yes

Chapter 6: Monitoring and Reporting

Monitoring is essential to ensure that response actions achieve their intended water-use reduction goals or to identify improvements or new actions that may be needed.

6.1 Mechanism to Determine Reductions in Water Use and to Meet State Reporting Requirements

The PWD has meters on all residential, commercial, and landscape service connections in the service area and requires meters on all new connections. These meters record water consumption at each location. These meters, in combination with billing information, will be used to monitor actual reductions in water use.

6.2 Monitoring and Reporting

Certain aspects of water conservation can be readily monitored and evaluated, such as metered water use and production quantities. Other aspects, such as public education, are more difficult to measure in terms of effectiveness. Additionally, weather patterns make it more difficult to compare one year's water demand and conservation results with another year's usage.

When severe shortages occur and some degree of mandatory reduction is required, a program's effectiveness can be measured directly from water bills. In these cases, targeted results must be met, and even reluctant customers will, overall, meet the goals. Specific methods to evaluate the effectiveness of water conservation programs to be employed by PWD are:

1. Monitoring of Metered Water Usage – This will determine how much has been used. Compiling statistics to track customer group usage and determine trends is currently done through the water billing computer system. Meter readings/billings can be compared and analyzed to determine the effectiveness of conservation for all customer classes.

2. Monitoring Production Quantities – In normal water supply conditions, production figures are recorded daily by the PWD automated system. The Water Production Supervisor and the Production Lead monitor the accuracy of the monthly production totals. The totals are incorporated into the monthly water supply report to the State by the Water Treatment Supervisor.

To verify that conservation reduction goals are being met, production and metered usage reports will be provided to the General Manager during each stage of the conservation period. Water production figures will be compared with those from previous years for the same period to determine whether conservation goals are being met. Results will be posted on the Palmdale Water website, as appropriate.

Additional actions available to PWD include:

1. Transition of remaining customer water meters to "smart meters" and investment in an automated system to improve customer interface to allow more timely monitoring by customers of water use patterns.

2. Provide incentives to property owners to install individual meters or sub-meters in multi-family structures for resident/property owners to track water usage.

Table 6-1 lists specific monitoring and reporting methods for each shortage stage that can be used to measure the effectiveness of reducing the shortage gap. As the stages progress toward a higher percentage of the required supply reduction, monitoring and reporting will increase in frequency, intensity, and resources.

Table 6-1: Monitoring and Reporting to Support Shortage Response Actions

Shortage Stage (% supply reduction)	Monitoring and Reporting Methods (How to measure effectiveness of reducing the shortage gap)
I (Up to 10%)	• Water-Use Monitoring Mechanisms • Prepare and review monthly water use reports
II (Up to 20%)	• All Previous Monitoring and Reporting Methods Run and review monthly water use reports
III (Up to 30%)	• All Previous Monitoring and Reporting Methods Run and review monthly water use reports
IV (Up to 40%)	• All Previous Monitoring and Reporting Methods • Run and review monthly water use reports
V (Up to 50%)	• All Previous Monitoring and Reporting Methods Run and review monthly water use reports
VI (Up 50% of More)	• All Previous Monitoring and Reporting Methods Run and review monthly water use reports

Chapter 7: Communication Protocols

Customer participation is a key element in responding to a supply shortage, while general media coverage of a drought is likely to increase awareness. Multiple communication channels will continue to be used by PWD staff to communicate water shortage conditions and necessary actions to the PWD Board of Directors, customers, residential HOAs, business chambers, inter-governmental bodies, essential facilities (schools, hospitals, fire and police departments), and other stakeholders. Communication methods include the following:

- Public water conservation forums hosted at PWD headquarters, off-site locations, or through virtual platforms.
- Attendance and agenda presentation at local city council meetings.
- Attendance and agenda presentations at HOAs and business chamber meetings.
- Direct mailings and bill inserts to customers and account holders.
- Press releases.
- PWD publications.
- Updated posting of issues and information on the PWD website.
- Advertisements in local publications and cable channels.
- Cards, table tents, door hangers, and other leave-behind reminders.
- Social media updates and postings.

Table 7-1 describes communication protocols and procedures to be used by PWD for outreach to customers to reduce demand during each defined shortage stage.

Table 7-1: Communication Protocols for Addressing a Water Shortage

Stage	Communication Protocols and Procedures *(Outreach to customers when each Stage is declared)*
I	• Declaration and notification of water supply shortage Stage I by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in the public newspaper
II	• Declaration and notification of water supply shortage Stage II by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in the public newspaper • Commence social media updates • Notify the top five (5) water users in each customer class, e.g. residential, and CII
III	• Declaration and notification of water supply shortage Stage III by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in the public newspaper and the local cable channel • Schedule regular media, city council, and county briefings • Continue social media updates • Targeted messaging to customers • Notify the top 10 water users in each customer class, e.g. residential, and CII
IV	• Declaration and notification of water supply shortage Stage IV by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in the public newspaper and the local cable channel • Continue regular media, city council, and county briefings • Continue social media updates • Targeted messaging to customers • Notify the top 15 water users in each customer class, e.g. residential, and CII
V	• Declaration and notification of water supply shortage Stage V by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in the public newspaper and the local cable channel • Continue regular media, city council, and county briefings • Continue social media updates • Targeted messaging to customers • Notify the top 20 water users in each customer class, e.g. residential, and CII

Stage	Communication Protocols and Procedures *(Outreach to customers when each Stage is declared)*
VI	• Declaration and notification of water supply shortage VI by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper • Advertisement in Local Public Newspaper and local cable channel • Continue regular media, city council and County briefings • Continue social media updates • Targeted Messaging to customers • Notify top 25 water users in each customer class, e.g. residential, and CII

Chapter 8: Enforcement

Enforcement actions for violations of water conservation measures are summarized in Table 6-1. PWD customers are encouraged to report water conservation violations through the PWD hotline.

Table 8-1: Penalties for Customer Violations

Violation Level	Penalties or Charges
1st Violation	The customer shall be notified in writing. The notice shall include a warning that further violations may result in stricter penalties
2nd Violation	A 2nd violation is punishable by a fine of up to $50
3rd Violation	A 3rd violation is punishable by a fine of up to $250
4th Violation	A 4th violation is punishable by a fine of up to $500
5th Violation	A 5th violation may result in termination of service and a $1,000 reconnection fee
Violation Assessment Period	Any violations occurring within 12 months of each other will be considered consecutive and result in escalating penalties. The period for assessing. Consecutive penalties may be extended beyond 12 months by resolution of the Board of Directors

In accordance with the PWD Water Waste policy, upon receipt of a notice claiming water waste or misuse, the Customer shall have five (5) days to file a request for reconsideration with the General Manager and, 15 days after the General Manager's decision, file a written appeal with the Board of Directors. A hearing on the appeal will be conducted in the next Board of Directors meeting following the appeal, with the Board of Directors' decision from the hearing designated as final and conclusive.

Chapter 9: Financial Consequences of Actions During Shortages

Water providers face notable financial challenges during droughts. During periods of reduced consumption and declining revenue from water sales, expenses remain relatively constant. A reduction in construction activities can also reduce the amount of water service connection fees collected. At the same time, as consumption decreases, some expenditures are expected to increase, including staff costs for community education, enforcement of ordinances, monitoring and evaluation of water use, and drought planning. Operations and maintenance costs may also increase due to the need to identify and quickly repair all water losses.

PWD recognizes the financial impacts of reduced customer deliveries and connections during droughts. The following sections describe potential revenue reductions, expense increases, mitigation actions, and the cost of compliance with reducing residential water use during drought.

9.1 Revenue Impacts of Reduced Sales and Increased Costs

Based on the 2025 Budget, PWD had total annual water-based revenues $33M, of which approximately 40 percent is derived from water sales. As a result, water conservation efforts impact revenues and the ability to cover fixed, non-variable costs. Reductions in potable water use could result in an operating shortfall. Although operating expenses decline with lower sales, fixed costs cannot be fully recovered when sales are significantly reduced, resulting in a net operating loss. PWD has planned for this shortfall by creating a reserve fund.

In the case of water-use reductions resulting from the implementation of the PWD WSCP, PWD would likely experience impacts to operating revenue and would draw from reserves as necessary and as possible. In addition, the budget-based tiered rate structure intends to improve revenue stability. While revenue would inevitably fluctuate with water-use reductions, PWD has established appropriate means to manage these impacts through a drought surcharge, as indicated in the 2019 Financial Planning Report and the 2024 Water Rate Study Final Report. Table 9-1 presents the revenue impacts from demand reduction, based on 2025 data.

Table 9-1: Revenue Impacts of Reduced Water Demand

Demand Reduction	Annual Revenue Reduction ($ Million)[a]	Ancillary Costs ($)[b]	Net Cost of Compliance ($)[c]
10%	1.3	0.3	1.6
20%	2.6	0.4	3.0
30%	3.8	0.5	4.3
40%	5.1	0.6	5.7
50%	6.4	0.6	7.0

Notes:
(a) Reduction in non-fixed water service revenues based on calendar year 2025 water sales (volumetric) revenues.
(b) Estimated as a percentage of Operations and Maintenance expenses to reflect increased costs for expanded public outreach campaigns, increased meter reading, and additional operational and administrative support during each drought stage to implement demand reduction actions.
(c) Calculated sum of annual revenue reduction plus ancillary costs.

9.2 Mitigation Actions to Address Revenue Reductions

A reduction in water revenue could be mitigated by using the established reserve fund, deferring, avoiding capital fund expenditures, using less costly water supplies (if possible), and implementing drought surcharge rates. Table 9-2 summarizes measures to overcome revenue and expenditure impacts. Table 9-3 lists the drought surcharges recommended in the 2024 Water Rate Study Final Report.

Table 9-2: Measures to Overcome Revenue Impacts During Storage

Measure	Summary of Effects
Use of reserve funds	Provide short-term rate stabilization, but requires delays in capital expenditures and rebuilding reserves after the water shortage
Re-evaluate capital expenditure plans	Delay major construction projects for facilities, as well as upgrades and replacements
Shift water sources to less costly supplies if possible	Reduce costs associated with purchasem treatment, and distribution of water
Drought surcharge rates	Increase revenue

Table 9-3: Proposed Drought Surcharges

Drought Mandate	2025 ($)	2026 ($)	2027 ($)	2028 ($)	2029 ($)
20% Surcharge	2.12	2.36	2.57	2.80	3.02
30% Surcharge	3.09	3.43	3.74	4.07	4.40
40% Surcharge	3.48	3.86	4.21	4.59	4.96

Source: Palmdale Water District 2024 Water Rate Study Final Report.

9.3 Financial Consequences of Limiting Excessive Water Use

Per the California Water Code Section 365 et al., retail water suppliers are required to prohibit or discourage excessive water use. Reporting this is not required under the UWMP; however, Water Code Section 10632(a)(8)(C) requires the financial consequences of these actions to be reported as part of the UWMP. Water Code Section 367 states that there are three (3) types of drought emergencies:

1. Declared statewide drought emergency
2. When a supplier implements its mandatory reductions per their WSCP
3. A declared local drought emergency

Water Code Section 366 states that a retail water supplier must prohibit excessive use through these strategies:

1. **Rate structure.** A rate structure that includes block tiers, water budgets, or rate surcharges over and above base rates for excessive water use by a residential water customer.

2. **An excessive water use ordinance**. An ordinance that includes a procedure to identify and address excessive water use by metered single-family residential customers and customers in multiunit housing complexes in which each unit is individually metered and may include a process to issue written warnings to a customer and perform a site audit of customer water usage prior to deeming the customer in violation.

PWD already has in place budget-based rates that discourage excessive water use. Should a drought emergency occur, PWD would already have the necessary processes in place to discourage excessive use. As discouraging excessive use is already part of PWD's normal operations, the financial consequences would be minimal.

Chapter 10: References

American Water Works Association. (2011). Drought Preparedness and Response. Manual of Water Supply Practices, M60.

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Appendix A

Resolution Adopting the 2025 Water Shortage Contingency Plan

RESOLUTION NO. 2026-2

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE PALMDALE WATER DISTRICT ADOPTING, DIRECTING FILING OF, AND IMPLEMENTING THE PALMDALE WATER DISTRICT 2025 URBAN WATER MANAGEMENT PLAN AND THE 2025 WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 during the 1983-1984 Regular Session of the California Legislature (Water Code Section 10610 et.seq.) known as the Urban Water Management Plan Act (the Act).

WHEREAS, the California Water Code Section 10632 requires that every urban water supplier shall prepare and adopt a Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan (UWMP); and

WHEREAS, the WSCP is consistent with the California Water Code Sections 350 through 359 and Section 10632 and guidance provided by the California Department of Water Resources Urban Drought Guidebook; and

WHEREAS, the Act mandates that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare, and every five (5) years thereafter update, its UWMP, the primary objective of which is to plan for the conservation and efficient use of water.

WHEREAS, the 2025 UWMP and the 2025 WSCP (together known as the Plans) must be adopted by July 1, 2026, and filed with the California Department of Water Resources, within thirty days of adoption; and

WHEREAS, the Palmdale Water District prepared and filed a UWMP with the California Department of Water Resources in December 1985, December 1990, December 1995, December 2000, December 2005, December 2010, December 2020, and December 2020; and

WHEREAS, the Act further requires that the adopted UWMP and WSCP be available for public review during normal business hours for thirty (30) days following its submission to the Department of Water Resources; and

WHEREAS, as an urban water supplier providing water service to over 3,000 customers, Palmdale Water District is subject to the Act and has, therefore, prepared and circulated for public view a draft 2025 UWMP and a draft 2025 WSCP in compliance with the requirements of the Act,

and a properly noticed public hearing regarding the proposed Plan was duly held by the Palmdale Water District on June 8, 2026.

NOW, THEREFORE, BE IT RESOLVED by the Board of the Directors of the Palmdale Water District as follows:

1. The 2025 Urban Water Management Plan and the 2025 Water Shortage Contingency Plan are hereby approved and adopted.
2. The General Manager is hereby authorized and directed to file the Plans with the California Department of Water Resources, the California State Library, and the City of Palmdale within thirty days of adoption in accordance with the Act.
3. When required by conditions contained in the Plans, the General Manager is authorized to declare a Water Shortage Emergency and to implement water conservation programs as detailed in the Plans, including recommendations to the Board of Directors regarding necessary procedures, rules, and regulations to carry out effective and equitable water conservation programs.
4. The General Manager and staff are hereby further authorized and directed to take such other and further actions as may be reasonably necessary to carry out the purposes and intent of the Plan.

I certify that this is a true copy of Resolution No. 2026-2 as passed by the Board of Directors of the Palmdale Water District at its meeting held June 8, 2026 in Palmdale, California.

Date: June 8, 2026

Kathryn Mac Laren-Gomez, President,
Board of Directors

ATTEST:

Cynthia Sanchez, Secretary, Board of Directors

APPROVED AS TO FORM:

BY:

Aleshire & Wynder, LLP, General Counsel

Appendix B

Palmdale Waste of Water Policy

APPENDIX O

WASTE OF WATER POLICY AND EMERGENCY WATER CONSERVATION RESTRICTIONS

Palmdale Water District is engaged in the production, transmission, storage and distribution of water to its Customers in accordance with California law.

California law prohibits the waste or unreasonable use of water and requires that the District take all appropriate actions to prevent such waste and unreasonable use of this finite resource.

Water waste includes but is not limited to:

- Application of potable water to outdoor landscapes in a manner that causes runoff.
- Failure to repair water leaks or to adjust sprinkler overspray in a timely manner.
- Hosing of hardscape surfaces, except where health and safety needs dictate.
- The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
- Irrigation with potable water of ornamental turf on public street medians.
- Watering of outdoor landscapes within 48 hours of measurable rainfall.
- Car washing and outside cleaning activities except when performed with buckets and automatic hose shutoff devices.
- The serving of drinking water other than upon request in eating or drinking establishments.
- Failure of operators of hotels and motels to provide guests with the option of choosing not to have towels and linens laundered daily. (The hotel or motel shall prominently display notice of this option in each guestroom.)
- Inefficient use of water for construction purposes.
- Irrigation with potable water outside of newly constructed homes and buildings not delivered by drip or microspray is prohibited.

Categories of Water Waste:

The District recognizes that water waste can vary significantly in severity and for this reason will classify and deal with three levels of water waste.

Level 1 Water Waste:

This is the least severe category of water waste which includes any violation of the Water Waste Policy and any other form of water waste that leads to minor but avoidable water loss. Examples of this would be overspray from improperly adjusted sprinklers or small leaks leading to wetting of the sidewalk.

Penalties for Level 1 Water Waste:

Penalties for Level 1 waste violation will be an initial warning. Failure to repair the violation will result in a $50 fine. An additional new $50 fine will be assessed if the follow up inspection shows that the violation is unrepaired. Follow up inspection will occur no more frequently than once every 14 days. If a Level 1 water waste violation continues unrepaired for greater than 60 days, then the District may elevate the penalties to Level 2 fines as described below.

Level 2 Water Waste:

This category includes any form of water waste where water is visibly and measurably flowing off the property. Examples of this would be a sheared off sprinkler or an irrigation system that is stuck on. Follow up inspection will occur no more frequently than once every 7 days.

Penalties for Level 2 Water Waste:

The penalties will mirror the penalties found in the Water Shortage Contingency Plan. These penalties are currently as follows:

1st Notice of Violation- The customer shall be notified in writing. The notice shall include a warning that further violations could result in stricter penalties.

2nd Notice of Violation- is punishable by a fine of up to $50.

3rd Notice of Violation- is punishable by a fine of up to $250.

4th Notice of Violation- is punishable by a fine of up to $500.

5th Notice of Violation- may result in termination of service.

Level 3 Water Waste:

This category includes any form of water waste where water leaving the property appears uncontrollable or poses a threat to public safety. Examples of this would be a broken water line flowing unrestrained off the property or water leaving the property causing a public safety threat due to icing or flooding.

Penalties for Level 3 Water Waste:

Level 3 water waste will result in the shutdown of service until the repair has been successfully accomplished. Repeat incidences of severe water waste will mirror the penalties found in the Water Shortage Contingency Plan.

District Process:

1. Upon notification or observation of waste or misuse of water, the District shall:

   (a) Make a photographic record of such activity;

   (b) Provide notice to the Customer in writing or by means of a door tag; and

   (c) Log the warning on the Customer's service record.

2. In the event of a recurring violation, the District shall:

   (a) Assess the appropriate fine upon the Customer for each notification of violation occurring after the warning has been given;

   (b) Give notice to the Customer in writing that if such waste or misuse continues, the Customer may be subject to increased penalties up to and including disconnection of service.

3. Upon determination that a violation is still unresolved and a final notice needs to be issued, the District shall:

   (a) Give written notice to the Customer that disconnection of the service will occur within five (5) working days of the date of the notice;

   (b) Disconnect the Customer's service after the appropriate time has been allotted; and

   (c) Charge the Customer a disconnection charge for waste or misuse of water as set forth in Appendix D and a turn-on fee as set forth in Appendix D if service is later restored. Service will be restored only when the Customer has provided evidence satisfactory to the District that waste and unreasonable use of water will no longer occur.

The District recognizes that there may be mitigating or intervening circumstances that bear upon a Customer's apparent misuse of water. Upon receipt of any notice regarding purported misuse or waste of water, the Customer shall have five (5) working days within which to file a written request for reconsideration with the General Manager. If the Customer is not satisfied with the General Manager's decision, the Customer shall have fifteen (15) days after the General Manager's decision within which to file a written appeal with the Board. The Board shall conduct a hearing on the appeal at the next Board meeting immediately following the appeal. The Board's decision following such hearing shall be final and conclusive.

Prohibition on Potable Water Use for Nonfunctional Turf (AB 1572)

A. Potable Water Prohibition

The use of potable water to irrigate nonfunctional turf is prohibited in accordance with the following statutory compliance schedule:

- January 1, 2027: State and local government properties.
- January 1, 2028: Commercial, industrial, and institutional (CII) properties.
- January 1, 2029: Homeowners' association (HOA) and common-interest development common areas.
- January 1, 2031: Local government properties located in disadvantaged communities, unless delayed due to lack of state funding.

B. Exempt Uses

Potable water may continue to be used for:

- Irrigation required to sustain trees and perennial non-turf landscape plants.
- Health and safety purposes, including fire suppression and erosion control.
- Cemeteries, parks, sports fields, and other public assembly or recreation areas.
- Agricultural irrigation.

C. Enforcement

Violations of this section shall be enforced in accordance with the District's Waste of Water Policy. Administrative penalties may be imposed up to $1,000 per violation, as authorized under state law.

D. Compliance Extensions

The State Water Resources Control Board may grant compliance extensions of up to three years for documented economic hardship, critical business need, or health and safety concerns.

E. Penalties for Nonfunctional Turf Violations

The following penalty structure applies specifically to violations of this section:

1. First violation: Warning and educational materials.
2. Second violation: Warning and educational materials.
3. Third violation: $500 fine and educational materials.
4. Fourth violation: $1,000 fine and educational materials.
5. Fifth and subsequent violations: $1,000 per violation.

Section 3: Implementation and Coordination

The District shall implement the requirements of AB 1572 through updates to its internal procedures, customer communication materials, and development-review processes.

The District shall coordinate with the City of Palmdale and other appropriate agencies to ensure that proposed landscape and irrigation plans comply with the potable-water restrictions applicable to nonfunctional turf.

ADOPTED BY THE BOARD OF DIRECTORS OF PALMDALE WATER DISTRICT AT A REGULAR MEETING HELD OCTOBER 11, 2017

Appendix C

2025 Annual Water Supply and Demand Assessment

Table 1: Information

Water Shortage Report Submitted on 06/12/2025 (Read-Only)

Type of Supplier (REQUIRED TO CHECK ONE OR BOTH)	
Supplier is a wholesaler	☐
Supplier is a retailer	☑

Year Covered By This Shortage Report (REQUIRED)	
Start: July 1,	2025
End: June 30,	2026
Volume Unit for Reported Supply and Demand (must use same unit throughout)	AF
Supplier's Annual Assessment Planning Cycle (REQUIRED)	
Start Month:	January
End Month:	December
Data Reporting Interval Used:	Monthly (12 data points per year)
Supplier's Water Shortage Contingency Plan	
WSCP Title:	2020 Water Shortage Contingency Plan
WSCP Adoption Date:	06/14/2021
Other Annual Assessment Related Activities (optional)	
Activity	Timeline/Outcomes/Links/Notes
Annual Assessment/Shortage Report Title:	
Annual Assessment/Shortage Report Approval Date:	
Other Annual Assessment Related Activities:	

Table 2 Retail: Demands[1]

Water Shortage Report Submitted on 06/12/2025 (Read-Only)

Use Type	Start Year:	2025	Volumetric Unit Used:	AF										
Drop down list May select each use multiple times. These are the only Use Types that will be recognized by the WUEdata online submittal tool. (Add additional rows as needed)	Additional Description (as needed)	Level of Treatmen for Non-Potable Supplies Drop down list	Projected Water Demands - Volume[2]											
			Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun[3]	Total by Water Demand Type
Demands Served by Potable Supplies														
Commercial			182	185	191	144	125	112	105	84	87	87	126	149	1,577
Other Potable	Construction		3	2	4	2	1	1	1	0	1	0	1	6	22
Other Potable	Fire Services		85	79	79	66	49	56	43	34	33	31	58	70	683
Other Potable	Irrigation		145	158	113	113	62	31	13	7	10	19	73	107	851
Multi-Family			155	163	170	151	140	137	127	113	116	115	129	157	1,673
Single Family			1,052	1,156	1,033	949	784	689	593	523	521	557	777	907	9,541
Transfers to other agencies			14	36	64	41	89	88	81	90	56	45	32	21	657
TOTAL BY MONTH (POTABLE)			1,636	1,779	1,654	1,466	1,250	1,114	963	851	824	854	1,196	1,417	15,004
Demands Served by Non-Potable Supplies														
TOTAL BY MONTH (NON-POTABLE)			0	0	0	0	0	0	0	0	0	0	0	0	0
NOTES															

[1]Projections are based on best available data at time of submitting the report and actual demand volumes could be different due to many factors.

[2]Units of measure (AF, CCF, MG) must remain consistent.

[3]When optional monthly volumes aren't provided, please enter yearly volumes in the June column (Jun[3]).

Table 3 Retail: Water Supplies[1]

Water Shortage Report Submitted on 06/12/2025 (Read-Only)

Water Supply	Start Year:	2025					Volumetric Unit Used:			AF						
Drop down list May select each use multiple times. These are the only Use Types that will be recognized by the WUEdata online submittal tool. (Add additional rows as needed)	Additional Detail on Water Supply	Projected Water Supplies - Volume[2]												Total by Water Demand Type	Water Quality Drop Down List	Total Right or Safe Yield * (optional)
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun[3]			
Potable Supplies																
Purchased/Imported Water		1,350	1,450	1,450	1,100	700	200	150	125	0	175	225	875	7,800		
Groundwater (not desal.)		360	360	360	360	360	360	360	360	360	360	360	360	4,320		
Surface water (not desal.)					50	200	600	550	400	500	350	650	275	3,575		
TOTAL BY MONTH (POTABLE)		1,710	1,810	1,810	1,510	1,260	1,160	1,060	885	860	885	1,235	1,510	15,695		0
Non-Potable Supplies																
TOTAL BY MONTH (NON-POTABLE)		0	0	0	0	0	0	0	0	0	0	0	0	0		0
NOTES																

[1]Projections are based on best available data at time of submitting the report and actual demand volumes could be different due to many factors.

[2]Units of measure (AF, CCF, MG) must remain consistent.

[3]When optional monthly volumes aren't provided, please enter yearly volumes in the June column (Jun[3]).

Table 4 Retail: Water Assessment

Water Shortage Report Submitted on 06/12/2025 (Read-Only)

Table 4(P): Potable Water Shortage Assessment[1]	Start Year:		2025			Volumetric Unit Used[2]:						AF	
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun[3]	Total
Potable Supplies													
Anticipated Unconstrained Demand	1,636	1,779	1,654	1,466	1,250	1,114	963	851	824	854	1,196	1,417	15,004
Anticipated Total Water Supply	1,710	1,810	1,810	1,510	1,260	1,160	1,060	885	860	885	1,235	1,510	15,695
Surplus/Shortage w/o WSCP Action	74	31	156	44	10	46	97	34	36	31	39	93	691
% Surplus/Shortage w/o WSCP Action	5%	2%	9%	3%	1%	4%	10%	4%	4%	4%	3%	7%	5%
State Standard Shortage Level	0	0	0	0	0	0	0	0	0	0	0	0	0
Planned WSCP Actions													
Benefit from WSCP: Supply Augmentation													0
Benefit from WSCP: Demand Reduction													0
Revised Surplus/Shortage with WSCP	74	31	156	44	10	46	97	34	36	31	39	93	691
% Revised Surplus/Shortage with WSCP	5%	2%	9%	3%	1%	4%	10%	4%	4%	4%	3%	7%	5%

Table 4(NP): Non-Potable Water Shortage Assessment[1]	Start Year:		2025			Volumetric Unit Used[2]:						AF	
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun[3]	Total
Non-Potable Supplies													
Anticipated Unconstrained Demand													0
Anticipated Total Water Supply													0
Surplus/Shortage w/o WSCP Action	0	0	0	0	0	0	0	0	0	0	0	0	0
% Surplus/Shortage w/o WSCP Action													0%
Planned WSCP Actions													
Benefit from WSCP: Supply Augmentation													0
Benefit from WSCP: Demand Reduction													0
Revised Surplus/Shortage with WSCP	0	0	0	0	0	0	0	0	0	0	0	0	0
% Revised Surplus/Shortage with WSCP													
NOTES													

[1]Projections are based on best available data at time of submitting the report and actual demand volumes could be different due to many factors.

[2]Units of measure (AF, CCF, MG) must remain consistent.

[3]When optional monthly volumes aren't provided, please enter yearly volumes in the June column (Jun[3]).

Table 5 Retail: Actions

Water Shortage Report Submitted on 06/12/2025 (Read-Only)

Year Covered By This Shortage Report			July 1,	2025	to June 30,	2026
Anticipated Shortage Level Drop Down List of State Standard Levels (1-6) and Level 0 (No Shortage)	ACTIONS: Demand Reduction, Supply Augmentation, and Other Actions. (Drop Down List) These are the only categories that will be accepted by the WUEdata online submital tool. Select those that apply.	Is Action Already Being Implemented? (Y/N)	How much is action going to reduce the shortage gap?		When is shortage response action anticipated to be implemented?	
			Enter Amount	(Drop Down List) Select % or Volume Unit	Start Month	End Month
Add additional rows as needed						
0 (No Shortage)	No Actions	Yes			July	June
Notes: (NOTES Section to be used only for clarifying details, and not for listing specific actions. Actions need to entered into rows above.)						

Appendix D

Local Hazard Mitigation Plan

Draft 2021 Local Hazard Mitigation Plan

Palmdale Water District

Palmdale, CA

July 26, 2021

DRAFT

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Appendices

Appendix A. Local Mitigation Plan Review Tool Regulation Checklist

Appendix B. Hazard Mitigation Planning Team

Appendix C. Public and Stakeholders Involvement

Appendix D. Palmdale Water District's Adoption Resolution

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
cfs	cubic feet per second
CIP	Capital Improvement Plan
District	Palmdale Water District
DMA	District Mitigation Act
du	dwelling unit
DWR	Department of Water Resources
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
LCID	Littlerock Creek Irrigation District
LHMP	Local Hazard Mitigation Plan
mgd	million gallons per day
mL	milliliters
mph	miles per hour
MPN	most probable number
NFIP	National Flood Insurance Program
PWRP	Palmdale Water Reclamation Plant
RRA	Risk and Resilience Assessment
SARS	severe acute respiratory syndrome
SCADA	Supervisory Control and Data Acquisition
SR	State Route
SWP	State Water Project
USAF	United States Air Force
UWMP	Urban Water Management Plan
WHO	World Health Organization

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1 Introduction

The purpose of this Local Hazard Mitigation Plan (LHMP) is to reduce long-term risks to people and property from either natural or anthropogenic, man-made and technological hazards. The Palmdale Water District (District) LHMP is the representation of the District's commitment to reduce risks from hazards and serves as a guide for decision-makers as they commit resources to reducing the effects of hazards.

This LHMP complies with the Disaster Mitigation Act of 2000 (DMA 2000), Federal Register 44 Code of Federal Regulations (CFR) Parts 201 and 206, which modified the Robert T. Stafford Disaster Relief and Emergency Assistance Act – Mitigation Planning. This law, as of November 1, 2004, requires local governments develop and submit hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) funding and other disaster assistance and mitigation funding. The overall intent of this LHMP is to reduce or prevent injury and damage from hazards. It identifies past and present mitigation activities, current policies and programs, and mitigation strategies for the future. This LHMP also guides hazard mitigation activities by establishing hazard mitigation goals and objectives.

Federal law and the State of California's requirements for hazard mitigation plans require coverage of only natural hazards. The District's 2020 Risk and Resilience Assessment/Emergency Response Plan includes technological and human-caused hazards as well as natural hazards. The planning team decided to cover both natural and technological/human-caused hazards for the LHMP, including a description and analysis of each hazard.

The LHMP is a "living document" that will be reviewed and updated regularly to reflect changing conditions and improvements from new information, especially information on local planning activities. The Federal Emergency Management Agency (FEMA) has produced a Local Mitigation Plan Review Tool Regulation Checklist (Appendix A**)**. The Plan Review Tool has a regulation checklist that provides a summary of FEMA's evaluation of whether the plan has addressed all requirements. The planning requirements set forth in the CFR are identified throughout this plan, mirroring the order of the FEMA Regulation Checklist in the Local Mitigation Plan Review Tool.

1.1 Grant Programs with Mitigation Plan Requirements

The District applied for a grant to update its LHMP and on April 23, 2020 FEMA approved it (HMGP #4407-238-25P) The grant obligates federal funds pay for 75 percent of the cost and requires the District to pay the remaining 25 percent. The final LHMP must comply with the *Standard Hazard Mitigation Grant Program Conditions* as amended in August 2018. All work must be completed no later than October 23, 2022. If these conditions are not met, federal funds may be de-obligated. In compliance with the National Environmental Policy Act , this undertaking is categorically excluded from the need to prepare either an environmental assessment or an environmental impact statement.

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2 Planning Process

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. In general, hazard mitigation is work done to minimize the impact of a hazard event before it occurs, with the goal of reducing losses from future disasters. For the District, hazard mitigation planning is a process in which the District will:

- Identify and profile hazards that affect the service area.
- Analyze their facilities and equipment at risk from those hazards.
- Develop a mitigation strategy and actions to lessen or reduce the impact of the profiled hazards.
- Implement the strategy and actions that may involve planning, policy changes programs, project, and other activities.

The requirements for documentation of the LHMP planning process are described below in the FEMA Regulation Checklist: Planning Process. This section summarizes the planning team's hazard mitigation planning efforts in 2021. Additionally, the section describes public and stakeholder outreach efforts as part of the LHMP planning process. The section also summarizes the review and incorporation of existing plans, studies, and reports used to develop the LHMP. Documentation of the 2021 LHMP planning process for the Hazard Mitigation Planning Team is provided in Appendix B; documentation of the process for the public and stakeholders is found in Appendix C. These appendices document the planning meetings and outreach and include meeting agendas, presentations, sign-in sheets, minutes, social media materials, and other documentation used to conduct the planning process.

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FEMA REGULATION CHECKLIST: PLANNING PROCESS

Documentation of the Planning Process

44 CFR § 201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Elements

A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? 44 CFR § 201.6(c)(1).

A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? 44 CFR 201.6(b)(2)

A3. Does the Plan document how the public was involved in the planning process during the drafting stage?

44 CFR 201.6(b)(1) and 201.6(c)(1)

A4. Does the Plan document the review and incorporation of existing plans, studies, reports, and technical information? 44 CFR 201.6(b)(3)

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

The planning process began with the District establishing the planning area and emailing stakeholders within the planning area to invite them to participate in the process. In addition, the District identified the financial and technical resources required to update the LHMP. Once all the District's financial and technical resources were identified, the District established the planning team and created a schedule for the process.

2.2 Plan History

The 2021 LHMP is an update of the Palmdale Water District Local Hazard Mitigation Plan December 2008 Plan (2008 HMP/Plan). It updates and consolidates hazards analyzed in the previous plan and adds new hazards. The 2021 LHMP contains many of the mitigation actions listed in the 2008 version as mitigation activities are ongoing and still relevant.

2.3 Plan Purpose and Authority

The purpose of the LHMP is to identify natural, technological, and anthropogenic-caused hazards that impact the District, to assess the vulnerability and risk posed by those hazards to District-wide human and structural assets, to develop strategies for mitigation of those identified hazards, to present future maintenance procedures for the plan, and to document the planning process. It is prepared in compliance with DMA 2000 requirements and represents an updated LHMP.

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The resolution adopting this plan by the Palmdale Water District Board can be found in Appendix D. [Note to Public Reviewer: This appendix will be added after the District Board adopts this Hazard Mitigation Plan at the end of this process.]

FEMA REGULATION CHECKLIST: PLAN ADOPTION

Adoption by the Local Governing Body

44 CFR § 201.6(c)(5): The local hazard mitigation plan shall include "[d]documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

Element

E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval?

Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

2.4 Participation in the Planning Process

In March 2021, the planning process for the 2021 LHMP began. Select District staff were invited to join the Hazard Mitigation Planning Team (planning team) to develop the 2021 LHMP. The planning team can be found below in Table 2-1Documentation is located in Appendix B and Appendix C.

Email solicitations were sent to other utility companies and cities within the service area, requesting participation in the LHMP planning process. Documentation of the emails is contained in Appendix C, Public and Stakeholders Involvement.

2.5 Planning Team

Members of the core LHMP planning team are listed in Table 2-1.

Table 2-1. Planning Team

Department or Agency	Member Name	Key Role
Palmdale Water District	Chris Bligh	Data Input & Reviewer
Palmdale Water District	Jennifer Emery	Grant Manager & Reviewer
Palmdale Water District	Adam Ly	Project Manager & Reviewer
Palmdale Water District	Mynor Masaya	Data Input & Reviewer
Palmdale Water District	Heather Oates	Reviewer
Palmdale Water District	Judy Shay	Coordinator & Reviewer

2.6 Planning Team Activities

In progress.

2.7 Community Engagement

In progress.

2.8 Review of Existing Plans, Reports, Technical Documents, and Data

The planning team used various resource documents and references to update the LHMP. Table 2-2 contains a comprehensive list of guidance tools incorporated to create the current Plan.

Table 2-2. List of Existing Information

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
Palmdale Water District Local Hazard Mitigation Plan December 2008	Hazard Mitigation Plan	The LHMP assesses hazard vulnerabilities and identifies mitigation actions that jurisdictions will pursue to reduce the level of injury, property damage, and community disruption that might otherwise result from such events.
2020 Risk and Resilience Assessment for Water	Risk and Resilience Assessment	Risk and resilience refer to the preparation that utilities must undergo to avoid disruptions in water quality and delivery due to emergencies such as natural disasters, accidents, or international acts.
2020 Urban Water Management Plan (UWMP) Draft	UWMP	The UWMP Act requires water agencies to develop UWMPs to provide a framework for long-term water planning and information regarding long-term resource planning to ensure sufficient water supplies are available to meet existing and future demands. Urban water suppliers must report, describe, and evaluate water deliveries and uses, water supply sources, efficient water uses, demand management measures, and water shortage contingency planning.
Littlerock Dam Emergency Action Plan	Response Plan	The District has developed an Emergency Action Plan to prepare for and mitigate the effects of a dam failure. The response procedures and organization strategies provide a step-by-step guide to response and operations during a failure.
Palmdale Water District Emergency Response Plan December 2020	Response Plan	In compliance with the America's Water Infrastructure Act, The District updated its emergency response plan to better prepare for, respond to, recover from, and mitigate natural and man-made disasters.
Los Angeles County Operational Area Emergency Response Plan	Comprehensive Response Plan	All hazards emergency response plan.
Federal Emergency Management Agency	Technical and Planning Resource	Resource for LHMP guidance (how-to series), floodplain and flood-related National Flood Insurance Program (NFIP) data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy.

Table 2-2. List of Existing Information

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
National Centers for Environmental Information https://www.ncdc.noaa.gov/data-access	Technical Resource	Online resource for weather-related data and historic hazard event data. Used in the risk assessment.
National Integrated Drought Information System (2019) https://www.drought.gov/drought/	Technical Resource	Source for drought-related projections and conditions. Used in the risk assessment.
National Inventory of Dams (2018) https://www.fema.gov/2018-national-inventory-dams	Technical Resource	Database used in the dam failure hazard profiling. Used in the risk assessment.
National Weather Service https://www.weather.gov/	Technical Resource	Source for hazard information, data sets, and historical event records. Used in the risk assessment.
United States Geological Survey (2018). Earthquake Hazards Program. https://earthquake.usgs.gov/hazards/hazmaps/conterminous/	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
Western Regional Climate Center https://wrcc.dri.edu/	Website Data	Online resource for climate data used in climate discussion.

3 Palmdale Water District Profile

3.1 Location

the City of The District is located in Palmdale, California, within the Antelope Valley in Los Angeles County, and approximately 60 miles north of the City of Los Angeles and 50 miles west of the City of Victorville. The District's primary service area includes the central, eastern, and southern portions of the City of Palmdale and adjacent unincorporated areas of Los Angeles County. The District encompasses approximately 187 square miles and serves approximately 126,000 people through about 27,000 service connections.

In addition to the primary service area, there is a federal land area of approximately 65 square miles upstream of Littlerock Dam in the Angeles National Forest. The lands in the area presently served by the District slope gently upward to the foot of the

northeast-facing slopes of the San Gabriel Mountains. Elevations range from approximately 2,600 feet to 3,800 feet above sea level. Figure 3-1 indicates the service area and the boundaries of the Littlerock Dam land area.

3.1.1 Governing Bodies

The Palmdale Water District is an independent special district governed by a five-member Board of Directors. With the District's water service boundaries divided into five different areas, or divisions, a Director is elected to serve a 4-year term from each of these divisions. Directors must live in the division they are elected to serve and are elected by customers within the division boundaries.

The Board of Directors has two regular meetings each month. They are held on the second and fourth Mondays. All meetings of the Board of Directors use Robert's Rules of Order as a guideline and are governed by the Ralph M. Brown Act pursuant to the California Government Code sections 54950 et seq. The public is welcome to attend and there is a period reserved on each agenda for public comment.

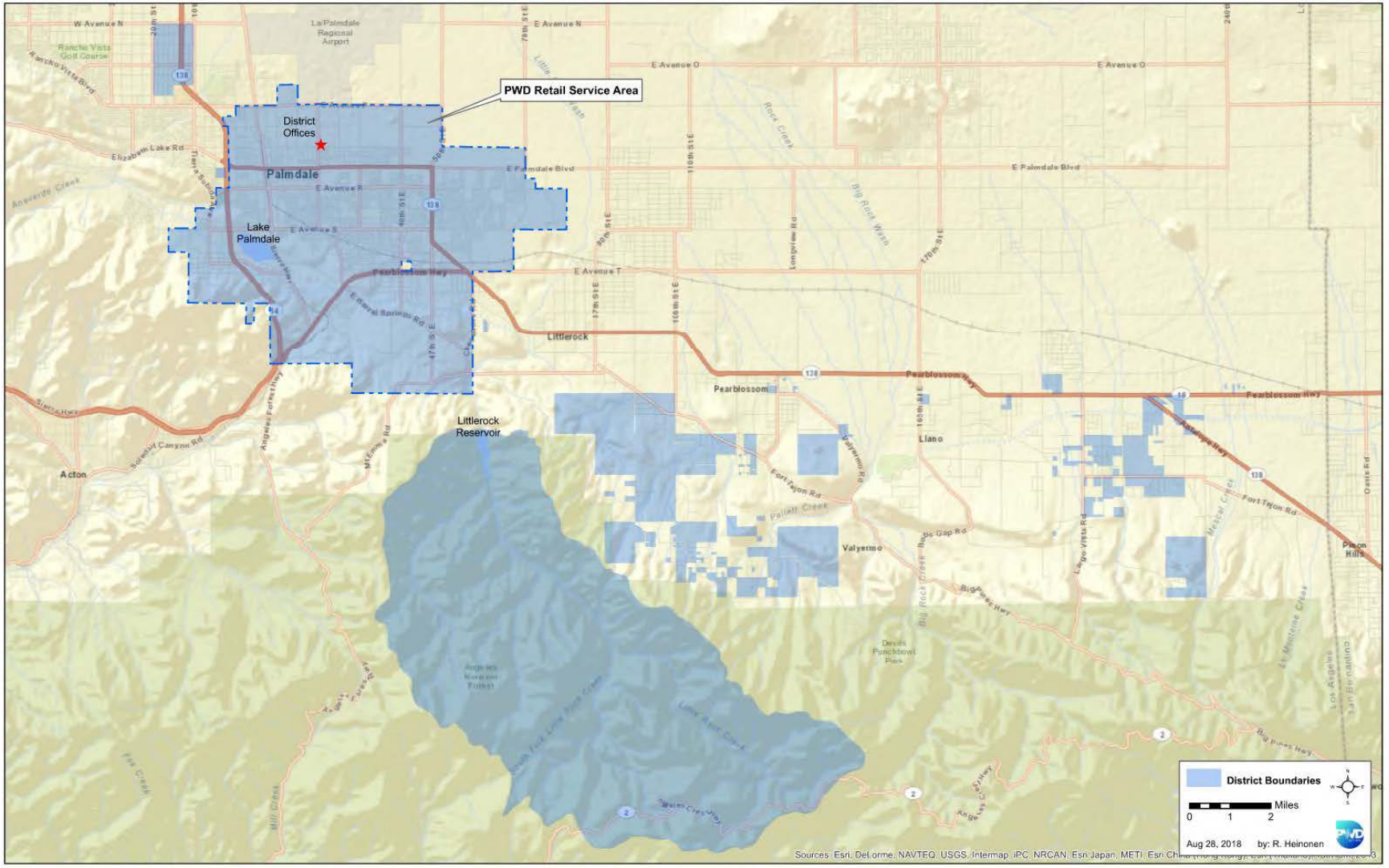
3.1.2 Water Supply

The Palmdale Water District receives water from three sources: (1) Littlerock Dam and Reservoir; (2) the State Water Project (SWP) (imported water from Oroville to Southern California via the Sacramento River, the Bay-Delta, and the California Aqueduct); and (3) groundwater. The District acts as a retailer of water supplies for domestic, commercial, and industrial users. There are no agricultural deliveries made within the service area boundaries.

Figure 3-1 and Figure 3-2 show the Palmdale Water District's Boundaries and water supply system, respectively.

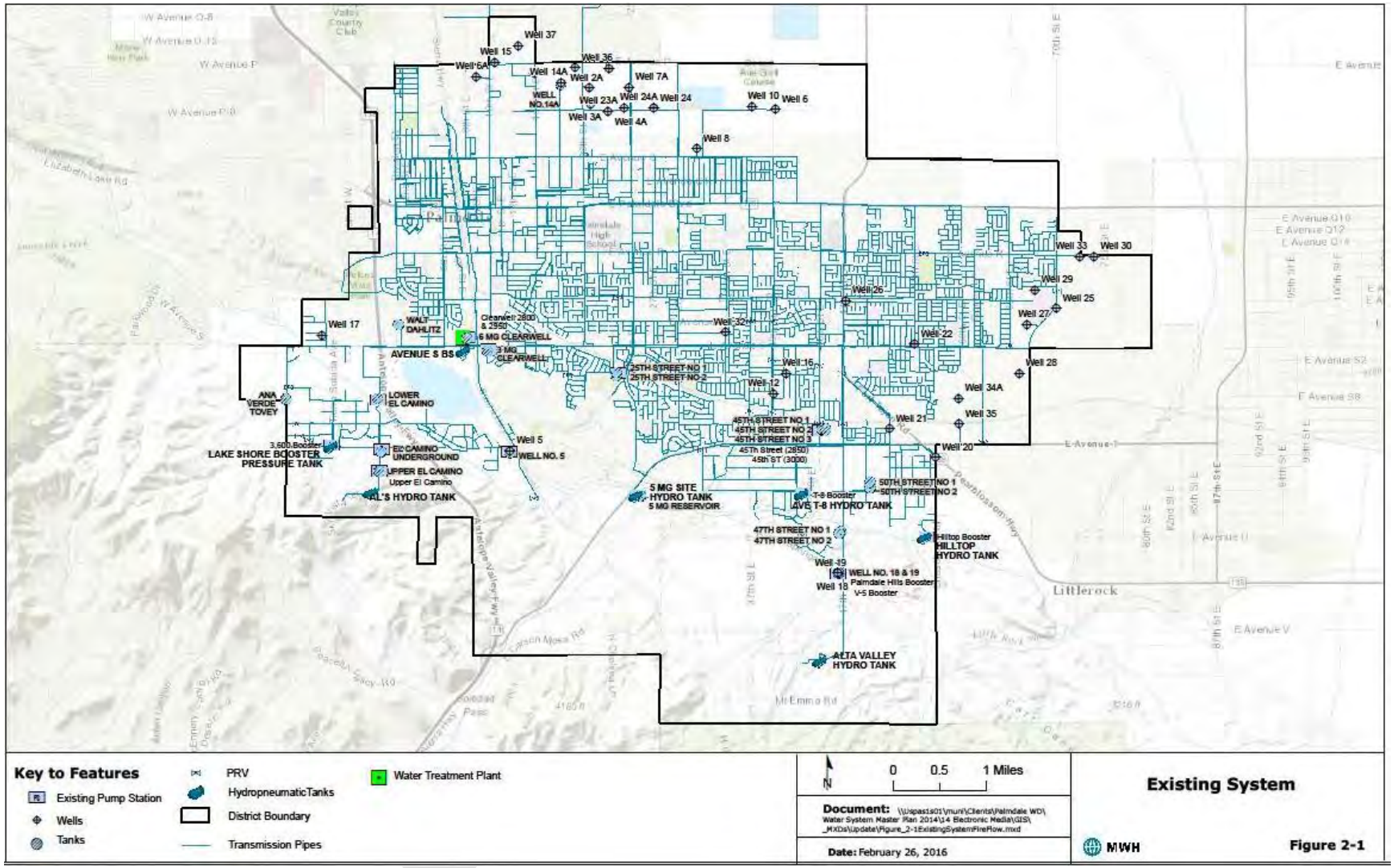
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Figure 3-1. District Boundaries



PALMDALE WATER DISTRICT BOUNDARIES

Figure 3-2. Existing Water Supply System



The District uses Little Rock Creek as its local surface water supply source. The watershed is defined by the area tributary to Littlerock Reservoir, Palmdale Ditch, and Lake Palmdale. The SWP water is also stored in Palmdale Lake before delivery to the Palmdale Water Treatment Plant.

Littlerock Dam and Reservoir

The principal stream tributaries to the District's service area are Little Rock and Big Rock creeks, which flow north from the San Gabriel Mountains along the southern district boundary. Numerous intermittent streams also flow into the service area; however, run-off is meager. The Littlerock Dam and Reservoir intercepts flows from the Little Rock and Santiago canyons. Runoff from the 65 square mile watershed in the Angeles National Forest to the reservoir is seasonal and varies widely from year to year. For the period 1953-1999, average inflow was 13,285 acre-feet per year. The median inflow for this same period was 6,707 acre-feet per year. The difference between the median and average demonstrates that dry years occur more frequently than wet years and that wet years tend to be more extreme.

Littlerock Dam and Reservoir is located about 8.5 miles from the City of Palmdale and diverts water from Little Rock Creek. Since 1922, the District has shared water from this source with Littlerock Creek Irrigation District (LCID). The District and LCID jointly hold long-standing water rights to divert 5,500 acre-feet per year from Little Rock Creek flows. Per an agreement between the two districts, the first 13 cubic feet per second (cfs) of creek flows is available to LCID. Any flow above 13 cfs is shared between the two districts with 75 percent going to the Palmdale Water District and 25 percent to LCID. Each of the districts is entitled to 50 percent of the reservoir's storage capacity. Water from Littlerock Dam Reservoir is conveyed to Lake Palmdale through an open canal that is known as Palmdale Ditch.

In 1992, during renegotiations of the districts' agreement, a plan to rehabilitate the existing dam was implemented. The plan involved reinforcing the original multiple-arch construction with a roller-compacted concrete buttress, raising the dam by 12 feet to increase capacity, providing recreational facilities around the reservoir, and replacing the historic wooden trestle between the creek and the reservoir with an underground siphon. The entire project was completed by the end of 1995. This agreement gives the District the authority to manage the reservoir. LCID granted ownership of its water rights to the District for the 50-year term of the agreement in lieu of contributing financial resources for the rehabilitation work. LCID is entitled to purchase from the District, in any one calendar year, 1,000 acre-feet of water, or 25 percent of the yield, from Littlerock Reservoir, whichever is less. Upon expiration of the 1992 Agreement in 2042, the terms of the 1922 Agreement will again define and govern the rights and responsibilities of the District and LCID with respect to the dam and the waters stored in the reservoir.

California State Water Project

The SWP is the primary source for imported water in the Antelope Valley. The main transport structure of the SWP is the California Aqueduct, which conveys water from northern to southern California. This facility is managed by the California Department of

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Water Resources (DWR). The aqueduct is an artificial concrete-lined water transport channel that is about 450 miles long.

The District is one of 29 contracting agencies having entitlements to water supplies from the SWP. The District has been able to take delivery of SWP water since 1985 from the east branch of the California Aqueduct, which passes through the service area. The District receives its entitlement from a 30 cfs connection on the east branch, where SWP water is conveyed to Lake Palmdale via a 30-inch-diameter pipeline. Lake Palmdale acts as a forebay for the District's 30 million gallons/day (mgd) water treatment plant and stores approximately 4,250 acre-feet of SWP water and Little Rock Creek water.

Groundwater

Groundwater is obtained from underground aquifers via 22 active wells scattered throughout the District and chlorinated prior to distribution. Three of the District's wells also pump water from deposits that are within the San Andreas Rift Zone. Because the water quality of the groundwater meets state and federal standards, the wells pump directly into the District's distribution system or into nearby holding tanks without the need for treatment, except for chlorination. Water is conveyed from the wells or treatment plant to the consumers via a distribution system with pipe sizes ranging between 2- and 42-inches in diameter. The District maintains 19 storage tanks within the distribution system, with a total capacity of 44.6 million gallons.

The District produces about 20,500 acre-feet annually, composed of approximately 60 percent surface water and 40 percent groundwater. The District is usually more dependent on groundwater in the winter, prior to the snowmelt.

Water Treatment Plant

The Palmdale Water District also owns and operates a water treatment plant known as the Leslie O. Carter Water Treatment Plant, which provides treatment for water extracted from Lake Palmdale. Lake Palmdale receives water from the two sources noted in the previous sections: the SWP and Littlerock Dam and Reservoir. Water is conveyed from the SWP via a 30-inch-diameter pipeline while water from Littlerock Dam and Reservoir is conveyed through the Palmdale Ditch. The treatment plant consists of chemical addition, flocculation, sedimentation, filtration, and disinfection. The capacity of the existing plant is 30 mgd. However, a water supply permit from the Department of Health Services requires that one filter be kept off-line as a redundant source. This limits the capacity of the plant to 28 mgd. The District upgraded the treatment plant to meet more stringent water quality regulations. These upgrades were completed in two phases. The upgrades now allow the treatment capacity of the plant to be increased to approximately 35 mgd.

3.2 Climate

The City of Palmdale is in the high desert (altitude - 2,600 to 3,800 feet above sea level), where the summers are very hot and dry, and winters are cold and windy. Palmdale has over 280 days of sunshine each year. The same weather pattern that brings the marine layer stratus and afternoon sea breeze to the Los Angeles Basin brings gusty winds to

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Palmdale, especially near the foothills on the south side. Gusty southwest winds blow over Palmdale almost every afternoon and evening all year round.

- Average annual rainfall: 8.8 inches per year
- Average winter temperature: 63 degrees F (high); 37 degrees F (low)
- Average summer temperature: 95 degrees F (high); 63 degrees F(low)

3.3 History

The Palmdale Water District evolved from several private water companies. The first water agency, the Palmdale Irrigation Company, was established in 1886 to acquire land and water, and then rent, lease, and sell both as they were developed. As a means of providing water for these purposes, they constructed a 6.5-mile irrigation ditch to divert water from nearby Little Rock Creek to Palmdale.

Not long after, it became apparent that water storage facilities were needed. In 1895, the South Antelope Valley Irrigation Company constructed an earthen dam forming Harold Reservoir, known today as Lake Palmdale. To connect the water from Little Rock Creek to Harold Reservoir, they constructed another earthen ditch, including a flume and wooden trestle, parallel to the ditch used by the Palmdale Irrigation Company.

By the early 1900s, it was decided that one or more dams on Little Rock Creek were necessary. By this time, the Palmdale Water Company and Littlerock Creek Irrigation District had acquired the facilities of earlier water companies. Together, they studied the costs and options for constructing one or more dams on Little Rock Creek. It was determined that forming a public irrigation district was the best way to finance this construction. The Palmdale Irrigation District was then formed in 1918 by a vote of the public. It maintained a service area of about 4,500 acres and acquired the added facilities of the Palmdale Water Company.

Together with Littlerock Creek Irrigation District, financing and construction of the Littlerock Dam began on Little Rock Creek in August of 1922 and took 2 years to complete. At a height of 175 feet and a water storage capacity of 4,200-acre feet, it was noted as the highest reinforced concrete, multiple-arch dam in the U.S. However, controversy surrounded the design of Littlerock Dam, and by 1932, the State of California declared Littlerock Dam an unsafe structure and ordered renovations be made. By 1938, renovations had still not been completed. Subsequently, a 2-day storm caused major damage to the Littlerock Dam spillway as well as the flume and wooden trestle downstream of the dam. Repairs were made to the damage and by 1940, the re-construction of Littlerock Dam was considered complete.

Until the 1950s, the area within Palmdale Irrigation District's boundaries was primarily agricultural. However, with the activation of Air Force Plant 42 and the increased use of Edwards Air Force Base, agricultural water use diminished. As populations grew within the valley, the shift to domestic water began.

In 1963, the Palmdale Irrigation District entered into an agreement to purchase water from the newly planned SWP (also known as the California Aqueduct). This agreement guaranteed the District would have sufficient alternative source water to supply projected population growth well into its future. To contain the increased water supply, bonds were

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sold to rebuild and expand Lake Palmdale (formerly known as Harold Reservoir) to an increased capacity of over 4,100 acre-feet. This bond financing also allowed the construction of a new treatment facility adjacent to the lake. As a result, this new water supply enabled the Palmdale Irrigation District to service a broader area of Palmdale.

It was decided in 1973, that the Palmdale Irrigation District's name should be changed to the more appropriate Palmdale Water District. Founded as an irrigation district supplying water mainly to farms for agricultural use, the District's boundaries had expanded with Palmdale's rapid population growth, and the District shifted to providing predominantly municipal and industrial water. To put this substantial growth in perspective, from 1965 to 1985, water production grew from 4,100-acre feet per year to over 8,000-acre feet per year and then more than doubling the next 5 years. To keep up with demand, in 1987, the District constructed the Leslie O. Carter Water Treatment Plant that could process 12 million gallons of water per day. Later that year, Palmdale Water District and Littlerock Creek Irrigation District started planning new renovations to the Littlerock Dam.

Following extensive environmental and design work, in 1993, the Palmdale Water District and Littlerock Creek Irrigation District began to rehabilitate the dam in three phases. The first phase involved reinforcing the original multiple-arch construction with a roller-compacted concrete buttress. At the same time, the original dam was raised 12 feet, which doubled the reservoir's capacity.

The second phase of construction provided new recreational facilities around the reservoir. A dedication ceremony was held June 23, 1995, marking the re-opening of the Littlerock Dam area, which had remained closed during the renovation construction process. The final phase of construction included replacing the historic wooden trestle with an underground siphon, which was completed shortly thereafter.

As Palmdale's population continued to grow, it was determined that the water treatment plant built in 1987 would not support Palmdale's future water usage needs. An expansion of the facility was determined necessary and was completed in 1993, increasing the District's production capacity from 12 million to 30 million gallons of water per day.

From 1995 to 2020 the Palmdale Water District continued to improve and add to its water distribution and storage facilities. The District's boundaries now encompass approximately 187 square miles of land in northeastern Los Angeles County, consisting of more than 30 noncontiguous areas scattered throughout the Antelope Valley with the District's primary service area within the City of Palmdale's planning area. The distribution system has over 414 miles of pipeline ranging in size from 4 inches to 48 inches in diameter, 22 active water wells, 14 booster pumping stations, and 20 water tanks with a total storage capacity of 50 million gallons of water.

3.4 Demographics

According to the 2021 AV EDGE Economic Roundtable Report, there were 181,148 people living in the City of Palmdale. The median age is 32 years old. Approximately 45 percent of the population is white and 61 percent Hispanic or Latin. Spanish is spoken by 42 percent of the population.

Palmdale is policed by the Los Angeles County Sheriff's Department and the City is served by the Los Angeles County Fire Department.

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3.5 Land Use and Development Trends

Historically, the Palmdale Water District has been primarily agricultural. However, in the mid-1970s, the District's service area shifted from agricultural to municipal and industrial uses. In the 2016 Water System Master Plan Update, the District's land use types were grouped into five categories: Residential, Commercial, Industrial, Open Space, and Other.

Residential-low density consists of those parcels that are zoned for 0-2 dwelling unit (du)/acre. Residential medium consists of those parcels zoned for 2-6 du/acre, which consists of most single-family homes. Residential-high density consists of those parcels zoned for 10-16 du/acre and consists mainly of apartment buildings, condominiums, and townhouses.

Commercial land use consists of the following land use types: business parks, downtown commercial, community commercial, neighborhood commercial, and regional commercial. Industrial land use consists of the following land use types: airport, community manufacturing, and industrial. Open space land use consists of open space and public facilities such as schools and public buildings.

Figure 3-3 presents a map of the City of Palmdale's Land Uses.

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Figure 3-3. Land Use

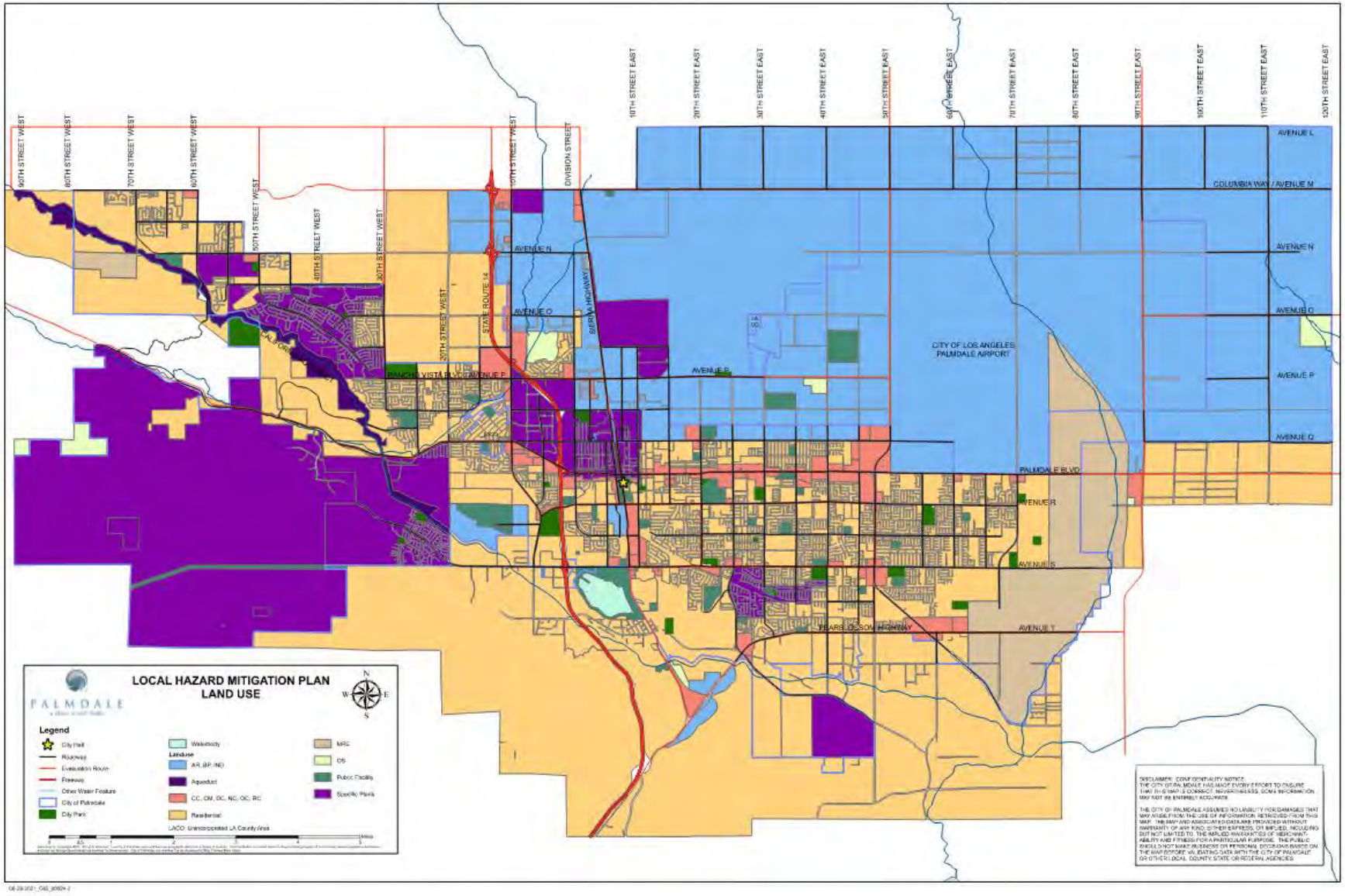


Table 3-1. Land Use Method Demand Projects

Land Use Type (Vacant Parcels)	Area (acres)	WDR (gpd/acre)	Demand (mgd)	Demand (acre-ft/yr)
Commercial	4,950	1,258	6.23	6,980
Industrial	650	1,074	0.70	790
Public	200	2,500	0.50	570
Low Density Residential	10,010	717	7.18	8,040
Medium Density Residential	1,620	3,309	5.36	6,000
High Density Residential	370	4,130	1.53	1,702
Non-Recreational Open Space	350	1,357	0.47	524
Unknown	3737	330	0.12	140
Total Vacant Parcel Demand				24,800
Existing Demand (2010)				19,800
Total Demand Excluding Conservation				**44,600**

Topographic constraints to development exist along the south and west portions of the planning area in the form of fault zones and foothills of the San Gabriel and Sierra Pelona Mountains. The San Andreas rift zone traverses the planning area from northwest to southeast and is designated as an Alquist-Priolo special study area requiring development setbacks. Within the rift zone are springs and wetland areas that have been preserved through the development process. A number of natural drainage courses and flood hazard areas traverse the planning area. Hills and ridges to the south and west of the developed portions of the City of Palmdale rise to over 4,500 feet in elevation, while developed portions of the city generally range in elevation from 2,400 to 2,700 feet.

The Palmdale Water District's Engineering Department is responsible for establishing any requirements or conditions and any estimates of fees and charges for providing water service to unserved properties within the District. To assist landowners through the process of providing water service to their newly developed properties, the District has developed guidelines to use to begin meeting the requirements set forth by the District.

4 Capabilities Assessment

The federal regulations require local mitigation plans to identify mitigation strategies for reducing long-term vulnerabilities to the identified hazards in the planning area that the District is capable of implementing and its ability to expand and/or improve its ability, see below.

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FEMA REGULATION CHECKLIST: CAPABILITY ASSESSMENT

44 CFR § 201.6(c)(3): – The plan must include mitigation strategies based on the jurisdiction's "existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."

Elements

C1. Does the plan document the jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR § 201.6(c)(3).

C2. Does the Plan address the jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR § 201.6(c)(3)(ii).

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

A hazard mitigation plan's primary focus is the mitigation strategy. It represents the efforts selected by the District to reduce or prevent losses resulting from the hazards identified in the risk assessment. The strategy includes mitigation actions and projects to address the risk and vulnerabilities discovered in the risk assessment. The mitigation strategy consists of the following steps:

- Identify and profile hazards and risks within the service area.
- Identify projects and activities that can prevent or mitigate damage and injury to the population and buildings.
- Develop a mitigation strategy to implement the mitigation actions.
- Develop an action plan to prioritize, implement, and administer the mitigation actions.
- Implement the LHMP mitigation action plan.

A capability assessment was conducted of the District's authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. The planning team also developed a plan to prioritize, implement, and administer the mitigation actions to reduce risk to existing buildings and new development.

4.2 Planning, Program, and Regulatory Capabilities

An assessment of authorities, policies and programs, and resources was conducted to identify capabilities that reduce vulnerability to hazards. The capabilities include authorities and policies such as legal and regulatory resources, fiscal resources, and staff (e.g., technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, floodplain managers, surveyors, personnel with GIS skills, and staff with expertise of the hazards in the planning area).

Planning and regulatory capabilities include local ordinances, policies, and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans,

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building codes, and zoning ordinances. These capabilities may be used to inform and support mitigation planning or may be modified as a mitigation action. Table 4-1 and Table 4-2 list District planning and regulatory capabilities. Under the Description column is an explanation of the District's ability to use the LHMP to expand on and improve these existing policies and programs

Table 4-1. Local Planning Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Version/ Date	Capability Type
UWMP	Describes the impact of climate change and actions such as rate changes during drought conditions. Expansion: Updates to the LHMP must address climate change per California SB 379. These updates can inform the UWMP sections on climate change	Climate Change, Drought	June 2021	Planning, Regulatory, Technical
Risk and Resilience Assessment (RRA)	Describes District hazards and vulnerabilities/response actions to address them. Expansion: The RRA and the LHMP should use the same source data and similar language to describe hazards that are contained in both. Hazard analysis and risk/vulnerability updates to one document should be reviewed for inclusion in both.	Drought Earthquake Extreme Heat Source Water Contamination Civil Disturbance Cybersecurity Dam Failure	2020	Planning, Regulatory
Capital Improvement Plan (CIP)	CIPs are created through master planning documents and urgent needs. They may include activities to mitigate hazards. Expansion: The District will review the mitigation action plan in the LHMP as it updates its CIP. Several mitigation actions address facility improvement and resiliency. Grant funding for these projects may support CIP projects	All	Updated annually	Planning, Technical

Table 4-2. Local Ordinances and Regulations

Local Ordinances and Regulations	Description
Palmdale Water District Resolution No. 08-7	The Board of Directors approves entering into the agreement for participation in the supply and conveyance of water by the Department of Water Resources of the State of California through the Yuba County Purchase Agreement for the Yuba Accord under the Dry Year Water Purchase Program.
Palmdale Water District Rules and Regulations, Article 10, Section 10.07	Capital Improvement Fee. To provide funds for the construction of District facilities to meet water demands created by future development, the Board has determined that developers shall be required to contribute toward the cost of constructing the additional facilities required to meet increasing demands for water service.

Table 4-2. Local Ordinances and Regulations

Local Ordinances and Regulations	Description
Palmdale Water District Rules and Regulations, Article 10, Section 10.06	Assessment Parity Charge. Every applicant for water service from any of the lines or works of the District who has not, either in person or through the predecessor in interest, paid an Assessment Parity Charge (previously called an Acreage Supply Charge) or the equivalent thereof or requests modification of service or change in land use, with respect to the land to be served, shall, before such application will be acted on by the District, or water furnished pursuant thereto, pay to the District an Assessment Parity Charge computed at a per acre rate set forth in Appendix G of the District Rules and Regulations.
Palmdale Water District Rules and Regulations, Article 11, Section 11.12	Related to minimum fire flow requirements.
Palmdale Water District Water Conservation Regulations	The District adopted water conservation regulations in February 1991. The regulations prohibit the use of water for hose washing of sidewalks, walkways, buildings, and driveways. They also establish limits on a variety of water uses, including washing motor vehicles, filling decorative fountains, serving drinking water at restaurants, and watering landscaped areas.
Water Code Law 10632(c)	The Palmdale Water District Urban Water Management Plan includes actions to be taken by the urban water supplier to prepare for and implement during a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
Reliable Water Supply Bond Act of 2008 - SB 59	Contains provisions for conservation, additional surface storage, and delta conveyance system.
Disaster Preparedness and Flood Prevention Bond Act of 2006 – Proposition 1E	This act rebuilds and repairs California's most vulnerable flood control structures to protect homes and prevent loss of life from flood-related disasters, including levee failures, flash floods, and mudslides. Protects California's drinking water supply system by rebuilding delta levees that are vulnerable to earthquakes and storms.
Cobey-Alquist Floodplain Management Act	The Cobey-Alquist Floodplain Management Act encourages local governments to plan, adopt, and enforce land use regulations for floodplain management to protect people and property from flooding hazards. This act also identifies requirements jurisdictions must meet to receive state and financial assistance for flood control.
Flood Damage Prevention Code, Earthquake Hazard Reduction in Existing Building Code	These codes address safety issues associated with flooding and earthquakes directly.
Alquist-Priolo Earthquake Fault Zoning Act	The Alquist-Priolo Earthquake Fault Zoning Act requires the state geologist to identify earthquake fault zones along traces of both recently and potentially active major faults. The Alquist-Priolo Zones are usually one-quarter mile or less in width and proposed development plans within these fault zones must be accompanied by a geotechnical report prepared by a geologist describing the likelihood of surface rupture and other seismically induced hazards.

Table 4-2. Local Ordinances and Regulations

Local Ordinances and Regulations	Description
Earthquake Safety and Public Buildings Rehabilitation Bond Act (Proposition 122)	In 1990, the State of California passed the Earthquake Safety and Public Buildings Rehabilitation Bond Act (Proposition 122). Up to $50 million was allocated for the seismic retrofit of essential services facilities. Many local governments and special districts have retrofitted their essential services buildings with local funds.
Uniform Fire Code	This code may be adopted by local jurisdictions, with amendments, and provides minimum standards for many aspects of fire prevention and suppression activities. These standards include provisions for access, water supply, fire protection systems, and the use of fire-resistant building materials.
California Health and Safety Code and the Uniform Building Code	The Health and Safety Code provides regulation pertaining to the abatement of fire related hazards. It also requires that local jurisdictions enforce the Uniform Building Code, which provides standards for fire-resistive building and roofing materials, and other fire-related construction methods.
Title 19 California Code of Regulations	These regulations pertain to fire prevention and engineering measures for new construction.

4.3 Administrative and Technical Capabilities

Following are the human and technical resources available to engage in mitigation planning processes and a list of financial resources and funding sources that affect or promote mitigation.

Table 4-3. Administrative and Technical Capabilities

Human Resources	Department
Emergency Managers	General Managers Department Heads Risk Management and Safety Officer Engineering Department
Planner(s) or Engineer(s) with knowledge of land development, land management practices, construction practices related to buildings and/or infrastructure	Engineering Department Facilities Department Construction Supervisor
GIS specialist	Engineering Department
CAD specialist	Engineering Department
IT specialist	IT Department
Grant writers	District Managers Engineering Managers

4.4 Fiscal Capabilities

The following funding opportunities were identified for the District.

- General Fund
- Capital Improvement Fee (developer's fee)
- Development fees (restricted to expansion costs for new development)
- Assessment Parity Charge (previously called an Acreage Supply Charge)
- Fees for water service
- Impact fees for homebuyers or developers for new developments/homes
- State Funding Sources:
    - Commerce and Economic Development Program
    - Infrastructure State Revolving Fund Program
    - Proposition 13
    - Proposition 84 Integrated Regional Water Management Program
    - Proposition 1E Disaster Preparedness and Flood Prevention Bond Act of 2006
    - California State Department of Water Resources, Division of Local Assistance, Davis-Grunsky Act Program
    - California State Water Resources Control Board Proposition 40
    - California State Water Resources Control Board Proposition 50
    - Clean Water State Revolving Fund Program
    - Watershed Protection Program
- Federal Funding Sources:
    - FEMA (Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program)
    - U.S. Army Corp of Engineers
    - United States Bureau of Reclamation
    - Natural Resources Conservation Service
    - Small Watershed Program
    - Flood Prevention Program
    - Emergency Watershed Protection Program
    - Homeland Security Grants (Terrorism)
    - Bureau of Land Management Programs
    - Water Infrastructure Act of 2021

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4.5 Education and Outreach Capabilities

These capabilities include fire safety programs, hazard awareness campaigns, and public information or communications. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Table 4-4. Education and Outreach Resources

Name	Description	Hazards Addressed	Version/Date	Capability Type
Public Affairs Department	Develops and delivers outreach and engagement programs that promote hazard awareness, safety of drinking water, and water conservation methods	All	N/A	Technical
District Website	Provides easily accessed information about the District. Used for LHMP public outreach and engagement.	All	N/A	Technical
Facebook and Twitter Accounts	Provides easily accessed information about the District. Used for LHMP public outreach and engagement.	All	N/A	Technical

4.6 National Flood Insurance Program Participation

The District does not participate in the NFIP; however, the City of Palmdale is currently participating in it.

The Palmdale Water District has not experienced any property damage due to flooding and has no repetitive loss properties.

The Palmdale Water District does not have direct regulatory or enforcement authority over its watershed. They rely on the regulatory powers of other agencies and through them are active in promoting watershed protection by means of a variety of different venues, including education, regulatory review, and participation in Best Management Practice implementation. The District has taken an active role in protecting its sources of water supply from contamination, and in preparing to deal with accidents, should they occur.

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5 Hazard Characterization and Profiles

This section of the LHMP includes requirements for hazard profiles and a risk assessment, as provided in the CFR.

FEMA REGULATION CHECKLIST: RISK ASSESSMENT

Hazard Identification

44 CFR § 201.6(c)(2)(i): The risk assessment shall include a description of the type of all natural hazards that can affect the jurisdiction.

Elements

B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Requirement § 201.6(c)(2)(i).

B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for the jurisdiction? See 44 CFR § 201.6(c)(2)(i).

B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? Requirement § 201.6(c)(2)(ii).

B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? Requirement § 201.6(c)(2)(ii).

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

5.2 Hazard Characterization and Profiles

The Palmdale Water District is subject to potential negative impacts from a broad range of hazards and threats. There are three broad categories of hazards that threaten the District:

- Natural Hazards:
  - Earthquakes
  - Floods
  - Wildfire
  - Extreme weather (drought/windstorms/sudden heavy rain)
  - Water supply contamination (waterborne diseases)
- Technological Hazards:
  - Dam failure
  - Hazardous materials (Hazmat) incidents
- Domestic Security Threats:
  - Terrorism (Chemical, Biological, Radiological, Nuclear, Explosive, Cyber)
  - Criminal Activity

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Table 5-1 describes how and why the hazards listed above were identified by the District in preparing its LHMP.

Table 5-1. District Hazards

Hazard	How and Why Identified
Earthquakes	History of events; presence of fault lines and geologic activity
Flooding	History of events
Dam failure	History of events; presence of dams
Wildfire	History of events
Extreme weather (drought, sudden heavy rain, windstorms)	History of events
Water supply contamination (waterborne diseases)	History of events
Hazmat incidents	History of events
Terrorism	Heightened sense of awareness since September 2001

Following are details of the identified hazards faced by the Palmdale Water District as identified by the planning team. The hazards also indicate the risk probability and severity assessment identified by the planning as related to the District.

For the rating of "probability" of occurrence, for each of the following hazards, the planning team were asked to provide ratings of the likelihood that an event would occur in the future. The ratings that were used were:

- High Probability (highly likely to occur)
- Medium Probability (likely to occur)
- Low Probability (not very likely to occur)

These were subjective, order-of-magnitude ratings that the participants could relate to whether they were highly skilled in a hazards area or not. This approach facilitated utilizing a consensus approach with the planning team.

For the rating of "magnitude," the planning team was asked to provide ratings of the likely magnitude of an event, assuming one occurred in the future. The ratings that were used were:

- High (extensive loss of life and/or property)
- Medium (moderate loss of life and/or property)
- Low (relatively modest loss of life and/or property)

These were subjective, order-of-magnitude ratings that the participants could relate to whether they were highly skilled in a hazards area or not. This approach facilitated utilizing a consensus approach with the planning team.

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5.2.1 Earthquake

Description

An earthquake is a sudden, rapid shaking of the ground caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual; at other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates.

The major form of direct damage from most earthquakes is damage to construction. Bridges are particularly vulnerable to collapse, and dam failure may generate major downstream flooding. Buildings vary in susceptibility, dependent on construction and the types of soils on which they are built. Earthquakes destroy power and telephone lines; gas, sewer, or water mains; which, in turn, may set off fires and/or hinder firefighting or rescue efforts. The hazards of earthquakes vary from place to place, depending on the regional and local geology. Ground shaking may occur in areas 65 miles or more from the epicenter (the point on the ground surface above the focus). Ground shaking can change the mechanical properties of some fine grained, saturated soils, whereupon they liquefy and act as a fluid (liquefaction).

Where earthquakes have struck before, they will strike again. Earthquakes can strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night.

Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related injuries result from collapsing walls, flying glass, and falling objects as a result of the ground shaking, or people trying to move more than a few feet during the shaking. Much of the damage in earthquakes is predictable and preventable.

With increasing magnitude (i.e., larger earthquakes) ground motions are stronger, last longer, and are felt over larger areas. Earthquake "intensity" refers to the effects of earthquake ground motions on people and buildings. Earthquake intensity is often more useful than magnitude when discussing the damaging effects of earthquakes. The most common intensity scale is the Modified Mercalli Intensity scale, which ranges from I to XII.

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Table 5-2. Richter Scale and Modified Mercalli Intensity Scale

Descriptor	Richter Scale	Mercalli Intensity	Description
Very Minor	1.0-3.0	I	I. Not felt except by a very few under especially favorable conditions.
Minor	3.0-3.9	II-III	II. Felt only by a few persons at rest, especially on upper floors of buildings.
Light	4.0-4.9	IV-V	III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
Moderate	5.0-5.9	VI-VII	IV. Felt indoors by many, outdoors by few during the day. Some awakened at night. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
Strong	6.0-6.9	VIII-IX	V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
Major	7.0-7.9	X-XI	VI. Felt by all, many frightened. Some heavy furniture moved; a few cases of fallen plaster. Damage slight.

History

The Palmdale Water District is in a seismically active region. The dominant seismic feature affecting the District is the San Andreas Fault, which traverses the southernmost portion of the planning area. The San Andreas Fault is the boundary where the North American plate and the Pacific plate meet. Relative movement of the plates along this boundary causes earthquakes. This fault is considered one of the most dangerous in the State of California in terms of destructive potential.

Figure 5-1 through Figure 5-5 illustrate California Earthquake Events State of Emergency Proclamations by County between 1950 and 2003 and disaster declarations from 2004 and 2019. During that period, there were five earthquake State of Emergency Proclamations for Los Angeles County.

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Figure 5-1. California Proclaimed States of Emergency by County 1950 – 2003, Earthquakes



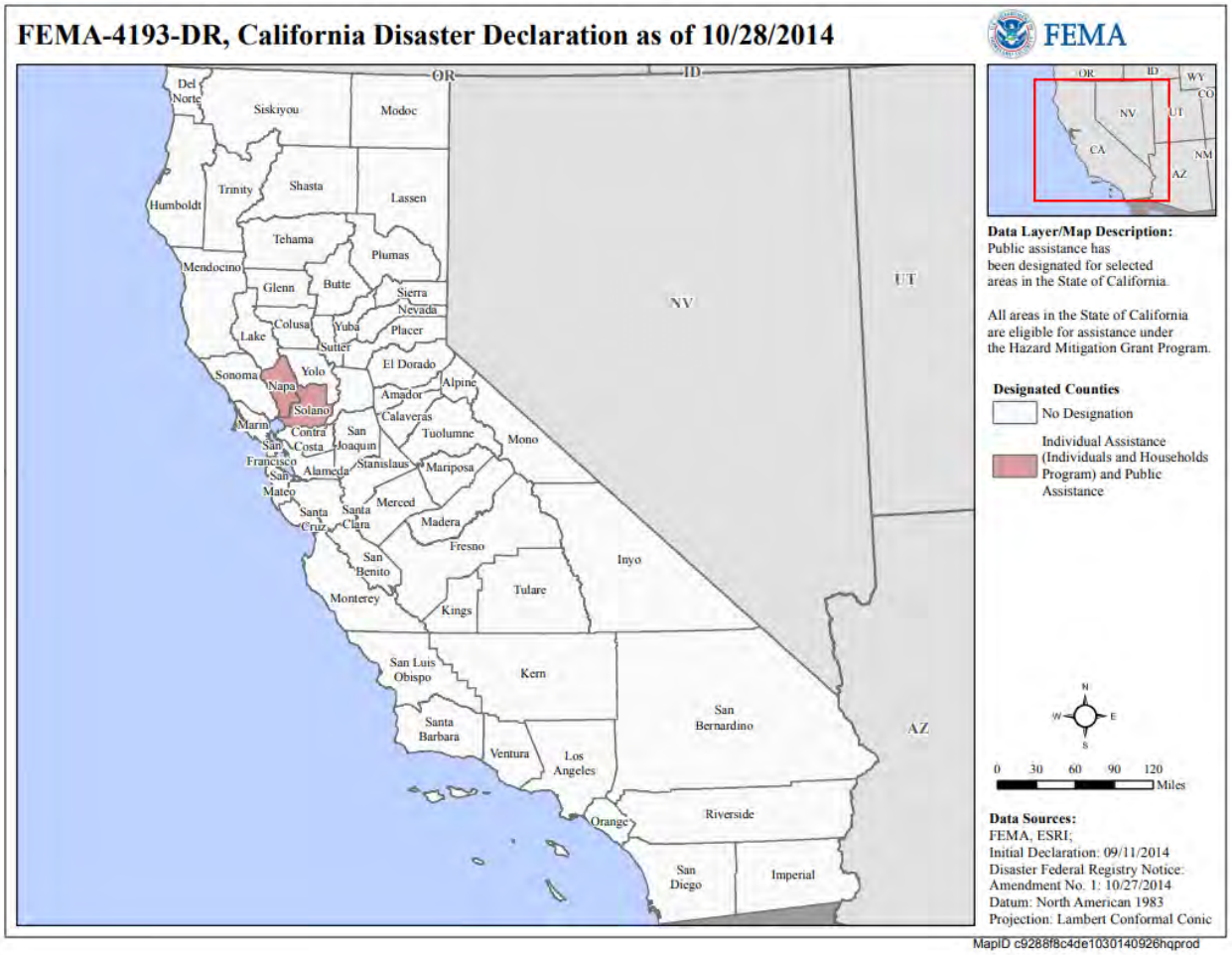
Figure 5-2. California [Earthquake] Disaster Declaration 2004



Figure 5-3. California [Earthquake] Disaster Declaration 2010



Figure 5-4. California [Earthquake] Disaster Declaration 2014



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Figure 5-5. California [Earthquake] Disaster Declaration 2019

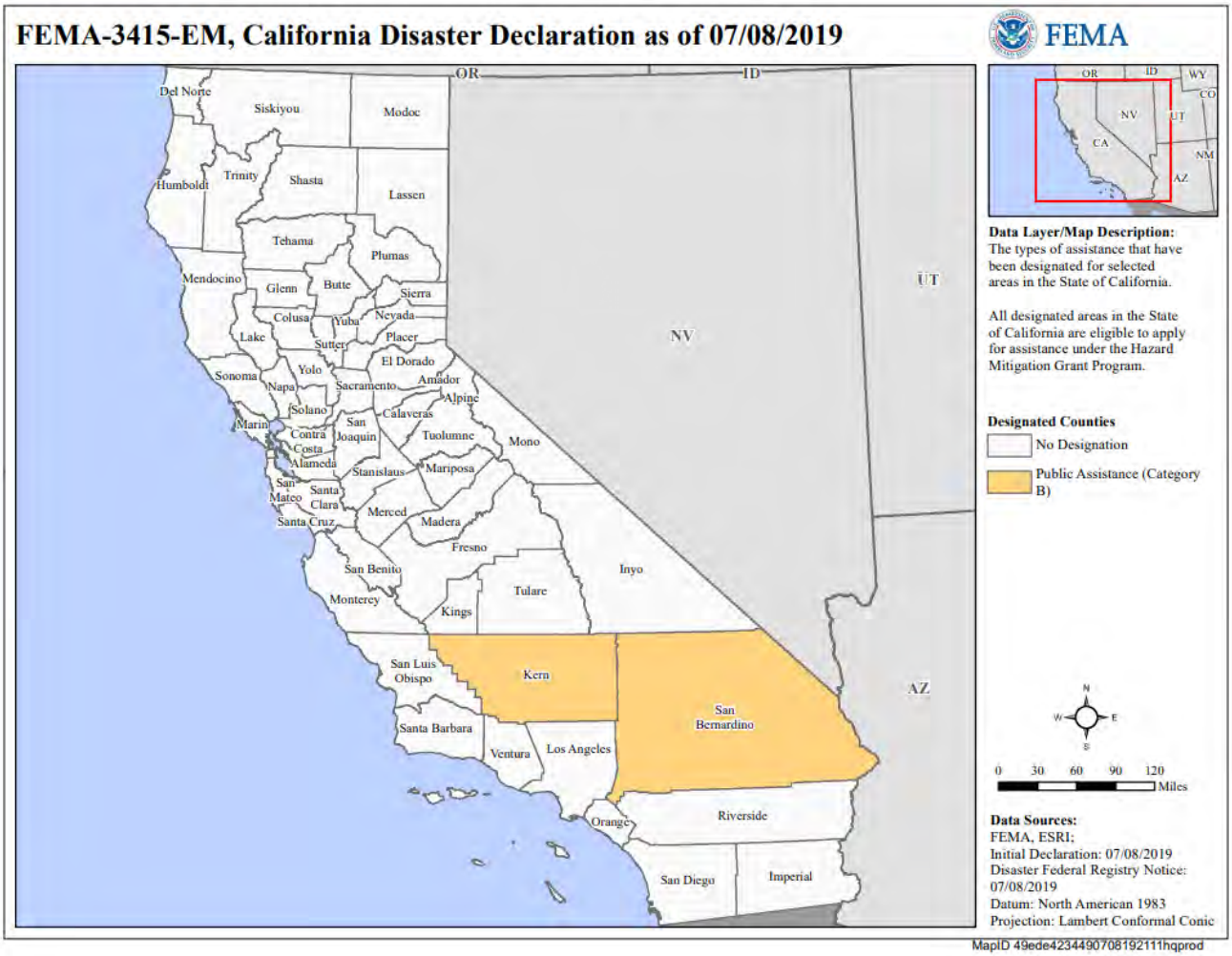


Table 5-3 is a list of historical earthquakes with a magnitude of 5.0 or greater occurring in Los Angeles County and felt in the Palmdale area.

Table 5-3. Historical Earthquakes

Location	Date/Time	Richter	Mercalli	Deaths and Property Damage
Northridge	01/17/1994 4:31 a.m.	6.7	—	Fifty-seven deaths; more than 9,000 injured; estimated $40 billion in property damage. In Palmdale, there was damage to masonry fences, sidewalks, a few chimneys, a few windows, and stucco and plaster walls cracked. A few items were shaken off store shelves; a few people ran outdoors. The Vincent electric power substation was significantly damaged.
Sierra Madre	06/28/1991 7:44 a.m.	5.8	—	Two deaths; $40 million in property damage
Malibu	01/19/1989 10:38 p.m.	5.0	—	No deaths; slight damage
Pasadena	12/03/1988 11:38 p.m.	5.0	—	No deaths; no appreciable damage
Whittier-Narrows	10/01/1987 7:42 a.m.	5.9	—	Eight deaths; $358 million in property damage
Malibu	01/01/1979 3:15 p.m.	5.2	—	No deaths; minor damage
San Fernando	02/09/1971 6:01 a.m.	6.6	—	Sixty-five deaths; $505 million in property damage
San Clemente Island	12/25/1951 4:46 p.m.	5.9	—	No deaths; no appreciable damage
Long Beach	03/10/1933 5:54 p.m.	6.4	IX	One hundred twenty deaths; $40 million in property damage
Tejon Pass Region	10/23/1916 2:44 p.m.	5.3	—	No information
Fort Tejon	01/09/1857 4:24 p.m.	7.9	IX	Two deaths. Were the Fort Tejon shock to occur today, the damage would easily run into the billions of dollars and the loss of life would probably be substantial. Some of the present day communities that lie on or near the 1857 rupture area are Palmdale, Wrightwood, Frazier Park, and Taft.
L.A. Area	07/11/1855 4:15 a.m.	6.0	VIII	Bells of Mission San Gabriel torn down; 26 buildings damaged in L.A.
L.A. Area	09/24/1827 4:00 a.m.	5.5	—	No information
L.A. Area	12/08/1812 3:00 p.m.	7.0	VII	Forty deaths, Mission San Juan Capistrano severely to moderately damaged. Mission San Gabriel moderately damaged.
L.A. Area	07/28/1769	6.0	VIII	No information

Source: NOAA National Climatic Data Center

Location

The San Andreas Fault extends over 600 miles from the Salton Sea, northwest toward the Pacific Ocean at Point Arena. Two of the three largest (8.0+ Richter) earthquakes in the state have occurred along the San Andreas Fault: the 1906 San Francisco earthquake, which caused 21-foot offsets, and the 1857 Fort Tejon earthquake, which left a trace at the surface 225 miles long and caused the surface of the earth to shift along the fault about 30 feet.

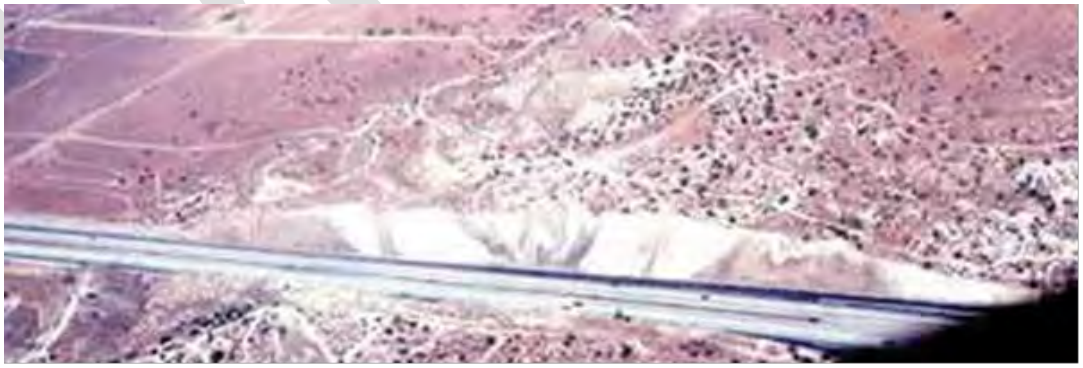
The photo below in Figure 5-6 is an aerial view of the San Andreas Fault line from just west of the Palmdale Reservoir to Big Pine.

Figure 5-6. Aerial View of the San Andreas Fault Line



The San Andreas Fault is a large system of faults and to pinpoint its location can prove difficult where motion is expressed along many sub-parallel fault strands. This complexity warrants using the term: San Andreas Fault Zone. Evidence for this line of reasoning is expressed in the following picture of the roadcut (Figure 5-7.

Figure 5-7. San Andreas Fault Zone, Roadcut



The roadcut outside Palmdale along Highway 14 in the westernmost Mojave Desert exposes highly folded and faulted lakebed sediments caught up within the San Andreas Fault Zone. The roadcut slices through rocks deformed by the powerful and extensive

movement of rocks along the San Andreas Fault. The geology at the roadcut demonstrates that the deformation along a fault can be very complex.

Figure 5-8 and Figure 5-9 show a complex series of folds, but no clear apparent fault. However, the rocks on the left side of the picture differ greatly from the rocks on the right side of the picture, indicating some sort of geologic boundary. On closer inspection, one finds a multitude of minor faults interspersed within and near the folds. These minor faults more or less have the same orientation, and, if considered to be part of one large fault, comprise the much larger and substantial San Andreas Fault Zone.

Figure 5-8. Palmdale Roadcut Looking Towards the South



Figure 5-9. Aerial Photograph of the Roadcut



Several fault traces branch off from the primary fault within the San Andreas Fault Zone. The major fault traces for the San Andreas system in the Palmdale area are the Cemetery Fault, the Nadeau Fault, and the Littlerock Fault. All three faults are active splays of the San Andreas Fault. Thus, movement on the San Andreas Fault may activate one or all of these subsidiary faults. The Nadeau, Cemetery and Littlerock Fault

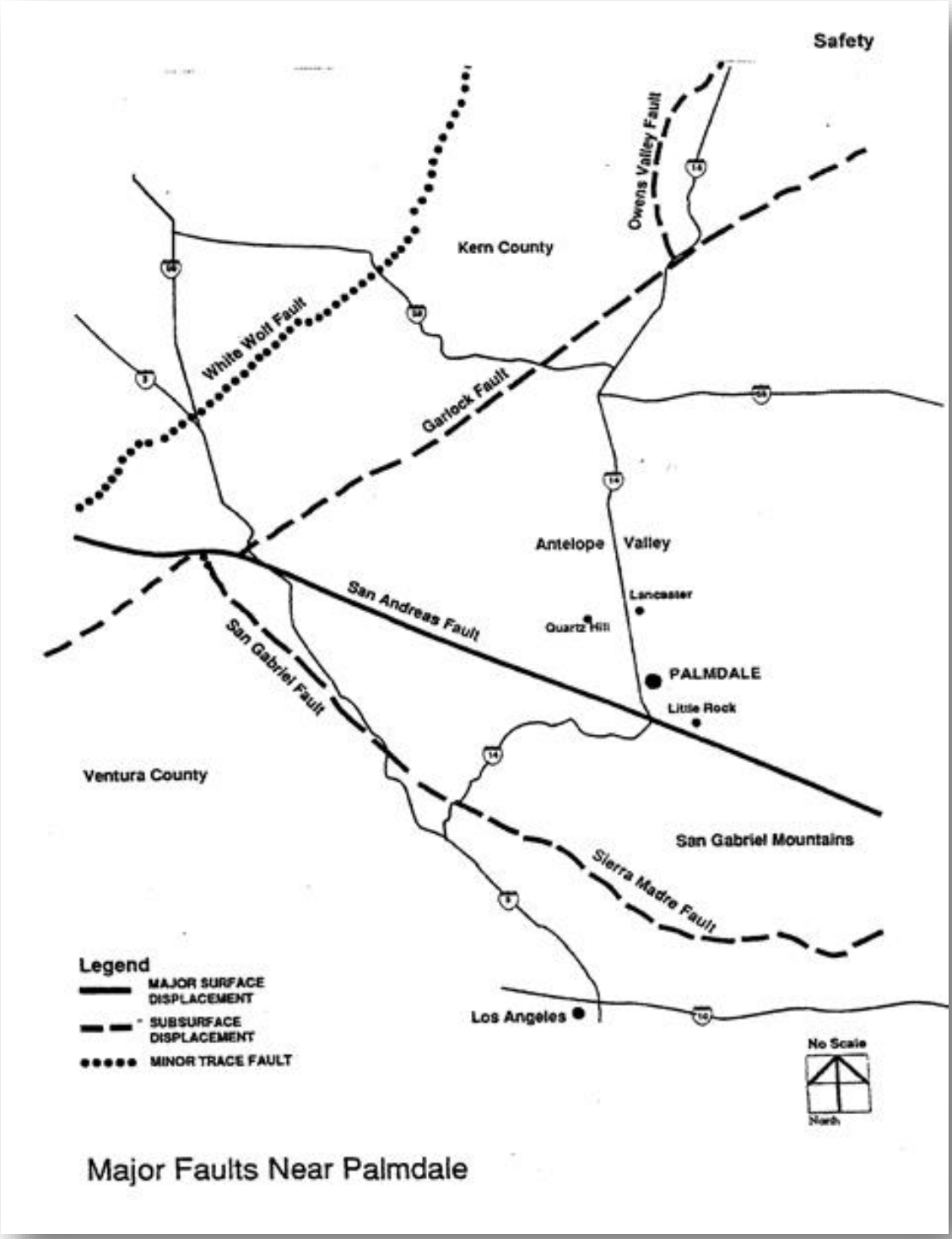
traces are located in the City of Palmdale. Other splays of the San Andreas Fault found in Palmdale are the Powerline Fault and the eastern end of the Clearwater Fault.

In addition to the San Andreas Fault system, other principal faults that could produce damaging earthquakes in the Palmdale area are the Sierra Madre-San Fernando, Garlock, Owens Valley, and White Wolf faults. The Sierra Madre Fault is located at the base of the San Gabriel Mountains approximately 20 miles from Palmdale; the Garlock and White Wolf faults are northeast-trending faults located 30 to 60 miles, respectively, northwest of Palmdale. The Owens Valley fault is 60 miles to the northeast and runs north-south.

Several other faults located in the Southern California region could be responsible for earthquakes that would affect the Palmdale area, although no major damage is expected to occur. Figure 5-10 indicates the relative location of the major faults and earthquake fault zones near Palmdale.

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Figure 5-10. Major Faults near Palmdale



Scientists have recently discovered that Palmdale is in the center of a 120-mile-long, kidney-shaped area of land that rose as much as 10 inches in the early 1960s. The Palmdale "bulge," as the uplift is called, could be an early warning signal of a major—and potentially disastrous—earthquake.

Between November 1976 and November 1977, a swarm of small earthquakes (local magnitude <3) occurred on or near the San Andreas Fault near Palmdale. This swarm was the first observed along this section of the San Andreas since cataloging of instrumental data began in 1932. The activity followed partial subsidence of the 35-centimeter vertical crustal uplift of the Palmdale bulge along this "locked" section of the San Andreas, which last broke in the great 1857 Fort Tejon earthquake. The swarm events exhibit characteristics previously observed for some foreshock sequences such as tight clustering of hypocenters and time-dependent rotations of stress axes inferred from focal mechanisms. However, because of the present lack of understanding of the processes that precede earthquake faulting, the implications of the swarm for future large earthquakes on the San Andreas Fault are unknown.

Recent studies have shown that the ground rose noticeably before the 1971 San Fernando quake that killed 58 people in California's last major tremblor. The location of the Palmdale bulge has added to scientists' concern. The swelling lies along a stretch of the 600-mile San Andreas Fault, a deep fracture that runs from below the Mexican border to about 100 miles north of San Francisco, where it meets the Pacific Ocean. The fault is actually the boundary of two tectonic plates, huge sections of the earth's outer layer that are sliding in opposite directions. A western sliver of California, on the Pacific plate, is moving northwest. The remainder of the state is being carried by the North American plate toward the southeast.

As the two plates grind past each other, friction causes them to stick together briefly at some places. Then, driven by powerful and little-understood forces deep within the earth, they tear apart to resume their journeys, causing minor to moderate tremors. But in the Palmdale region, they have apparently been firmly locked for more than a century, while adjoining parts of the plate have slid as much as 30 feet. Someday, seismologists warn, the stalled sections are going to have to catch up with the main bodies of the plates. Strains are inexorably building up in the crustal rock. When the rock finally fractures, the plates will jolt ahead, causing a major earthquake.

What scientists fear is that the Palmdale bulge could be caused by dilatancy, a phenomenon that takes place in rocks before they break under stress. Tiny cracks open in the rock, increasing its volume; this could account for the uplift of land. Dilatancy has already been linked to such quake precursors as unexpected variations in velocities of seismic waves through the earth and changes in local magnetic fields as well as in electrical conductivity of rocks; all have been used to make successful forecasts in the emerging science of earthquake prediction.

Extent

In the event of an earthquake, the location of the epicenter as well as the time of day and season of the year would have a profound effect on the number of deaths, casualties, property damage, agricultural and environmental damage, and disruption of normal government and community services and activities. The effects could be aggravated by

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collateral emergencies such as dam failure, flooding, hazardous material spills, utility disruptions, fire, landslides, and transportation emergencies.

Aside from ground shaking and ground surface rupture, earthquake hazards include the fissuring or cracking of bedrock, landslides, liquefaction, and ground settlement. Structures most likely to be affected by earthquakes are those that are old or near earthquake faults in areas that may be prone to liquefaction. Dams along earthquake faults may be subject to failure and may cause flooding of the surrounding areas. Critical damage may also occur to reservoirs and underground pipes, structures that provide emergency services (hospitals, fire stations, schools, emergency shelters). Roads and utility lines for water, gas, power, telephone, sewer, and storm drainage may be disjointed and services cut off.

The City of Palmdale's General Plan, Safety Element states: "In case of a major earthquake on the San Andreas Fault within or near Palmdale, damage to the following structures is expected:

- Palmdale and Littlerock Reservoirs could sustain surface rupture and cause area flooding.
- The California Aqueduct may rupture, causing flooding of the surrounding area and loss of water supply to the region.
- Water lines, sewer pipes, and telephone lines may be truncated.
- High voltage lines may be damaged, causing power failure in the area.
- Damage may be sustained by residential and other structures located close to the fault rupture due to intense ground shaking and slope failure."

Vulnerabilities specific to the Palmdale Water District include the structures (and lake) listed in Section 5.3.1. As the chart of assets in Section 7 shows, the approximate damage or loss to identified assets as a result of earthquake is estimated to be 75 percent of the structure and contents values provided in the table.

- **Effects on people and housing.** In any earthquake, the primary consideration is saving lives. Time and effort must also be dedicated to providing for mental health by reuniting families, providing shelter to displaced persons, and restoring basic needs and services. Major efforts will be required to restore and re-establish public services and utilities, remove debris and clear roadways, demolish unsafe structures, and provide continuing care and temporary housing for affected citizens.
- **Effects on infrastructure.** The damage caused by both surface rupture and ground shaking can lead to the disruption of essential District facilities and systems (dams, water, pipelines, and drainage systems).

Table 5-4 lists their maximum probable magnitudes. A maximum probable earthquake is the largest event expected to occur within 100 years.

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Table 5-4. Fault Magnitudes

Faults	Maximum Probable Magnitude (Moment*)
San Andreas	8.0+
Sierra Madre – San Fernando	6.6
Garlock	7.5
Owens Valley	7.4
White Wolf	7.2

* The Moment Magnitude is preferred to the Richter Magnitude for earthquakes larger than 6M. As the magnitude surpasses 6.5M (Richter), all events begin to take on the same magnitude values. The Moment Magnitude keeps its integrity and delineates the different values greater than 6.5M.

Source: California Department of Mines and Geology.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-5 was identified by the planning team.

Table 5-5. Probability of Future Events and Magnitude: Earthquakes

Probability	Magnitude
Low	High

5.2.2 Drought

Description

Palmdale Water District officials noted that 2006 was the driest in recorded history in the high desert, with a scant 1.4 inches of rainfall, about one-fifth of the normal precipitation. The Littlerock Reservoir, which normally catches rain and snow runoff from the north slopes of the San Gabriel Mountains, got no inflows that year at all. In June 2008, California's Governor declared the first statewide drought in 17 years – setting the state for drastic cutbacks and diverting supplies from the relatively water-rich to the water-poor. The Governor called for a 20 percent reduction in water use statewide and urged local agencies to bolster conservation programs and to work with federal and other authorities to help farmers who were suffering huge financial losses and abandoning crops in droves. California's Governor lacked the authority to impose statewide rationing; however, the State Department of Water Resources could slash water supplies to local agencies, which then would be forced to institute rationing.

The Governor's pronouncement followed the driest spring on record and 2 years of below-normal precipitation for the state. Snowpack in the Sierra Nevada, the backbone of the state's water supply, stood at two-thirds of normal; dusty banks lined many important reservoirs; and environmental rulings slashed water pumped from the crucial Sacramento-San Joaquin River Delta – all while California's booming population threatened to overwhelm some of the state's key infrastructure.

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Unlike most other natural hazards, drought is not a sudden, catastrophic occurrence. Droughts occur over several years. In fact, it is almost impossible to tell when a drought begins and often difficult to determine when it ends.

According to the Glossary of Meteorology (1959), drought is defined as "A period of abnormally dry weather sufficiently prolonged for the lack of water to cause serious hydrologic imbalance in the affected area."

However, Tannehill noted in Drought and Its Causes and Effects (1959), "We may say truthfully that we scarcely know a drought when we see one. We welcome the first clear day after a rainy spell. Rainless days continue for a time and we are pleased to have a long spell of such fine weather. It keeps on and we are a little worried. A few days more and we are really in trouble. The first rainless day in a spell of fine weather contributes as much to the drought as the last, but no one knows how serious it will be until the last dry day is gone and the rains have come again…we are not sure about it until the crops have withered and died."

Droughts may be measured by a number of indicators, including:

- Levels of precipitation
- Soil conditions (moisture)
- Temperature

There are four ways in which droughts can be viewed:

Meteorological – a measure of departure of precipitation from normal. Due to climatic differences, what may be considered a drought in one location of the country might not be a drought in another location.

Agricultural – refers to a situation where the amount of moisture in the soil no longer meets the needs of a particular crop.

Hydrological – occurs when surface and subsurface water supplies are below normal.

Annual Indicators – the California Department of Water Resources uses three indicators to evaluate water conditions in California. These are snowpack, precipitation, and reservoir storage as percentages of the annual average.

History

Very limited data is available to evaluate periods of drought in California before the 1900s. Droughts frequently occur in California. Recent periods of drought include:

- **1976–1977:** 1977 had been the driest year in state history to date. According to the *Los Angeles Times*, "Drought in the 1970s spurred efforts at urban conservation and the state's Drought Emergency Water Bank came out of drought in the 1980s."
- **1986–1992:** California endured one of its most prolonged droughts ever, observed from late 1986 through late 1992. Drought worsened in 1988 as much of the U.S. also suffered from severe drought. In California, the 6-year drought ended in late 1992 as a significant El Niño event in the Pacific Ocean (and the eruption of Mount Pinatubo in June 1991) most likely caused unusual persistent heavy rains.

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- **2007–2009:** Saw 3 years of drought conditions, the 12th worst drought period in the state's history, and the first drought for which a statewide proclamation of emergency was issued. The drought of 2007–2009 also saw greatly reduced water diversions from the SWP. The summer/fall of 2007 saw some of the worst wildfires in Southern California history.
- **2011–2017:** The period between late 2011 and 2014 was the driest in California history since recordkeeping began. The drought led to Governor Jerry Brown instituting mandatory 25 percent water restrictions in June 2015. Many millions of trees died from the drought – approximately 102 million, including 62 million in 2016 alone. By the end of 2016, 30 percent of California had emerged from the drought, mainly in the northern half of the state, while 40 percent of the state remained in the extreme or exceptional drought levels. Heavy rains in 2017 ended the drought except for the southernmost area of the state.

Location

When a drought is in effect, the entire district is affected.

Extent

The National Integrated Drought Information System Act of 2006 (Public Law 109-430) describes an interagency approach for drought monitoring, forecasting, and early warning. The National Integrated Drought Information System maintains the U.S. Drought Portal, a web-based database to several drought-related resources, including the U.S. Drought Monitor and the U.S. Seasonal Drought Outlook.

The primary indicators for drought maps for the Western U.S. are the Palmer Hydrologic Drought Index and the 60-month Palmer Z-index. The Palmer Drought Severity Index is a commonly used index that measures the severity of drought for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-6 was identified by the planning team.

Table 5-6. Probability of Future Events and Magnitude: Drought

Probability	Magnitude
Low (High)	High

5.2.3 Waterborne Diseases/Water Contamination/Algae Blooms

Description

Water is basic to life and health. In the U.S., the drinking water supply is normally safe; yet diseases that spread through water are still a very real problem. Microorganisms are responsible for more than 90 percent of the reported waterborne disease outbreaks in the U.S.; enteric viruses, such as hepatitis A, are identified as causing almost 10 percent

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of these. However, in 50 percent of the outbreaks, no causative agent is identified due to limitations in the ability to isolate and detect viruses in water samples. Historically, consumption of contaminated groundwater has been the source of one-half of the reported outbreaks; in recent years, that fraction has risen to more than two-thirds. The most frequently reported source of contamination in these outbreaks is domestic sewage from septic tanks, leaking sewer lines, and cesspools.

Waterborne diseases in the U.S. are caused by viruses, bacteria, and intestinal parasites. The burden of disease from waterborne pathogens is substantial. According to the Department of Health and Human Service's Centers for Disease Control and Prevention, during the period from 1920 to 2000, 883,806 illnesses related to waterborne diseases were reported – an average of 40,648 cases per year.

Following are descriptions of the types of waterborne diseases in the U.S.:

- Bacteria are microorganisms often composed of single cells shaped like rods, spheres, or spiral structures. Prior to widespread chlorination of drinking water, bacteria like Vibrio cholerae, Salmonella typhii, and several species of Shigella routinely inflicted serious diseases such as cholera, typhoid fever, and bacillary dysentery, respectively. As recently as 2000, a drinking water outbreak of E. coli in Walkerton, Ontario, sickened 2,300 residents and killed seven when operators failed to properly disinfect the municipal water supply. Developed nations have largely conquered waterborne bacterial pathogens through the use of chlorine and other disinfectants.
- Viruses are infectious agents that can reproduce only within living host cells. Shaped like rods, spheres, or filaments, viruses are so small that they pass through filters that retain bacteria. Enteric viruses, such as hepatitis A, Norwalk virus, and rotavirus are excreted in the feces of infected individuals and may contaminate water intended for drinking. Enteric viruses infect the gastrointestinal or respiratory tracts and are capable of causing a wide range of illness, including diarrhea, fever, hepatitis, paralysis, meningitis, and heart disease.
- Protozoan parasites are single-celled microorganisms that feed on bacteria found in multicellular organisms such as animals and humans. Several species of protozoan parasites are transmitted through water in dormant, resistant forms, known as cysts and oocysts. According to the World Health Organization (WHO), Cryptosporidium parvum oocysts and Giardia lamblia cysts are introduced to waters all over the world by fecal pollution. The same durable form that permits them to persist in surface waters makes these microorganisms resistant to normal drinking water chlorination (WHO 2002). Water systems that filter raw water may successfully remove protozoan parasites.

Waterborne Disease Patterns

Several waterborne diseases show seasonal patterns, suggesting that they are subject to environmental influences. Specific environmental influences have been documented for several specific pathogens. Environmental changes have effects on pathogen replication, survival, and persistent rates; transmission rates; and disease ranges overall.

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Temperature and precipitation, both of which will increase with climate change, affect the spread of waterborne diseases. In general, increased temperature results in higher pathogen replication, persistence, survival, and transmission for bacterial pathogens, and has mixed effects on viral pathogens but often reduces the overall transmission rate. Higher temperatures seem to produce a greater number of waterborne parasitic infections as well.

Overall, increased precipitation is associated with increased burdens of disease for bacteria, viruses, and parasites, though the causes of these increases differ by pathogen and ecologic setting.

The U.S. is fortunate to have one of the best supplies of drinking water in the world. Although tap water that meets federal and state standards is generally safe to drink, threats to drinking water quality in the U. S. still exist. Outbreaks of drinking water-associated illness and water restrictions during droughts demonstrate that we cannot take our drinking water for granted. In the U. S., contaminated drinking water in homes and businesses is usually a result of water main breaks or other emergency situations.

History

According to the 2008 Watershed Sanitary Survey and Source Water Assessment Update, the following is a summary of available water quality data from the Palmdale Water Treatment Plant from 2002 through 2007. Data on both raw and treated water is presented, focusing on microbial contaminants. Additionally, brief summaries of trace metals, physical constituents, and organic/inorganic contaminants monitored by the Department of Public Health (DPH) and/or the Environmental Protection Agency (EPA), are included.

Total coliforms are a measure of the concentration of bacteria in a water sample. Bacteria are usually present in raw water samples. Their presence alone is not cause for concern; however, their source should be identified and controlled if possible. Daily coliform data for the District's water treatment plant raw water were available from January 2000 through September 2007. Overall, total coliform counts were well below 200 most probable number (MPN) per 100 milliliters (mL), with coliform spikes above 200 MPN/100 mL approximately 8 percent of the time. Additionally, the spikes have decreased in frequency and magnitude over the last 6 years. The largest period of spikes occur during the latter portion of the winter months, primarily in February and March of each year. The cause of these spikes is unclear; however, they may be related to weather changes and migratory birds.

Fecal coliforms are also a measure of the concentration of bacteria in a water sample but are focused on bacteria found in human (and other animals) intestinal tracts. Hence, it is assumed that the presence of these bacteria in water samples is indicative of the presence of fecal matter and possible pathogenic organisms, which may be of human origin. Much like the total coliform counts for the Lake Palmdale intake, fecal coliform counts have also been low. The data available for fecal coliforms span the same sampling dates as total coliforms, covering nearly 6 years. During this period of time, there was more than 40 percent incidence rate where fecal coliforms exceeded 20 MPN/100 mL, with the percentage of incidents decreasing yearly. The spikes occur in the winter months and are most likely related to first flush events and weather.

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Giardiasis and Cryptosporidiosis are both serious waterborne diseases caused by the protozoa Giardia lamblia and Cryptosporidium parvum, respectively. The protozoa are found in the intestinal tracts of infected humans and animals and can be passed in their stool. The protozoa can survive for a long period of time outside the body, making water an ideal medium for the protozoa to spread. Both show a fairly high resistance to typical disinfection chemicals, such as chlorine. Effects of the diseases can range from mild intestinal cramps in healthy individuals to serious and life threatening problems in persons with compromised immune systems. Palmdale Water District has maintained records of tests for Giardia and Cryptosporidium from the raw water intake. Data was available beginning in January 2003 through September 2007. Sampling and testing was performed on a monthly basis. The detection method used has always been the current EPA-prescribed method at the time of testing; currently Palmdale Water District uses EPA Method 1623. Overall, the data shows little to no evidence of any Giardia or Cryptosporidium problems or potential problems. In the period of available data there were no detects of Cryptosporidium, and only seven detects of Giardia, all of which were four total oocyts per liter or lower.

Algae has historically been a water quality concern in Lake Palmdale and the District has taken steps to reduce algae production and the need for chemical treatment with copper sulfate. Lake Palmdale appears to be home to several species of diatoms year round. In 2002 the District applied 2,000 pounds of copper sulfate per week for 20 weeks from April through September. It is important to note that copper sulfate application dropped from this weekly application before the installation of the SolarBee mixers to twice during the 2003 season after installation. Copper sulfate addition continues to remain infrequent and at low concentrations.

In 2000, drinking water tested in the City of Palmdale had the third-highest level of the carcinogen chromium 6 found in a countywide study. Drinking water was sampled at 110 courthouses, medical clinics, libraries, and other public facilities in 71 cities on orders of the County Board of Supervisors, who were prompted by newspaper articles about the presence of chromium 6 in drinking water in the San Fernando Valley.

The State has established a ”public health goal” of 0.2 parts per billion, or less than one-thirtieth the level found in Palmdale. The federal standard for total chromium is 100 parts per billion, and the State standard is 50 parts per billion. Palmdale water normally tests at 10 or 15 parts per billion of total chromium. The county test found 10.1 parts per billion of total chromium.

In 2003, Palmdale Water District notified customers that total trihalomethanes measured during the spring had topped a recently stiffened maximum allowable level. Trihalomethanes are a byproduct of the treatment plant disinfection process. They form through reaction of chlorine, used as a disinfectant, with organic material in the water. The District’s increase use of well water brought the levels down. Unlike water from the California Aqueduct, which provides much of Palmdale’s water, well water does not contain the quantities of organic materials and salt that react with chlorine used in water purification to form trihalomethanes.

Table 5-7 lists the selected reportable disease cases in Los Angeles County in 2017 from the County of Los Angeles, Public Health Department.

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Table 5-7. Historical Waterborne Disease Events in Los Angeles County

Outbreaks	Number
Gastroenteritis (unknown etiology)	160
Giardiasis	372
Viral Gastroenteritis	427
Shigellosis	732
Campylobacteriosis	1,807
Salmonellosis	1,107
E. coli Diarrhea	309
Hepatitis A	87
Typhoid	76
Vibriosis	53

Location

The Palmdale Water District's Operations Department operates the Leslie O. Carter Water Treatment Plant to treat surface water from Lake Palmdale, which receives water from the SWP and the Littlerock Dam and Reservoir via the Palmdale Ditch. The Operations Department also monitors and maintains operational control of the District's 22 active ground water wells, 17 reservoir sites, 15 booster stations, 14 pressure regulating stations, 9 hydro pneumatic tanks, and hypo-chlorite disinfection equipment at 32 of the above sites.

Extent

Standards for safe drinking water have been established by the U.S. EPA and in the State of California by the Department of Health Services. Palmdale Water District meets or exceeds all these standards. Samples of water are taken regularly from selected points in the distribution system for bacteriological and chemical analysis to ensure that the water is always safe for human consumption.

Vulnerabilities specific to the Palmdale Water District include most of the structures listed in Section 5.3.1

- **Effects on People, Economics, and Housing.** Water supply contamination is a hazard that is of particular interest to a water district. Depending on levels of contamination and exposure, effects could range from minimal to devastating.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-8 was identified by the planning team.

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Table 5-8. Probability of Future Events and Magnitude: Waterborne Diseases/Water Contamination

Probability	Magnitude
Low	High

5.2.4 Wildfire

Description

A wildfire is an uncontrolled fire spreading through vegetative fuels, posing danger and destruction to property. Wildfires can occur in undeveloped areas and spread to urban areas where structures and other human development are more concentrated.

Fires that occur within the urban-wildland interface areas affect natural resources as well as life and property. This type of fire is described as "a fire moving from a wildland environment, consuming vegetation for fuel, to an environment where structures and buildings are fueling the fire" (California Resources Agency 1996).

While some wildfires start by natural causes, humans cause four out of every five wildfires. Wildfires started by humans are usually the result of debris burns, arson, or carelessness. As a natural hazard, a wildfire is often the direct result of a lightning strike that may destroy personal property and public land areas, especially on state and national forest lands. The predominant dangers from wildfires are:

- Injury or loss of life to people living in the affected area or using the area for recreational facilities.
- The destruction of property, timber, and wildlife.

History

Wildfires are common in the hills throughout California and in the coastal communities of Southern California. Fire has always been a trait of the area's chaparral and grassland ecosystems. The largest fires in southern California have historically occurred in the autumn, when Santa Ana winds can develop with high temperatures (conditions are characterized by low relative humidity, high temperatures, and strong northeasterly winds). Conditions that are more conducive to fires can occur with hotter and drier summers and greater amount of vegetation resulting from wetter winters. Plant pests and pathogens can also raise the risk of fire by increasing the number of dead trees in an area.

The hot dry climate of the planning area keeps the grass dry and readily combustible. The Santa Ana winds can spread fires into adjacent areas. Steep slopes bring grass and brush within reach of upward flames while impeding the access of firefighting equipment. Within Palmdale, wildfire hazards areas exist within the southern and western portions of the area. The fire season in the Palmdale area occurs roughly from September to November when the Santa Ana winds blow. If rains are minimal, grass may dry as early as May and brush as early as July. From December to April, in the rainy season, wildfires rarely occur.

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The Palmdale Water District and surrounding areas have had a history of wildfires. Table 5-9 depicts some of the most recent incidents.

Table 5-9. Historical Wildfire Events

Location	Date	Type	Reported Property Damage/Description
Palmdale	June 2021	Wildfire	King Fire began in 90th Street West and West Avenue K and approximately 350 acres were burned.
Palmdale	May 2021	Wildfire	Pine Fire burned approximatively 442 acres east of Palmdale.
Lancaster	08/13/2019	Wildfire	West Fire started on August 13, 2019 off of 120th Street West and Coppermill Road, Lancaster in Los Angeles County. 90 acres burned
Palmdale	04/12/2007	Wildfire	Brush fire fanned by heavy winds. 150 firefighters fought a 15- to 20-acre blaze in the desert City of Palmdale. Homes were threatened for a time before most of the active flames were knocked down.
Palmdale (Cheseboro Fire)	2006	Wildfire	Cause: Arson; 142 acres burned.
Palmdale (Sierra Fire)	2005	Wildfire	Cause: Playing with fire; 364 acres burned.
Palmdale (Tovey Fire)	2005	Wildfire	Wildfire burned 983 acres; cause unknown.
Los Angeles/South of Palmdale (Crown Fire)	07/21/2004	Wildfire	More than 900 personnel were assigned to fight this fire that threatened 500 homes near the town of Acton, about 10 miles southwest of Palmdale. More than 11,970 acres had burned. A Red Cross evacuation center was set up in Palmdale.
Los Angeles/Leona Fire (12 miles west of Palmdale)	09/04/2002	Wildfire	Leona fire threatened the communities of Leona Valley, Quartz Hill, Ritter Ranch, and Lost Valley; about 500 homes. The 3,200-acre fire destroyed three or four homes and forced the mandatory evacuation of 200 people from Leona Valley and Lost Valley. One injury was related to the fire.
Palmdale	08/08/1998	Wildfire	Fire destroyed a home while blazing a 200-acre path across the north end of Palmdale. More than 200 Los Angeles County firefighters battled the blaze.

Source: NOAA National Climatic Data Center

Location

Fire can occur in any structure. Wildland fires may spread to urban areas resulting in urban fires. Structures within the District's service area are primarily single-family dwellings away from the wildland/urban interface. While a large, urban fire may occur in any neighborhood, they are not likely to expand throughout the service area.

Extent

Vulnerabilities specific to the Palmdale Water District include the structures listed in Section 5.3.1.

- **Effects on People and Structures.** Wildfires are damaging to natural environments and wildfire smoke can create health hazards. Wildfires can injure and kill residents and firefighters, as well as damage or destroy structures and personal property. The quantity and quality of water supplies can be dramatically affected by fire.
- **Effects on Infrastructure.** In addition to damaging residences and structures and injuring and killing residents and firefighters, wildfires also deplete water reserves, down power lines, disrupt telephone service, and block roads. They can also indirectly cause floods, if flood control facilities are inadequate to handle an increase in storm runoff, sediment, and debris that is likely to be generated from barren, burned-over hillsides.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-10 was identified by the planning team.

Table 5-10. Probability of Future Events and Magnitude: Wildfires

Probability	Magnitude
Medium	Low

5.2.5 Extreme Weather

Description

Extreme weather hazards for the Palmdale Water District include:

- Thunderstorms/Windstorms
- Heavy Rain/Hailstorms
- Extreme Heat/Drought (discussed in Section 5.2.2)

History

Drought, thunderstorms, heavy winds, and heavy rainfall have all caused damage to the Palmdale Water District planning area in the past and will no doubt occur again in the future. The Palmdale Water District planning area has had a history of extreme weather hazards. Table 5-11 depicts some of the most recent extreme weather incidents.

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Table 5-11. Historical Extreme Weather Events

Location	Date	Type	Reported Property Damage/Description
Countywide	06/01/2008	Drought	In June 2008, following the driest spring on record and 2 years of below-normal precipitation for the state, California's Governor declared the first statewide drought in 17 years – setting the state for drastic cutbacks and diverting supplies from the relatively water-rich to the water-poor.
Antelope Valley	03/02/2008	High Winds	High winds knocked out power to over 23,000 customers in the Antelope Valley. Visibility was reported to be zero at times on the Antelope Valley Freeway between Palmdale and Rosamond, causing one truck to blow over and forcing California Highway Patrol officials to escort traffic.
Antelope Valley	08/23/2006 through 08/28/2006 09/05/2006 June 2021 July 2021	Extreme Heat	The California Office of Emergency Services issued an "extreme heat advisory" for Antelope Valley where triple digit temperatures were expected for two or more days. Cooling centers were open.
Los Angeles Countywide	01/07/2005 through 01/11/2005	Heavy Rain	Property damage: $5M. A powerful Pacific storm brought heavy rain, snow, flash flooding, high winds, and landslides to Central and Southern California. During the 5-day event, rainfall totals ranged from 3 to 10 inches over coastal areas with up to 32 inches in the mountains. With such copious rainfall, flash flooding was a serious problem across Santa Barbara, Ventura, and Los Angeles Counties. Across Los Angeles County, flash flooding killed a homeless man in Elysian Park, flooded a mobile home park in Santa Clarita, closed Highway 1, and caused numerous problems in Palmdale. In the mountains, 4 to 12 feet of snowfall was recorded, along with southeast winds between 30 and 50 miles per hour (mph) with higher gusts. Overall, damage estimates for the entire series of storms that started December 27th, 2004 and ended on January 11th, 2005 were easily over $200 million with the most damage incurred by agricultural interests in Ventura County.
Los Angeles Countywide	12/31/2004	Heavy Rain	A powerful Pacific storm brought more heavy rain, snow, and flash flooding to Central and Southern California. Total rainfall amounts ranged from 1 to 3 inches on the coastal plain to between 3 and 6 inches in the mountains. The heavy rain resulted in numerous reports of urban and rural flooding. In the mountains of Ventura and Los Angeles counties, snow levels dropped to around 4500 feet, resulting in snow accumulations between 8 and 16 inches. Gusty south to southeast winds between 25 and 40 mph produced mountain visibilities near zero in blowing snow.

Table 5-11. Historical Extreme Weather Events

Location	Date	Type	Reported Property Damage/Description
Los Angeles Countywide	12/27/2004 through 12/29/2004	Heavy Rain	A powerful Pacific storm brought heavy rain, snow, and tornados to Central and Southern California. Total rainfall amounts ranged from 2 to 8 inches on the coastal plain to between 6 and 13 inches in the mountains. With such heavy rain, there were many hydrologic problems. Urban flooding was widespread across all of San Luis Obispo, Santa Barbara, Ventura, and Los Angeles Counties. In Los Angeles County, flash flooding and debris flows in the mountains and Santa Clarita valley closed down Interstate 5 and Hasley Canyon Road. In the mountains of Ventura and Los Angeles Counties, winter storm conditions prevailed. Between 12 and 36 inches of snow fell above the 5000 foot elevation, while southeast winds between 30 and 50 mph with gusts to 75 mph resulted in near zero visibility in blowing snow. On the coastal plain of Los Angeles County, weak tornados were reported in Long Beach, Inglewood, and Whittier. The tornados only produced minor damage, including downed trees and damaged roofs.
Los Angeles Countywide	03/04/2001 through 03/06/2001	Heavy Rain	A powerful and slow-moving storm brought heavy rain, strong winds and snow to Central and Southern California. Across Ventura and Los Angeles Counties, rainfall totals were somewhat less, but still very significant. Los Angeles County received 1 to 3 inches of rain. Across Central and Southern California, strong southeasterly winds accompanied the storm. Widespread winds between 30 and 50 mph with stronger gusts were reported from the coastal areas to the mountains. In the mountains of Ventura and Los Angeles Counties, winter storm conditions developed with snowfall accumulations of 6 to 12 inches, gusty southeast winds, and visibility near zero in blowing snow and dense fog.
Los Angeles Countywide	02/24/2001	Heavy Rain	A Pacific storm brought rain, snow, and wind to Central and Southern California. Overall, rainfall totals were between 1 to 4 inches, producing numerous reports of urban flooding. In the mountains, snowfall totals were 8 to 16 inches, mainly above 6000 feet. Along with the snow, south winds gusting to 50 mph developed in the mountains.

Table 5-11. Historical Extreme Weather Events

Location	Date	Type	Reported Property Damage/Description
Los Angeles Countywide	02/11/2001–02/13/2001	Heavy Rain	A powerful Pacific storm brought heavy rain, heavy snow, and gusty winds to Central and Southern California. Overall, 2 to 8 inches of rain fell across the area, producing numerous reports of urban flooding. With the storm, snow levels fell to around 1,500 feet in some areas. Ski resorts reported between 3 to 7 feet of new snowfall. With such low snow levels, the Cuyama and Antelope Valleys reported between 4 to 8 inches of snowfall. Along with the precipitation, gusty south winds of 40 to 60 mph developed in the mountains. Across coastal and valley areas of Ventura and Los Angeles counties, southeast winds of 30 to 50 mph developed and produced some damage.
Los Angeles Countywide	01/10/2001	Heavy Rain	A powerful winter storm brought heavy rain, heavy snow, and strong winds to Central and Southern California. Total rainfall amounts ranged from 2 to 5 inches across coastal areas, with between 5 to 10 inches of liquid equivalent precipitation in the mountains. Due to very dry soil conditions, flash flooding did not occur. However, numerous reports of urban flooding were received. This storm also dropped snow levels down to around 3,000 feet, producing very significant snowfall in the mountains. At resort levels, above 6,000 feet, snowfall totals ranged between 2 and 4 feet. Between 3 000 and 6 000 feet, snowfall totals ranged from 8 to 24 inches. Along with the heavy snow, southerly winds of 30 to 40 mph with gusts to 60 mph produced widespread visibilities of one mile or less in blowing snow across the mountains.
Palmdale	07/13/1999	Thunderstorm/ Wind/Hail/ Lightning	Injuries: 1. Strong thunderstorms produced heavy rain, strong winds, and dangerous lightning across the Antelope Valley and the mountains of Santa Barbara, Ventura, and Los Angeles Counties. In Palmdale, lightning struck a steam-roller operator while strong thunderstorm winds snapped small trees. Heavy rain resulted in many reports of flash flooding across the area. In the Antelope Valley, flash flooding was reported in both Palmdale and Lancaster.
Palmdale	05/23/1999	Thunderstorm/ Lightning	Fatality: 1. A U.S. Forest Service firefighter was struck and killed by lightning as a pair of rare spring thunderstorms pummeled Palmdale and across the Southland. Thunderstorms also knocked out electricity throughout the area.
Antelope Valley	04/03/1999 through 04/04/1999	High Wind 56 knots	Strong northwest winds developed across Central and Southern California. Sustained wind speeds of at least 35 to 45 mph with gusts up to 65 mph were reported. Widespread power outages and felled trees were reported.

Table 5-11. Historical Extreme Weather Events

Location	Date	Type	Reported Property Damage/Description
Los Angeles County	12/21/1998 through 12/24/1998	Freeze	$200K crop damage. An unseasonably cold air mass produced a three-night period of sub-freezing temperatures across Central and Southern California. Agricultural interests suffered heavy crop losses. The California Department of Food and Agriculture reported over $83 million in crop losses across the four-county area.
Palmdale Airport	08/31/1998	Thunderstorm/ Wind	The official observation from the Palmdale Airport reported a thunderstorm wind gust of 58 mph.
Palmdale	08/12/1998	Lightning/ Thunderstorm/ Rain	Lightning, thunder, and rain cut a swath across the Antelope Valley, as residents were treated to an afternoon of muggy weather, power outages and flash flood warnings.
Palmdale/Antelope Valley	08/04/1998	Extreme Heat	For the 19th time since June 21, the area experienced temperatures in the triple digits, driving residents indoors and pushing statewide electricity use to new heights.
Antelope Valley	02/07/1998 through 02/08/1998	High Wind 61 knots	Strong winds, gusting up to 70 mph, knocked down many trees and power lines. Rainfall totals ranged from 1 to 4 inches over the coasts, up to 7 inches in the mountains. Widespread reports of urban and rural flooding were reported.
Antelope Valley	02/05/1998 through 02/06/1998	High Wind 61 knots	Strong winds, gusting up to 70 mph, knocked down many trees and power lines. Rainfall totals ranged from 1 to 3 inches over coastal areas, up to 6 inches in the mountains. Numerous flooding problems were reported across the area. Most highways, including the 1, 101, 126, and 154 were closed due to flooding or mudslides.
Antelope Valley	02/02/1998 through 02/03/1998	Flood/High Wind 78 knots	Powerful winds buffeted the entire area. Winds gusting in excess of 70 mph were reported. Hundreds of trees and power lines were blown down, resulting in numerous power outages. On average, rainfall totals ranged from 2 to 8 inches over coastal areas, up to 12 inches in the mountains. Widespread flooding was reported in all areas. Flooding and mudslides closed parts of most major roadways across the area.

Source: NOAA National Climatic Data Center

Location

When extreme weather is in effect, the entire district is affected.

Extent

Vulnerabilities specific to the Palmdale Water District include the structures and lake listed in Section 5.3.1.

Effects on people, housing, commercial and industrial structures, and infrastructure. Extreme weather incidents as noted above can cause extensive and costly damage to

housing, commercial and industrial structures, infrastructure, and even injury or loss of life. The danger is multiplied by the risks of power line downing, floods, and landslides/mudslides.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-12 was identified by the planning team.

Table 5-12. Probability of Future Events and Magnitude: Extreme Weather

Probability	Magnitude
High	High

5.2.6 Terrorism/Criminal Activity

Description

Terrorism is defined in 28 CFR Section 0.85 as "…the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." Since September 11, 2001, terrorism has become a fact of life for all Americans. Planning for response to potential terrorist incidents has long been part of California's Emergency Preparedness Planning effort. California provides a target-rich environment for terrorists, with many facilities and venues providing an easy place to hide in California's diverse population.

Until recently, contamination of water with biological, chemical, or radiological agents generally resulted from natural, industrial, or unintentional man-made accidents. Unfortunately, recent terrorist activity in the U.S. has forced the medical community, public health agencies, and water utilities to consider the possibility of intentional contamination of U.S. water supplies as part of an organized effort to disrupt and damage important elements of our national infrastructure. In his 2002 State of the Union Address, President Bush noted that confiscated Al Qaeda documents included detailed maps of several U.S. municipal drinking water systems. Apprehension regarding a terrorist assault on drinking water has also been reinforced by news reports and recent arrests of suspects charged with threatening to poison water supplies in the U.S. In addition, the National Academy of Sciences reported to Congress that water supply system contamination and disruption should be considered a possible terrorist threat in the U.S. As a result of these reports, there continues to be concern that water may represent a potential target for terrorist activity and that deliberate contamination of water is a potential public health threat.

Terrorists often use threats to create fear among the public, to try to convince citizens that their government is powerless to prevent terrorism, and to get immediate publicity for their causes. Terrorist acts or acts of war may cause casualties, extensive property damage, fires, flooding, and other ensuing hazards. Terrorism takes many forms, including:

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Chemical. Chemical weapons have been used primarily to terrorize an unprotected civilian population and not as a weapon of war. This is because of fear of retaliation and the likelihood that the agent would contaminate the battlefield for a long period of time.

Some analysts suggest that the possibility of a chemical attack would appear far more likely than either the use of nuclear or biological materials, largely due to the easy availability of many of the necessary precursor substances needed to construct chemical weapons. Additionally, the rudimentary technical knowledge needed to build a working chemical device is taught in every college level chemistry course in the world. Some chemical agents are odorless and tasteless and are difficult to detect. They can have an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days).

A terrorist would not have to build a complicated chemical release device. During favorable weather conditions an already existing chemical plant could be sabotaged or bombed, releasing a toxic cloud to drift into a populated area. The result could be just as dangerous as having placed a smaller chemical device in a more confined space. This type of incident would cause the maximum amount of fear, trepidation, and potential panic among the civilian population, and thus achieve a major terrorist objective

Biological. Biological weapons are defined as any infectious agent such as a bacteria or virus used to produce illness or death in people, animals, or plants. This definition is often expanded to include biologically derived toxins and poisons. Biological agents can be dispersed as aerosols or airborne particles. Terrorists may use biological agents to contaminate food or water because the agents are extremely difficult to detect. The agents are cheap, easy to make, and simple to conceal. Even small amounts, if effectively deployed, could cause massive injuries, and overwhelm emergency rooms. The production of biological weapons can be carried out virtually anywhere — in simple laboratories, on a farm, or even in a home.

However, experts say it remains very difficult to transform a deadly virus or bacterium into a weapon that can be effectively dispersed. A bomb carrying a biological agent would likely destroy the germ as it explodes. Dispersing the agents with aerosols is challenging because biomaterials are often wet and can clog sprayers. Most agree that, while a biological attack could be devastating in theory, in reality, the logistical challenges of developing effective agents and then dispersing them makes it less likely a terrorist could carry out a successful widespread assault.

Radiological. A radioactive material is a material made up of unstable atoms that give off excess energy in the form of radiation through the process of radioactive decay. Radiation cannot be detected by human senses. Wherever radioactive materials are used, transported, or stored, there is potential for a radiological accident to occur. Under extreme circumstances an accident or intentional explosion involving radiological materials can cause very serious problems. Consequences may include death, severe health risks to the public, damage to the environment, and extraordinary loss of, or damage to, property. Some of their most common uses include use:

- By doctors to detect and treat serious diseases.
- By educational institutions and companies for research.
- By the military to power large ships and submarines.

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- By companies in the manufacture of products.
- As a critical base material to help produce the commercial electrical power that is generated by a nuclear power plant.
- As one of the critical components in nuclear weapons, which are relied upon to help deter the threat of war.

Nuclear. The possibility exists that a terrorist organization might acquire the capability of creating a small nuclear detonation. A single nuclear detonation in the U.S. would likely produce fallout affecting an area many times greater than that of the blast itself. There is also the possibility that a terrorist will construct a "dirty bomb," a bomb that is used to distribute nuclear contaminated materials. It would have less of an effect than a "traditional" nuclear bomb, but the terror effect on the population would be great.

Explosive. The possibility exists that a terrorist may attack with conventional explosives, particular in a public setting. Innumerable incidents have occurred around the world involving car bombs, truck bombs, and bombs attached directly to terrorist individuals. Explosive terrorist attacks may have consequences, including death and damage to property.

Cyber-terrorism. Cyber-terrorism is the use of computer network tools to shut down critical government infrastructures such as energy, transportation, and government operations, or to coerce or intimidate a government or civilian population. The premise of cyber-terrorism is that as nations and critical infrastructure become more dependent on computer networks for their operation, new vulnerabilities are created. A hostile nation or group could exploit these vulnerabilities to penetrate a poorly-secured computer network and disrupt or even shut down critical public or business operations.

The goal of cyber-terrorism is believed to be aimed at hurting the economy of a region or country, and to amplify the effects of a traditional physical terrorist attack by causing additional confusion and panic.

Criminal Activity. Among the highest amount of crimes reported from October 2019 to February 2020 were aggravated assaults, burglary, auto theft, and other property theft crimes. Criminal activity levels can change based on a variety of outside influences, including socioeconomic impacts, shifts in political impressions, and various other factors. At this time, none of the research identified any specific criminal or terror targeting of the District. All crimes, however, have the potential to impact District staff away from the work environment. Also, because the District covers a large geographical area, its facilities are spread out, making it challenging to easily monitor all facilities. As such, the facilities that are in less populated areas are susceptible to vandalism and unauthorized entry into the compounds. Using proper safety and security habits will help reduce the likelihood or impact on staff, District facilities, and the District's mission.

Active Shooter. The U.S. Department of Homeland Security defines the active shooter as "an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms, and there is no pattern or method to their selection of victims." Active shooters may also use explosive devices during assaults to increase the likelihood of casualties or to commit suicide. Most incidents occur at locations in which the killers find little impediment in pressing their attack. Locations are generally described as soft targets that have limited security

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measures to protect members of the public. In most instances, shooters commit suicide, are shot by police, or surrender when confrontation with responding law enforcement becomes unavoidable.

History

September 11th and subsequent news reports indicated that some terrorists in the U.S. have obtained drivers licenses for transporting hazardous materials, including hazardous wastes, calling attention to a new form of hazardous material threat.

Fortunately, the Palmdale Water District has no history of incidents of chemical, biological, radiological, nuclear, explosive, cyber-terrorism, criminal activity, or active shooters.

Location

The form and locations of many natural hazards are identifiable and, even in some cases, predictable; however, there is no defined geographic boundary for terrorism.

Extent

The damage caused by a terror attack is dependent on the method of attack. Large bomb attacks could destroy major infrastructure, kill many people, and disrupt regional functioning for a significant time. Cyber-terrorism would cause very different types of damage, possibly severely hampering local government operations and local businesses with no direct injuries or loss of life. In addition to direct physical damage, terrorist attacks breed fear. Even an unsuccessful attempt to attack the region would seriously impact the comfort level of residents and could affect local businesses.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-13 was identified by the planning team.

Table 5-13. Probability of Future Events and Magnitude: Criminal Activity/Terrorism

Probability	Magnitude
Low	High

5.2.7 Cyber-attack/Cybersecurity Breach

Description

A cyber-attack is an intentional and malicious crime that compromises the digital infrastructure of a person or organization, often for financial or terror-related reasons. Such attacks vary in nature and are perpetrated using digital mediums or sometimes social engineering to target human operators. Generally, attacks last minutes to days, but large-scale events and their impacts can last much longer. As information technology continues to grow in capability and interconnectivity, cyber-attacks become increasingly frequent and destructive. Types of cyber-attack cyber-threats differ by motive, attack

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type, and perpetrator profile. Motives range from the pursuit of financial gain to political or social aims.

Cyber-threats are difficult to identify and comprehend. Types of threats include using viruses to erase entire systems, breaking into systems, and altering files, using someone's personal computer to attack others, or stealing confidential information. The spectrum of cyber-risks is limitless, with threats having a wide range of effects on the individual, community, organizational, and national threat (FEMA 2013).

While all cyber-terrorism is a form of cyber-attack, not all cyber-attacks are cyber-terrorism. Public and private computer systems are likely to experience a variety of cyber-attacks, from blanket malware infection to targeted attacks on system capabilities. Cyber-attacks specifically seek to breach Information Technology security measures designed to protect an individual or organization.

Since 2013, a new type of cyber-attack is becoming increasingly common against individuals and small- and medium-sized organizations. This attack is called cyber-ransom. Cyber-ransom occurs when an individual downloads ransom malware, or ransomware, often through phishing or drive-by download. The subsequent execution of code results in encryption of all data and personal files stored on the system. The victim then receives a message that demands a fee in electronic currency or cryptocurrency, such as Bitcoin.

History

Cyber-attacks on U.S. companies occur daily, and the quantity and quality of information being hacked, stolen, destroyed, or leaked is becoming more and more of a problem for consumers, government entities, and businesses.

In late April 2020, Israel's National Cyber Directorate received reports about an attempted major cyber-attack on its water infrastructure. According to a statement issued by the directorate, the attack consisted of "assault attempts on control and control systems of wastewater treatment plants, pumping stations, and sewers."

The City of Atlanta was crippled by a ransomware attack in March 2018, which disrupted city utilities, courts, and other operations. For roughly a week, employees with the Atlanta Department of Watershed Management were unable to turn on their work computers or gain wireless internet access, and 2 weeks after the attack, Atlanta completely took down its water department website "for server maintenance and updates until further notice." It took Atlanta months and estimated costs of up to $5 million in recovery efforts to address the attack.

Location

Cyber-attacks are not characterized by location. Attacks can originate from any computer to affect any other computer in the world. If a system is connected to the Internet or operating on a wireless frequency, it is susceptible to exploitation. Targets of cyber-attacks can be individual computers, networks, organizations, business sectors, or governments. Financial institutions and retailers are often targeted to extract personal and financial data that can be used to steal money from individuals and banks. The most affected sectors are finance, energy and utilities, and defense and aerospace, as well as communication, retail, and health care.

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Extent

All critical facilities and infrastructure, such as water systems operated by electricity and/or a computer system, are vulnerable to cyber-attacks. Cyber-attacks may affect structures if any critical electronic systems suffer service disruption. For instance, a cyber-attack may cripple the electronic system that controls a cooling system or pressure system within critical infrastructure. This scenario may result in physical damage to the structure from components overheating or an explosion if pressure relief systems are rendered inoperable.

The District's Supervisory Control and Data Acquisition (SCADA) system and financial, human resources, and administrative systems are vulnerable to cyber-attack.

Common Mechanisms for Cyber-Attacks include:

- **Socially Engineered Trojans** - Programs designed to mimic legitimate processes (e.g., updating software, running fake antivirus software) with the end goal of human-interaction-caused infection. When the victim runs the fake process, the Trojan is installed on the system.
- **Unpatched Software** - Nearly all software has weak points that may be exploited by malware. Most common software exploitations occur with Java, Adobe Reader, and Adobe Flash. These vulnerabilities are often exploited as small amounts of malicious code often downloaded via drive-by download.
- **Phishing** - Malicious email messages that ask users to click a link or download a program. Phishing attacks may appear as legitimate emails from trusted third parties.
- **Password Attacks** - Third-party attempts to crack a user's password and subsequently gain access to a system. Password attacks do not typically require malware but rather stem from software applications on the attacker's system. These applications may use a variety of methods to gain access, including generating large numbers of generated guesses, or dictionary attacks, in which passwords are systematically tested against all of the words in a dictionary.
- **Drive-by Downloads** - Malware is downloaded unknowingly by the victims when they visit an infected site.
- **Denial of Service Attacks** - Attacks that focus on disrupting service to a network in which attackers send high volumes of data until the network becomes overloaded and can no longer function.
- **Man-in-the-Middle** - These attacks mirror victims and endpoints for online information exchange. In this type of attack, the attacker communicates with the victims, who believe they are interacting with a legitimate endpoint website. The attacker is also communicating with the actual endpoint website by impersonating the victim. As the process goes through, the attacker obtains entered and received information from both the victim and endpoint.
- **Malvertising** - Malware downloaded to a system when the victim clicks on an affected ad.

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- **Advanced Persistent Threat** - An attack in which the attacker gains access to a network and remains undetected. Advanced persistent threat attacks are designed to steal data instead of cause damage.

Probability of Future Events and Magnitude

While there is little evidence to indicate the likelihood of a cyber-attack against the District, there is 100 percent certainty that cyber-attacks will continue.

An initial attack is often followed by more severe attacks to cause harm, stealing data, or financial gain. As cyber-attacks become more sophisticated and numerous, all of the District's digital infrastructure is at risk.

5.2.8 Power Failure

Description

Power outages are a region-wide problem in Los Angeles County. It is not unusual to experience several outages a year. In the past, outages have ranged between a few minutes to several hours, from half a day to several days in some areas of the County. If an outage affects several areas of the County, Palmdale is usually affected.

Power failures of longer durations are usually caused by natural events that damage or disrupt large areas of the power transmission and/or distribution systems. Some of the causes of longer duration power failures have been severe winter storms, often accompanied by high winds and extreme heat waves, causing equipment failure and excessive power demands leading to brownouts.

Another cause is high-pressure induced windstorms, which can last from 3 to 5 days and disrupt the power distribution system. Vehicular accidents involving power poles or transmission lines and trees falling on transmission lines are often the causes of localized outages of shorter duration.

Those individuals or facilities at greatest risk from loss of power are the elderly, home health care patients, health care facilities, emergency services providers/facilities, and similar entities.

History

Rather than list all of the power outages Southern California Edison has experienced in Los Angeles County, listed are those that impacted the Antelope Valley. A sampling of outages over the past 7 years includes:

- 2001 – deliberate rotating outages due to statewide energy shortage
- 2005 – 500,00 without power due to failure of a key transmission line
- 2007 – thousands without power due to faulty distribution transformers

There have been other more localized power failures due to downed utility poles and faulty or failed equipment, including the loss of power to 11,500 in September 2007.

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Location

Power outages can occur throughout the District service area and affect the entire region.

Extent

Power outages are typically measured by the number of customers without power. This number is two to three times lower than the number of people affected.

Probability of Future Events and Magnitude

There is always the possibility that equipment will fail, and as Los Angeles County and Palmdale continue to grow and be subjected to weather cycles that place high demands on power, the probability of future power failures/outages is high.

5.2.9 Public Health Emergency/ Pandemic

Description

Human health hazards include transmittable diseases and environmental hazards such as adverse weather. The following sections describe commonly recognized human health hazards.

- **Coronaviruses /SARS -** The current (2020) COVID-19 pandemic is spread by a coronavirus. Coronaviruses cause a large percentage of colds and upper respiratory infections. Severe acute respiratory syndrome (SARS) is a viral respiratory disease caused by a SARS-associated coronavirus. It was first identified at the end of February 2003 during an outbreak that emerged in China and spread to four other countries.
- **Influenza** - Flu epidemics and pandemics occur routinely, typically in the fall and winter. Because flu seasons fluctuate in length and severity, a single estimate cannot be used to summarize influenza-associated deaths. The U.S. Centers for Disease Control and Prevention estimates that from the 1976 through 1977 flu season to the 2006 through 2007 season, flu-associated deaths ranged from a low of about 3,000 to a high of about 49,000.
- **Insect/Tick-Borne Disease -** Insects such as mosquitos and ticks can transmit a variety of diseases.

  Diseases that can be contracted through a tick bite include:

  - Colorado tick fever
  - Ehrlichiosis
  - Lyme disease
  - Rocky Mountain spotted fever
  - Tularemia

  Diseases that mosquitoes carry include:

  - Eastern equine encephalitis

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- Malaria
- West Nile virus
- Zika virus

- **Plague** - Plague is caused by the bacteria Yersinia pestis, a zoonotic bacterium usually found in small mammals and their fleas. Plague is transmitted between animals and humans by the bite of infected fleas, direct contact with infected tissues, and inhalation of infected respiratory droplets. There are two primary clinical forms of plague infection: bubonic and pneumonic. Bubonic plague is the most common form and is characterized by painful swollen lymph nodes or 'buboes.'

  Plague can be a very severe disease in people, with a case-fatality ratio of 30 percent to 60 percent for the bubonic type and is always fatal for the pneumonic kind when left untreated.

- **Anthrax -** Anthrax is a serious infectious disease caused by gram-positive, rod-shaped bacteria known as Bacillus anthracis. Although it is rare, people can get sick with anthrax if they come in contact with infected animals or contaminated animal products. Anthrax has the potential for and has been used as a biological weapon.

- **Hemorrhagic Fevers** - Viral hemorrhagic fevers are a group of illnesses caused by several distinct families of viruses. In general, the term "viral hemorrhagic fever" is used to describe a severe multisystem syndrome. Characteristically, the overall vascular system is damaged, and the body's ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhage (bleeding); however, the bleeding is itself rarely life-threatening. While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening disease. Hemorrhagic fevers include Ebola and Yellow Fever.

History

Pandemics have occurred throughout history. Some of the largest scale public health and pandemic incidents include:

- **2020–Present COVID-19:** Beginning in December 2019, in the region of Wuhan, China, a new ("novel") coronavirus appeared and rapidly spread. COVID-19, a shortened form of "coronavirus disease of 2019," has affected every nation on the planet. It is the largest pandemic since the 1918-1919 Spanish Influenza.

- **1976–Present HIV/AIDS** (Peak 2005-2012): HIV/AIDS was first identified in the Democratic Republic of the Congo in 1976. HIV/AIDS is a global pandemic, having killed more than 36 million people since 1981. Currently, there are between 31 and 35 million people living with HIV infections.

- **1968:** A Category 2 flu pandemic, sometimes referred to as "the Hong Kong Flu," the 1968 flu pandemic was caused by the H3N2 strain of the Influenza A virus. Within three months, it had spread to the Philippines, India, Australia, Europe, and the U.S. While the 1968 pandemic had a comparatively low mortality rate (0.5 percent), it still resulted in the deaths of more than a million people, including 500,000 residents of Hong Kong; approximately 15 percent of its population at the time.

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- **1956–1958:** The Asian Flu was a pandemic outbreak of Influenza A of the H2N2 subtype that originated in China in 1956 and lasted until 1958. In its 2-year infectious duration, it resulted in approximately 2 million deaths worldwide and 69,800 in the US.
- **1918–1920:** A strain of H1N1 influenza resulted in a deadly outbreak that tore across the globe, infecting over a third of the world's population and ending the lives of 20 to 50 million people. Of the 500 million people infected in the 1918 infection wave, mortality rates were estimated at 10 percent to 20 percent, with up to 25 million deaths in the first 25 weeks alone.
- **1346 to 1353:** The Black Death was an outbreak of Bubonic Plague that ravaged Europe, Africa, and Asia, with an estimated death toll between 75 and 200 million people. Thought to have originated in Asia, the pandemic most likely jumped continents via the fleas living on the rats found aboard merchant ships.

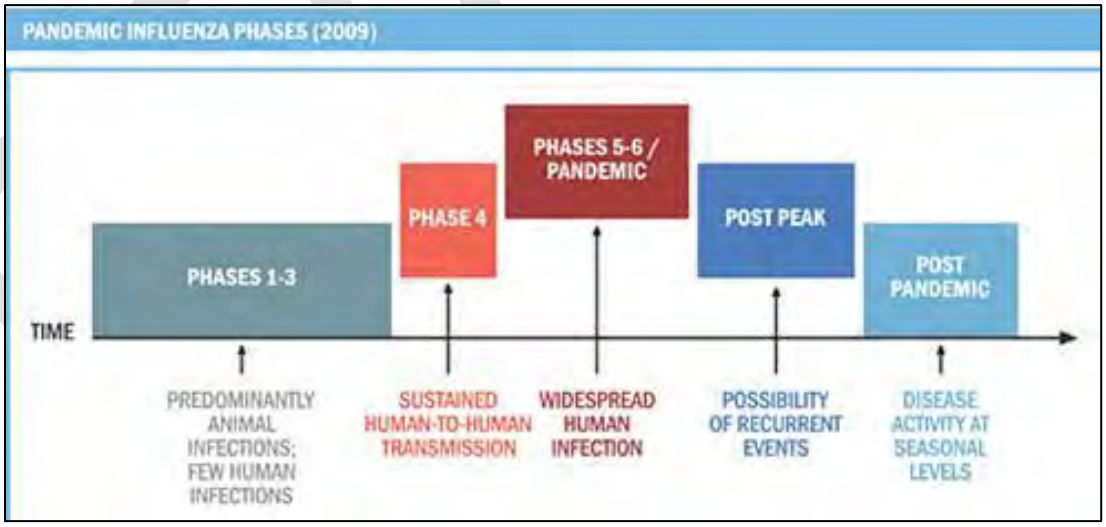
Location

Pandemics occur worldwide. Smaller-scale public health incidents or epidemics may be localized, such as the Ebola outbreak in a region of Africa. All locations are susceptible to pandemics and local public health hazard incidents.

Extent

The WHO currently uses the Pandemic Influenza Phases to characterize pandemics, as shown in Figure 5-11.

Figure 5-11. WHO Pandemic Influenza Phases



In nature, influenza viruses circulate continuously among animals, especially birds. Even though such viruses might theoretically develop into pandemic viruses.

- In Phase 1, no viruses circulating among animals have been reported to cause infections in humans.

- In Phase 2, an animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans and is, therefore, considered a potential pandemic threat.
- In Phase 3, an animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver. However, limited transmission under such restricted circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic.
- Phase 4 is characterized by verified human-to-human transmission of an animal or human-animal influenza reassortant virus able to cause "community-level outbreaks." The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk for a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed, and a decision made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in the risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.
- Phase 5 is characterized by human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.
- Phase 6, the pandemic phase, is characterized by community-level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in Phase 5. Designation of this phase will indicate that a global pandemic is underway.

Probability of Future Events and Magnitude

Although the timing of the outbreak of a pandemic or other public health emergency is difficult to predict, they will continue to occur continually and have a greater than 1 percent chance of occurring in any year.

5.2.10 Hazardous Materials and Hazardous Incidents

Description

A hazardous material is any material whose physical, chemical, or biological characteristics, quantity, or concentration may cause or contribute to adverse effects in organisms or their offspring; pose a substantial present or future danger to the environment; or result in damage to or loss of equipment, property, or personnel.

Hazardous materials consist of substances that by their nature, lack of containment, and reactivity, have the capability for inflicting harm. Hazardous materials pose a threat to health and the environment when improperly managed and can be toxic, corrosive,

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flammable, explosive, reactive, an irritant, or a strong sensitizer. Hazardous materials substances also include certain infectious agents, radiological materials, oxiders, oil, used oil, petroleum products, and industrial solid waste substances. Hazardous materials can pose a threat where they are manufactured, stored, transported, or used. They are used in almost every manufacturing operation and by retailers, service industries, and homeowners.

Geologic resources (i.e., soil and groundwater) are susceptible to contamination from the surface. Releases of hazardous chemicals such as petroleum products and solvents have resulted in soil contamination at military installations. Contaminated soil or groundwater may require physical removal or extensive remediation to ensure the protection of public health and safety.

Hazardous material incidents are one of the most common technological threats to public health and the environment. Incidents may occur as the result of natural disasters, human error, and/or accident. Hazardous materials incidents typically take three forms:

- Pipeline incidents
    - Pipelines carry natural gas and petroleum. Breakages in pipelines carry differing amounts of danger, depending on where and how the break occurs, and what is in the pipe.
- Fixed facility incidents
    - It is reasonably possible to identify and prepare for a fixed site incident, because laws require those facilities to notify state and local authorities about what is being used or produced there.
- Transportation incidents
    - Transportation incidents are more difficult to prepare for because it is impossible to know what material(s) could be involved until an accident actually happens.

History

Numerous sites in the City of Palmdale area generate, use, or store hazardous substances, including the US Air Force (USAF) Plant 42, Lockheed Martin Aeronautics Company, and the Palmdale Water Reclamation Plant (PWRP).

The USAF Plant 42 operations include assembly of test aircraft and pilot training. Hazardous materials and wastes used and generated on site include various petroleum products, paints, solvents, and corrosives. USAF Plant 42 is listed on the EPA's Comprehensive Environmental Response, Compensation, and Liability Information System database as a potentially contaminated site. The California Department of Health Services has also identified USAF Plant 42 as a hazardous waste site targeted for cleanup. Twenty-eight contaminated areas have been identified; however, information available to date indicates that no hazardous waste exposure to public health or the environment exists at this time.

Lockheed Martin Aeronautics Company Joint Strike Fighter assembly area uses 54 hazardous materials in their operation; this is down from between 400 and 500 hazardous materials that were used to support predecessor aircraft.

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The PWRP was constructed in 1953 in an unincorporated county area adjacent to the City of Palmdale. As the PWRP began operating, most of the effluent was managed using evaporation/percolation ponds. In 1959, PWRP District No. 20 began contracting with local farmers to provide effluent from the PWRP for agricultural irrigation. Throughout the 1960s, District No. 20 supported the use of effluent for agricultural irrigation; however, only a small portion of the total effluent managed was actually reused. By the 1970s, approximately one-third of the treated effluent from the PWRP was reused for crop irrigation with the remainder being sent to the evaporation/percolation ponds.

Major gas lines also come into Southern California over the San Andreas at several points, including Palmdale, Indio, the Cajon Pass, and the Tejon Ranch. Officials at the Southern California Gas Company expressed confidence that the system could withstand a strong earthquake, noting they have been upgrading the pipeline for years.

Currently there are no hazardous waste landfills located in the Palmdale Water District Planning Area. The Palmdale Disposal Plant is a non-hazardous Class II landfill. Groundwater and surface water are protected from contamination by wastes deposited at the landfill through required waste management practices in place at the landfill.

Hazardous Material Hazard Incidents

A review of the U.S. Department of Transportation's Hazardous Material Incident Reporting System identified 15 spills between 2002 and 2007 in the City of Palmdale but did not identify a location with enough accuracy to determine if they were in the watershed.

There were two occasions between 2002 and 2007 (*as of October 26, 2007*), where vehicles crashed into Palmdale Ditch. Both occurred at bar screen No. 8, Pearblossom Highway Underpass (just off Pearblossom Highway to the south, approximately 150 feet west of Barrel Springs Road). Both vehicles were traveling east on Pearblossom Highway and unable to stop for traffic stopped at the traffic light.

The Palmdale Water District and surrounding areas have had a history of hazardous materials spill incidents. Table 5-14 depicts some of the most recent recorded incidents.

Table 5-14. Hazardous Material Events

Date	Substance/Type	Reported Property Damage/Description
6/11/2021	Petroleum	A traffic collision involving a semitruck was the cause of a petroleum release. The release impacted a dirt shoulder and no waterways were involved with this incident.
5/10/2021	Petroleum	A semi-truck crashed into a pick-up truck resulting in the release of petroleum onto the right shoulder of the roadway.
3/14/2021	Petroleum	A vehicle collided with a power pole and caused a release of non-PCB mineral oil from a capacitor bank.
3/4/2021	Petroleum	A bucket truck overturned causing the release of petroleum.

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Table 5-14. Hazardous Material Events

Date	Substance/Type	Reported Property Damage/Description
2/1/2021	Petroleum	A hydraulic oil leak coming from a garbage truck which spanned several streets.
1/11/2021	Other	PFOA released onto soil by the fire hydrant at Airforce Plant 42.
1/4/2021	Chemical	A plumbing leak that leaked on a foam panel and caused the foam cannon to operate within the hangar. The release entered a trench within the hangar and approximately 500 gallons of the fire-fighting foam overflowed and released outside the hangar and was static on the asphalt.
12/10/2020	Petroleum	A collision a vehicle was turned on its side causing a release of oil.
9/16/2020	Petroleum	A traffic collision caused release of petroleum from a fuel tank that was punctured.
9/2/2020	Vapor	3/4-inch steel natural gas line was damaged causing a release.
9/1/2020	Vapor	½-inch residential service gas line was damaged which causing a release.

Source: California Office of Emergency Services

Location

Several state agencies monitor hazardous materials/waste facilities. Potential and known contamination sites are monitored and documented by the California Department of Health Services and the Regional Water Quality Control Board (WQCB). A review of the leaking underground storage tank list produced by the Regional Water Quality Control Board and the Hazardous Waste and Substances Sites List produced by the Office of Planning and Research indicates two hazardous waste sites located in Palmdale as noted in Table 5-15.

Table 5-15. Hazardous Sites

Address	Problem	Source
Palmdale Regional Airport 394441 North 25th Street Palmdale	Tank Leak	WQCB
Lockheed 2500 East Avenue M Palmdale	Tank Leak	WQCB

Transport of Hazardous Materials

Transportation of hazardous materials/wastes and explosives through the Planning Area is regulated by the California Department of Transportation. State Route (SR)-14 and SR-138 are open to vehicles carrying hazardous materials/wastes. Palmdale City streets and unincorporated county areas are generally not designated as hazardous

materials/wastes transportation routes; however, a permit may be granted on a case-by-case basis. Transporters of hazardous wastes are required to be certified by the Department of Transportation and manifests are required to track the hazardous waste during transport.

Although no spills have been reported, the danger of hazardous materials/waste spills during transport exists and will potentially increase as industrial development in the planning area increases. At present, the Los Angeles County Fire Department is responsible for hazardous materials accidents at all locations within the Palmdale Water District planning area.

Extent

The extent of a hazardous material spill may vary from significant impacts causing injuries and evacuation to minor impacts requiring minimal cleanup. Hazardous materials releases can be harmful in the following ways:

- Chemical, biological, and radiological agents can cause significant health risks to those exposed to them; biological agents can be additionally dangerous if they are infectious. Flammable and explosive materials also present life safety concerns when exposed to heat.
- Oil spills can present an immediate fire hazard and can contaminate drinking water supplies. Any release of hazardous material requires a thorough and careful clean-up of the site and decontamination of those exposed. Clean-up and recovery are time and cost consuming.
- Delays caused by hazardous materials releases and the ensuing evacuation and cleanup processes could lead to significant economic losses due to traffic delays (mobile releases) or operational shutdown (fixed facilities).
- Overall, hazardous materials can cause death, serious injury, long-lasting health effects, and damage to buildings, the environment, homes, and other property.

Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-16 was identified by the planning team.

Table 5-16. Probability of Future Events and Magnitude: Hazardous Materials and Hazardous Incidents

Probability	Magnitude
Low	High

5.2.11 Dam Failure

Description

Dam break floods are usually associated with intense rainfall, prolonged flood conditions, or earthquakes. Dam failure may also be caused by faulty design, construction, and operational inadequacies. The cause can be due to a flood event or earthquake larger

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than the dam was designed to accommodate. The degree and extent of damage depends on the size of the dam and circumstances of failure. A small dam retaining water in a stock pond may break resulting in little more damage that the loss of the structure itself. An even larger dam failure might bring about considerable loss of property, utilities, roads, and loss of life. Other consequences can include loss of income, disruption of services, and environmental devastation.

Dams are a critical part of our national infrastructure. Millions of Americans rely on dams for water supply, power generation, flood control, irrigation, and recreation. But many of our dams are beyond their life span and are in desperate need of repair. Despite efforts by states to improve dam conditions, far too many unsafe dams remain at risk of failure, threatening life and property.

A dam failure is the partial or complete collapse of an impoundment, with the associated downstream flooding. Flooding of the area below the dam may occur as the result of structural failure of the dam, overtopping, or a seiche. Dam failures are caused by natural and manmade conditions. The list of causes includes earthquake, erosion of the face or foundation, improper sitting, structural/design flaws, and prolonged rainfall and flooding. The primary danger associated with a dam failure is the swift, unpredictable flooding of those areas immediately downstream of the dam.

There are three general types of dams: earth and rock fill, concrete arch or hydraulic fill, and concrete gravity. Each of these types of dams has different failure characteristics. The earth and rock fill dam will fail gradually due to erosion of the breach; a flood wave will build gradually to a peak and then decline until the reservoir is empty. A concrete arch or hydraulic fill dam will fail almost instantaneously, with a very rapid build-up to a peak and then a gradual decline. A concrete gravity dam will fail somewhere in between instantaneous and gradual, with corresponding buildup of flood wave.

History

The Palmdale Water District evolved from several private water companies. The first water agency, the Palmdale Irrigation Company, was established in 1886 to acquire land and water, and then rent, lease, and sell both as they were developed. As a means of providing water for these purposes, they constructed a 6.5-mile irrigation ditch to divert water from nearby Little Rock Creek to Palmdale. Not long after, it became apparent that water storage facilities were needed.

On July 22, 1918, the Palmdale Irrigation District, which later became Palmdale Water District, was formed and the task to build the Littlerock Dam for storage commenced. Littlerock Creek Irrigation District was a partner in the project. When the dam was completed in 1924, it was the tallest multiple-arch dam in the U.S.

In 1987, after years of study, Palmdale Water District and Littlerock Creek Irrigation District decided to rehabilitate the Littlerock Dam in three phases. The first phase involved reinforcing the original multiple-arch construction with a roller-compacted concrete buttress. At the same time, the original dam was raised 12 feet, which doubled the reservoir's capacity. Shotcrete with steel reinforcement was applied to the upstream surface of the dam, further strengthening the structure, but also improving its appearance cosmetically. Larger outlet pipes and controls were installed to provide greater safety when releasing stored water.

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The second phase of construction provided new recreational facilities around the reservoir, including a new boat launching facility; improved picnic areas and campsites; an interpretive display center overlooking the dam; and improved parking and restroom facilities.

The final phase of construction included replacing a historic wooden trestle with an underground siphon.

Financed partly with funds from the Davis-Grunsky Act, California Department of Boating and Waterways, and the issuance of Certificates of Participation, the $22 million Littlerock Dam renovation project was completed in 1995. Key factors in its completion were cooperative efforts between local, state, and federal agencies.

Location

Lake Palmdale. In 1895, the South Antelope Valley Irrigation Company constructed an earthen dam forming Harold Reservoir, known today as Lake Palmdale. To connect the water from Little Rock Creek to Harold Reservoir, they constructed another earthen ditch, including a flume and wooden trestle, parallel to the ditch being used by the Palmdale Irrigation Company.

Littlerock Dam. Located on U.S. Forest Service land in the southern Antelope Valley, construction of Littlerock Dam was completed in 1924. At that time, it was the highest reinforced concrete multiple arch-dam in the U.S. with a capacity of 4,200-acre feet of water. Much controversy surrounded the design of Littlerock Dam, and in 1932 it was determined by the State of California that it was an unsafe structure in its then-present condition, and renovations were ordered. By 1938, renovations had still not been completed and a 2-day storm caused major damage to the dam and spillway as well as the flume. By 1940, renovations were completed, and reconstruction of Littlerock Dam was considered once again complete. However, it was reconstructed again in 1966 after the State Division of Safety of Dams studies indicated that the dam would not withstand a major earthquake.

Figure 5-12. Littlerock Dam



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Extent

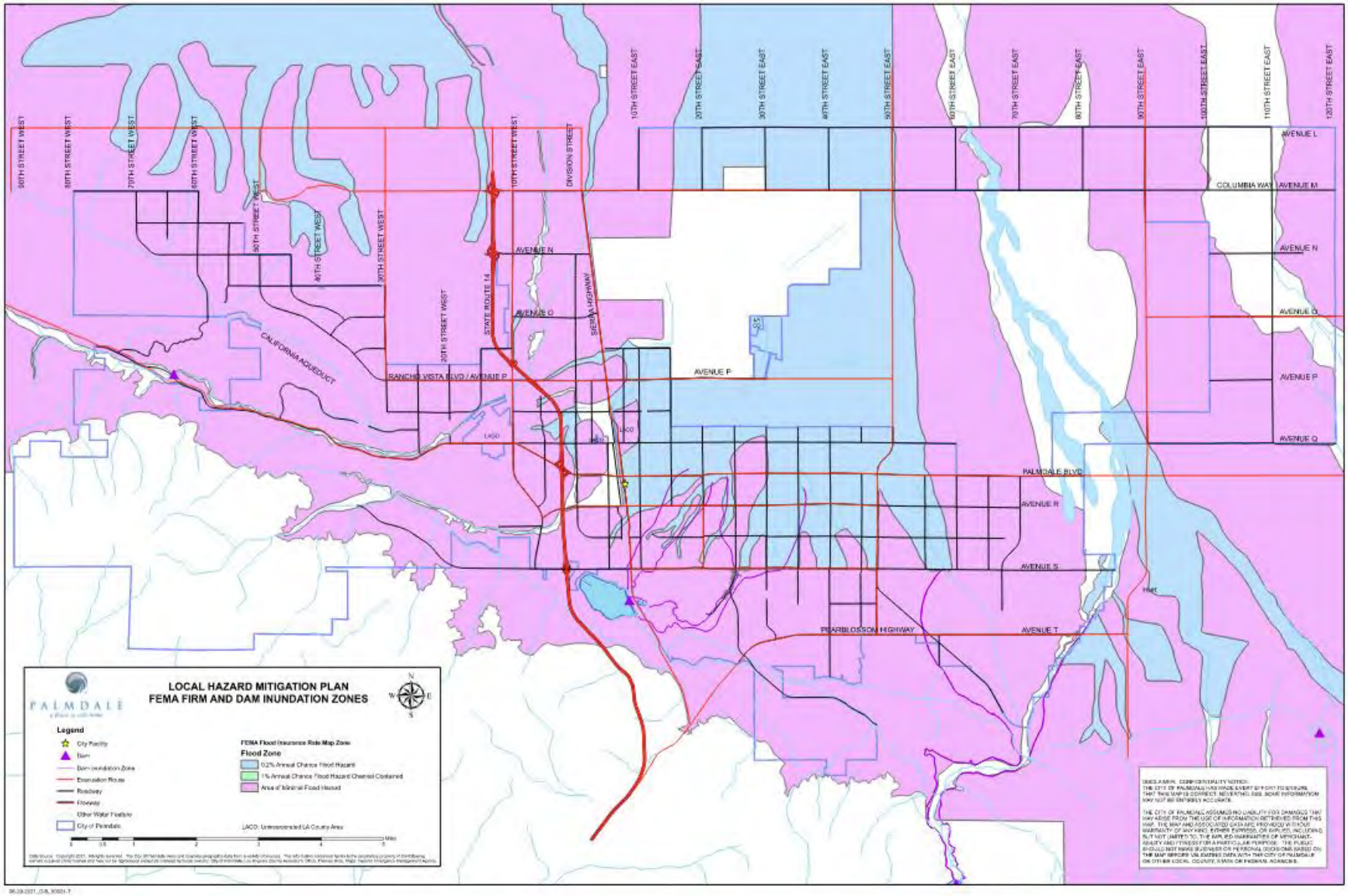
Surface rupture and ground shaking from earthquakes may result in the rupture of the Palmdale and Littlerock Dams, causing flooding. Flood waters could be as deep as 50 feet immediately downstream of the Littlerock Dam. Failure of the Littlerock Dam would result in the inundation of a 300-foot-wide area for 0.25 mile north of the dam. Along this length, the water depth would vary from 50 to 15 feet. Ten minutes after failure, the flood water would veer eastward for 800 feet to Avenue U where the depth would be reduced to 10 feet. Trending north from Avenue U, the water would eventually dissipate so that the depth would no longer be a risk to downstream developments.

In addition to dam failure and subsequent flooding, a seismic event could cause a water wave, or seiche to occur at Lake Palmdale, which could potentially overtop the dam. The design report for the dam considers a reflection of the wave on return unlikely. Also, wave volume above the dam would not be substantial (approximately 1 acre-foot) and would not result in damaging floods. Overpour on the downstream side of the dam would not cause any damage by erosion as the existing rockfill was designed to withstand it.

Figure 5-13 indicates the inundation areas in the event of a dam break.

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Figure 5-13. Inundation Map



Probability of Future Events and Magnitude

The risk probability and risk severity assessment listed in Table 5-17 was identified by the planning team.

Table 5-17. Probability of Future Events and Magnitude: Dam Failure

Probability	Magnitude
Low	High

5.3 Risk Assessment

A risk assessment involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard. The intention of a risk assessment is to help the community understand the greatest risks facing the District. The risk assessment defines and quantifies vulnerable staff, buildings, critical facilities, and other assets at risk from hazards and is based on the best available data and the significance of the hazard. The risk assessment further examines the impact of the identified hazards on the District, determines which areas of the District are most vulnerable to each hazard, and estimates potential losses to District facilities for each hazard.

5.3.1 Assets (Services and Facilities)

The assets shown in Table 5-18 were identified for the District during the 2020 RRA workshops.

Table 5-18. Critical Assets

1	Tank and Booster 1 - Lower El Camino
2	Tank and Booster 2 - 3M (includes Well 5/Booster Station)
3	Tank and Booster 3 - 6M
4	Tank and Booster 4 - 25th Street
5	Tank and Booster 5 - 45th Street (includes 47th and 50th)
6	Tank and Booster 6 - Walt's
7	Tank and Booster 7 - Underground
8	SCADA
9	Leslie O. Carter Water Treatment Plant (includes Lake Palmdale and Intake)
10	Generic Wells
11	Service Connection from the SWP

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Table 5-18. Critical Assets

12	Generic Transmission Pipelines
13	Staff
14	Littlerock Dam, Reservoir, & Palmdale Ditch
15	AVEK Connection (Receive and Distribute)

5.3.2 Cultural and Natural Resources Inventory

There are no cultural or natural resources that the District is cognizant of. The District does not have watershed management responsibilities.

5.3.3 Risk Assessment and Potential Loss

The risk assessment and potential losses for physical damage for district facilities are listed in Table 5-19 through Table 5-33. Because the District provides a critical lifeline infrastructure support system, potential losses beyond physical damage must be considered. Loss of potable water service due to nondestructive events results in community hardship, economic loss, and reputational damage. Computing potential losses from these risks is beyond the scope of this LHMP and must be considered in the context of the impact on the entire county and region.

Table 5-19. Risk Assessment/Potential Losses: Tank and Booster 1 – Lower El Camino

Hazard	Potential Losses
Earthquake	$1,908,900
Drought	$551,500
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$422,400
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure/ Flooding	$4,500

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Table 5-20. Risk Assessment/Potential Losses: Tank and Booster 2 – 3M (includes Well 5/Booster Station)

Hazard	Potential Losses
Earthquake	$1.961.925
Drought	$551.500
Waterborne Diseases/Water Contamination/Algae Blooms	$37.750
Wildfire	$422,400
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$5,100

Table 5-21. Risk Assessment/Potential Losses: Tank and Booster 3 – 6M

Hazard	Potential Losses
Earthquake	$1.961.925
Drought	$551.500
Waterborne Diseases/Water Contamination/Algae Blooms	$37.750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$64,500
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-22. Risk Assessment/Potential Losses: Tank and Booster 4 – 25th Street

Hazard	Potential Losses
Earthquake	$1.930.110
Drought	$551.500
Waterborne Diseases/Water Contamination/Algae Blooms	$37.750
Wildfire	$422,400
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-23. Risk Assessment/Potential Losses: Tank and Booster 5 – 45th Street (includes 47th and 50th)

Hazard	Potential Losses
Earthquake	$1.930.110
Drought	$551.500
Waterborne Diseases/Water Contamination/Algae Blooms	$37.750
Wildfire	$211.200
Extreme Weather	$57.000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-24. Risk Assessment/Potential Losses: Tank and Booster 6 – Walt's

Hazard	Potential Losses
Earthquake	$1,961,925
Drought	$551,500
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-25. Risk Assessment/Potential Losses: Tank and Booster 7 – Underground

Hazard	Potential Losses
Earthquake	$1,908,900
Drought	$551,500
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-26. Risk Assessment/Potential Losses: SCADA

Hazard	Potential Losses
Earthquake	$212,100
Drought	$220,600
Waterborne Diseases/Water Contamination/Algae Blooms	$15,100
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$70,500
Water Contamination	$447,000
Cyber Attack	$327,600
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$15,600
Hazardous Materials and Hazardous Incidents	$15,100
Dam Failure	$600

Table 5-27. Risk Assessment/Potential Losses: Leslie O. Carter Water Treatment Plant (includes Lake Palmdale and Intake)

Hazard	Risk Cost
Earthquake	$1,908,900
Drought	$1,985,400
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$528,000
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$5,100

Table 5-28. Risk Assessment/Potential Losses: Generic Wells

Hazard	Risk Cost
Earthquake	$1,908,900
Drought	$1,985,400
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-29. Risk Assessment/Potential Losses: Service Connection from State Water Project

Hazard	Risk Cost
Earthquake	$1,908,900
Drought	$551,500
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-30. Risk Assessment/Potential Losses: Generic Transmission Pipelines

Hazard	Risk Cost
Earthquake	$1.908.900
Drought	$551.500
Waterborne Diseases/Water Contamination/Algae Blooms	$37.750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-31. Risk Assessment/Potential Losses: Staff

Hazard	Risk Cost
Earthquake	$212.100
Drought	$220.600
Waterborne Diseases/Water Contamination/Algae Blooms	$15,100
Wildfire	$211,200
Extreme Weather	$11,400
Criminal Activity	$420,750
Water Contamination	$447,000
Cyber Attack	$276,750
Power Outage	$25,800
Public Health Emergency/Pandemic/Loss of Staff	$15,600
Hazardous Materials and Hazardous Incidents	$15,100
Dam Failure	$600

Table 5-32. Risk Assessment/Potential Losses: Littlerock Dam, Reservoir, and Palmdale Ditch

Hazard	Risk Cost
Earthquake	$1,908,900
Drought	$551,500
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$422,400
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

Table 5-33. Risk Assessment/Potential Losses: AVEK Connection (Receive and Distribute)

Hazard	Risk Cost
Earthquake	$1,908,900
Drought	$551,500
Waterborne Diseases/Water Contamination/Algae Blooms	$37,750
Wildfire	$211,200
Extreme Weather	$57,000
Criminal Activity	$420,750
Water Contamination	$3,352,500
Cyber Attack	$276,750
Power Outage	$129,000
Public Health Emergency/Pandemic/Loss of Staff	$9,750
Hazardous Materials and Hazardous Incidents	$37,750
Dam Failure	$4,500

6 Mitigation Strategy

Federal regulations require local mitigation plans to identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area.

FEMA REGULATION CHECKLIST: CAPABILITY ASSESSMENT

44 CFR § 201.6(c)(3): – The plan must include mitigation strategies based on the jurisdiction's "existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."

Elements

C1. Does the Plan document the jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR § 201.6(c)(3).

C2. Does the Plan address the jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR § 201.6(c)(3)(ii).

C3. Does the Plan include goals to reduce or avoid long-term vulnerabilities to identified hazards? 44 CFR § 201.6(c)(3)(i).

C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for the jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? See 44 CFR § 201.6(c)(3)(ii).

C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost-benefit review), implemented, and administered by the jurisdiction? 44 CFR § 201.6(c)(3)(iii).

C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

A hazard mitigation plan's primary focus is the mitigation strategy. It represents the efforts selected by the District to reduce or prevent losses resulting from the hazards identified in the risk assessment. The strategy includes mitigation actions and projects to address the risk and vulnerabilities discovered in the risk assessment. The mitigation strategy consists of the following steps:

- Identify and profile hazards and risk within the District.
- Identify projects and activities that can prevent or mitigate damage and injury to the population and buildings.
- Develop a mitigation strategy to implement the mitigation actions.
- Develop an action plan to prioritize, implement, and administer the mitigation actions.
- Implement the LHMP mitigation action plan.

A capability assessment was conducted of District authorities, policies, programs, and resources. Based on this assessment and the hazard analysis and risk assessment,

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goals and mitigation actions were developed. The planning team also developed a process to prioritize, implement, and administer the mitigation actions to reduce risk to existing facilities and new development.

6.2 Overview

The 2021 LHMP represents the District's commitment to creating a safer, more resilient community by taking actions to reduce risk and by committing resources to lessen the effects of hazards on the people and property of the District.

Mitigation goals are guidelines that represent what the community wants to accomplish through the mitigation plan. Goals are broad statements that represent a long-term, community-wide vision. The planning team reviewed the example goals and objectives from the previous LHMP and determined which goals best met the District's objectives for mitigation. The 2021 goals are new, as this is the District's first LHMP since 2008. In addition to the overarching hazard mitigation goals, the District worked to develop the strategies aligned with the District CIP and Urban Water Management Plan.

Mitigation Goals

1. Protect life and property and reduce the potential injuries from natural or anthropogenic hazards.
2. Improve the public's understanding, support, and need for hazard mitigation measures.
3. Elevate disaster resilience for the District's natural, existing, and future environment.
4. Hone partnerships and collaborating efforts to implement hazard mitigation activities.
5. Improve the District's ability to immediately and effectively respond to hazards.

6.3 Mitigation Actions/Projects and Implementation Strategy

Mitigation actions are specific activities or projects that serve to meet the goals that the community has identified. Mitigation actions and projects are more specific than goals or objectives and often include a mechanism such as an assigned time frame, to measure the success and ensure the actions are accomplished. The planning team conducted a review of the mitigation actions and strategies from the State Hazard Mitigation Plan and from other cities' planning efforts to develop new mitigation actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure, if needed.

The requirements for prioritization of mitigation actions, as provided in the federal regulations implementing the Stafford Act as amended by DMA 2000, are described below.

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FEMA REGULATION CHECKLIST: MITIGATION STRATEGY; PLAN AND REVISION

44 CFR § 201.6(c)(3)(iii): – The mitigation strategy section shall include "an action plan describing how the actions identified in section (c)(3)(iii) will be prioritized, implemented, and administered by the local jurisdiction.

Elements

C1. Does the Plan document the jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR § 201.6(c)(3).

C2. Does the Plan address the jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR § 201.6(c)(3)(ii).

C3. Does the Plan include goals to reduce or avoid long-term vulnerabilities to identified hazards? 44 CFR § 201.6(c)(3)(i).

C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for the jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? See 44 CFR § 201.6(c)(3)(ii).

C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost-benefit review), implemented, and administered by the jurisdiction? 44 CFR § 201.6(c)(3)(iii).

C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

Based on these criteria, the District prioritized potential mitigation projects and included them in the mitigation action plan discussed below in Section 6.3.3. The mitigation action plan developed by the planning team includes the action items that the District intends to implement during the next 5 years, assuming funding availability. The action plan includes the implementing department, an estimate of the timeline for implementation, and potential funding sources.

6.3.2 Previous Mitigation Actions/Projects Assessment

FEMA REGULATION CHECKLIST: PLAN REVIEW AND REVISION

Progress in Local Mitigation Efforts

44 CFR § 201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . .."

Element

D2. Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).

Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

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The 2008 HMP contained 12 mitigations actions. Many of the mitigation actions were completed or carried out to some degree or are considered ongoing. Some of the mitigation actions were duplicative; others were better categorized as emergency preparedness or recovery activities, and others were either not addressed during the time period or were not feasible to accomplish. Table 6-1 provides the status of mitigation actions from the 2008 HMP.

Table 6-1. 2008 Hazard Mitigation Plan Activity Status

Hazard and Plan No.	Activity	Status
Earthquake, 1	Fit potable water tanks with seismically triggered valves.	In Progress
Earthquake, 2	Increase stockpile of replacement materials (pipes, fittings, valves, etc.).	Complete
Earthquake, 3	Purchase additional generators for remaining critical sites.	In Progress
Earthquake, 4	Implement backup communication capability.	In Progress
Flooding/ Dam Failure, 1	Mitigate the risks of flood occurrence by improving drainage.	Yes
Flooding/ Dam Failure, 2	Acquire additional heavy equipment and pre-position near vulnerable assets and population to mitigate the severity of damage when an event occurs.	Yes
Flooding/ Dam Failure, 3	Establish a program to regularly turn rock stockpiles as they get compacted to mitigate the severity of damage when an event occurs.	No
Wildfire, 1	Install sprinklers at remote booster stations.	No
Wildfire, 2	Re-roof remote sites with fire-retardant materials.	In Progress
Wildfire, 3	Install backup generators at remote sites.	No
Extreme Weather, 1	Mitigate severity of impact of an event by increasing public awareness.	In Progress
Extreme Weather, 2	Consider new City Ordinances regarding water conservation requirements to mitigate severity of impact of an event on assets of the Water District.	Yes
Extreme Weather, 3	Continue to educate the public regarding water conservation to mitigate severity of impact of an event on assets of the Water District.	Yes
Waterborne Diseases, 1	Acquire portable disinfecting units.	No
Waterborne Diseases, 2	Acquire backup incubator/laboratories to run waterborne disease tests.	No
Hazardous Materials, 1	Acquire additional hazmat removal equipment and pre-position at plant or, as an alternative, store in a mobile trailer.	In Progress
Hazardous Materials, 2	Update the Emergency Response Plan to note who has been trained in hazardous materials and to what extent, i.e., 8 hours, 24 hours, or 40 hours of training courses.	No training established. ERP is updated.
Terrorism, 1	Tie-in the SCADA security system into law enforcement agency.	No
Terrorism, 2	Acquire improved/higher quality CCTV system.	No

6.3.3 New Mitigation Actions

Mitigation actions are specific activities or projects that serve to meet the goals that the community has identified. Mitigation actions and projects are more specific than goals or objectives and often include a mechanism such as an assigned time period, to measure the success and ensure actions are accomplished. The planning team conducted a review of the mitigation actions and strategies from the 2008 HMP. With information from the risk assessment, capability assessment, and status of the actions implemented since the 2008 HMP, the planning team developed new/ongoing mitigation actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure.

Table 6-2 lists the initial, potential mitigation actions developed by the planning team. For each mitigation action, the following information is listed: the goal that each action addresses as listed Section 6.2, type of mitigation project; hazard(s) addressed, type of development affected by action; and the source of the mitigation project idea.

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Table 6-2. Potential Mitigation Actions 2021

Goal	Action Item No.	Action Description	Mitigation Type	Related Hazards	Implementing Organizations
1. Protect life and property and reduce the potential injuries from natural or anthropogenic hazards.	1.1	Increased signage using a "No Trespassing" sign. The name of the facility will be omitted. Discuss with sheriff and counsel.	Prevention	Criminal Activity	Operations
	1.2	Evaluate onsite physical security protection at all reservoir sites.	Preparedness	Criminal Activity	Operations
	1.3	Conduct a seismic evaluation for the reservoir storage tanks and the water treatment plant.	Preparedness	Earthquake	Operations
	1.4	Evaluate redundant connections for the SWP.	Preparedness	All	Operations
	1.5	Assess and implement flexible piping joints at above-ground storage reservoirs as appropriate.	Prevention	Seismic	Operations
2. Improve the public's understanding, support, and need for hazard mitigation measures.	2.1	Continue educating the public about the impact of natural hazards on water operations through community involvement.	Preparedness	All	Administrative
	2.2	Include hazard education (e.g., earthquake kits and preparedness) through District water bill inserts.	Preparedness	Earthquake	Administrative
	2.3	Build a public education center to provide customers information on water conservation. Include a model garden that incorporates water saving equipment and installations.	Preparedness	Extreme Weather	Administrative
3. Elevate disaster resilience for the District's natural,	3.1	Secure steel tanks to footings and add seismic valves to inlet and outlet pipes.	Preparedness	Earthquake	Operations

Table 6-2. Potential Mitigation Actions 2021

Goal	Action Item No.	Action Description	Mitigation Type	Related Hazards	Implementing Organizations
existing, and future environment.	3.2	Continue to institute water shortage contingency measures during extreme drought periods	Prevention	Drought	All
	3.3	Develop an external/mobile Emergency Operations Center.	Preparedness	All	Administrative
	3.4	Regularly train, drill, and exercise staff on the ERP and on specific disaster scenarios.	Preparedness	All	All
	3.5	Identify and confirm that pipe specifications are compatible with engineering and earthquake specifications.	Prevention	Seismic	Operations
	3.6	Provide backup power generation as part of critical facility design.	Preparedness	Loss of Power/ PSPS	Operations
4. Hone partnerships and collaborating efforts to implement hazard mitigation activities.	4.1	Continue dig alert program to ensure contractors mark where pipes are located.	Prevention	Water Contamination	Operations
	4.2	Coordinate with law enforcement to convey the importance of a water distribution system.	Prevention	All	Administrative
5. Improve the District's ability to immediately and effectively respond to hazards.	5.1	Train employees in the policies and procedures associated with fire response and notification procedures.	Prevention	Wildfire	Operations
	5.2	Provide employee education and resources for extreme heat hazards.	Prevention	Extreme Heat	Operations
	5.3	Procure and install remotely observable security cameras at key locations at District operating facilities.	Prevention	Terrorism	Operations

Table 6-2. Potential Mitigation Actions 2021

Goal	Action Item No.	Action Description	Mitigation Type	Related Hazards	Implementing Organizations
	5.4	Upgrade the SCADA system to better address cyber-security concerns and integrate cameras.	Prevention	Cyber-attack	Operations
	5.5	Develop and implement a pandemic/influenza emergency response plan module.	Preparedness	Public Health	Administrative
	5.6	Consider training employees in the pandemic/influenza procedures	Preparedness	Pandemic	All
	5.7	Purchase satellite phones that are interoperable with appropriate county satellite phones.	Response	All	Administrative

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6.3.4 Mitigation Action Implementation Plan

6.3.5 Incorporation into Other Plans (In Progress)

The 2008 LHMP was not incorporated into other planning mechanisms systematically. The 2021 LHMP will be coordinated with and integrated into the following other planning mechanisms.

- The District Emergency Operations Plan contains a list of hazards. The LHMP provides a similar, more detailed description of these hazards. Updates to the LHMP can inform revisions to the Emergency Operations Plan. Hazards in both plans should be correlated.
- The American Water Infrastructure Act required both the RRA and the LHMP to use the same source data and similar language to describe hazards that are contained in both. Hazard analysis and risk/vulnerability updates to one document should be reviewed for inclusion in both. For the 2021 LHMP, the planning team used portions of the RRA to develop new mitigation actions.

The District will review the mitigation action plan in the LHMP as it updates its CIP. Several mitigation actions address facility improvement and resiliency. Grant funding for these projects may support CIP projects.

7 Monitoring and Evaluation

Implementation and maintenance of the plan is vital to the overall success of hazard mitigation. This section details the process that the District will use to monitor, update, and evaluate the plan within the 5-year cycle of the plan's revision to ensure the LHMP remains an active, relevant, and useful document.

When it is time to maintain or revise the LHMP, data can be easily located and incorporated, resulting in an easy method to keep the plan current and relevant.

FEMA REGULATION CHECKLIST: PLANNING PROCESS

Documentation of the Planning Process

44 CFR § 201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Elements

A5. Is there discussion on how the community will continue public participation in the plan maintenance process? 44 CFR 201.6(c)(4)(iii)

A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? 44 CFR 201.6(c)(4)(i)

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

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The planning team will convene annually to perform reviews of the LHMP and its implementation. The planning team will include representation from residents, citizen groups, and stakeholders within the planning area.

If planning team members can no longer serve on the planning team, the Project Manager will assign another staff person to be on the planning team so that every District department is represented.

7.2 Plan Maintenance Procedures

The HMP includes a range of action items to reduce losses from hazard events. Together, the action items provide a framework for activities that the District can choose to implement over the next 5 years. The effectiveness of the plan depends on the incorporation of the action items into existing District plans, policies, and programs. Although the Project Manager will have primary responsibility for the LHMP's continual review, coordination, and promotion, plan implementation, and evaluation will be a shared responsibility among all departments and agencies that contributed to the Plan.

The Project Manager and department supervisors will be jointly responsible for the Plan's implementation and maintenance through existing District programs. Operations supervisors will be responsible for implementing mitigation strategies and actions specific to their department operations. The Project Manager will assume the lead responsibility for facilitating plan maintenance and coordinating the planning team.

Each April, the planning team will begin the process of reviewing the LHMP and the implementation of mitigation actions to develop an annual progress report. This process can also assist the budget review process by providing information on mitigation projects and activities that have been completed or implemented. The annual progress report process will serve to align annual reviews of the HMP and to incorporate information. As updates to the LHMP are completed, the public will be made aware of the changes and asked to make recommendations or comments.

The planning team will monitor the hazard mitigation strategies during the year, and at a meeting held in January of each year, team members will provide information for the evaluation of the progress of the 2021 LHMP. This evaluation will include:

- A summary of any hazard events that occurred during the prior year and their impact on the planning area.
- A review of successful mitigation initiatives identified in the 2021 Plan.
- A brief discussion about the targeted strategies that were not completed.
- A re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended, and the reason for the amendment, e.g., funding issues.
- Any recommendations for new projects.
- Any changes in or potential for new funding options (grant opportunities).
- Any impacts of other planning programs or initiatives in the District that involve hazard mitigation.

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The planning team will write a progress report that will be provided to the District's budget planning team for review and incorporation in the budget process as mitigation projects are completed or implemented. The hazard mitigation plan progress report will also be posted on the District website on the page dedicated to the hazard mitigation plan, provided to the local media through a press release, and presented in the form of a report to the District Board. The planning team will strive to complete the progress report process by March of each year.

7.3 Plan Update

Section 201.6.d.3 of 44CFR requires that local hazard mitigation plans be reviewed, revised as appropriate, and resubmitted for approval to remain eligible for benefits awarded under the Disaster Mitigation Act. The District intends to update its hazard mitigation plan on a 5-year cycle.

Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The hazard risk assessment will be reviewed and updated using the most recent information and technologies.
- The action plan will be reviewed and revised to account for any initiatives completed, dropped, or changed and to account for changes in the risk assessment.
- Any new District policies identified under other planning mechanisms, as appropriate.
- The draft LHMP update will be sent to appropriate agencies and organizations for comment.
- The public will be given an opportunity to comment on the updated version prior to adoption.
- The District Board will adopt the updated plan.

At a minimum of 6 months prior to the expiration date of the 2021 LHMP, the planning team will implement a plan revision schedule to formally update the 2021 Plan. The Plan will be revised using the latest FEMA hazard mitigation guidance documents, such as the Mitigation Planning Tool and Regulation Checklist, to confirm compliance with current hazard mitigation planning regulations.

7.4 Continued Public Involvement

The overall success of the LHMP is through implementation of the plan's hazard mitigation strategy and activities to reduce the effects of hazards, protect people and property, and improve the District's efforts to respond to and recover from disasters. Members of the public and the District will ultimately benefit from the implementation of the LHMP and must be given the opportunity to provide input to the continuous cycle of LHMP planning.

The District will strive to keep the public aware of hazard mitigation projects that take place as a result of the LHMP. Public information will be released through press releases, District website announcements, public hearings as required, board meetings, social media, and the District e-news blast to subscribers.

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Projects that mitigate hazards are included in the District's annual budget planning process. The public will be made aware of the planning through District board meetings and press releases during this time. The budget planning process will serve as an annual opportunity to conduct outreach to the public on updates to the hazard mitigation planning process.

A survey can be developed to gather input on how the community feels about the progress being made on LHMP activities. The District will also provide press releases and information about hazard mitigation projects to the public regularly. At a minimum, the public will be engaged to learn about current LHMP activities and given the opportunity to provide comments and information on an annual basis to update and maintain the LHMP. The team tasked with public outreach will be responsible for ensuring the public is included and involved in the annual public plan update and outreach.

When the time comes to begin revising the 2021 LHMP, the plan update process will be implemented, which will include continued public involvement and input through attendance at designated public meetings, web postings, through press releases to local media, community fairs and events, and surveys. As part of this effort, a series of public meetings will be held, and public comments will be solicited on the revisions to the LHMP according to the 5-year cycle.

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Appendix A. Local Mitigation Plan Review Tool Regulation Checklist

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Appendix B. Hazard Mitigation Planning Team

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Appendix C. Public and Stakeholders Involvement

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Appendix D. Palmdale Water District's Adoption Resolution

This appendix will be added after the Palmdale Water District Board adopts this Hazard Mitigation Plan.

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