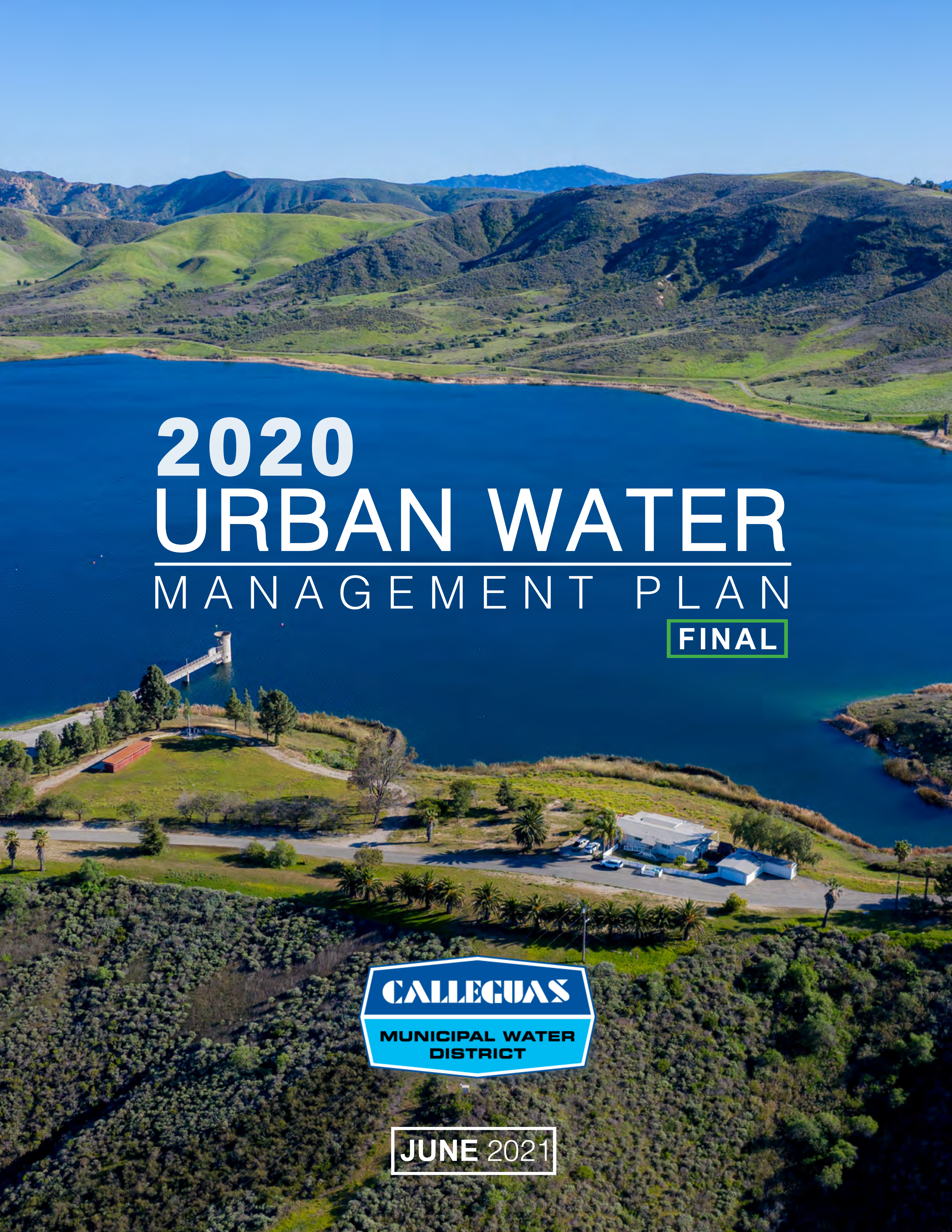

2020
URBAN WATER
MANAGEMENT PLAN

FINAL

CALLEGUAS
MUNICIPAL WATER DISTRICT

JUNE 2021

FINAL

CALLEGUAS MUNICIPAL WATER DISTRICT

2020 URBAN WATER MANAGEMENT PLAN

JUNE 2021

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LIST OF ACRONYMS

AF	Acre-feet
AFY	Acre-feet per year
AG	Agriculture
ASR	Aquifer Storage and Recovery
AWPF	City of Oxnard Advanced Water Purification Facility
AWWA	American Water Works Association
BMP	Best management practice
Cal Water	California Water Service Company
Camrosa	Camrosa Water District
CCDP	Conejo Creek Diversion Project
cfs	cubic feet per second
CII	Commercial, industrial, and institutional
CRA	Colorado River Aqueduct
CRPD	Conejo Recreation and Park District
CURB	City Urban Restriction Boundary
CVP	Central Valley Project
CWC	California Water Code
CWS	Community water system
DAC	Disadvantaged Community
DCP	Delta Conveyance Project
Delta	Sacramento/San Joaquin Delta
DMMs	Demand management measures
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
EOY	End of year
EWSP	Emergency Water Supply Plan
FCGMA	Fox Canyon Groundwater Management Agency
ft msl	feet above mean sea level
GSA	Groundwater Sustainability Agency
GSP	Groundwater sustainability plan
Hidden Valley	Hidden Valley Municipal Water District
IRP	Integrated Resources Plan
IRWMP	Integrated Regional Water Management Plan
IWOP	Imported Water Outage Protocol
kWh	kilowatt-hour
LBWFP	Lake Bard Water Filtration Plant
LRP	Local Resources Program
LVMWD	Las Virgenes Municipal Water District
Metropolitan	Metropolitan Water District of Southern California
MG	million gallons
mg/L	milligrams per liter
mgd	million gallons per day

MHI	Median Household Income
MWQI	Municipal Water Quality Investigations Program
PHWA	Port Hueneme Water Agency
RES	Residential
SCADA	Supervisory control and data acquisition system
SCAG	Southern California Association of Governments
SGMA	Sustainable Groundwater Management Act
SMP	Salinity Management Pipeline
SOAR	Save Open Space & Agricultural Resources
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	Thousand acre-feet
TDS	Total dissolved solids
Triunfo	Triunfo Water and Sanitation District
UWCD	United Water Conservation District
UWMP	Urban Water Management Plan
VCWWD	Ventura County Waterworks District
WCVC	Watersheds Coalition of Ventura County
WFP	Water Filtration Plant
WRA	Water Reliability Assessment
WSAP	Metropolitan's Water Supply Allocation Plan
WSAS	Water Supply Alternatives Study
WSCP	Water Shortage Contingency Plan
WSDM Plan	Metropolitan's Water Surplus and Drought Management Plan
WUE	Water Use Efficiency
WWTP	Wastewater Treatment Plant

1.0 Introduction and Lay Description

1.1 HISTORY AND BACKGROUND

In the early twentieth century, agriculture dominated southeastern Ventura County. By the mid-1900s, communities developed among the agricultural areas and experienced accelerating population growth. In the 1940s and 1950s, dwindling groundwater supplies coupled with deteriorating water quality threatened the economic livelihood of the area. To address this challenge, in 1953 the public voted to form Calleguas Municipal Water District (Calleguas or District) for the purpose of providing a safe, reliable water supplemental water supply. In 1960, Calleguas became a member agency of the Metropolitan Water District of Southern California (Metropolitan), which provides wholesale water from the Colorado River via the Colorado River Aqueduct and from northern California via the State Water Project (SWP).

Today, the mission of Calleguas is to provide its service area with a reliable supplemental supply of regional and locally developed water in an environmentally and economically responsible manner. Calleguas distributes high quality drinking water on a wholesale basis to 19 retail water purveyors, who in turn deliver water to area residents, businesses, and agricultural customers. Approximately 75% of the population of Ventura County is wholly or partially served by Calleguas.

1.2 PURPOSE OF URBAN WATER MANAGEMENT PLANNING

Water planning is an essential function of water suppliers, and critical as California continues to experience highly variable hydrology due to long-term climate change. Prior to the adoption of the Urban Water Management Planning (Act), there were no specific requirements that water agencies conduct long-term resource planning. The requirements for Urban Water Management Plans (UWMPs) are found in two sections of California Water Code, §10610-10656 and §10608. The Act requires municipal water suppliers that serve more than 3,000 customers or provide more than 3,000 acre-feet (AF) of water annually to develop UWMPs every five years. UWMPs provide a framework for long-term water planning that ensures adequate water supplies for existing and future demands, and inform the public of a supplier's plans. Plan components that are required to be addressed and evaluated include:

- A detailed look at current and future water use.
- Analysis of potable and non-potable water supplies, including water rights and contracts, assessing water deliveries, ascertaining restrictions on water availability under certain regulatory and hydrological conditions, and other opportunities or limitations explained in documentation for each water supply.
- A water reliability assessment by integrating the water use analyses with the water supply analyses to provide a water service reliability picture under normal conditions, single dry-year conditions, and five consecutive dry years through at least 2040.
- Drought Risk Assessment
- Water Shortage Contingency Planning

The Act has been modified over the years in response to the State's water shortages, droughts, and other factors.

1.3 2020 UWMP EXECUTIVE SUMMARY

Calleguas' 2020 Urban Water Management Plan (UWMP) has been prepared in compliance with the California Water Code (CWC). This Executive Summary satisfies the requirement of CWC Section 10630.5 to include a simple lay description of information necessary to provide a general understanding of the plan, including a description of Calleguas' water supply, as well as its needs, strategies, and potential challenges for the foreseeable future.

This plan provides assessment of Calleguas' water service reliability, describes and evaluates sources of water supply, efficient uses of water, demand management measures, implementation strategy and schedule, and other relevant information and programs. In addition to the water reliability assessments, the plan includes an evaluation of frequent and severe periods of droughts, as described in the Drought Risk Assessment, and the preparation and adoption of a Water Shortage Contingency Plan (WSCP).

Calleguas operates as a member agency of Metropolitan. Metropolitan provides Calleguas with imported water supplies, which Calleguas in turn distributes on a wholesale basis to its retail water purveyors. All factors described for Metropolitan's Water Reliability Assessment (WRA) for its 2020 UWMP can be directly applied to the Calleguas WRA as the District is fully dependent on Metropolitan for its water supply. The information included in Calleguas' 2020 UWMP represents the most current and available planning projections of supply capability and demand forecasts developed through a collaborative process with Metropolitan and the District's purveyors.

1.3.1 System Description, Water Use, and Supplies

The characteristics of Calleguas, such as purveyors served, demographics, information on the District's water distribution and treatment facilities, water supplies utilized within the Calleguas service area, community dependance on imported water, water quality and quantity challenges, and future water projects and other planning initiatives can be found in Chapters 3-6.

1.3.2 Water Service Reliability

This document describes water reliability under conditions associated with a normal water year, single dry-year, and droughts lasting at least five consecutive water years, with projected information in five-year increments for 20 years. Consistent with the Metropolitan 2020 UWMP, the required reliability assessments are based on the following hydrologic conditions:

- <u>Normal Year</u> – the average of historic years 1922 to 2017 most closely represents water supply conditions available during a normal water year.
- <u>Single Dry Year</u> – the conditions for the year 1977 represent the lowest total water supply.
- <u>Five-Consecutive-Year Drought</u> – the five consecutive years of 1988 to 1992 represent the driest five-consecutive year historical sequence for water supply. This five-year sequence is used to complete both Calleguas' water service reliability and drought risk assessments.

As described in Chapter 7, Calleguas' water supplies are sufficient to meet projected demands under the hydrologic conditions listed above. Calleguas is well positioned to mitigate the challenges posed by hydrologic variability, potential climate change, and regulatory risk through the supply capabilities and investments in storage made on the Metropolitan Regional-level and through Calleguas' own reasonable available outage supply stored in Lake Bard (7,500 AF) and the Las Posas Aquifer Storage and Recovery (ASR) Wellfield (20,000 AF).

Demand projections are based on data provided by Metropolitan. Metropolitan's imported water demand projections for Calleguas are inferred to be equal to Metropolitan's supply projections for Calleguas. Imported water demand projections are informed by data provided by Metropolitan's Member Agencies – including Calleguas – that include compilation of a Local Production Forecast sent to retail water purveyors consistent with the planning horizon of the 2020 UWMP.

1.3.3 Water Shortage Contingency Planning

The WSCP is a guide that describes intended actions by Calleguas during water shortage conditions. Calleguas falls directly under the WSCP of Metropolitan, as Calleguas is fully dependent on Metropolitan for its water supply. While the Calleguas WSCP may be viewed as a restatement of Metropolitan's WSCP, the District continues to develop additional water shortage contingency measures in the event of a catastrophic interruption of supply.

Calleguas efforts related to water outage planning include, but are not limited to, the 2014 Emergency Water Supply Plan (EWSP), the District's Water Supply Alternatives Study (WSAS), and the Imported Water Outage Protocol (IWOP).

More information on the Calleguas WSCP can be found in Chapter 8 and Appendix K.

1.3.4 Water Use Efficiency and Demand Management Measures

Calleguas promotes water use efficiency and is actively involved in a variety of programs designed to increase public awareness of water resource issues. Since the 2015 UWMP, residents and businesses in the Calleguas service area removed over 7.6 million square feet of turfgrass resulting in 993 AF/year of estimated potable water savings. Chapter 9 discusses the demand management measures (DMMs) undertaken by the District, including many programs that are implemented in partnership with Metropolitan.

1.3.5 Appendices

Attached to this 2020 UWMP are appendices that support the information described throughout the document. These appendices include:

Appendix A – UWMP Checklist

Appendix B – Survey to Local Planning Agencies

Appendix C – Distribution System Loss Model Output Summary

Appendix D – Metropolitan's Draft Overall Supply Capability Tables and Supply/Demand Projections for Calleguas' Service Area

Appendix E – Calleguas MWD's Metered Connections with Metropolitan

Appendix F – Example Monthly Master Meters and Reservoirs Report

Appendix G – July 2020 Annual Water Quality Report

Appendix H – Calleguas Groundwater Storage Account Balance Reports

Appendix I – Water Supply Alternatives Study Project Status Summary

Appendix J – Status Update for the Study of Seismic Impacts to the Santa Susana Tunnel (February 2021)

Appendix K – Water Shortage Contingency Plan

Appendix L – Reduced Reliance on the Delta

Appendix M – Public Hearing and 60-Day Plan Adoption Notices, Hearing Agendas, and Adoption Resolution

Appendix N – Copies of Comments Received and Responses

2.0 Plan Preparation

As a wholesale water provider delivering more than 3,000 AF of water annually, Calleguas is required to prepare an UWMP to meet requirements of the Urban Water Management Planning Act. The intent of this plan is to provide information regarding Calleguas' current and future water supplies and water resource needs. Specifically, the UWMP presents water supply planning associated with a 25-year planning period (in 5-year increments); identifies and quantifies adequate water supplies for existing and future demands during normal conditions, single dry-year conditions, and five consecutive dry years; demonstrates conservation methods and efficient use of urban water supplies; and provides information about the District's water shortage contingency planning, including planning for catastrophic interruptions of water supply.

UWMPs must be submitted to and reviewed by the California Department of Water Resources (DWR). For each effort, DWR has issued a guidebook outlining the specific information required by the UWMP Act, as well as the criteria used by DWR staff in reviewing the UWMP for completeness. DWR's draft 2020 UWMP Guidebook was released in September 2020 and a revised version released in March 2021. To meet the July 1, 2021 submittal deadline, activities related to the Calleguas 2020 UWMP were performed according to the schedule outlined in Table 2-1.

Table 2-1. Plan Completion Schedule

Timeframe	Task
March 2020 and October 2020	Request purveyor supply & demand projections via questionnaire
November 2020	Distribute Notice of Preparation to solicit stakeholder input
March 2020 – December 2020	Compile information
March 2020 – February 2021	Develop draft reports
January 2021 – March 2021	Subject discussed at each Purveyor meeting
February 2021	Internal review of draft reports
February 2021	Send draft UWMP, draft WSCP, and draft supply and demand forecasts to Purveyors
March 24, 2021	Issue draft final reports and 60-day notification of public hearing
April 15, 2021	Community informational meeting (virtual)
June 2, 2021	Public hearing
June 2, 2021	UWMP and WSCP adoption by Calleguas Board of Directors
Prior to July 1, 2021	Submit UWMP and WSCP to DWR

To prevent confusion and facilitate electronic submission of the required information, this document has been organized to match the structure laid out in DWR's 2020 UWMP Guidebook. To minimize reporting redundancy, water management activities undertaken by Calleguas' purveyors are not discussed in detail in this document, as they are addressed in the individual UWMPs of those purveyors.

A checklist of specific UWMP requirements is included as Appendix A. This checklist provides the section where each required element is addressed, to assist DWR's review of the submitted UWMP.

Water agencies may develop UWMPs individually or cooperatively with regional partners. As shown in Table 2-2, Calleguas has elected to develop an individual UWMP that reports solely on its service area.

<table>
<tr><th colspan="4">Table 2-2. Plan Identification</th></tr>
<tr><th>Select Only One</th><th colspan="2">Type of Plan</th><th>Name of RUWMP or Regional Alliance</th></tr>
<tr><td>☑</td><td colspan="3">Individual UWMP</td></tr>
<tr><td></td><td>☐</td><td>Water Supplier is also a member of a RUWMP</td><td></td></tr>
<tr><td></td><td>☐</td><td>Water Supplier is also a member of a Regional Alliance</td><td></td></tr>
<tr><td>☐</td><td colspan="2">Regional Urban Water Management Plan (RUWMP)</td><td></td></tr>
</table>

Table 2-3 identifies Calleguas as a wholesale agency and indicates that the data presented in this UWMP are for calendar years and have units of AF, unless otherwise noted.

<table>
<tr><th colspan="2">Table 2-3. Supplier Identification</th></tr>
<tr><td colspan="2">Type of Supplier</td></tr>
<tr><td>☑</td><td>Supplier is a wholesaler</td></tr>
<tr><td>☐</td><td>Supplier is a retailer</td></tr>
<tr><td colspan="2">Fiscal or Calendar Year</td></tr>
<tr><td>☑</td><td>UWMP Tables are in calendar years</td></tr>
<tr><td>☐</td><td>UWMP Tables are in fiscal years</td></tr>
<tr><td colspan="2">Units of measure used in UWMP</td></tr>
<tr><td>Unit</td><td>AF</td></tr>
</table>

Calleguas has coordinated its UWMP planning efforts with Metropolitan and its purveyors to ensure that the information presented herein is accurate. Table 2-4 lists the water supply agencies that were informed of available water supplies.

Table 2-4. Water Supplier Information Exchange	
☑	Supplier has informed more than 10 other water suppliers of water supplies available in accordance with Water Code Section 10631.
☐	Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with Water Code Section 10631.

Water Supplier Name
Berylwood Heights Mutual Water Company
Brandeis Mutual Water Company
Butler Ranch Mutual Water Company
California-American Water Company
California Water Service Company
Camrosa Water District
City of Camarillo
City of Oxnard*
City of Thousand Oaks
Crestview Mutual Water Company
Golden State Water Company
Pleasant Valley Mutual Water Company
Solano Verde Mutual Water Company
Triunfo Water and Sanitation District – formerly Oak Park Water Service
Ventura County Waterworks District No. 1 (VCWWD No. 1)
Ventura County Waterworks District No. 8 (VCWWD No. 8)†
Ventura County Waterworks District No. 19 (VCWWD No. 19)
Ventura County Waterworks District No. 38 (VCWWD No. 38) – formerly Lake Sherwood Community Services District (CSD)
Zone Mutual Water Company

NOTES: *Calleguas indirectly serves the Port Hueneme Water Agency (PHWA) via the City of Oxnard. PHWA serves the City of Port Hueneme, Channel Islands Beach Community Services District, and the Naval Base Ventura County.
†Calleguas indirectly serves VCWWD No. 17 (Bell Canyon) via VCWWD No. 8.

The information included in the 2020 UWMP represents the most current and available planning projections of supply capability and demand developed through a collaborative process. Table 2-5 lists the organizations and agencies that Calleguas coordinated with as part of the development of this UWMP, along with a description of the level of participation.

Table 2-5. UWMP Coordination

Organization/Agency Name	Level of Participation
Berylwood Heights Mutual Water Company	Retail agency provided projected local production. Was sent a copy of the UWMP.
Brandeis Mutual Water Company	Was sent a copy of the UWMP.
Butler Ranch Mutual Water Company	Retail agency provided projected local production. Was sent a copy of the UWMP.
California American Water Company	Was sent a copy of the UWMP.
California Department of Water Resources	Was sent a copy of the UWMP.
California Water Service Company	Was sent a copy of the UWMP.
Camrosa Water District	Retail agency provided projected local production. Was sent a copy of the UWMP.
City of Camarillo	Retail agency provided projected local production. Noticed of UWMP update at least 60 days prior to public hearing. Was sent a copy of the UWMP.
City of Moorpark	Noticed of UWMP update at least 60 days prior to public hearing. Was sent a copy of the UWMP.
City of Oxnard	Retail agency provided projected local production. Noticed of UWMP update at least 60 days prior to public hearing. Was sent a copy of the UWMP.
City of Simi Valley	Retail agency provided projected local production. Was sent a copy of the UWMP.
City of Port Hueneme	Retail agency provided projected local production. Noticed of UWMP update at least 60 days prior to public hearing. Was sent a copy of the UWMP.
City of Thousand Oaks	Retail agency provided projected local production. Noticed of UWMP update at least 60 days prior to public hearing. Was sent a copy of the UWMP.
Crestview Mutual Water Company	Retail agency provided projected local production. Was sent a copy of the UWMP.
Farm Bureau of Ventura County	Was sent a copy of the UWMP.
Fox Canyon Groundwater Management Agency	Was sent a copy of the UWMP.
Golden State Water Company	Retail agency provided projected local production. Was sent a copy of the UWMP.
Ventura Local Agency Formation Commission (LAFCo)	Was sent a copy of the UWMP.
Metropolitan Water District of Southern California	Wholesale agency provided information regarding available water supplies and projected demands.
Pleasant Valley Mutual Water Company	Was sent a copy of the UWMP.
Solano Verde Mutual Water Company	Was sent a copy of the UWMP.

Table 2-5. UWMP Coordination

Organization/Agency Name	Level of Participation
Southern California Association of Governments	Was sent a copy of the UWMP.
Triunfo Water and Sanitation District (formerly Oak Park Water Service)	Retail agency provided projected local production. Was sent a copy of the UWMP.
United Water Conservation District	Was sent a copy of the UWMP.
County of Ventura, County Executive Office	Noticed of UWMP update at least 60 days prior to public hearing.
VCWWD No. 1	Retail agency provided projected local production. Was sent a copy of the UWMP.
VCWWD No. 8	Was sent a copy of the UWMP.
VCWWD No. 19	Retail agency provided projected local production. Was sent a copy of the UWMP.
VCWWD No. 38 (formerly Lake Sherwood CSD)	Was sent a copy of the UWMP.
Zone Mutual Water Company	Retail agency provided projected local production. Was sent a copy of the UWMP.

3.0 System Description

3.1 GENERAL DESCRIPTION

Calleguas is an independent special district that was formed by the voters of southern Ventura County in 1953 for the purpose of providing a safe, reliable water supply. Named for the watershed in which it is located, the district is a public agency established under the Municipal Water District Act of 1911. It is governed by a five-member board of directors elected by voters to represent each of the five geographic divisions within the District.

In 1960, Calleguas became a member agency of the Metropolitan Water District of Southern California (Metropolitan), which provides wholesale water from the Colorado River via the Colorado Aqueduct and from northern California via the State Water Project (SWP). Metropolitan is comprised of 26 member agencies, and as of fiscal year 19-20, Calleguas is the sixth largest member agency in terms of annual imported water deliveries.

Approximately three-quarters of Ventura County residents (roughly 645,000 people) rely on Calleguas for all or part of their water. Calleguas distributes high-quality drinking water on a wholesale basis to 19 cities, local water agencies, and investor-owned and mutual water companies throughout southeast Ventura County. These retail purveyors receive water through about 130 miles of large-diameter pipeline operated and maintained by Calleguas. In turn, these purveyors (listed below) deliver water to area residents, businesses, and agricultural customers. Only a small portion of the water delivered by Calleguas (approximately 5 percent) is used for agricultural purposes. Agricultural demands are generally met by other agencies or private entities using untreated surface water, recycled wastewater, and groundwater from various basins underlying the area.

Calleguas MWD Purveyors and Communities Served

- **Berylwood Heights Mutual Water Company.** A private agricultural water supplier located in an unincorporated area west of Moorpark. It is supplied by groundwater, with potable water from Calleguas used rarely as a backup supply.
- **Brandeis Mutual Water Company.** A private domestic water system serving the campus of American Jewish University, located on the southeast edge of Simi Valley. Its entire supply is potable water from Calleguas.
- **Butler Ranch Mutual Water Company.** A private water supplier located in an unincorporated area west of Simi Valley. To date, the property has not been developed and it has not used Calleguas water.
- **California-American Water Company.** An investor-owned domestic water supplier serving western Thousand Oaks including the community of Newbury Park, and an unincorporated area north of Camarillo. Its entire supply is potable water from Calleguas.
- **California Water Service Company.** An investor-owned domestic water supplier serving eastern areas of the City of Thousand Oaks, including the community of Westlake Village. It is supplied by recycled water from Triunfo Water and Sanitation District and potable water from Calleguas.
- **Camrosa Water District.** A public domestic and agricultural water supplier serving eastern Camarillo and the unincorporated Santa Rosa Valley. It is supplied by groundwater, recycled wastewater, and Calleguas potable water.

- **City of Camarillo.** A municipal domestic water supplier serving portions of the City of Camarillo west of Calleguas Creek. It is supplied by groundwater, recycled wastewater, and Calleguas potable water.
- **City of Oxnard.** A municipal domestic water supplier serving the City of Oxnard. It is supplied by groundwater, recycled wastewater, and Calleguas potable water.
- **City of Thousand Oaks.** A municipal domestic water supplier serving the central part of the City of Thousand Oaks. Its entire supply is potable water from Calleguas.
- **Crestview Mutual Water Company.** A private domestic water supplier serving the western part of the city of Camarillo. It is supplied by groundwater and Calleguas potable water.
- **Golden State Water Company.** An investor-owned domestic water supplier serving the eastern portion of the City of Simi Valley. It is supplied by groundwater and Calleguas potable water.
- **Triunfo Water and Sanitation District (formerly Oak Park Water Service).** A public domestic water supplier serving the unincorporated community of Oak Park. It is supplied by recycled water and Calleguas potable water.
- **Pleasant Valley Mutual Water Company.** A private domestic water supplier serving an unincorporated area north of Camarillo. It is supplied by groundwater and Calleguas potable water.
- **Solano Verde Mutual Water Company.** A private domestic and agricultural water supplier in the northwestern portion of the Las Posas Valley. Its entire supply is potable water from Calleguas.
- **Ventura County Waterworks District No. 1.** A public domestic and agricultural water supplier serving the City of Moorpark and surrounding unincorporated areas. It is supplied by groundwater, recycled wastewater, and Calleguas potable water.
- **City of Simi Valley/Ventura County Waterworks District No. 8.** A public domestic water supplier serving a majority of the City of Simi Valley and nearby unincorporated areas. It is supplied by recycled water and Calleguas potable water.
- **Ventura County Waterworks District No. 19.** A public domestic and agricultural water supplier serving the unincorporated area around Somis. It is supplied by groundwater and Calleguas potable water.
- **Ventura County Waterworks District No. 38.** A public domestic water supplier serving unincorporated areas surrounding Lake Sherwood, south of the City of Thousand Oaks. It is supplied by recycled water from Triunfo Water and Sanitation District and potable water from Calleguas.
- **Zone Mutual Water Company.** A private agricultural water supplier serving the unincorporated area around Somis. It is supplied by groundwater, with potable water from Calleguas used in limited quantities for salt management purposes.

The following communities are indirectly served by Calleguas through the City of Oxnard:

- **Channel Islands Beach Community Services District.** A public domestic water supplier serving the unincorporated communities of Hollywood by the Sea and Silver Strand. It is supplied by the Port Hueneme Water Agency (PHWA) with groundwater and Calleguas potable water.
- **City of Port Hueneme.** A municipal domestic water supplier serving the City of Port Hueneme. It is supplied by PHWA with groundwater and Calleguas potable water.

- **Naval Base Ventura County.** The Navy operates its own water systems at Point Mugu and Port Hueneme. It is supplied by PHWA with groundwater and Calleguas potable water.

The following community is indirectly served by Calleguas through Ventura County Waterworks District No. 8:

- **Ventura County Waterworks District No. 17.** A public domestic water system serving an unincorporated area in Bell Canyon. Its entire supply is potable water from Calleguas.

Figure 3-1 shows Calleguas' service area and purveyor boundaries. Calleguas' service area encompasses approximately 366 square miles. Land use in the area is primarily residential, commercial, industrial, and agricultural. Although a large portion of the water use in Ventura County is for agricultural purposes, these demands are generally served by other agencies or private entities using untreated surface water, recycled wastewater, and groundwater from various basins underlying the area.

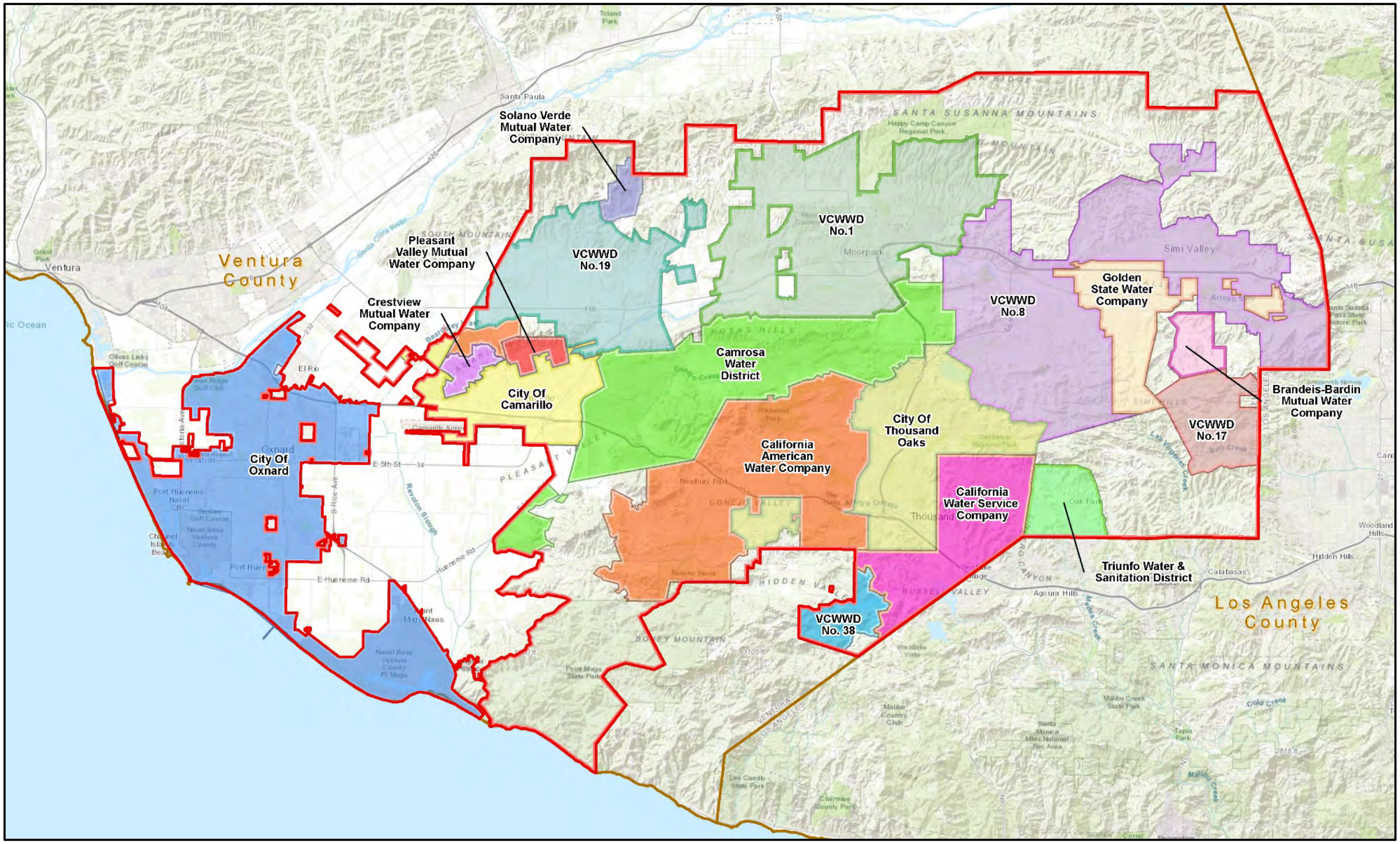

Figure 3-1 Calleguas MWD Service Area and Purveyors

3.2 DISTRIBUTION SYSTEM FACILITIES

Calleguas' system includes transmission pipelines, purveyor turnouts, flow and pressure regulating facilities, hydroelectric generating stations, pump stations, and reservoirs. The following description of Calleguas' system is summarized from the *2017 Potable Water Master Plan Update* (February 2017).

3.2.1 Service Regions

Calleguas provides potable imported water to 19 retail water purveyors located within the following five service regions: Simi Valley, Conejo Valley, Oak Park, Las Posas, and Camarillo. The service area is divided into 12 pressure zones with each zone's hydraulic grade regulated by one or more facilities.

Supply from Metropolitan enters the Calleguas system in the Simi Valley Region via the Calleguas Conduits (North Branch and South Branch). From there, the water is either pumped into the Oak Park Region or pressure/flow regulated to the Conejo Valley, Las Posas, and Camarillo Regions. The Simi Valley, Conejo Valley, and Oak Park Regions are referred to as the Upper Zone and the Las Posas and Camarillo Regions are referred to as the Lower Zone. Figure 3-2 shows the service regions and the Upper and Lower Zones.

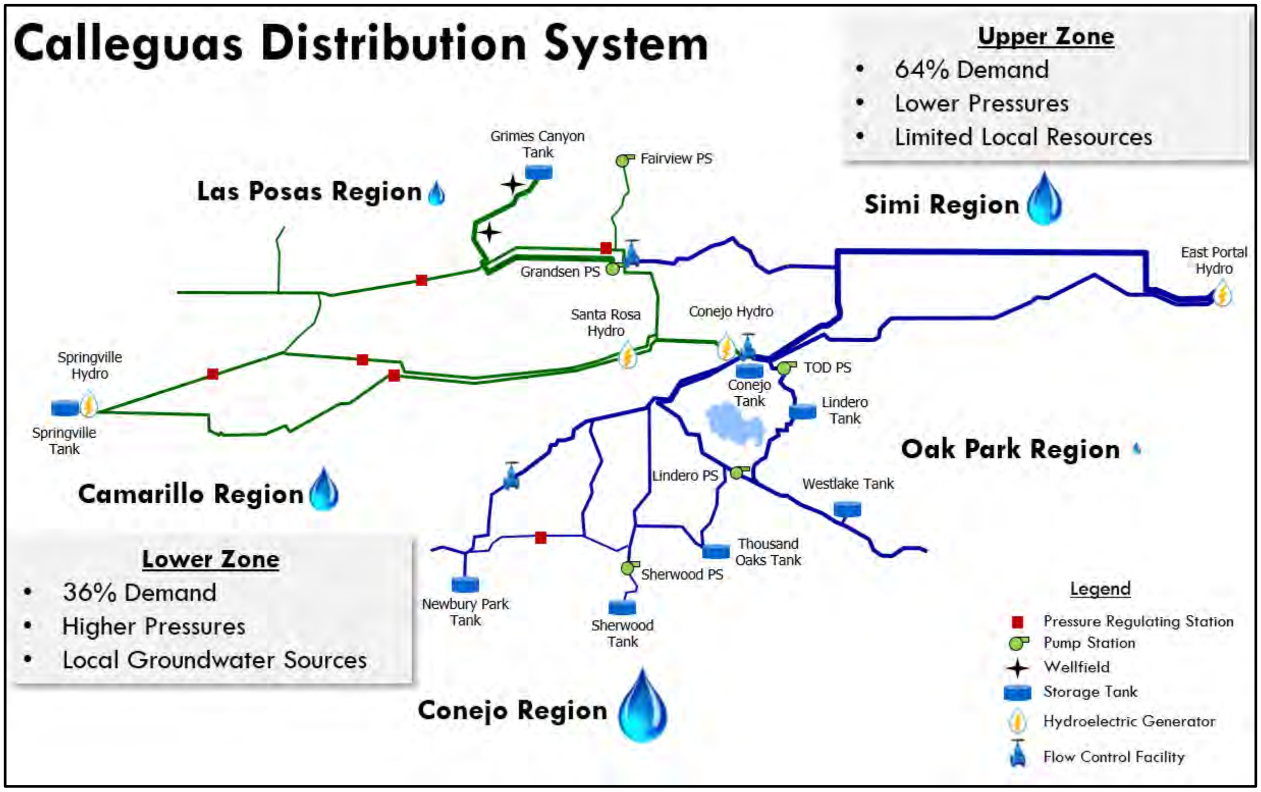

Figure 3-2 Calleguas MWD Service Regions and Major Facilities

3.2.2 Facilities

Pipelines and Turnouts. Calleguas operates a potable water transmission system consisting of about 130 miles of major transmission pipelines ranging from 14 to 78 inches in diameter. This system currently supplies 91 purveyor turnouts. The turnouts are all automated to accurately monitor and document flow deliveries to purveyors.

Regulating and Hydroelectric Generating Stations. The Calleguas service area ranges in elevation from approximately 1,200 feet above mean sea level (ft msl) near the East Portal to about 300 ft msl at the system's western terminus. Due to this range in elevation, Calleguas operates 20 pressure regulating stations and five hydroelectric generating stations. The hydroelectric generating stations are the Conejo, East Portal, Springville, Santa Rosa, and Grandsen stations.

Pump Stations. Calleguas owns and operates six potable water pump stations:

- Conejo Pump Station
- Fairview Pump Station
- Lake Sherwood Pump Station
- Lindero Pump Station
- TOD Pump Station (Formally known as Lindero Pump Station No. 2.)
- Grandsen Pump Station

Conejo Pump Station is only operated when Lake Bard supplies the system and water must be boosted to the Upper Zone. Grandsen Pump Station only operates when the Las Posas Wellfields No. 1 and No. 2 (Wellfields) supply the system.

Enclosed Reservoirs. Calleguas has twelve enclosed potable water storage reservoirs totaling approximately 59 million gallons (MG), which includes two 4-MG clearwells[1] at the Lake Bard Water Filtration Plant (WFP). The reservoirs provide operational storage for the system to help meet peak hourly demands.

Lake Bard and Lake Bard Water Filtration Plant. Lake Bard is located in the center of the Calleguas service area and is owned and operated by Calleguas. It is an earthen open-surface reservoir with a total storage capacity of 10,500 AF. Water stored in Lake Bard is treated at the Lake Bard WFP, which has a treatment capacity of 65 million gallons per day (mgd). Due to hydraulic constraints through Lake Bard WFP, only 7,500 AF can be treated and delivered as potable water. The remaining 3,000 AF are available as an emergency non-potable supply. Water from the Lake Bard WFP can be delivered anywhere in Calleguas' service area.

Las Posas Aquifer Storage and Recovery Project (Las Posas ASR Project). The Las Posas ASR Project (also known as the Wellfield) is located west of Moorpark and is owned and operated by Calleguas. It consists of 18 dual-purpose wells which can inject imported water into the East Las Posas groundwater basin for storage when excess supplies are available and extract the stored water in times of emergency or during scheduled events when transmission pipes or system facilities are taken offline for maintenance. The Grandsen Pump Station enables Las Posas ASR Project water to be delivered to Calleguas' entire service area.

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[1] A clearwell is an enclosed tank at a water treatment plant that stores water to provide chlorine contact time for final disinfection of the filtered water. When Lake Bard WFP is in service, a portion of each clearwell is used for contact time.

The Wellfield produces higher quality water if imported water is injected immediately prior to extraction, which is the practice before a planned, short-term outage of imported supplies. However, if the outage is not planned, the water may contain concentrations of manganese and iron that result in visible color. While this does not pose a health risk, it does represent a potential aesthetic issue.

Non-Potable Water Systems. Calleguas operates the Salinity Management Pipeline (SMP), which collects salty water generated by groundwater desalting facilities and excess recycled water and conveys that water for safe discharge to the ocean, where natural salt levels are higher. The SMP facilitates the development of local water supply projects to maximize the use of available water supplies. The recycled water system and the SMP play an important role in reducing Calleguas' potable water demands. Additionally, Calleguas operates a small non-potable water system, which includes facilities to deliver recycled water primarily for irrigation purposes in Simi Valley.

3.3 SERVICE AREA CLIMATE

Like many regions in coastal southern California, the climate in Ventura County varies based on proximity to the ocean. Areas closest to the coast experience mild summers and winters, while inland areas experience warmer summers and mild winters. In the summer, high temperatures average in the high-70s (degrees Fahrenheit) and winter low temperatures average in the mid-40s. Typically, Calleguas' service area receives an average of 10 to 13 inches of precipitation annually with the majority of this rainfall occurring during the winter months. Table 3-1 presents monthly average climatic data for Calleguas' service area. As discussed in Section 7.1.1.3, climate modeling conducted for Ventura County[2] estimates that over the next 20 years inland air temperature is likely to increase at least 3-5 °F and coastal air temperature will increase at least 2-3 °F, on average.

Table 3-1. Monthly Average Climate Data Summary for Ventura County(1)

Month	Standard Monthly Average ETo (inches)	Average Total Precipitation (inches)	Average Temperature (degrees Fahrenheit)	
			Maximum	Minimum
January	2.51	2.49	68.03	45.01
February	2.69	2.37	67.41	44.22
March	3.96	1.82	69.39	45.92
April	4.77	0.86	70.88	47.16
May	5.20	0.52	71.25	50.08
June	5.43	0.31	74.59	54.36
July	6.07	0.36	79.12	57.94
August	5.73	0.32	79.76	57.27
September	4.51	0.33	79.80	55.78
October	3.64	0.75	77.42	52.25
November	2.81	0.93	73.07	47.50
December	2.28	2.15	66.90	44.03

(1) From the California Irrigation Management Information System (CIMIS) website http://www.cimis.water.ca.gov. Data shown is the average of the Camarillo 152 station from January 2000 through January 2020 and the Moorpark 217 station from July 2014 through January 2020.

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[2] Oakley, N.S., Hatchett, B.J., McEvoy, D., Rodriguez, L., 2019. Projected Changes in Ventura County Climate. Western Regional Climate Center, Desert Research Institute, Reno, Nevada. Available at: wrcc.dri.edu/Climate/reports.php

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

3.4.1 Service Area Population

Metropolitan developed population projections through 2045 for the Calleguas service area. For Ventura County, Metropolitan uses demographic growth projections produced by Southern California Association of Governments (SCAG), a regional transportation planning agency. SCAG produces long-term transportation plans for sustainable communities in addition to preparing regional projections of populations, households, income, and employment. SCAG's regional growth forecasts are updated approximately every four years. SCAG approved Connect SoCal – The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy in September 2020. SCAG's related growth forecast (RTP-20) projects growth in population, households, and employment for County-level and local jurisdictions.

Metropolitan developed population projections in 5-year increments through 2045 for Calleguas' service area, based on the RTP-20. Table 3-2 lists Metropolitan's population projections for the Calleguas service area through the year 2045.[3]

Table 3-2. Population - Current and Projected (DWR Submittal Table 3-1)

Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	644,441	669,437	679,367	689,762	699,089	708,575

3.4.2 Other Social, Economic, and Demographic Factors

While the Calleguas service area encompasses many of the cities in Ventura Country, the service area is predominately suburban with a majority of water demand utilized for residential end uses. A concentration of large commercial, industrial, and institutional (CII) water users can be found in the greater Conjeo Valley area and within the City of Oxnard. Imported water does support a small portion of agriculture (AG) in the Calleguas service area with AG water users primarily located in the Las Posas Valley Basin, Pleasant Valley Basin, and the Oxnard Subbasin areas.

Over time, the District expanded its service area to the west through annexation of small communities and traditionally agricultural areas. A significant portion of agricultural lands and open spaces adjacent to the District's western boundary fall under the Ventura County Save Open Space & Agricultural Resources (SOAR) initiatives. SOAR requires a majority vote of the people to rezone unincorporated open space, agricultural, or rural land for development. In 2016, voters approved renewal of SOAR to 2050. It is anticipated that many of these areas will remain outside the Calleguas service area for the foreseeable future.

Due to the Coronavirus (COVID-19) Pandemic, the unemployment rate for Ventura County peaked in April 2020 at an estimated 13.9%. As of October 2020, the level of unemployment for the labor force residing in the Calleguas service area is estimated at 5.0%.[4] This is relatively in-line with overall Ventura County estimates of a 7.1% unemployment rate.[5]

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[3] The 2020 UWMP covers required data and analysis through at least the year 2040. Many DWR Submittal Tables throughout the UWMP have an optional: *2045(opt)*, column for the year 2045.

[4] American Community Survey (ACS) B23025 – Employment Status for the Population 16 Years and Older

[5] https://data.vcstar.com/unemployment/ventura-county-ca/CN0611100000000/

Table 3-3. Unemployment Rate: Calleguas and Related Areas (Oct. 2020)

Area	Net Seasonally Adjusted			
	Rate	Unemployment	Employment	Labor Force
Calleguas Service Area	5.0%	17,184	340,708	357,892
Ventura County	7.1%	29,958	390,071	420,029
California	8.7%	1,682,556	17,606,781	19,289,337
Camarillo (City)	6.5%	2,195	31,796	33,991
Moorpark (City)	6.1%	1,177	18,152	19,329
Oxnard (City)	8.3%	8,289	91,970	100,259
Ventura (City)	6.8%	3,789	52,093	55,882
Santa Paula (City)	10.1%	1,386	12,283	13,669
Simi Valley (City)	6.6%	4,453	62,611	67,064
Thousand Oaks (City)	6.2%	3,943	60,097	64,040

Employment data for Calleguas was modeled with American Community Survey (ACS) B23025 – Employment Status for the Population 16 Years and Older and visualized in Figure 3-3.

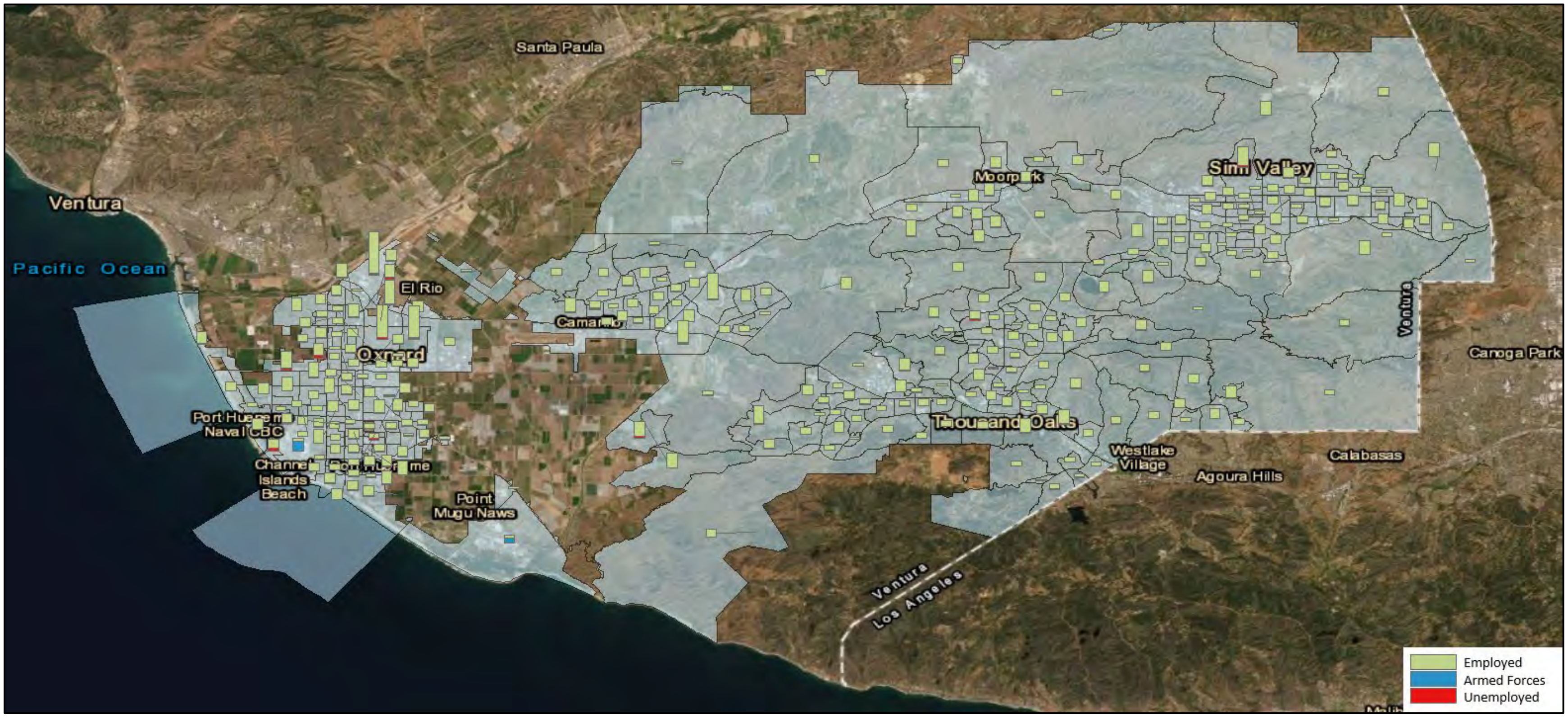

Figure 3-3 Employment in the Calleguas MWD Service Area

DWR provides a mapping tool that displays Median Household Income (MHI) in determining areas that may qualify as a Disadvantaged Community (DAC).[6] Figure 3-4 identifies the DACs in and around the Calleguas service area (shown in blue).

As shown in Figure 3-5, a concentration of DACs can be found in the western portion of the District's service area, within and adjacent to the City of Oxnard. A portion of these DACs lie outside the Calleguas service area and rely on water service from a small community water system (CWS) or other means of local supply production. As an example, five mutual water companies provide service to small area within the incorporated area of Oxnard. Occasionally, some of these small systems suffer crises of well failures or other supply disruptions that necessitate emergency water service from the City of Oxnard. Calleguas continues to monitor and investigate options that could bring long-term drinking water solutions to these areas.

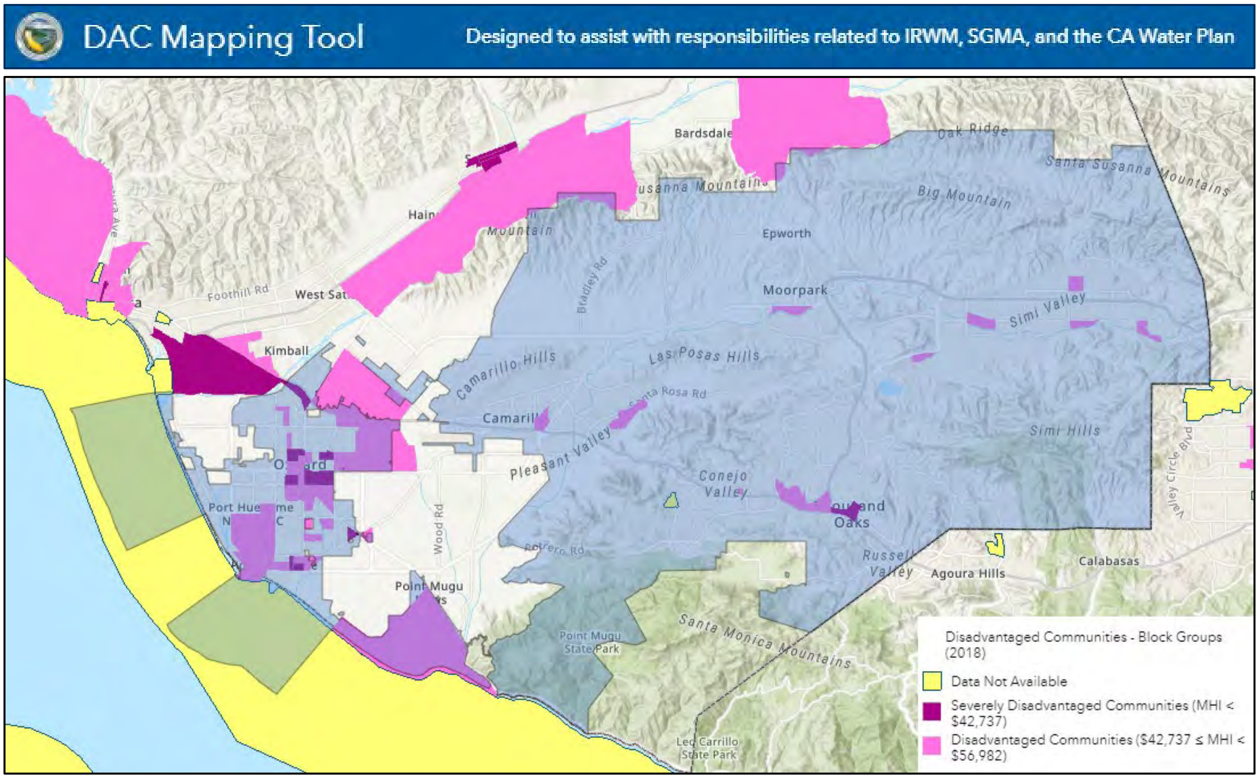

Figure 3-4 Disadvantaged Communities in the Calleguas MWD Service Area

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[6] DWR DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/

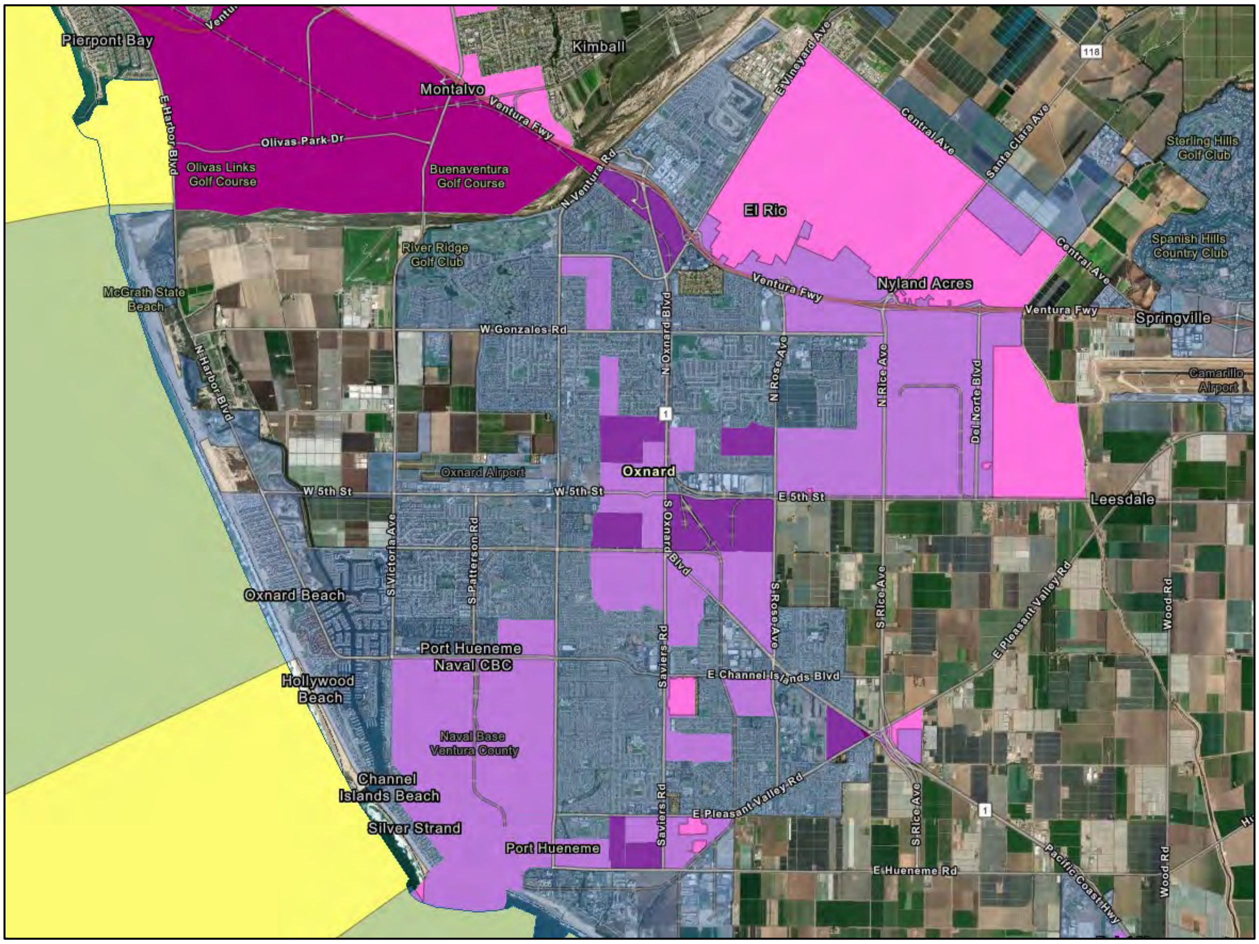

Figure 3-5 Disadvantaged Communities in the Oxnard Area of Calleguas MWD Service Area

3.4.3 Land Uses and Development Standards within Service Area

Water resources in Ventura County include imported water, groundwater, recycled water, and surface water. Within the Calleguas service area, cities and unincorporated county areas have varying degrees of access to and reliance on the different water sources. City and County General Plans provide frameworks to manage water, recognizing that land use decisions affect water demand now and into the future and affect water quality and availability.

Calleguas directly serves imported water to the Cities of Simi Valley, Moorpark, Thousand Oaks, Camarillo, and Oxnard, and unincorporated areas of Ventura County. On January 11, 2021, Calleguas circulated a survey to the planning departments of these cities and the County to solicit input on current and future land use patterns that may affect water use and overall demands, and all recipients responded. A copy of the survey is included in Appendix B.

Relevant planning and land use documents[7] for each local jurisdiction were also reviewed for current and projected land uses. The following discussion reflects input received by the city and county planning agencies with regard to current and future land uses in the Calleguas service area, and the expected impact on water demands. For specific water demand projections, see Section 4.2.

The predominant land uses in the Calleguas service area are residential development and open space. Developed areas are primarily built out, due to topographic restrictions (such as the hills and mountains surrounding the Cities of Simi Valley, Thousand Oaks, and Moorpark) as well as regulatory constraints such as the SOAR ordinances. In addition to the County SOAR ordinance that applies to unincorporated Ventura County, Camarillo, Oxnard, Simi Valley, Thousand Oaks, and Moorpark have enacted SOAR ordinances to establish voter-controlled urban growth boundaries, known as City Urban Restriction Boundaries (CURBs). CURBs are lines around each city that require voter approval to allow city annexation and development of land outside of the CURB boundary.

Several large undeveloped areas exist within the Oxnard CURB that either have developed since adoption of the CURB or are likely to fully develop by 2030. According to the City of Oxnard 2030 General Plan, once these areas are developed, additional development would have to be largely redevelopment within the CURB or by amending and expanding the CURB with voter approval. Within other cities and communities of the Calleguas service area, future growth is also expected to consist mainly of infill developments and redevelopment of properties that are vacant, underutilized, or contain obsolete development. The majority of new residential development in incorporated cities is expected to be multi-family apartments and townhomes. Within the unincorporated areas of the County, the historic trend toward single-family housing is expected to continue, but accessory dwelling units and farmworker housing may increase in proportion to other residential developments due to anticipated County ordinance revisions.

Ventura County adopted its 2040 General Plan (County 2040 GP) in September 2020. The Water Resources Element of the County 2040 GP includes a number of goals and policies to improve and protect the County's long-term water supply, particularly in light of ongoing and emerging challenges related to climate change, drought, groundwater basin overdraft, new groundwater well prohibitions, and regulations affecting groundwater use. Goal WR-1 (To effectively manage water supply by adequately planning for the development, conservation, and protection of water resources for present and future generations) is supported by 14 policies including several that address imported water directly or indirectly. Policy WR-1.3 directs the County to support the development and maintenance of a diverse water supply portfolio. While imported water provides an important element of the overall portfolio, having diverse sources helps buffer against the unique challenges inherent to each. The importance of imported water is further demonstrated in Policy WR-1.4, which directs the County to continue to support the conveyance of, and seek to secure water from, State sources. Policy WR-1.7 supports continued cooperation among water suppliers to establish and maintain emergency inter-tie projects (See Section 6.7 for more information on inter-tie projects Calleguas is involved in). Policy WR-1.9 supports the use of groundwater basins for water storage, such as Calleguas' Las Posas ASR Project (see Section 3.2.2). Policy WR-1.11 requires new discretionary developments to demonstrate an adequate long-term supply of water, and Policy WR-1.14 requires new golf courses to utilize reclaimed water for irrigation where feasible.

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[7] Planning and land use documents that informed this discussion include the Simi Valley General Plan EIR – Section 4.10 (Land Use/Planning) (June 2010), MOORPARK 2020: An Examination of the City's Existing Conditions (draft; November 2020), Thousand Oaks Land Use and Community Design Existing Conditions Report (March 2020), City of Camarillo 2019 General Plan Annual Progress Report, City of Camarillo General Plan 2013-2021 Housing Element (2014), City of Oxnard 2030 General Plan Goals & Policies (2011, amended 2016), Ventura County 2040 General Plan (September 2020), and the Background Report for the Ventura County 2040 General Plan (September 2020).

Several cities in the Calleguas service area have also adopted goals, policies, and standards to address water supply with respect to current and future development in their respective jurisdictions. The City of Simi Valley adopted the California Green Building Standards Code and included an amendment to require builders to provide water efficient landscape irrigation design that reduces the use of potable water by 50 percent over maximum allowable water application standards. The City of Moorpark adopted its Water Efficient Landscape Ordinance, which establishes a structure for designing, installing, maintaining and managing water efficient landscapes in new and rehabilitated projects. The ordinance reduces water use to the lowest practical amount and sets an upper limit that shall not be exceeded. It also establishes provisions for water management practices and water waste prevention for established landscapes. The City of Thousand Oaks Municipal Code Section 10-2.1101 *et seq*. requires a variety of water conservation measures for existing and new developments, including progressively more stringent measures in the event of drought.

The current and projected water supply, use, and reliability analyses for the Calleguas service area as presented in this 2020 UWMP have been developed to consider these local goals, policies, and standards while also maintaining a conservative estimate to ensure that the reasonable worst-case scenario of water demand is addressed.

3.5 CHANGES TO THE SERVICE AREA

Calleguas, as a member agency of Metropolitan, provides imported water service to its member purveyors. Existing policies and agreements restrict such service to uses within Calleguas' boundaries to preserve the integrity of ratepayer investments. Section 5(a) of Calleguas Ordinance No. 12 provides that "the right of any Member Agency to water served by the District's facilities shall be restricted to the amount required for uses within the area of the District lying within the boundaries of such Member Agency" and that "no potable water ... produced by a Member Agency be sold or delivered for any use outside the District's boundaries ..." Therefore, any properties outside of Calleguas' boundaries must undergo annexation to both Calleguas and Metropolitan in order to receive imported municipal water service via a Calleguas member purveyor. Annexation is the administrative process of changing a public agency boundary to take in more land. Figure 3-6 provides an overview of the Calleguas annexation process.

When Calleguas joined Metropolitan in 1960, its service area was approximately 172,800 acres (270 square miles) and included the communities of Camarillo, Somis, Moorpark, Thousand Oaks, Newbury Park, Santa Susana, and Simi Valley. The City of Oxnard annexed to Calleguas shortly thereafter, and by 2010 the Calleguas service area had grown to 234,160 acres (366 square miles). The size and frequency of annexation cases has slowed considerably since 2000. As shown in Table 3-4, between 2010 and 2020 there have been nine annexations to Calleguas totaling 156 acres. The annexations ranged in size from 0.74 to 109.1 acres, with most under 10 acres. One annexation was in the Camarillo area and the others located in Oxnard. Future annexations are expected to continue this trend of an average of one, relatively small annexation completed per year. It is anticipated that future expansion of Calleguas' boundaries will primarily occur on the Oxnard Plain.

Table 3-4. Annexations to Calleguas MWD Since 2010

Annexation No.	Name	Completed	Acres	Location
94	California Conservation Corps	9/21/2010	17.0	Camarillo
95	Evergreen & Crossroads	12/20/2012	5.7	Oxnard
96	Paseo Nuevo	4/23/2012	4.9	Oxnard
97	Ventura Boulevard	12/12/2013	2.8	Oxnard
98	East Village Phase III	4/8/2014	109.1	Oxnard
100	Pleasant Valley Venture, LLC	1/26/2017	8.7	Oxnard
101	Ocean View Schools	8/27/2018	5.3	Oxnard
102	Dioji	7/30/2018	0.7	Oxnard
103	Cabrillo Economic Development Corporation	12/17/2019	2.0	Oxnard
		Total	156.2	-

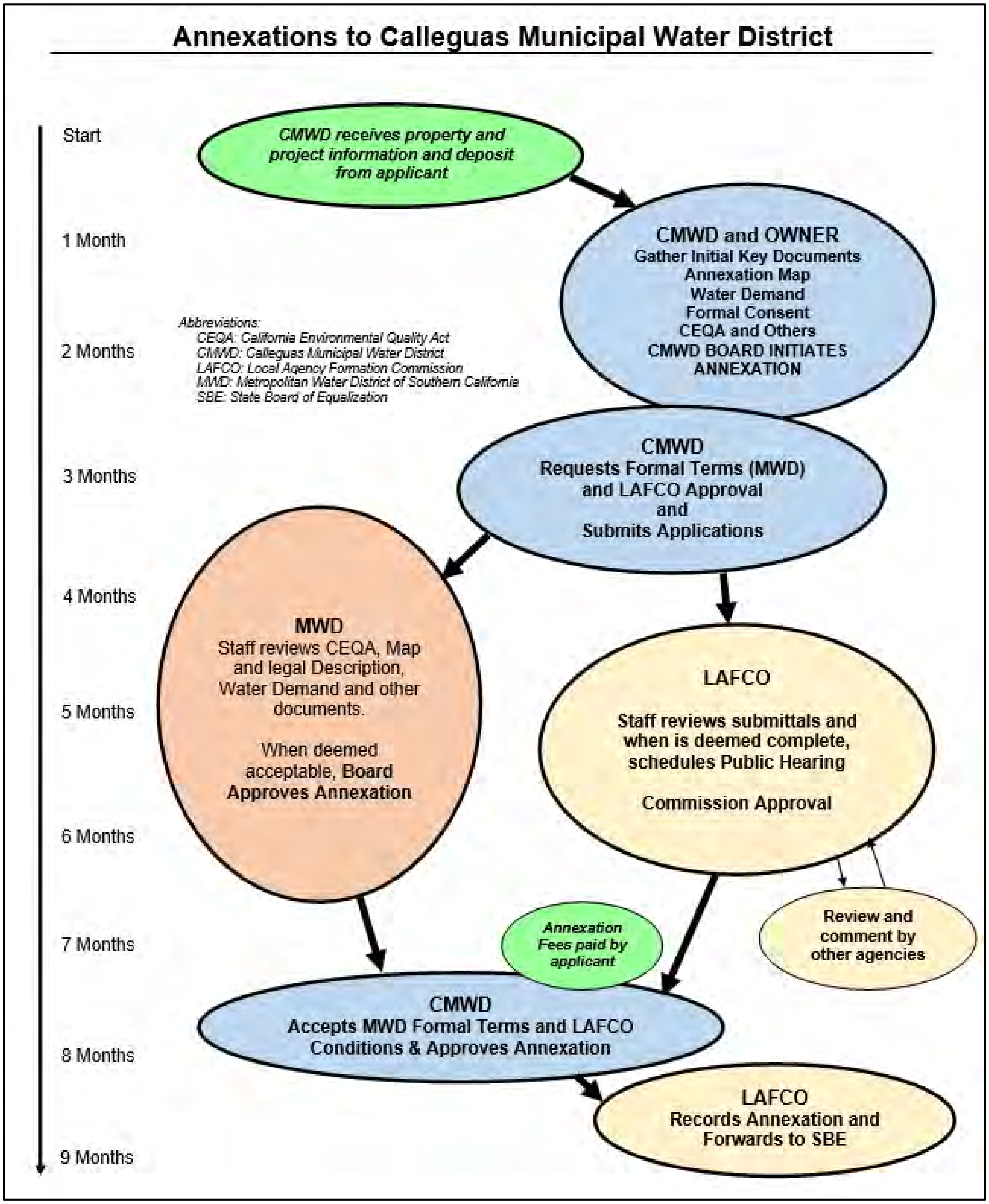

Figure 3-6 Calleguas MWD Annexation Process

4.0 Water Use Characterization

Water agencies must include past, current, and projected water use in the UWMP in five-year increments through at least the year 2040. Water agencies must also identify the water use by sector to the extent that records are available.

This chapter addresses water use characteristics and projected water demands on Calleguas.

4.1 WATER USES BY SECTOR

Sales to other agencies account for 100 percent of Calleguas' water demands. Within Calleguas' service area, municipal and industrial uses account for approximately 95 percent of the imported water distributed by Calleguas. Agricultural uses account for the remaining 5 percent. These proportions are forecasted to remain constant throughout the planning period.

As shown in Figure 4-1, purveyors located in the Upper Zone of the Calleguas distribution system are nearly 100 percent reliant on imported water supplies. Purveyors located in the Lower Zone of the Calleguas distribution system have greater access to local water supplies and therefore less dependent on imported water supplies.

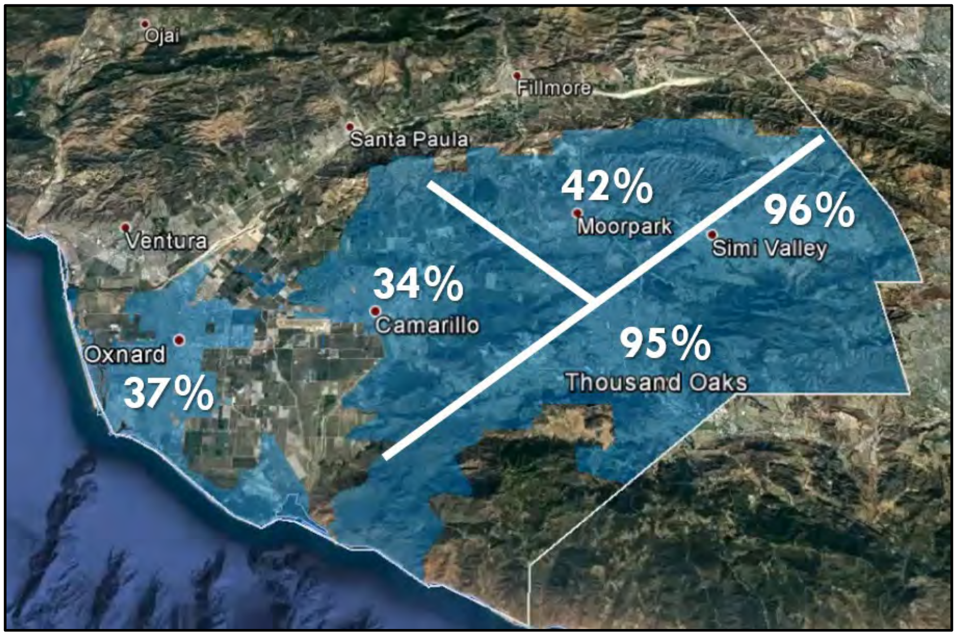

Figure 4-1 Dependence on Imported Water (CY 2019)

4.2 WATER DEMANDS

Calleguas calculates imported water demand as the total water demand for the Calleguas service area less local supplies:

Calleguas Imported Demand = Total Calleguas Service Area Demands – Local Supplies

Table 4-1 lists Calleguas' actual water demands and losses for 2020 and Figure 4-2 shows the distribution of water delivered by Calleguas to its purveyors in 2020. The losses shown in Table 4-1 were estimated using the American Water Works Association's (AWWA's) water audit tool as provided in Appendix C. See Section 4.3 for more detail on Calleguas efforts in tracking distribution system water losses.

Table 4-1. Demands for Potable and Non-Potable Water - Actual			
Use Type*	2020 Actual		
	Additional Description *(as needed)*	Level of Treatment When Delivered	Volume (AFY)
Sales to other agencies	Potable water from Metropolitan	Drinking Water	89,630
Losses	Potable water from Metropolitan	Drinking Water	581
Other	Potable water from Metropolitan	Drinking Water	1,729
		TOTAL	91,940
NOTES: *Based on Calleguas' 2020 delivery records. For "Other" demands, 1,729 AF put into storage (Lake Bard and Las Posas ASR) for CY 2020.			

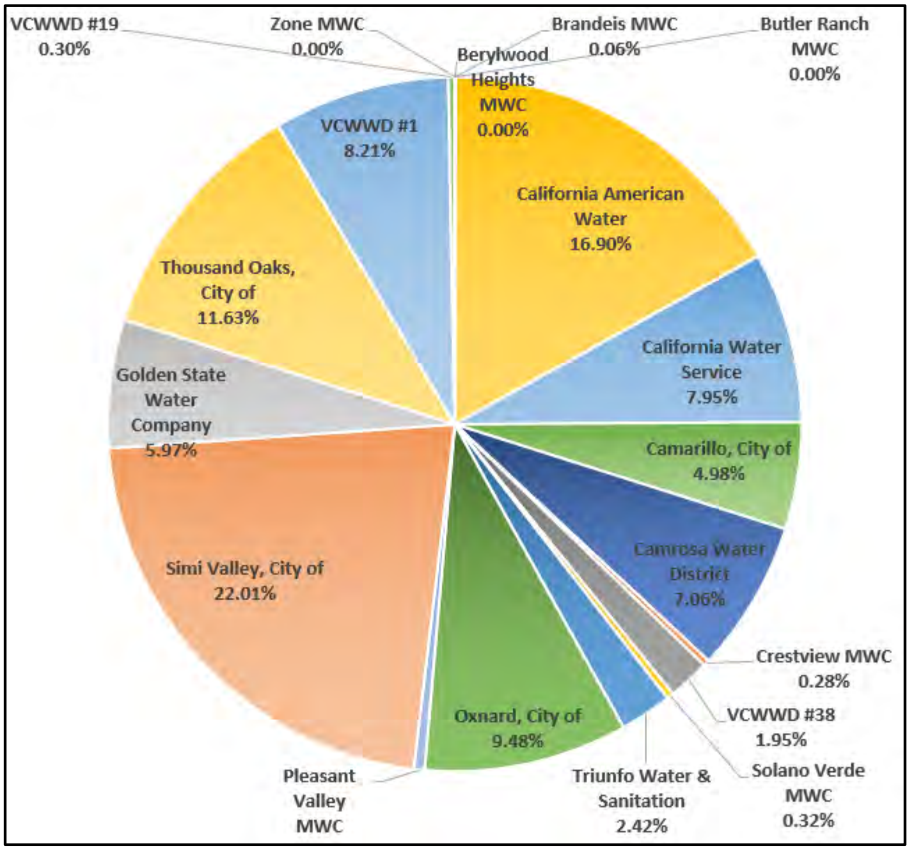

Figure 4-2 2020 Calleguas Water Deliveries

Table 4-2 lists the annual imported water demands anticipated through the planning period. The projections for "Sales to other agencies" are based on data provided by the Metropolitan Water District and consider expected population growth, planned land use, and water use trends. This data is provided in Appendix D.

Note that projected water demands are lower than in previous Calleguas UWMPs. From 2012-2016, a severe statewide drought in California led to a significant conservation campaign and water use restrictions implemented by water agencies resulting in an overall decrease in water demands. The decrease from projected water use listed in Table 4-2 when compared to the Calleguas 2015 UWMP can be attributed to this post-drought demand hardening effect.

Projected "Losses" are calculated by applying a water loss factor of 1% to sales projections. This is consistent with past projections of water loss for the District and its experience in tracking distribution system losses.

Finally, projections for "Other" demands are for replenishment water to the District's Las Posas ASR facility and Lake Bard. Both imported water storage points are designated as a critical source of outage water supply for Calleguas.

Table 4-2. Use for Potable and Raw Water - Projected

Use Type	Additional Description *(as needed)*	Projected Water Use (AFY)				
		2025	2030	2035	2040	2045 (opt)
Sales to other agencies	Potable water from Metropolitan (Consumptive Use)	85,352	86,465	88,625	90,071	90,529
Losses*	Potable water from Metropolitan	854	865	886	901	905
Other	Potable water from Metropolitan (Replenishment Water)	1,255	1,255	1,255	1,255	1,255
	TOTAL	87,461	88,585	90,766	92,227	92,689

NOTES: *"Losses" estimated by applying water loss factor (0.01) to projected "Sales to other agencies".

Table 4-3 lists the total potable and recycled water demands Calleguas anticipates through the planning period. Recycled water demands are discussed in detail in Chapter 6.

Table 4-3. Total Water Use (Potable and Non-Potable)

Use Type	2020	2025	2030	2035	2040	2045 (opt)
Potable and Raw Water *From Tables 4-1 and 4-2*	91,940	87,461	88,585	90,766	92,227	92,689
Recycled Water Demand *From Table 6-4*	57	80	80	80	80	80
TOTAL WATER DEMAND	91,997	87,541	88,665	90,846	92,307	92,769

4.3 DISTRIBUTION SYSTEM WATER LOSSES

Distribution system water losses (also known as “real losses”) are the physical water losses from the water distribution system and the supplier’s storage facilities, up to the point of customer consumption.

Calleguas water losses are primarily attributed to the unique configuration of its supply meters with Metropolitan’s system, evaporation from Lake Bard, treatment-related losses, and dewatering activities related to system maintenance.

The District may receive imported water supplies through 3 metered connections with Metropolitan: CA-01, CA-02, and CA-03. CA-02 is the District’s primary metered connection for imported water. All imported water converges to the District’s Santa Susana Tunnel, located in Chatsworth, CA, prior to entering the service area. A schematic of the District’s metered connections with Metropolitan is provided in Appendix E.

Calleguas produces a monthly Master Meters and Reservoirs Report that reconciles metered water volumes into and at various points in the distribution system against metered sales to the District’s purveyors. An example of this report for December 2020 is provided in Appendix F. Data from all Master Meters and Reservoirs Reports compiled in CY 2020 was utilized in conjunction with AWWA’s water audit tool to complete the “Volume of Water Loss” calculation. A copy of the model output summary page is included as Appendix C. As shown in Table 4-4, the tool estimated Calleguas’ water loss to be 581 AF.

Table 4-4. 12-Month Water Loss Audit Reporting

Reporting Period Start Date	Volume of Water Loss*
01/2020	581 AF

** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*

5.0 Conservation Target Compliance

On November 10, 2009 the California State Legislature passed Senate Bill 7 as part of the Seventh Extraordinary Session, referred to as SBX7-7. SBX7-7, also known as the Water Conservation Bill, mandated that the State of California achieve a 20 percent reduction in urban per capita water use by 2020.

SBX7-7 requires each urban retail water supplier to develop water use targets and agricultural water suppliers to implement efficient water management practices. Consequently, beginning in 2010, retail water suppliers documented historical per capita water use in their UWMPs and identified the means and methods for reducing per capita consumption 20 percent by 2020. In the 2020 UWMPs, each urban retail water supplier must demonstrate compliance with its established 2020 target, as identified in its 2015 UWMP.

Requirements associated with SBX7-7 for urban wholesale water suppliers are different than those for urban retail water suppliers. Most notably, since target per capita water use rates will be measured for compliance at the retail level, wholesale water suppliers are not specifically required to identify the per capita water use rates for each of their purveyors. However, wholesale water suppliers are expected to include an assessment of how water conservation programs and policies implemented by the wholesale water agency will help the retail suppliers in the service area achieve their SBX7-7 requirements.

As a wholesale water agency, Calleguas is not required to establish or report on an urban water use reduction target. However, Calleguas supports Metropolitan’s regional conservation programs that are designed to assist member agencies and retail water suppliers in the service area with complying with SBX7-7. These efforts include technical assistance, legislation, code and standards updates, and financial incentives where needed for market transformation to increase water use efficiency.

To increase public awareness of water resource issues and encourage a greater measure of water use efficiency, Calleguas has sponsored and/or actively coordinated various outreach programs. Among other efforts, in recent years, the District has hosted semi-annual native plant sales and rain barrel sales. Calleguas has also presented workshops to promote the use of California-friendly landscaping and turf alternatives, hosted graywater and rainwater capture workshops, and sponsors ongoing hands-on drip irrigation workshops presented by the UC Master Gardeners of Ventura County. Calleguas financed development of the *California True Colors Garden and Learning Center* in the City of Thousand Oaks in partnership with the UC Master Gardeners, the City of Thousand Oaks, and the Conejo Recreation and Park District. Calleguas staff routinely provides presentations on water resources matters to local political bodies and community and service organizations, maintains a robust social media presence as part of its communications strategy, and frequently publishes large, full-color display advertisements in local newspapers regarding the availability of consumer rebates for water saving devices.

More information on Calleguas’ public outreach and water use efficiency promotion activities can be found in Chapter 9.

6.0 System Supplies

This chapter discusses the supplies of water available to Calleguas and provides a high-level overview of the groundwater and recycled water conditions and activities within Calleguas' service area.

6.1 PURCHASED OR IMPORTED WATER

Due to the geographic location of its service area, Calleguas receives exclusively SWP water under normal Metropolitan operating conditions. The SWP is a 700-mile network of reservoirs, aqueducts, and pumping facilities that convey water from the northern Sierra Nevada Mountain Range to Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Water delivered to Calleguas is treated by Metropolitan at the Joseph Jensen Filtration Plant in Granada Hills and is typically delivered to Calleguas through Metropolitan's West Valley Feeder No. 2 Pipeline. The West Valley Feeder No. 2 Pipeline is capable of delivering up to 300 cubic feet per second (cfs) of water to the East Portal of Calleguas' eight-foot-diameter Santa Susana Tunnel (also known as the Perliter Tunnel). The East Portal, located in the community of Chatsworth, is Calleguas' sole connection to Metropolitan. From this point, water is conveyed through the Santa Susana Tunnel into Simi Valley, where it is distributed through Calleguas' transmission system, stored in Lake Bard, or injected into Las Posas ASR Project for storage. During planned and unplanned shutdowns of imported water supply, Lake Bard and the Las Posas ASR Project provide reliable water supplies to Calleguas' customers (see Chapters 3 and 8 for further details).

6.1.1 Water Quantity Challenges

The original SWP facilities, completed in the early 1970s, were designed to meet the needs of SWP contractors established at that time. It was anticipated that additional SWP facilities within the Sacramento/San Joaquin Delta (Delta) would be constructed over time to bolster long-term supply reliability. However, these additional facilities were deferred, and environmental regulations have greatly restricted water exports. As a result, the SWP is not capable of delivering full contractor entitlements on a routine basis.

The focal point is the Delta, the largest estuary on the west coast, through which 60 percent of the freshwater used in the State must pass. Over 150 years of extensive modification by man, a variety of competing interests, and political gridlock have resulted in significant environmental deterioration within the Delta. Several native fish that rely on the Deltas for all or part of their life cycle, including the Delta smelt, winter-run Chinook salmon, spring-run Chinook salmon, and splittail, are listed as threatened or endangered species under the federal and state Endangered Species Acts. Resulting actions taken to protect the ecosystem of the Delta have placed considerable limitations on SWP operations. As detailed in Section 1.4 of Metropolitan's Draft 2020 UWMP, the continual deterioration of water supply reliability from the SWP is a key concern.

6.1.2 Water Quality Challenges

SWP water is generally of high quality. Total dissolved solids (TDS) concentrations range between 250 and 350 milligrams per liter (mg/L). The quality of SWP water as a drinking water source is affected by several factors, most notably seawater intrusion, agricultural drainage from peat soil islands in the Delta, municipal wastewater discharges, drought, and urban runoff. The water quality parameters of most concern are bromide and salinity. Levels of bromide in the water increase significantly as it moves through the Delta. Bromide can combine with chemicals used in the water treatment process to form bromate, which is considered to be a risk to human health at concentrations above the state and federal drinking water standards. Treated wastewater and urban runoff discharged from cities and towns surrounding the Delta also add salts to the water, which build up in local watersheds over time.

Moreover, actions to protect Delta fisheries have impacted existing water quality problems by forcing SWP diversions to shift from the spring to the fall when bromide and salinity levels are highest. Closure of the Delta Cross Channel gates to protect migrating fish has also degraded the quality of SWP supplies by reducing the flow of higher quality Sacramento River water.

The water quality challenges described above are successfully managed by Metropolitan's treatment process. The Metropolitan Jensen Treatment Plant utilizes ozone as its primary disinfectant, which minimizes production of disinfection byproducts that would otherwise form in the chlorine treatment of SWP water.

For more information on the water quality of the treated water supplies that Calleguas distributes to its purveyors, please see the July 2020 Annual Water Quality Report provided in Appendix G.

6.2 GROUNDWATER

Groundwater has been used in Ventura County since the late 19th century, primarily for irrigation, but also for municipal and industrial water supply. Historically, the aquifer system in southern Ventura County has been in a state of overdraft, which has led to seawater intrusion. The non-consumptive portion of imported water utilized by the majority of Calleguas purveyor customers is treated at local wastewater treatment facilities and discharged to the Calleguas Creek watershed. This water ultimately percolates into the aquifers, serving as an important source of recharge.

Over the past several decades, salts accumulation in the watershed can be attributed to the introduction of imported water and deep-aquifer pumped groundwater. In addition, wastewater discharges, urban and agricultural runoff, applied irrigation, and native marine sediments have also caused aquifers to become increasingly saline. Increasing chloride concentrations have rendered many wells unsuitable for potable or irrigation purposes.

With the passage of California's Sustainable Groundwater Management Act (SGMA) in 2014, prudent management of the state's critical groundwater basins is now a primary water resource concern and mandated by state law. SGMA requires adoption of groundwater sustainability plans (GSPs) by January 31, 2020 for all basins defined by the state as either a high or medium priority and subject to critical overdraft, and by January 31, 2022 for all other high or medium priority basins. For more information on SGMA, see https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management.

SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt GSPs. Table 6-1 provides a general description of groundwater management and the status of GSP preparation in Calleguas' service area. Figure 6-1, taken from the DWR GSA Map Viewer, shows the location of GSAs within the Calleguas service area.

Table 6-1. Groundwater Basin Management within Calleguas Service Area

Groundwater Basin	GSAs	GSP Completed?
Las Posas Valley	Fox Canyon GMA Camrosa Water District GSA Las Posas Outlying Areas GSA- (County of Ventura)	Yes; http://fcgma.org/groundwater-sustainability-plan
Arroyo Santa Rosa	Arroyo Santa Rosa GSA Fox Canyon GMA	In progress
Pleasant Valley	Fox Canyon GMA Camrosa Water District GSA Pleasant Valley Outlying Areas GSA- (County of Ventura)	Yes; http://fcgma.org/groundwater-sustainability-plan
Santa Clara River Valley Oxnard Basin	Fox Canyon GMA Camrosa Water District GSA Oxnard Outlying Areas GSA- (County of Ventura)	Yes; http://fcgma.org/groundwater-sustainability-plan
Simi Valley	*	No
Tierra Rejada	*	No
Conejo	*	No
Thousand Oaks Area	*	No
Hidden Valley	*	No
Russell Valley	*	No
NOTE: *No GSAs on record for these basins.		

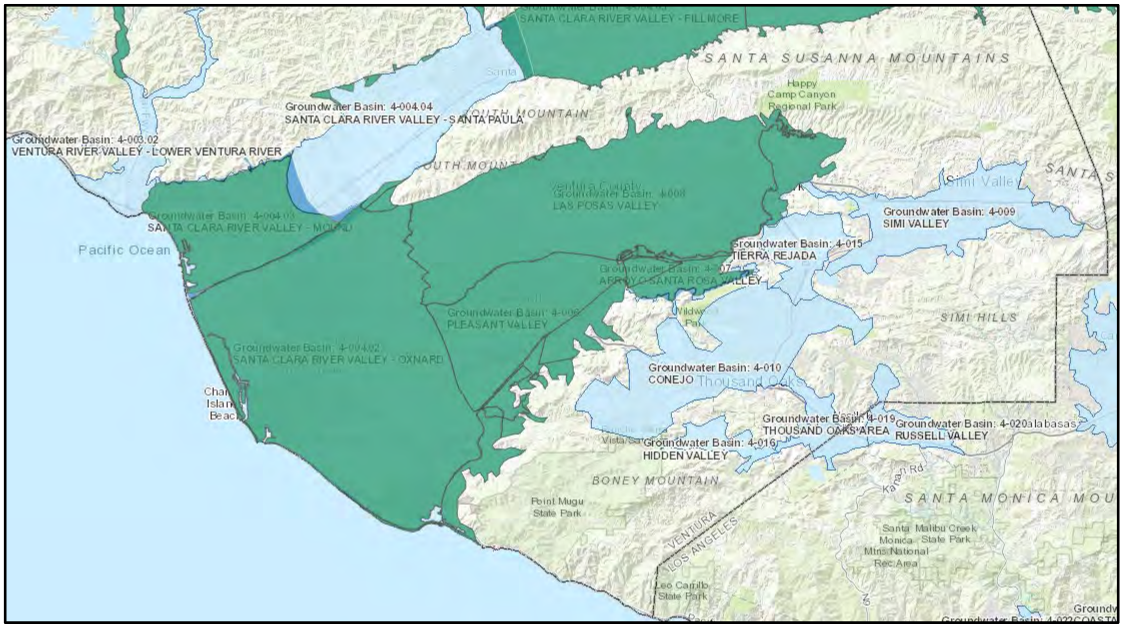

Figure 6-1 Established GSAs (green-shaded areas) within the Calleguas Service Area

6.2.1 Fox Canyon Groundwater Management Agency

The Fox Canyon Groundwater Management Agency (FCGMA) is an independent special agency created in 1983 to oversee groundwater resources within all or portions of four groundwater basins underlying the southern portion of Ventura County. The primary objective for the FCGMA is set out in the Fox Canyon Groundwater Management Act.[8] From Sec. 601, FCGMA shall develop, adopt, and implement a plan to control extractions from the Oxnard and Mugu aquifers with the objective of balancing water supply and demand in the Oxnard Plain of Ventura County. Article 6 further charges the FCGMA with investigations of the lower aquifer system and a plan to control extractions to address seawater intrusion. With adoption of SGMA, the FCGMA was designated as the GSA for the basins within its jurisdiction.

FCGMA's boundary is located partially within Calleguas' service area and overlies approximately 118,000 acres. The FCGMA boundary encompasses the coastal basins that underlie the cities of Oxnard, Port Hueneme, Camarillo, and Moorpark.

There are four major groundwater basins within FCGMA's jurisdiction. These include the Santa Clara River Valley – Oxnard Subbasin, Pleasant Valley, Arroyo Santa Rosa, and the Las Posas Valley within the Calleguas service area. The aquifers are recharged by infiltration of streamflow and precipitation, artificial and mountain-front recharge, return flow from agricultural and residential irrigation, and in varying degrees by groundwater underflow from adjacent basins. Three of the basins, Las Posas Valley Basin, Oxnard Subbasin, and Pleasant Valley Basin, are classified as high priority basins and are therefore subject to the requirements set forth in the SGMA. The Arroyo Santa Rosa Valley Basin is classified as a very low priority basin[9]. It is important to note that a comprehensive groundwater adjudication was filed in 2018 concerning the Las Posas Valley Basin.

FCGMA's goal is to sustainably manage the groundwater basins to avoid undesirable results as identified in the Groundwater Sustainability Plans. To achieve this goal, FCGMA has adopted ordinances in an effort to eliminate groundwater overdraft, and to combat the ongoing threat of seawater intrusion. These ordinances and resolutions help to regulate, conserve, and manage the use and extraction of groundwater within the region. Recent ordinances adopted by the FCGMA detail establishing new groundwater extraction allocation systems for the Las Posas Valley Basin, Oxnard Subbasin and Pleasant Valley Basin. For more information regarding history and a description of active ordinances, please visit the FCGMA website: http://www.fcgma.org/public-documents/ordinances-legislation.

6.2.2 Groundwater Quality

Groundwater in Calleguas' service area is generally high in chloride and TDS. Seawater intrusion has long been a concern and was the issue that precipitated the creation of FCGMA. The intrusion occurs exclusively along the coastline in the Oxnard Subbasin.

Chloride presents a problem in all the groundwater basins in the Calleguas service area. In some areas, water suppliers must either blend groundwater with lower-chloride water or remove the chloride in the groundwater through a reverse osmosis process to render the water suitable for irrigation and potable use.

High nitrate concentrations in the groundwater are localized in the Oxnard Subbasin and the Arroyo Santa Rosa Basin. The primary sources of nitrate are septic systems and agricultural fertilizer. To

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[8] https://fcgma.org/fcgma.old/publicdocuments/ordinances/GMA%20Act.pdf

[9] https://data.cnra.ca.gov/dataset/13ebd2d3-4e62-4fee-9342-d7c3ef3e0079/resource/ffafd27b-5e7e-4db3-b846-e7b3cb5c614c/download/sgma_bp_process_document.pdf

address the problem, septic systems are prohibited and best management practices (BMPs) are being implemented to limit agricultural contributions. As discussed in Section 6.5, Calleguas is an active participant in regional efforts to advance groundwater desalter and nitrate removal projects through the operation and future expansion of the Salinity Management Pipeline (SMP).

6.2.3 Groundwater Storage

Calleguas does not pump native groundwater. However, as indicated in Table 6-2, Calleguas has incorporated groundwater storage strategies and transfer agreements into its water resources portfolio, as described below.

Table 6-2. Groundwater Volume Pumped (DWR Submittal Table 6-1)

☐	Supplier does not pump groundwater.					
Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	East Las Posas	106	43	431	255	421
	TOTAL	106	43	431	255	421

NOTES: Las Posas ASR Well Production is reported to the Fox Canyon GMA. EOY reports can be found in Appendix H - Calleguas Groundwater Storage Account Balance Reports.
Volume units reported are acre-feet (AF)

As described in Section 3.2.2, Calleguas stores imported water through the Las Posas ASR. Current direct injected storage in the Las Posas ASR Wellfield totals approximately 20,926 AF (as of December 2020).

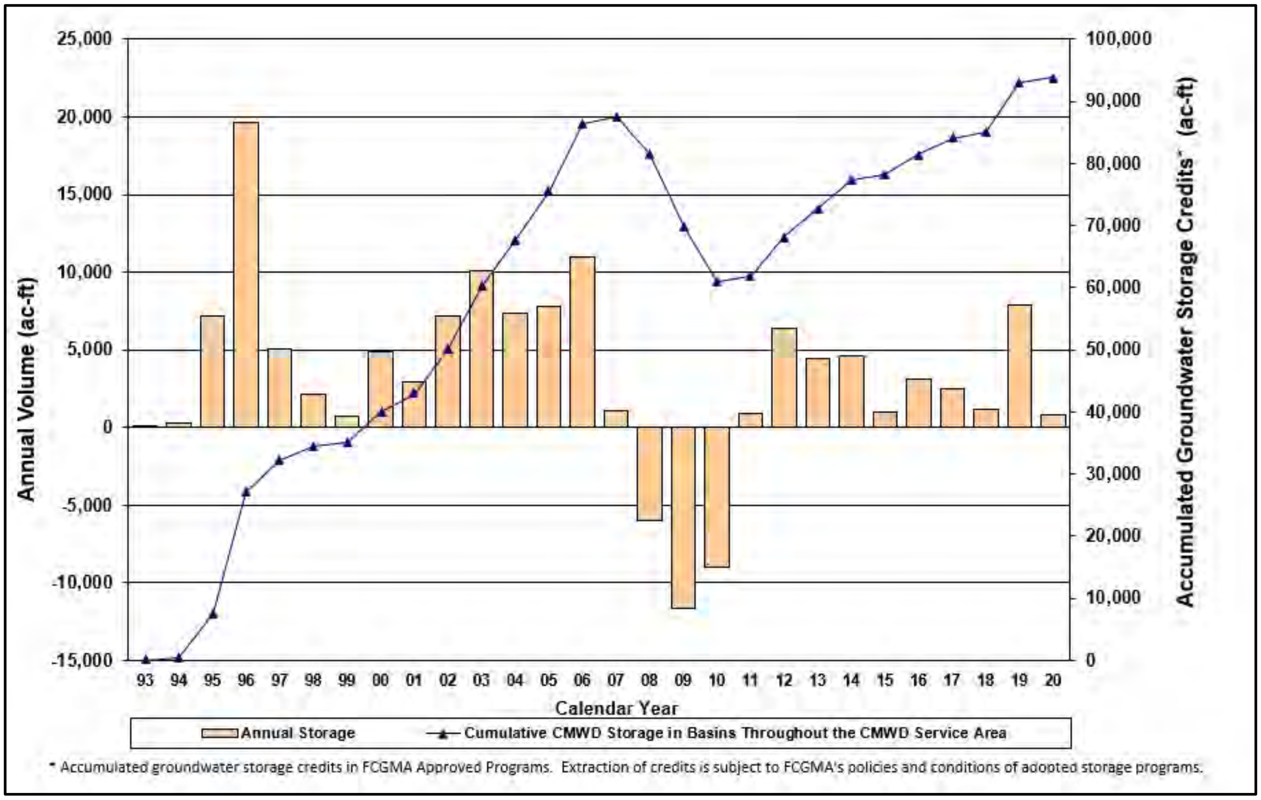
Calleguas participates in Metropolitan's Cyclic Storage Program, whereby Metropolitan suspends the Capacity Charge (May 1 – September 30) during years with a surplus of imported water for water to be stored. This program encourages its member agencies to purchase surplus water when available. In 2019, surplus SWP water was available and Calleguas signed a purchase order for 3,000 AF to be injected into the Las Posas ASR Wellfield. Additional surplus water was available after Calleguas met its initial commitment, and Metropolitan approved additional cyclic storage deliveries. Calleguas injected approximately 8,300 AF in CY 2019, including nearly 6,000 AF categorized under the Cyclic Storage Program.

Calleguas is investigating similar cyclic storage agreements for several of its purveyors for whom cyclic storage or cyclic deliveries is feasible; this would potentially allow for more supplies to be utilized in the Calleguas service area for use in outages and drought periods.

In addition to the Las Posas ASR Project, Calleguas has periodically stored water through in-lieu means since the early 1990s. Under this storage method, Calleguas has supplied imported water to well operators who, in turn, reduce groundwater pumping. The reduction in pumping results in the creation of storage credits. Such storage credits are then transferred to Calleguas. In this way, groundwater can be stored and subsequently pumped during periods when imported supplies are curtailed. Calleguas is currently investigating the potential for other groundwater pumpers to produce a portion of the district's stored groundwater credits during water supply outages.

Calleguas accumulated additional groundwater storage credits through the Conejo Creek Diversion Project (CCDP). The CCDP consists of a diversion structure and pipelines that were jointly constructed by Calleguas and the Camrosa Water District (Camrosa). Recycled wastewater from the City of Thousand Oaks' Hill Canyon Wastewater Treatment Plant is diverted from Conejo Creek and used for agricultural and landscape irrigation within Camrosa's service area. Water that is not used within Camrosa is provided to the Pleasant Valley County Water District for agricultural irrigation in-lieu of groundwater pumping. In return, Calleguas received groundwater storage credits from FCGMA equal to the amount of water delivered. By agreement, historically some of these credits were pumped from wells operated by the United Water Conservation District (UWCD) to meet demands in the Cities of Oxnard and Port Hueneme. In 2014, Calleguas turned over all its project facilities and obligations to Camrosa but retained groundwater storage credits that it had accrued as a project participant up to that time.

Figure 6-2 shows Calleguas' accumulated groundwater storage in FCGMA-approved programs stored in basins throughout the Calleguas service area since 1993. Some of this water was directly injected into the ASR wells. However, the majority represents credits gained from in-lieu deliveries. It is important to note that extraction of credits is subject to FCGMA's policies and conditions of adopted storage programs.



* Accumulated groundwater storage credits in FCGMA Approved Programs. Extraction of credits is subject to FCGMA's policies and conditions of adopted storage programs.

Figure 6-2 Calleguas Historical Groundwater Storage Data

As illustrated on Figure 6-2, Calleguas' groundwater storage steadily increased through 2007. As a result of drought conditions, Calleguas extracted stored water to help meet regional water demands from 2008 through 2011. From 2011 through 2020, Calleguas steadily increased its stored water primarily via direct injection of imported water through the Las Posas ASR.

6.3 SURFACE WATER

Calleguas does not provide or utilize surface water except that which it receives from Metropolitan.

6.4 STORMWATER

Calleguas does not utilize or treat stormwater.

6.5 WATEWATER AND RECYCLED WATER

Calleguas has actively supported the development and use of recycled wastewater within its service area. In the 1990s, Calleguas built recycled water delivery systems within the Conejo and Simi Valleys. In the 2000s, Calleguas built recycled water facilities as a participant in the CCDP, as previously noted. The CCDP consists of a diversion structure and pipelines that were jointly constructed by Calleguas and Camrosa. Recycled wastewater from the City of Thousand Oaks is diverted from Conejo Creek and used for agricultural and landscape irrigation within Camrosa's service area. Water that is not used within Camrosa is provided to the Pleasant Valley County Water District for agricultural irrigation in-lieu of groundwater pumping. As previously noted, Calleguas turned over ownership, operation, and maintenance of those facilities to Camrosa in 2014.

From 2016 to 2020, Calleguas conveyed treated wastewater from the City of Oxnard Advanced Water Purification Facility (AWPF) to agricultural customers for irrigation in lieu of groundwater pumping. The AWPF water was transported through the SMP, which was operating at very low capacity as a brine discharge facility. Because the AWPF water is extremely low in salinity, even when blended with the brine discharge in the SMP, it provided water of a quality suitable for agricultural irrigation. However, as additional water treatment facilities such as the City of Camarillo's North Pleasant Valley Desalter come online and begin discharging brine to the SMP, salinity levels will no longer support use as an agricultural water conveyance.

6.5.1 Wastewater Collection, Treatment, and Disposal

Calleguas does not operate any wastewater treatment facilities; therefore, this UWMP does not include DWR Submittal Table 6-3 (Wastewater Treatment and Discharge within Service Area in 2020). Seven service providers treat wastewater that originates within Calleguas' service area. These service providers are independent of Calleguas and therefore, the entire service area of each provider may or may not be within Calleguas' service area boundary. Many of these service providers treat wastewater so that it can be recycled for non-potable uses such as irrigation of agricultural crops, golf courses, street medians, and school athletic fields, and dust abatement. Table 6-3a summarizes the recycling efforts of these wastewater service providers, including level of treatment provided, and disposal method for non-recycled wastewater effluent. Table 6-3b lists the uses of recycled wastewater and the method(s) utilized by each wastewater service provider to encourage recycled water use.

Table 6-3a. Recycled Wastewater Treatment in Calleguas' Service Area

Wastewater Service Provider	Treatment Level for Recycled Water	Method of Disposal for Non-Recycled Wastewater
Camarillo Sanitary District Water Reclamation Plant	Tertiary	Conejo Creek
Camrosa Water District Water Reclamation Facility(1)	Tertiary	Salinity Management Pipeline (SMP)

City of Oxnard Advanced Water Purification Facility	Tertiary with advanced oxidation and reverse osmosis	Ocean
City of Simi Valley Wastewater Treatment Plant (WWTP)	Tertiary	Arroyo Simi
City of Thousand Oaks Hill Canyon WWTP	Tertiary	North Fork of Arroyo Conejo Creek
Triunfo Water & Sanitation District/ Las Virgenes Municipal Water District – Tapia WRF	Tertiary	Los Angeles River or Malibu Creek(2)
VCWWD No. 1 – Moorpark WWTP	Tertiary	Percolation Ponds

(1) Treated effluent is normally discharged to storage ponds and used for irrigation. Discharge to the SMP is rare and generally only occurs during wet-weather events.

(2) Tapia WRF is not permitted to discharge into Malibu Creek between April 15th and November 15th.

Table 6-3b. Recycled Wastewater Uses in Calleguas' Service Area

Wastewater Service Provider	Uses of Recycled Wastewater	Methods to Encourage Recycled Wastewater Use
Camarillo Sanitary District Water Reclamation Plant	Irrigation	Not applicable
Camrosa Water District Water Reclamation Facility	Irrigation	Recycled water priced lower
City of Oxnard Advanced Water Purification Facility	Industrial, irrigation	Mandatory use, recycled water priced lower
City of Simi Valley WWTP	Irrigation, dust abatement	Recycled water priced lower
City of Thousand Oaks Hill Canyon WWTP	Irrigation	Recycled water priced lower
Triunfo Sanitation District/ Las Virgenes Municipal Water District – Tapia WRF	Irrigation	Recycled water priced lower
VCWWD No. 1 – Moorpark WWTP	Irrigation	Recycled water priced lower

6.5.2 Recycled Water System

Beginning in the mid-1990s, Calleguas owned, operated, and maintained recycled water systems in the Oak Park, North Ranch, and Lake Sherwood areas. The recycled water originates at the Tapia Wastewater Treatment Plant owned and operated by the Las Virgenes – Triunfo Joint Venture. It was purchased from the Joint Venture by Triunfo Water and Sanitation District (Triunfo) and delivered to Calleguas at the Los Angeles/Ventura County line. Calleguas then distributed and sold the recycled water to Triunfo, California Water Service Company (Cal Water), and Hidden Valley Municipal Water District (Hidden Valley). In 2017, Calleguas transferred the recycled water facilities and associated easements to Triunfo and terminated the agreement to purchase recycled water from Las Virgenes and Triunfo.

Today, Calleguas owns a small pipeline that provides recycled water to the City of Simi Valley (VCWWD No. 8). In the future, it is expected that the City of Simi Valley will take ownership, operation, and maintenance of this delivery facility. Calleguas does not provide any supplemental treatment to the recycled water it distributes.

6.5.3 Recycled Water Beneficial Uses

Table 6-4 lists the 2020 actual and future projected recycled water use for each receiving service provider through year 2045. Calleguas anticipates it will no longer purchase and provide recycled water from/to the City of Simi Valley (VCWWD No. 8) at some point in the future, but the timing is currently not known. Because of uncertainty in the timing of this transfer of this system, Table 6-4 provides a conservative estimate of continuing service through the planning period.

Table 6-4. Current and Projected Retailers Provided Recycled Water Within Service Area

☐	Recycled water is not directly treated or distributed by the Supplier. The Supplier will not complete the table below.						
Name of Receiving Supplier or Direct Use by Wholesaler	Level of Treatment	2020	2025	2030	2035	2040	2045 *(opt)*
VCWWD No. 8 (City of Simi Valley)*	Tertiary	57	80	80	80	80	80
	Total	57	80	80	80	80	80

NOTES: *Calleguas does not operate any wastewater treatment facilities, however it does own a small pipeline that provides recycled water to the City of Simi Valley (VCWWD No. 8). In the future, it is expected that the City of Simi Valley will take on ownership, operation, and maintenance of this delivery facility.

Table 6-5 compares the projection for 2020 recycled water use from the 2015 UWMP to the actual recycled water use in 2020 for each service provider. As described above, Calleguas sold its interest in the recycled water systems in the Oak Park, North Ranch, and Lake Sherwood areas to Triunfo Water and Sanitation District in 2017. However, Calleguas currently owns a small pipeline that provides recycled water to the City of Simi Valley (VCWWD No. 8). Although this facility was projected to have been transferred to VCWWD No. 8 by 2020, this has not yet occurred.

Table 6-5. 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☐	Recycled water was not used or distributed by the supplier in 2015, nor projected for use or distribution in 2020. The wholesale supplier will not complete the table below.	
Name of Receiving Supplier or Direct Use by Wholesaler	2015 Projection for 2020	2020 Actual Use
California Water Service Company*	650	-
Oak Park Water Service*†	720	-
Triunfo Sanitation District*†	400	-
VCWWD No. 8 (City of Simi Valley)‡	0	57
Total	1,770	57

NOTES: *Calleguas no longer owns or operates recycled water facilities that serve these purveyors. Calleguas sold its interest in these facilities to Triunfo Water & Sanitation District in 2017.
†In 2019, Oak Park Water Service and Triunfo Sanitation District consolidated under the new name: Triunfo Water and Sanitation District.
‡The 2015 UWMP assumed that VCWWD No. 8 would eventually take ownership of recycled water facilities that are currently owned and operated by Calleguas.

6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

In 1990 the Calleguas Board of Directors adopted Resolution No. 773, which calls for reducing demand for potable water through the expanded use of recycled water. The resolution mandates that recycled water shall be used, whenever feasible, to displace the use of potable water for new construction landscape and turf irrigation. Furthermore, since 1994, Calleguas has offered a discount on recycled water relative to its rate for potable service. The wholesale price of recycled water is established as 80 percent of the Tier 1 potable rate in effect in any given year. However, as described above, Calleguas anticipates transferring ownership of its remaining recycled water delivery facilities to the City of Simi Valley (VCWWD No. 8) at some point in the future. Calleguas supports recycled water use primarily through the SMP, which facilitates purveyors' own recycled water development.

6.6 DESALINATED WATER

Calleguas does not currently utilize desalinated water. A discussion of the potential to utilize desalinated water in the future is provided in Section 6.8 regarding the SMP.

6.7 WATER EXCHANGES, TRANSFERS, AND OTHER

As a member agency of Metropolitan, Calleguas benefits from water exchanges and transfer agreements made through Metropolitan.

Locally, Calleguas is pursuing several projects with other agencies to provide water supply during an outage. In 2020, Calleguas completed an interconnection with Crestview Mutual Water Company (Crestview) that could allow for a flow rate of up to 5 cfs when requested by the District in the event of an outage.

Additionally, the *Crestview Well No. 8 and Agreement to Deliver Water During an Outage* was finalized in 2020. This agreement between Calleguas and Crestview provides 3 cfs or 1,085 AF of water to

Calleguas during a 6-month outage from Crestview's new Calleguas-funded Well No. 8. A similar agreement between Calleguas and the City of Camarillo is under consideration. Under this agreement, Calleguas would fund a new City well in the Springville area and in turn the City of Camarillo would deliver water to Calleguas during an outage.

The *Calleguas Municipal Water District – Las Virgenes Municipal Water District Interconnection Project* is a joint project between Calleguas and the adjacent Las Virgenes Municipal Water District (LVMWD) to improve regional system reliability. It is a cost-effective means of receiving potable water for customers of both agencies if either agency experiences either a complete or partial supply outage not significantly affecting the supply of the other agency. The project includes over 11,000 feet of 30" diameter pipeline, a potable water pump and pressure regulating station, and associated appurtenances. It also includes over 2,000 feet of recycled water pipeline for LVMWD. The project has completed environmental review and design is nearly complete as of January 2021.

A future SWP interconnection is under development and will enable delivery of Ventura County's SWP water by wheeling through Metropolitan and Calleguas to the City of Ventura. The proposed interconnection consists of a seven-mile pipeline that would connect the western extent of Calleguas Municipal Water District's distribution system to the City of Ventura (Figure 6-3).

Figure 6-3 City of Ventura SWP Interconnection

Since 1971, the City of Ventura has owned rights to a 10,000-AFY water entitlement through the SWP. While Ventura has an established right to water from the SWP, it cannot currently take delivery due to a lack of infrastructure to deliver that water. A new pipeline connection to Calleguas would enable wheeling of SWP supplies to Ventura. The interconnection between Ventura and Calleguas will also allow for greater system redundancy for both agencies, especially important for emergency response and when local supplies are impacted.

6.8 FUTURE WATER PROJECTS

Calleguas has focused its planning efforts on water use efficiency and maximizing use of local water resources. Working cooperatively with local agencies, Calleguas supports several local water use efficiency, recycling, and groundwater recovery projects to help offset increasing imported water demands. Many of these efforts were described in Chapter 5 and are also described in Chapter 9.

Expansion of the existing SMP is planned in the future. The SMP is designed to collect brine generated by groundwater desalters and potable reuse facilities, as well as excess recycled water, and conveys that water for safe discharge to the ocean where natural salt levels are higher. A map of the SMP alignment is shown as Figure 6-4.

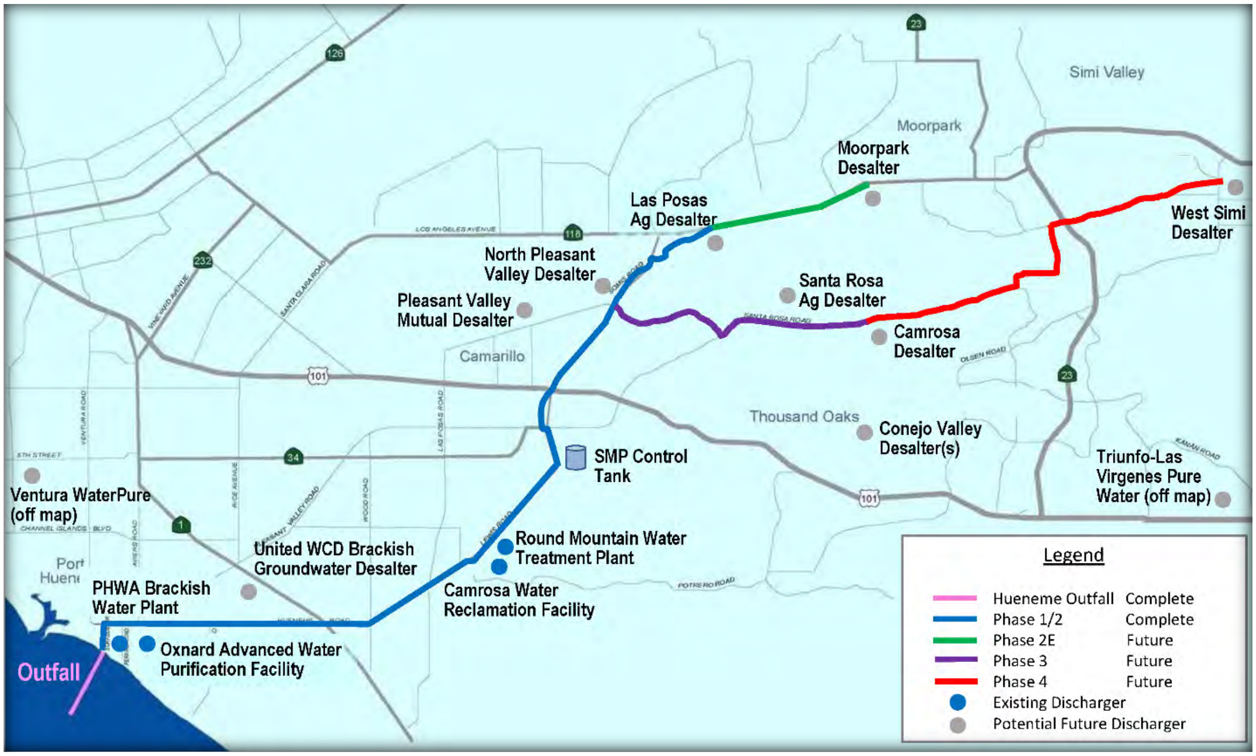


Figure 6-4 Salinity Management Pipeline Alignment

The SMP, upon full build-out, is anticipated to improve water supply reliability by facilitating development of an estimated 40,000 AF of new, local water supplies each year. The SMP is vital to the region's water reliability as imported supplies from the SWP have become increasingly vulnerable to drought, catastrophic levee failures from flood and/or seismic events, and regulatory-based shutdowns of pumping facilities to protect listed and other special-status species in the Delta.

The SMP improves water quality by moving salts out of the watershed. Salt is removed from groundwater and the concentrate from the treatment process sent to the SMP. Highly treated wastewater that is too saline for discharge to local streams is sent to the SMP during wet periods when it is not needed for irrigation. Continued support of local supply projects through the implementation and expansion of the SMP is anticipated to offset imported water demands. Table 6-6 summarizes the benefits of the SMP.

Table 6-6. Benefits of the Salinity Management Pipeline

Environmental	Water Supply	Water Quality
Improves the quality of flows into creeks.	Improves the region's water reliability.	Protects resources for municipal, agricultural, and environmental use.

Table 6-6. Benefits of the Salinity Management Pipeline

Environmental	Water Supply	Water Quality
Reduces greenhouse gas emissions by using local water resources instead of imported sources.	Enables water agencies to develop new local water from existing poor-quality groundwater.	Safely removes salts to the ocean where they cause no harm.
Reduces dependence on imported water from sensitive Delta ecosystem in Northern California.	Promotes pumping of shallow groundwater, providing space for stormwater capture.	Helps local communities meet water quality standards for Calleguas Creek and its tributaries.

In 2014, the first discharge to the SMP occurred from a desalination plant operated by Camrosa. In 2015, the PHWA Brackish Water Demonstration Facility began discharging brine to the SMP. As segments of the pipeline are constructed, it is anticipated that additional facilities will be completed by other entities that will connect to the SMP to discharge generated brine.

Calleguas is currently conducting a Water Supply Alternatives Study (WSAS) to identify other potential water sources for the District. These sources are focused on providing supplemental supply to meet Calleguas' demands during a supply outage. Several of the projects identified through the WSAS process have begun design, and are included in Table 6-7. This table also includes the interconnection projects discussed in Section 6.7.

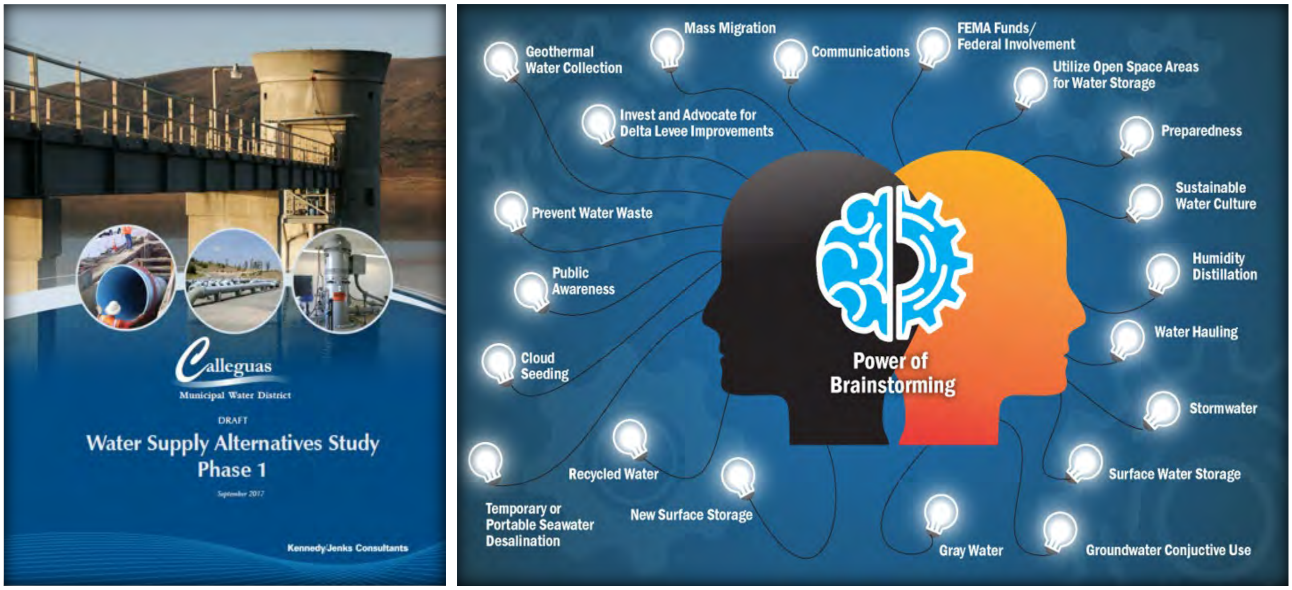


Figure 6-5 Calleguas Water Supply Alternatives Study (2017 – Present)

Table 6-7. Expected Future Water Supply Projects or Programs

☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.							
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.							
Name of Future Projects or Programs*	Joint Project with other suppliers?		Description	Planned Implementation Year	Supply Type	Planned for Use in Year Type	Expected Increase in Normal Water Supply to Supplier	Potential Outage Supply to Supplier
WSAS - Crestview Well No. 8 and Agreement to Deliver Water During an Outage	*Yes*	Crestview Mutual Water Company	Calleguas would fund the construction of an additional well (Well No. 8) for Crestview Mutual Water Company. In exchange, at least 3 cubic feet per second (CFS) of water could be delivered under outage conditions to Calleguas or its member purveyors.	2021	Outage	Not Applicable	None (0 AF)	3 CFS
WSAS - New Springville Area Well and Agreement to Deliver Water During an Outage	*Yes*	City of Camarillo	Calleguas would fund the construction of an additional well for the City of Camarillo. In exchange, at least 3 CFS of water could be delivered under outage conditions to Calleguas.	TBD	Outage	Not Applicable	None (0 AF)	3.35 CFS
WSAS - Fairview Well Rehabilitation	*No*	N/A	Fairview Well was installed in 1993 and operated as an ASR well until it was taken offline in 1998. This project would involve rehabilitation of the well and water would	TBD	Outage	Not Applicable	None (0 AF)	1.69 CFS

			be produced from the well in the event of an imported water outage.					
WSAS - Lake Bard Pumps	*No*	N/A	Calleguas' Lake Bard has a capacity of 10,500 AF. Due to hydraulic constraints, only 7,500 AF can be treated and delivered as potable water. This project includes the construction of a pump station that would provide sufficient hydraulic head to flow the remaining 3,000 AF through the Lake Bard Water Filtration Plant.	TBD	Outage	Not Applicable	None (0 AF)	3,000 AF
Las Virgenes MWD Interconnection	*Yes*	Las Virgenes MWD	The Calleguas-LVMWD Interconnection will allow each agency to deliver alternative supplies to the other under both outage and normal operating conditions. Those supplies include LVMWD/Triunfo Water & Sanitation District's planned PureWater Plant (indirect potable reuse), as well as any additional future local supplies that either agency develops.	2022	Outage	Not Applicable	TBD	21 CFS
City of Ventura SWP Interconnection	*Yes*	Metropolitan Water District, City of Ventura, United Water Conservation District, Casitas MWD	A pipeline would be constructed to connect Calleguas' and the City of Ventura systems. SWP water would be wheeled to Ventura and Casitas through Metropolitan's and Calleguas' systems. Under outage conditions, Ventura would deliver water to Calleguas.	2025	Outage	All Year Types	None (0 AF)	TBD
NOTES: *WSAS denotes Calleguas Water Supply Alternatives Study studied project. WSAS projects are primarily intended to increase Calleguas outage supply capabilities. Please see Appendix I - Water Supply Alternative Study Project Status Summary.								

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

Water supply projections were developed by Metropolitan for both imported water and local supplies. Metropolitan projects the need for imported supplies as a function of the demand forecasts and local supplies available to its member agencies. Table 6-8 lists the actual quantity of water that Metropolitan supplied Calleguas in 2020. Table 6-9 presents Metropolitan's estimates of water demand within the Calleguas service area which, in turn, Calleguas utilizes for planning purposes as the supply of imported water to be available through 2045.

Table 6-8. Water Supplies — Actual

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	Potable water from Metropolitan	89,630	Drinking Water	-
Recycled Water	Recycled water sales to VCWWD No. 8	57	Recycled Water	-
	Total	89,687		0

Table 6-9. Water Supplies - Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply Reasonably Available Volume				
		2025	2030	2035	2040	2045 *(opt)*
Purchased or Imported Water	Imported from Metropolitan*	86,607	87,720	89,880	91,326	91,784
Recycled Water	Projected purchases by VCWWD No. 8†	80	80	80	80	80
Supply from Storage	Calleguas Storage (Outage Supplies) ‡	27,500	27,500	27,500	27,500	27,500
	Total	114,187	115,300	117,460	118,906	119,364

NOTES: *Includes Replenishment Water & does not include Projected Water Losses.

†Calleguas does not operate any wastewater treatment facilities, however it does own a small pipeline that provides recycled water to the City of Simi Valley (VCWWD No. 8). In the future, it is expected that the City of Simi Valley will take on ownership, operation, and maintenance of this delivery facility.

‡For the purposes of Table 6-9, Calleguas Storage (Outage Supplies) is identified as Lake Bard (7,500 AF) and accumulated direct injection of imported water into the Las Posas ASR (20,000 AF).

6.10 ENERGY INTENSITY

New to 2020 UWMPs, urban water suppliers must include information that could be used to calculate the energy intensity of their water service. Required information is limited to that which is readily obtainable by the supplier for the listed operations. Appendix O of DWR's Draft 2020 UWMP Guidebook includes guidance on estimating the energy usage by each operation as well as submittal table templates to calculate the energy intensity of a supplier's water operations. The table templates were labeled Tables O-1 (a, b, and c, depending on available data) and O-2 in the Guidebook. Only Table O-1b is relevant to the data readily available for Calleguas. This table is included below as Table 6-10.

Water energy intensity is defined as the total amount of energy, calculated on a whole-system basis, required for the use of a given amount of water in a specific location.[10] This section reports Calleguas' calculated operational energy intensity, consistent with the guidance provided by DWR in Appendix O of the 2020 Draft UWMP Guidebook. Operational energy intensity is the total amount of energy expended by an urban water supplier on a per-AF basis to take water from the location where the urban water supplier acquires the water to its point of delivery. Thus, calculations do not include the water energy intensity upstream (i.e., Metropolitan's system and the SWP) or downstream (i.e., purveyors' distribution systems) from Calleguas' system. Those calculations are included in those wholesaler and retailer water agencies' 2020 UWMPs.

Table 6-10 presents Calleguas' wholesale potable water deliveries and associated energy consumption and hydropower generation during calendar year 2019 (the most recent year for which all energy data are available). Calleguas operates five hydroelectric generating stations within its system. The District has contracts with Southern California Edison (SCE), with expiration dates ranging from 2032 to 2035, for sale of power from four of these facilities. As shown in Table 6-10, Calleguas generated approximately 8 kWh/AF more energy than it consumed in CY 2019.

Table 6-10. Energy Intensity – Total Utility Approach (DWR Submittal Table O-1b)

Start Date for Reporting Period	1/1/2019	Urban Water Supplier Operational Control		
End Date	12/31/2019	Sum of All Water Management Process	Non-Consequential Hydropower	
		Total Utility	Hydropower[3]	Net Utility
Volume of Water Entering Process (AF)[1]		*90,176.5*	*90,176.5*	*90,176.5*
Energy Consumed (kWh)[2]		*5,983,052*	*-6,729,672*	*-746,620*
Energy Intensity (kWh/AF)		*66.3*	*-74.6*	*-8.3*

NOTES: 1 – Metered data – all water entering Calleguas system through the East Portal. Note that all "water entering process" may not pass through the East Portal hydro-generator.

2 – Southern California Edison cumulative meter data for Calleguas system.

3 – In 2019 Calleguas reported data from four of its hydro-generators – Conejo, East Portal, Springville, and Santa Rosa. In the future, data from a fifth hydro-generator, Grandsen, will be available.

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[10] Wilkinson, Robert C. 2000. "Methodology for Analysis of the Energy Intensity of California's Water Systems, and an Assessment of Multiple Potential Benefits Through Integrated Water-Energy Efficiency Measures." Exploratory Research Project. Ernest Orlando Lawrence Berkeley Laboratory, California Institute for Energy Efficiency. 89 pp. Online: http://large.stanford.edu/courses/2012/ph240/spearrin1/docs/wilkinson.pdf Accessed 2/3/2021.

7.0 Water Service Reliability and Drought Risk Assessment

The economic vitality of Ventura County is highly contingent upon a dependable water supply. Therefore, it is imperative that a strategy be developed to ensure reliable sources of water supply, including using existing supplies efficiently. This chapter discusses constraints on Calleguas' water sources and the Drought Risk Assessment. It also evaluates the reliability of available supplies to meet demands and discusses Metropolitan and Calleguas strategies to maintain reliable water deliveries during normal year, single-dry year, and five consecutive dry year conditions.

7.1 WATER SERVICE RELIABILITY ASSESSMENT

Water Code Section 10635(a) requires every water supplier to include a water service reliability assessment in its UWMP. Specifically, the 2020 UWMP must provide the expected water service reliability for a normal year, single dry year, and five consecutive dry years projections for 2025, 2030, 2035, and at least through 2040. This assessment is based on the information provided in previous chapters of this UWMP. This section also includes a discussion of constraints on Calleguas' water sources that can affect current or future supply characterization.

7.1.1 Constraints on Water Sources

Southern California's water supply is subject to natural and man-made forces, ranging from drought and earthquakes to environmental regulations and water rights determinations. In addition, climate change is expected to exacerbate these challenges and potentially introduce new ones. Some of the challenges facing Southern California with respect to water include:

- Population and resulting urban water demands are increasing.
- A major earthquake could damage levees within the Delta, the California Aqueduct, and/or the Colorado River Aqueduct (CRA), interrupting water supply to the region for many months, if not years.
- Environmental water demands are increasing, especially in the Delta, thus reducing the availability of water for other uses within California.
- California, like much of the west, is susceptible to long periods of drought.
- Recent climate change studies indicate that Delta and Colorado River supplies could be even more variable than that of the historical record, further stressing California water supplies.
- Many groundwater basins are in an overdraft condition.

The following sections discuss challenges that could affect Calleguas' water supplies.

7.1.1.1 Sacramento/San Joaquin Delta

As discussed in Section 6.1 of this UWMP and in Section 1.4 of Metropolitan's Draft 2020 UWMP, the SWP's existing water delivery system is inefficient and requires substantial upgrades to withstand the impacts of climate change and seismic events, and reduce negative impacts on sensitive fish species. Existing pumping operations cause reverse river flows, trap migrating fish, and have contributed to a decline in native fish populations. To address this, in recent years, DWR has severely curtailed water exports from the Delta. In addition, aging levees comprised largely of peat soils are all that protect most of California's water supplies from seismic events and the effects of climate change. Earthquakes, rising sea levels, intense storms, and floods could cause these levees to fail, which would contaminate the fresh water with salt and disrupt water service to 29 million Californians. Without improvements to the water supply infrastructure, the environment and the state's broader economy are at increasing risk of water supply disruption, job losses, higher food and water prices, and further decline in sensitive species.

California has been in the planning stages of a project to update the conveyance facilities from the Delta since 2005. Originally envisioned as a joint water conveyance and habitat conservation project, the effort was split into two projects in 2015. The water conveyance component was called California WaterFix and included construction of three new intakes, each with a maximum diversion capacity of 3,000 cfs, on the east bank of the Sacramento River between Clarksburg and Courtland in the north Delta. Each intake site would employ state-of-the-art on-bank fish screens and, although the diversions would be located outside of the main range for delta and longfin smelt, the fish screens would be designed to meet delta smelt criteria. Two 40-foot diameter underground pipelines would carry the diverted water by gravity flow approximately 30 miles to the expanded Clifton Court Forebay, where two pumping plants would be constructed to maintain optimal water levels in the forebay for the existing SWP and Central Valley Project (CVP) pumping facilities. The existing pumps would lift the water into the canals that flow hundreds of miles to supply San Joaquin Valley farms and cities as far away as San Diego. The north Delta intakes, which would be operated with the existing south Delta pumping facilities as a "dual conveyance system," would correct the current issue of "reverse flows", which can draw fish off their migratory path into predator-rich channels and towards state and federal pumps.

When Governor Gavin Newson took office in 2019, he announced that he did not support the two-tunnel WaterFix Project but did support a single-tunnel project to modernize conveyance facilities through the Bay Delta. The currently proposed project is called the Delta Conveyance Project (DCP). In January 2020 DWR issued a Notice of Preparation of an Environmental Impact Report for the DCP. The proposed project includes new intake facilities in the north Delta along the Sacramento River and a single main tunnel to convey the water to the Banks Pumping Plant. The new facilities would convey up to 6,000 cfs of water from the Sacramento River to SWP facilities south of the Delta. More information on the DCP, federal and State incidental take authorizations in the Delta, and the Bay-Delta Water Quality Control Plan Update and associated Voluntary Agreements can be found in Section 1.4 of Metropolitan's Draft 2020 UWMP.

7.1.1.2 Extended Drought

Drought is a recurring phenomenon in California. The State has already experienced two significant droughts this century: 2007 through 2009 and 2012 through 2016. The recent 2012-2016 drought was accompanied by record high temperatures across the state, and set several records: driest four consecutive water years based on statewide precipitation (2012–2015), lowest April 1 statewide snowpack water equivalent (5 percent in 2015), first-ever zero allocations to CVP agricultural contractors (2014 and 2015), and groundwater levels in many parts of the state below previous historical lows (California's Most Significant Droughts: Comparing Historical and Recent Conditions, DWR, January 2020). While 2017 and 2019 were wet years, allowing Metropolitan to add over a million AF and nearly 600 thousand acre-feet (TAF) to storage, respectively, Metropolitan only received a 20 percent SWP allocation in 2020 and water year 2021 is projected to be another dry year.

Metropolitan has a robust program to manage its water supplies for its member agencies. From Section 1.4 of Metropolitan's Draft 2020 UWMP:

> *Metropolitan's Water Surplus and Drought Management [WSDM] Plan, approved in 1999, provides policy guidance for managing regional water supplies during surplus and shortage conditions. It provides an overall vision for operational supply management and characterizes a flexible sequence of actions to minimize the probability of severe shortages and reduce the likelihood of extreme shortages. Thus, the WSDM Plan principles guide the specific actions to be*

> *taken under WSCP shortage stages. Metropolitan's Water Supply Allocation Plan [WSAP], developed in 2008, is integral to the WSCP's shortage response strategy. In the event that Metropolitan determines that shortage response actions through supply augmentation and demand reduction measures are insufficient to meet a projected shortage, WSAP may be implemented to fairly distribute a limited amount of water supply using a detailed methodology that reflects the range of local conditions and needs of the region's retail water consumers.*

To address shortages during the last drought, on April 14, 2015, Metropolitan's Board authorized implementation of the WSAP at a Level 3 Regional Shortage Level, effective July 1, 2015 through June 30, 2016.

More information on the WSDM Plan and the WSAP is provided in Chapter 8, as these plans are integral to Calleguas' water shortage contingency planning.

7.1.1.3 Climate Change

Several of the updates to the California Water Code sections that address UWMPs refer to climate change, and many of these are new since the 2015 UWMP Guidebook. Climate change is a crucial consideration in water planning and management, as it could have significant effects on supplies including availability, reliability, and water quality.

The vulnerability of the water sector to climate change stems from a modified hydrology that affects the frequency, magnitude, and duration of extreme events, which, in turn, affect water quantity, quality, and infrastructure. Both water supply and demand can be altered by the effects of climate change.

Predicted Climate Changes in Ventura County

The *Watersheds Coalition of Ventura County (WCVC) Integrated Regional Water Management Plan (IRWMP)* (Amended in 2019) includes a comprehensive study on the effects of climate change on Ventura County, including the entire Calleguas service area. Calleguas is a participant in the WCVC.

Appendix K[11] of the WCVC IRWMP is an assessment of climate change in Ventura County produced through a partnership between WCVC and Drs. Nina Oakley and Benjamin Hatchett of the Western Regional Climate Center at the Desert Research Institute in Reno, Nevada. As stated in the report, "the goal of this project and report is to 'paint a picture' of future climate in Ventura County to support decision making and prioritization of vulnerabilities related to climate during the IRWM planning process."

The report analyzes the results of 32 Global Climate Models that were utilized to ascertain probable changes in temperature, precipitation, and evapotranspiration in the County. For the period of 2021 through 2040, the analyses conclude that inland air temperature is likely to increase at least 3-5 °F and coastal air temperature will increase at least 2-3 °F, on average. Evapotranspiration is predicted to increase by up to 5-10 percent. There was no consensus among the various climate models as to whether average annual precipitation will increase or decrease in the County, but all deviations from current levels were relatively small. However, the models suggest that the number of dry days per year will increase, with 7 percent fewer days of precipitation in winter, 11 percent fewer days in spring, and 20 percent fewer in fall. Because annual precipitation is not expected to change much, this suggests precipitation events will be more intense when they do occur. The overall trend is predicted to be slightly wetter winters, summers with little change, and slightly drier spring and fall

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[11] Oakley, N.S., Hatchett, B.J., McEvoy, D., Rodriguez, L., 2019. Projected Changes in Ventura County Climate. Western Regional Climate Center, Desert Research Institute, Reno, Nevada. Available at: wrcc.dri.edu/Climate/reports.php

seasons. The predicted changes in precipitation, temperature, and evapotranspiration are expected to intensify by mid-century (2041-2070).

Climate Change Impacts to Water Reliability

As described in Section 6.1, Calleguas' water is entirely supplied by Metropolitan. Under normal operating conditions this water is from the SWP, although in times of drought or other shortage conditions the water Metropolitan supplies to Calleguas may include some Colorado River water. Although Calleguas maintains storage supplies in Lake Bard and the Las Posas ASR Project, the source water in storage also comes from Metropolitan. Section 2.6 of Metropolitan's 2020 UWMP elaborates on Metropolitan's assessment of climate change impacts to its water supplies and its activities to plan for and mitigate those impacts.

The following discussion assesses the potential local impacts of climate change. These potential shifts in demand scenarios have been considered by Metropolitan in its supply and demand calculations for the Calleguas service area (Appendix D).

- **Temperature**. An average increase in temperature of at least 3-5 °F is expected to increase water demand in the Calleguas service area, mainly for landscaping and use in recreational facilities such as swimming pools. However, Calleguas' water retailers are likely to control increases in these types of water demands to maintain compliance with the upcoming water budgets required under SBX7-7.

- **Precipitation**. Longer dry periods are anticipated, which could lead to extended and more frequent droughts. Under dry conditions, Calleguas typically works with its purveyors to communicate messaging to the public about reducing or eliminating non-essential water uses, and Calleguas can increase its incentives for water-efficient appliances and fixtures. See Chapter 8 for more information on actions Calleguas can take during varying degrees of water shortage.

  Dry periods can also result in reduction in local aquifers. Although Calleguas does not rely on native groundwater as a water source, many of its purveyors utilize groundwater to varying degrees. As groundwater sources become depleted, these purveyors may require more imported water from Calleguas to meet their demands.

  More extreme rainfall events in the service area are also predicted, as described above. These rain events can trigger mudslides, which could damage Calleguas facilities that are located on or near slopes especially in areas recently affected by wildfires.

- **Evapotranspiration**. As described above, climate modeling in Ventura County predicts a significant increase in evapotranspiration (up to 5-10 percent). This will increase demand for irrigation water. Residential and commercial irrigation in the service area is provided primarily by potable water, with recycled water used for some park, golf course, and commercial areas. Increases in evapotranspiration will directly increase demands for imported water from Calleguas for landscape irrigation. It could also indirectly increase demands on Calleguas for the agricultural sector. Although very little potable water is used for agriculture in the Calleguas service area, impacts from climate change on groundwater availability could increase demand for supplemental imported supplies.

- **Wildfire**. Longer dry periods, coupled with increased temperatures, increase the risk and likelihood of wildfires. The Calleguas service area contains large areas of open space with development interspersed, which makes the majority of the area vulnerable to wildfire. Fires in and around Ventura County have been increasing in frequency and size. Two of the top 20 most destructive wildfires in California history, the Thomas Fire (2017) and the Woolsey Fire (2018), affected the Calleguas service area in recent years[12]. Wildfires can damage or destroy Calleguas facilities which could lead to service disruptions and water quality concerns.

- **Sea-level rise.** Although Calleguas does not use native groundwater directly, many of its purveyors in the lower zone rely on coastal aquifers for a significant portion of their water supply. Sea level rise can exacerbate and speed saltwater intrusion into these aquifers, especially in dry times where replenishment is low. Saltwater intrusion can degrade the water quality in the aquifer to the point that it is no longer useable. If this were to occur, the purveyors who rely on the coastal aquifers would require a larger proportion of their demand to be met by imported water from Calleguas.

Climate Change Adaptation and Mitigation

As climate change continues to unfold in the coming decades, water agencies will need to adapt new strategies, which may require reevaluating existing agency policies, regulations, facilities, and funding priorities. Examples of mitigation and adaptation strategies include, but are not limited to, the following:

- Developing long-term plans that identify specific climate change adaptation elements.
- Increasing groundwater recharge using surface water and recycled water.
- Promoting the use of recycled water.
- Promoting water use efficiency for urban, agricultural, commercial, and industrial water users.
- Making beneficial use of impaired groundwater resources.
- Increasing investments in infrastructure that promote adaptation strategies and mitigate the loss of existing supplies that are susceptible to climate change impacts.
- Updating regulations to utilize the most current scientific data to most effectively balance environmental, agricultural, and municipal water needs.

7.1.1.4 Metropolitan Reliability Goals

In 1996, following the severe 1987-92 statewide drought, Metropolitan's Board of Directors adopted its initial Integrated Resources Plan (IRP) that provided the framework for a long-term water supply reliability strategy for Metropolitan's service area. The 1996 IRP included a reliability goal of meeting "retail-level water demands under all foreseeable hydrologic conditions." That goal has carried through the subsequent updates to the IRP, completed in 2004, 2010, and 2015. Metropolitan is in the process of preparing the 2020 IRP, which is not yet available for review. However, Section 2.1 of Metropolitan's Draft 2020 UWMP provides a summary of the planning effort and the new direction its planning team is undertaking for this current iteration of the IRP:

> *The 2020 IRP provides a broader look and concept than the previous IRP updates. The 2020 IRP strengthens the adaptive management approaches employed in prior updates through the incorporation of an explicit scenario planning step. Coming on the completion of a full "planning cycle" with reaching the end of the planning horizon of the 1996 IRP, the 2020 IRP has the benefit of a fuller understanding of the lessons learned from the previous 25 years.* ***The key lesson is that the future is not predictable and is a function of many diverse drivers that are out of the control of the water community.*** *The purpose of scenario planning is to broaden the understanding of plausible, but uncertain, future conditions affecting both supplies and demands. On the demand side, uncertainties surrounding future economic conditions, the*

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[12] CalFire – Top 20 Most Destructive California Wildfires (11/3/2020). Online: https://www.fire.ca.gov/media/t1rdhizr/top20_destruction.pdf

> *extent to which local supplies are developed, and water use behavior will guide member agency dependence on Metropolitan in meeting their retail demands. On the supply side, factors like climate change impacts and regulatory uncertainty are expected to affect future supply availability in unpredictable ways.* [emphasis added]

Metropolitan's Draft 2020 UWMP provides an assessment of water supply reliability within Metropolitan's service area. As expressly stated within Section 2.3 of Metropolitan's plan and summarized in associated data tables, *"…the region can provide reliable water supplies under both the single driest year and a drought period lasting five consecutive water years."* Key water supply assumptions include:

- Metropolitan's basic Colorado River apportionment plus supplies from existing and committed programs and stored supplies such that Metropolitan can deliver up to the CRA full capacity of 1.25 million AF per year.
- SWP supplies are estimated using the 2019 SWP Delivery Capability Report distributed by DWR in August 2020. Under the 2019 SWP Delivery Capability Report - existing condition scenario, the delivery estimates for the SWP for 2020 conditions as a percentage of Table A amounts are 58 percent, equivalent to 1,109 TAF for Metropolitan, under a single dry-year (1977) condition and 7 percent, equivalent to 134 TAF for Metropolitan, under a long-term average condition.
- Prudent management of Metropolitan's regional water storage.

While Metropolitan anticipates fully meeting service area demands, it acknowledges that there are a variety of risks and uncertainties such as climate change, regulatory actions, infrastructure failures, and unforeseen demographic transformations that may influence supply reliability. The potential magnitude of such risks and the role of the IRP in planning for them is addressed in Section 2.6 of Metropolitan's Draft 2020 UWMP:

> *Any of these risks and uncertainties, should they occur individually or collectively, may result in a negative impact to water supply reliability. While it is impossible to know how much risk and uncertainty to guard against, the region's reliability will be more secure with a long-term plan that recognizes risk and provides resource development to offset that risk.*

7.1.2 Year Type Characterization

Water supply and demand projections for the Calleguas service area were estimated for three hydrologic scenarios: normal year, single-dry year, and five consecutive dry years.

As summarized in Table 7-1, the normal year is the expected demand under average hydrologic conditions (based on historical average year conditions from 1922 through 2004); the single-dry year is the expected demand under the single driest hydrologic year (based on conditions experienced in 1977); and the five consecutive drought years is the expected demand based on conditions experienced from 1988 through 1992. As noted in the table, the available volumes listed are the sum of: Metropolitan's projected deliveries to Calleguas, Calleguas recycled deliveries, and reasonably available Calleguas Outage Storage (of imported water).

Table 7-1. Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location:
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	% of Average Supply
Average Year	2025 supply projection (average of 1922-2004 hydrology)	114,187	100%
Single-Dry Year	2025 supply projection (repeat of 1977 hydrology)	113,080	99%
Multiple-Dry Years 1st Year	2021 supply projection (repeat of 1988-1992 hydrology)	127,602	112%
Multiple-Dry Years 2nd Year	2022 supply projection (repeat of 1988-1992 hydrology)	135,542	119%
Multiple-Dry Years 3rd Year	2023 supply projection (repeat of 1988-1992 hydrology)	137,097	120%
Multiple-Dry Years 4th Year	2024 supply projection (repeat of 1988-1992 hydrology)	111,098	97%
Multiple-Dry Years 5th Year	2025 supply projection (repeat of 1988-1992 hydrology)	117,282	103%

NOTES: Available volumes shown above are the sum of Metropolitan's projected deliveries to Calleguas, Calleguas recycled deliveries, and reasonably available Calleguas Outage Storage: Lake Bard (7,500 AF) and the Las Posas ASR (20,000 AF). 27,500 AF is the basis for the Calleguas "Emergency Water Replacement Reserve" Fund. More description on the "Emergency Water Replacement" Fund can be found in Section 8.4.

7.1.3 Sources for Water Data

For SWP contractors, information on water supply capacity under several scenarios is available in the latest SWP Delivery Capability Report:

https://water.ca.gov/Library/Modeling-and-Analysis/Central-Valley-models-and-tools/CalSim-2/DCR2019

Weather information is available at:

- The National Weather Service Website: https://www.weather.gov/
- California Irrigation Management Information System: https://cimis.water.ca.gov/
- Western Regional Climate Center: https://wrcc.dri.edu/

Runoff data is available at:

- DWR (cdec) https://cdec.water.ca.gov/
- U.S. Geological Survey: https://maps.waterdata.usgs.gov/mapper/?state=ca
- Operators of local dams and reservoirs

Groundwater information is available at:

- Fox Canyon GMA: http://fcgma.org/
- State of California Sustainable Groundwater Management Website: https://water.ca.gov/Programs/Groundwater-Management
- California Statewide Groundwater Elevation Monitoring (CASGEM): https://water.ca.gov/Programs/Groundwater-Management/Groundwater-Elevation-Monitoring--CASGEM

7.1.4 Water Service Reliability

7.1.4.1 Water Service Reliability – Normal Year

As shown in Table 7-2, the estimated supply of water as determined by Metropolitan during an average (normal) year, together with Calleguas' recycled water supply, and the District's reasonably available outage supply are sufficient to meet the Calleguas' projected normal year water demands from 2025 through 2045.

Table 7-2. Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 *(Opt)*
Supply totals *(autofill from Table 6-9)*	114,187	115,300	117,460	118,906	119,364
Demand totals *(autofill from Table 4-3)*	87,541	88,665	90,846	92,307	92,769
Difference	26,646	26,635	26,614	26,599	26,595

NOTES: "Supply totals" does not include projected losses.

7.1.4.2 Water Service Reliability – Single Dry Year

As shown in Table 7-3, the estimated supply of water from Metropolitan during a dry year is sufficient to meet the Calleguas' projected dry year imported water demands from 2025 through 2045.

Table 7-3. Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 *(Opt)*
Supply totals	113,080	114,190	116,346	117,791	118,244
Demand totals	86,435	87,556	89,734	91,193	91,651
Difference	26,645	26,634	26,612	26,598	26,593
NOTES: "Supply totals" does not include projected losses.					

7.1.4.3 Water Service Reliability – Five Consecutive Dry Years

Table 7-4 shows the water supply versus demand evaluation under five consecutive drought years. For the five consecutive drought years assessment, a steady ramp up in imported demand is projected to occur over the first 3 years. Following the 3rd consecutive drought year, an approximate 20 percent decrease in imported demand would be observed. This would most likely occur due to the implementation of Metropolitan's WSAP or other external conservation messaging (e.g., SWRCB Conservation Targets for Community Water Systems). The 20 percent decrease in imported demand is consistent with what the Calleguas system experienced in 1988 through 1992 and again in 2012 through 2016. For example, during the 2012-2016 drought, imported demands decreased from 105,868 AF in 2014 to 86,537 AF in 2015 (about an 18 percent decrease). Sufficient supplies are projected to be available for the years 2025 through 2045.

Table 7-4. Multiple Dry Years Supply and Demand Comparison						
		2025	2030	2035	2040	2045 *(Opt)*
First year	Supply totals	117,282	117,293	119,045	120,784	121,644
	Demand totals	90,679	90,690	92,460	94,216	95,085
	Difference	26,603	26,603	26,585	26,568	26,559
Second year	Supply totals	124,402	124,414	126,305	128,182	129,111
	Demand totals	97,871	97,883	99,793	101,688	102,626
	Difference	26,531	26,531	26,512	26,494	26,485
Third year	Supply totals	125,797	125,809	127,727	129,631	130,573
	Demand totals	99,279	99,291	101,229	103,152	104,103
	Difference	26,518	26,518	26,498	26,479	26,470
Fourth year	Supply totals	102,480	102,489	103,952	105,404	106,123

Table 7-4. Multiple Dry Years Supply and Demand Comparison

		2025	2030	2035	2040	2045 *(Opt)*
	Demand totals	75,729	75,739	77,216	78,683	79,408
	Difference	26,751	26,750	26,736	26,721	26,715
Fifth year	Supply totals	111,027	111,036	112,608	114,167	114,938
	Demand totals	84,331	84,341	85,928	87,503	88,282
	Difference	26,696	26,695	26,680	26,664	26,656

7.1.5 Management Tools, Options, and Other Considerations

Metropolitan manages supplies on a calendar year basis and follows its WSDM plan for water management actions in response to a potential surplus or shortage year.

Calleguas owns and operates two significant points of imported water storage (Lake Bard and the Las Posas ASR) that primarily function as sources of outage supply for the District. In every water service reliability scenario described in the UWMP, Calleguas maintains a supply reserve in the event of a supply interruption from Metropolitan.

The supply vs. demand difference of 27,500 AF represents reasonably available Calleguas Outage Storage: Lake Bard (7,500 AF) and the Las Posas ASR (20,000 AF) that is within direct control of Calleguas. More information on Calleguas historical groundwater storage can be found in Section 6.2.3.

Water use efficiency and the implementation of demand management measures (DMMs) are effective management tools for Calleguas. Water use efficiency contributes to the District's Reduced Reliance on the Delta as the supply Calleguas receives from Metropolitan is virtually all from the SWP. More information on the District's Reduced Reliance on the Delta can be found in Appendix L.

7.2 DROUGHT RISK ASSESSMENT

7.2.1 Data, Methods, and Basis for Water Shortage Condition

CWC Section 10635(b) requires every urban water supplier to include, as part of its urban water management plan, a drought risk assessment (DRA) for its water service as part of information considered in developing its demand management measures and water supply projects and programs. The DRA analysis allows suppliers to consider how to manage their water supplies during stressed hydrologic conditions in relation to variations in demand. The DRA helps a supplier to evaluate the functionality of its WSCP shortage response actions and understand the type and degree of response that is appropriate for managing water supplies. This evaluation can help the supplier to identify risks and take proactive steps before the next actual drought lasting at least five consecutive years.

CWC Section 10612 requires the DRA to be based on the driest five-year historic sequence for the agency's water supply. However, CWC Section 10635 also requires that the analysis consider plausible changes on projected supplies and demands due to climate change, anticipated regulatory changes, and other locally applicable criteria. Accordingly, the 2020 UWMP Guidebook suggests that the historic five driest consecutive years on record may be considered a starting point in the analysis which is then informed by other factors. Suppliers may then use these estimated supply conditions to prepare the DRA analysis, assuming they occur over the next five years.

For Calleguas, the five-consecutive years of 1988 to 1992 represent the driest five-consecutive year historic sequence for its water supply. Thus, Calleguas used this five-year historic sequence to complete its DRA.

Metropolitan developed estimates of future demands and supplies for its member agencies based on local sources and from imported sources based on 96 years (1922-2017) of historic hydrology. Supply and demand analyses for droughts lasting at least five consecutive water years were based on conditions affecting the SWP, as this supply availability fluctuates the most among Metropolitan's sources of supply. Using the same 96-year period of the SWP supply availability, 1988 to 1992 is the driest 5-year historical sequence that represents the lowest water supply available for SWP supplies. In addition, analysis of the 8-river index indicates that the period 1988 to 1992 represents the lowest five consecutive dry years from 1922 through 2017. The 8-river index is used by DWR and other water agencies as an estimate of the unimpaired runoff (or natural water production) of the Sacramento and San Joaquin River basins, which are sources of water for the SWP.

7.2.2 DRA Water Source Reliability

Calleguas' DRA is presented in Table 7-5 and provides a comparison of its total water supply and use. This table is based on and is an abridged version of DWR's optional Planning Tool. Calleguas' assessment reveals that its supply capabilities are expected to exceed its projected water use for the next five years, from 2021 to 2025, under a repeat of a five consecutive-year drought based on historic driest five-year sequence of its water supply. As detailed in Appendix K, Calleguas and Metropolitan have a robust WSCP and comprehensive shortage response planning that includes demand reduction measures and supply augmentation actions. However, since Calleguas' DRA shows a potential surplus, no water service reliability concern is anticipated, and no shortfall mitigation measures are expected to be exercised over the next five years. Calleguas will periodically revisit its representation of both individual supply sources and of the total water use estimated for each year and will revise its DRA if needed.

7.2.3 Total Water Supply and Use Comparison

Table 7-5. Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	100,102
Total Supplies	127,602
Surplus/Shortfall w/o WSCP Action	27,500
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	27,500
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use [Use Worksheet]	108,042
Total Supplies [Supply Worksheet]	135,542
Surplus/Shortfall w/o WSCP Action	27,500
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	27,500
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use [Use Worksheet]	109,597
Total Supplies [Supply Worksheet]	137,097
Surplus/Shortfall w/o WSCP Action	27,500
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	27,500
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use [Use Worksheet]	83,598
Total Supplies [Supply Worksheet]	111,098
Surplus/Shortfall w/o WSCP Action	27,500
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	27,500
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use [Use Worksheet]	89,782
Total Supplies [Supply Worksheet]	117,282
Surplus/Shortfall w/o WSCP Action	27,500
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	27,500
Resulting % Use Reduction from WSCP action	0%

7.3 SUPPLY AND DEMAND ASSESSMENT

Metropolitan provides a supply/demand forecast for the Calleguas service area. In October 2020, Calleguas sent a data request to its purveyors and compiled a Local Production Forecast for Metropolitan. Metropolitan incorporated this forecast into its modeling of imported water demands. Metropolitan's imported water demand projections for Calleguas are assumed to be equal to Metropolitan's supply projections for Calleguas. A copy of Metropolitan's projections for Calleguas is included in Appendix D.

7.4 REGIONAL SUPPLY RELIABILITY

This section discusses water supply reliability strategies being implemented by DWR, Metropolitan and Calleguas. As a result of investments made in conservation, water recycling, transfer agreements, storage, and supply, Metropolitan expects to be able to meet forecasted Calleguas demands. Therefore, Calleguas also expects to be able to meet the forecasted purveyor demands.

7.4.1 DWR Strategies

As discussed previously, pumping from the Delta into the SWP system can create conflicts with natural flow patterns that stress the native habitat. In response, fish and wildlife agencies often require cutbacks in water exports to protect sensitive species at various times during the year. In addition, current water and ecosystem management approaches within the Delta are dependent upon the health of hundreds of miles of structurally suspect levees. Technical evaluations of levees have shown that they are vulnerable to failure due to a seismic event.

To address these and other related issues, DWR is evaluating a Delta Conveyance Project that includes facilities capable of diverting up to 6,000 cfs of water from the Sacramento River. This will:

- Reduce south Delta reverse river flows and minimize entrainment of fish that spawn in or migrate through the Delta.
- Enhance the ability to store surplus flows and reduce diversions during periods when fish are vulnerable.
- Improve drinking water quality and the ability of local water districts to meet public health standards.
- Support efforts to expand groundwater recharge and recycling to help meet California's new mandate to bring groundwater basins into sustainable patterns of pumping and recharge.
- Enhance seismic protection with the ability to provide a base supply while Delta levees are repaired.

Furthermore, operational redundancy for water exported through the Delta is important during outage scenarios. Additional information on Delta issues and status of the Delta Conveyance Project can be found on: https://water.ca.gov/deltaconveyance.

7.4.2 Metropolitan Strategies

Metropolitan's 2015 IRP Update established a plan to achieve a reliable water supply for Southern California through 2040. In the four years since adoption, the region's water supply reliability markedly improved from the depths of drought. Significant factors contributing to this improvement included continued conservation efforts by consumers, lasting investments in the Local Resources Program (LRP), flexible infrastructure to move surplus water into storage during wet years, and the ability to store conserved water in Lake Mead.

Metropolitan is in the process of completing its 2020 IRP Update. In its 2020 IRP Process, Metropolitan is using a scenario planning approach to identify and account for the broad range of uncertainty that the region faces in its water supplies and demands. Instead of focusing on a target for future water supply needs based on a single projected outcome of supplies and demands, this approach considered various possible future conditions for local and imported water supply and retail demand, and the policy implications for Metropolitan and its service area. Adaptive management during implementation will allow flexibility in how the region prepares for the supply and demand conditions as they evolve through the future. The scenario planning approach in the 2020 IRP started with identifying the major drivers of change that impact water supply and demand for the region, understanding how they interact, and then assessing the potential scale of impact in the future. The IRP planning effort and policy discussions are expected to continue throughout 2021.

7.4.3 Calleguas Strategies

Throughout its history, Calleguas has invested in local storage facilities to provide water when deliveries from Metropolitan are curtailed. Lake Bard and the Las Posas ASR Project were completed in the 1960s and 2000s, respectively. As discussed previously, these facilities provide essential local storage of imported water to be used during outages. Also, as described in Chapter 6, the SMP facilitates treatment of local groundwater that is currently too saline for potable use. The construction of future desalters will improve overall regional supply reliability.

8.0 Water Shortage Contingency Planning

Calleguas has developed water shortage contingency measures in the event that Metropolitan significantly reduces deliveries to its member agencies due to severe water shortage conditions or in the event of a catastrophic interruption of water supply.

Calleguas prepared its Water Shortage Contingency Plan (WSCP) as a separate document from the UWMP. Separation of the WSCP from the UWMP will allow for more flexibility in updating the WSCP without an amendment to the 2020 UWMP. The WSCP can be found in Appendix K.

Fundamental to the Calleguas WSCP is its relationship to Metropolitan's WSCP. The District falls directly under the water management actions of Metropolitan, as Calleguas is fully dependent on Metropolitan for its water supply. Metropolitan's WSDM plan is a critical component to the WSCP. Finally, while the Calleguas WSCP may be viewed as a restatement of Metropolitan's WSCP, the District continues to develop additional water shortage contingency measures in the event of a catastrophic interruption of supply.

This chapter provides a summary of elements within the Calleguas WSCP and other planning measures.

8.1 STAGES OF ACTION

Calleguas' Ordinance No. 12 gives the Board of Directors authority to take actions necessary to manage available supplies, including passing through to purveyors allocations and penalties for exceeding allocated deliveries. It is important to note that the Calleguas system is complex and the ultimate actions taken by Calleguas will depend on the unique issues of each particular condition.

Table 8-1 presents water management actions that could be implemented by Calleguas during shortage conditions. With exception of a catastrophic failure of the Santa Susana Tunnel or other infrastructure failure of similar magnitude, Calleguas does not foresee imposing allocations except under Metropolitan's direction and according to Metropolitan's WSAP schedule. Table 8-2 identifies demand reduction actions, and Table 8-3 addresses supply augmentation. As noted in Table 8-3, Metropolitan's WSCP applies to Calleguas for "supply augmentation methods and other actions."

Table 8-1. Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range[1] *Numerical value as a percent*	Shortage Response	
1	Up to 10%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
2	Up to 20%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
3	Up to 30%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
4	Up to 40%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
5	Up to 50%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation

Table 8-1. Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range[1] *Numerical value as a percent*	Shortage Response	
6	>50%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan Calleguas: *Catastrophic Interruption* **Conduct Initial Assessment of Outage** (increased communication and coordination with the District's Purveyors, assessment of Calleguas Outage Supplies and Purveyor Local Supplies) **Make Call for Conservation**: "No Outdoor Water Use" **Determine if Imported Water Outage Protocol (IWOP) - Allocation should be Implemented** (based on system demand reductions and additional information on potential duration of the Outage Event) **Board Action to Implement Allocation System**	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation Calleguas: *Catastrophic Interruption* (based on 2020 modeling - 6-mo. Outage) Dec. to May: Approx. 15% conservation (1st 4 months), 40% conservation after Lake Bard Water Filtration Plant (LBWFP) potable supply exhausted June to Nov.: Approx. 35% conservation (1st 4 months), 45% conservation after LBWFP potable supply exhausted Note: Call for "No Outdoor Water Use" may bring immediate 40% to 60% reductions in overall demand, which would extend availability of outage supplies.

[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*

NOTES: 2020 Imported Water Outage Protocol Memo - provided with WSCP in Appendix K

Table 8-2. Demand Reduction Actions

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Penalty, Charge, or Other Enforcement?
1 through 6*	Expand Public Information Campaign	Approx. 10% to >50% or 9,000 AF to 45,000 AF. During the 2012-2016 drought, Calleguas' imported demands decreased from 105,868 AF in 2014 to 86,537 AF in 2015 - an overall 18% system demand reduction. Factors that contributed to this reduction were: the demand reduction actions listed in Table 8-2, implementation of Metropolitan's WSAP, and the Statewide Conservation Targets.	Yes
	Provide Rebates on Plumbing Fixtures and Devices		
	Provide Rebates for Landscape Irrigation Efficiency		
	Provide Rebates for Turf Replacement		
	Moratorium or Net Zero Demand Increase on New Connections		
	Implement or Modify Drought Rate Structure or Surcharge		
	Reduce System Water Loss		

NOTES: *Calleguas would implement similar demand reduction actions across all Shortage Levels. This is consistent with the approach outlined by Metropolitan's WSCP, WSDM Plan, and WSAP. The implementation of demand reduction actions would likely be done across the Metropolitan Service Area with all the Member Agencies. For Level 6 (or a Catastrophic Interruption of Supply) that impacts Calleguas, the District may execute an outage response and allocation system that is similar to what is currently being studied in the IWOP.

Table 8-3. Supply Augmentation and Other Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?
1 through 6*	Please see Metropolitan's WSCP, Table A.4-4 Shortage Stages and Response Actions: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Approx. 10% to >50% or 9,000 AF to 45,000 AF.

NOTES: *The District falls directly under the "Supply Augmentation Methods and Other Actions" of Metropolitan, as Calleguas is fully dependent on Metropolitan for its water supply.

8.2 CONSUMPTION REDUCTION METHODS BY AGENCIES

Under the most severe drought conditions and under almost any catastrophe condition, and consistent with Calleguas' Ordinance No. 12 Section 6(a), Calleguas may "apportion the available water supply among Member Agencies in an equitable manner with due regard to public health and safety, and in accordance with the provisions of the Municipal Water District Act of 1911, as amended." In the event that a mandatory reduction in water consumption is required, following are examples of measures that purveyors may implement to meet water consumption goals:

- Restrict irrigation hours to evening and early morning hours.
- Prohibit non-essential irrigation (ex., golf courses and parks) and limit water use for essential irrigation.
- Restrict or disallow irrigation entirely.
- Disallow the use of water to fill ornamental lakes, ponds, pools, and fountains.
- Limit or disallow the washing of vehicles.
- Disallow the spraying of outdoor paved surfaces and using potable water for street cleaning.
- Restrict the use of water from fire hydrants for construction purposes.
- Implement a rate structure for charges and penalties for water use restriction violations.

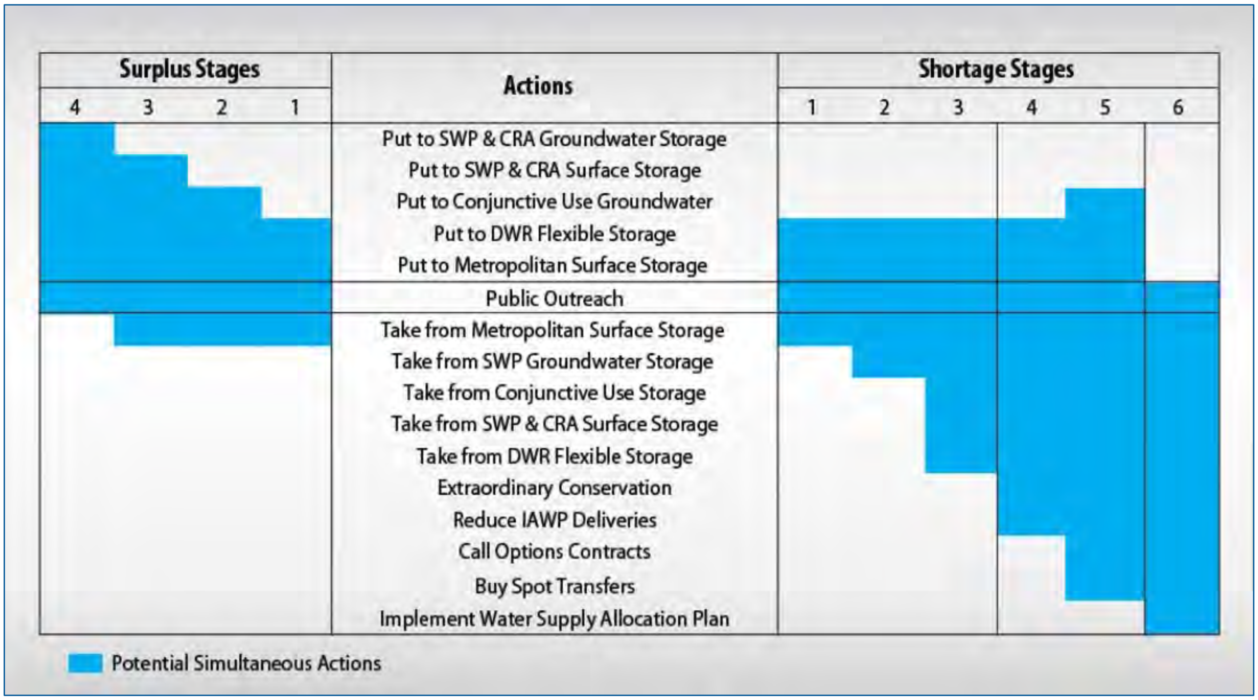
8.3 DETERMINING WATER SHORTAGE REDUCTIONS

With exception of a catastrophic failure of the Santa Susana Tunnel or other critical infrastructure, Calleguas does not foresee imposing allocations except under Metropolitan's direction and according to Metropolitan's WSDM Plan and WSAP schedule.

As shown in Figure 8-1, the WSDM Plan defines six shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a 10 percent shortfall in imported supplies could be a stage 1 shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage.

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

The WSAP is enacted at shortage stage 6 and provides a formula for allocating available water supplies to the member agencies in case of extreme water shortages within Metropolitan's service area. The WSAP formula seeks to balance the impacts of a shortage at the retail level for shortages of Metropolitan supplies of up to 50 percent.



Surplus Stages				Actions	Shortage Stages					
4	3	2	1		1	2	3	4	5	6
■				Put to SWP & CRA Groundwater Storage						
■	■			Put to SWP & CRA Surface Storage						
■	■	■		Put to Conjunctive Use Groundwater					■	
■	■	■	■	Put to DWR Flexible Storage	■	■	■	■	■	
■	■	■	■	Put to Metropolitan Surface Storage	■	■	■	■	■	
■	■	■	■	Public Outreach	■	■	■	■	■	■
	■	■	■	Take from Metropolitan Surface Storage	■	■	■	■	■	■
				Take from SWP Groundwater Storage		■	■	■	■	■
				Take from Conjunctive Use Storage			■	■	■	■
				Take from SWP & CRA Surface Storage			■	■	■	■
				Take from DWR Flexible Storage			■	■	■	■
				Extraordinary Conservation				■	■	■
				Reduce IAWP Deliveries				■	■	■
				Call Options Contracts					■	■
				Buy Spot Transfers					■	■
				Implement Water Supply Allocation Plan						■

■ Potential Simultaneous Actions

Figure 8-1 Metropolitan's Resource Stages, Anticipated Actions, and Supply Declarations[13]

8.4 REVENUE AND EXPENDITURE IMPACTS

During periods of reduced consumption, revenue from water sales will decline while expenses remain relatively constant. A natural disaster may also entail unpredicted expenditures for repairs. Therefore, it is imperative that Calleguas have adequate reserves to cover operating and emergency repair expenses during these periods. On April 29, 2014, Calleguas' Board adopted Resolution No. 1829, establishing a reserve policy which calls for funds to be set aside to (1) operate for six months without any revenue from water sales, (2) replenish Lake Bard and the Las Posas groundwater basin after use of those supplies during an extended supply outage, and (3) make emergency repairs to critical facilities in the event of a catastrophic event.[14] Resolution No. 1829 designates 27,500 AF as the basis for the "Emergency Water Replacement Reserve", and that same volume of supply factors into the reliability assessment for the District. These reserve funds are in place and allow for Calleguas to operate for extended periods with reduced revenue from water sales while at the same time paying for significant repairs to its system due to an unexpected event. If periods of reduced consumption are prolonged, Calleguas may be required to adjust rates to remain financially stable.

As discussed previously, Calleguas has the authority to impose penalties for exceeding allocated deliveries during declared shortage conditions. Calleguas has monitoring and control of flow at all turnouts and provides real-time flow data to both Calleguas and its purveyors, which assists in more efficient operations during both water shortage conditions and normal operating conditions.

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[13] Source: Metropolitan's Draft 2020 UWMP Figure 2-1

[14] http://www.calleguas.com/images/docs-financial/ReservePolicy.pdf

8.5 RESOLUTION OR ORDINANCE

Calleguas' Ordinance No. 12 gives the Board of Directors authority to take actions necessary to manage available supplies, including passing through allocations to purveyors, including penalties for exceeding allocated deliveries.

8.6 WATER QUALITY CONTINGENCY PLANNING

Changes in drinking water regulations, environmental litigation, or identification of a new contaminant could result in the loss of an existing water supply source. This section discusses how water quality concerns could impact the reliability of the regional water systems.

8.6.1 Metropolitan Water Quality Contingency Planning

Metropolitan requires a safe drinking water supply from the Delta to meet current and future regulatory requirements for public health protection. Finding cost-effective ways to reduce total organic carbon, bromide concentrations, pathogenic microbes, and other unknown contaminants from Delta water supplies is one of Metropolitan's top priorities. Metropolitan also requires a SWP supply that is consistently low in salinity so it can blend SWP water with higher salinity Colorado River water to achieve salinity goals for its member agencies. In addition, Metropolitan needs consistently low salinity SWP water to increase in-basin water recycling and groundwater management programs. These programs require that blended water supplied to the member agencies meets the TDS goal adopted by Metropolitan's Board, which specify a salinity objective of 500 mg/L for blended imported water. (Metropolitan's Draft 2020 UWMP, December 2020)

Metropolitan is actively involved in DWR's Municipal Water Quality Investigations (MWQI) Program. The MWQI Program strives to monitor, protect, and improve drinking water quality of Delta water deliveries to the urban SWP contractors and other users of Delta water. The program focuses on issues related to drinking water quality through regular water quality monitoring, special field and laboratory studies, the use of forecasting tools such as computer models and data management systems, and reporting. (Metropolitan's Draft 2020 UWMP, December 2020)

Levee modifications and other source control actions may significantly reduce ocean salinity concentrations in Delta water, which would benefit Delta water users and export interests alike. Recent computer modeling analyses by Metropolitan, DWR, and the US Geological Survey indicate that reducing this salinity intrusion by partially closing existing levee breach openings and/or building radial gate flow control structures will significantly reduce TDS and bromide concentrations in water from the Delta during the summer and fall months and in drought years. (Metropolitan's Draft 2020 UWMP, December 2020)

8.6.2 Calleguas Water Quality Contingency Planning

Calleguas manages two major local storage facilities, Lake Bard and the Las Posas ASR facilities. Lake Bard is relatively small and serves as a primary water supply for the District in the event of emergency or planned system outage. Contamination of Lake Bard is an unlikely event as the lake and its watershed are owned by Calleguas and access is restricted and continuously monitored by security cameras.

Stored groundwater is also an important part of Calleguas' water resource mix. Depending on the extent of extraction and the timing in relation to the last injection event, water in the Las Posas ASR could contain iron (Fe) and manganese (Mn) at levels that cause discoloration, potentially resulting in customer complaints. Las Posas Wellfield water supplies are expected to meet all primary MCLs[15], but may not meet secondary MCLs or customer expectations for aesthetics. Calleguas is developing a public outreach toolkit to be ready to distribute in the event of an outage that requires significant extraction from the Las Posas Wellfield. Public outreach materials would warn residents of the potential for discolored water during the outage, explain the causes of discoloration, provide information on the safety of the water, and provide a contact for more information.

8.7 CATASTROPHIC SUPPLY INTERRUPTION

Although Metropolitan's and Calleguas' water delivery systems are robust, these systems are still vulnerable. A natural event, such as an earthquake, could cause the complete and sudden failure of the facilities used by Metropolitan to import water into the region. Similarly, the facilities used to import water from Metropolitan to the Calleguas service area are susceptible to these same threats.

8.7.1 Metropolitan Catastrophe Strategies

The majority of Southern California's water is imported via three facilities, the California Aqueduct, Los Angeles Aqueduct, and the CRA. All three sources cross the San Andreas Fault (Figure 8-2). A catastrophic event that results in an unplanned interruption in supply from any of these facilities would have a significant impact on the ability to supply water. Consequently, Metropolitan has invested heavily in emergency storage facilities located both in and out of the region.

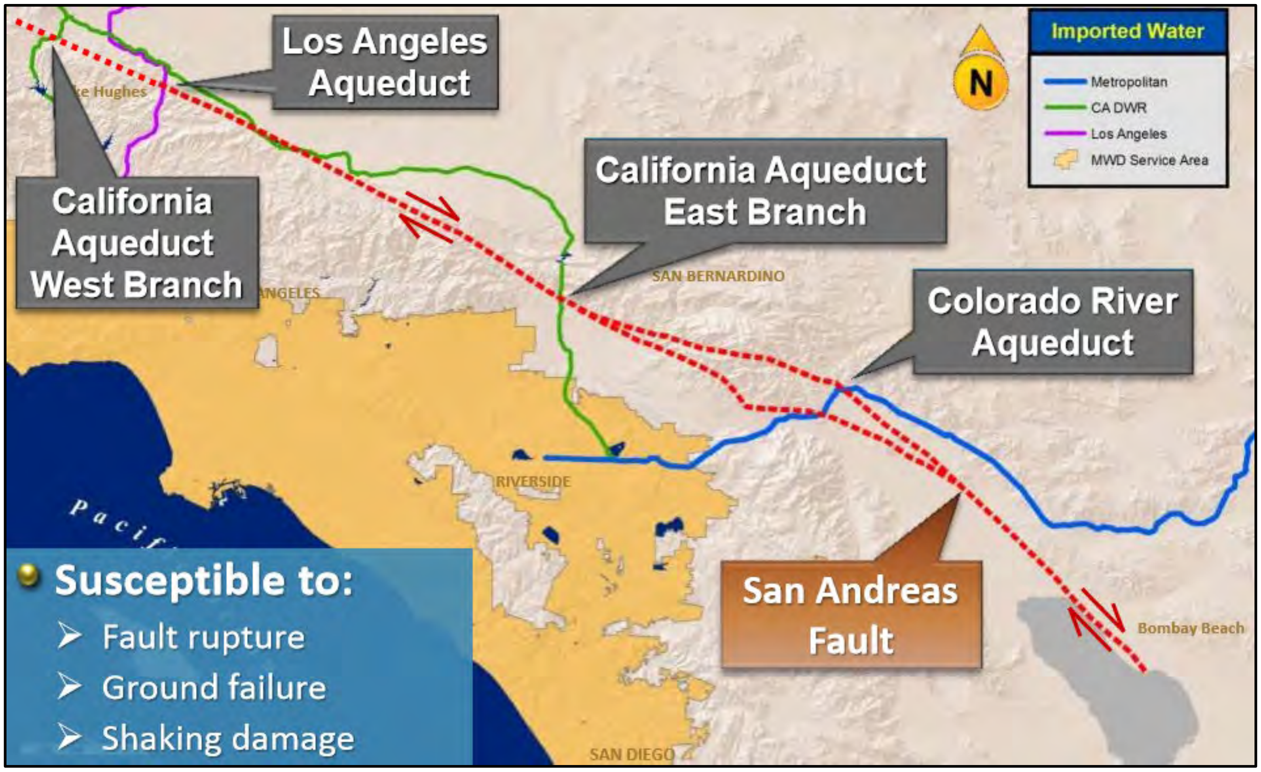

Figure 8-2 Imported Water Aqueducts Crossing the San Andrea Fault

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[15] Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water by state and federal regulations. Primary MCLs address health concerns, while secondary MCLs address aesthetics such as color, taste, and odor.

In the event of a SWP outage, any reservoir south of the outage could be used to supply water to the Calleguas service area. In 2019, Metropolitan revised its emergency storage objective up to 750 TAF from 500 TAF. Metropolitan's emergency storage planning criteria mandate that the region should maintain adequate surface storage reserves to serve 75 percent of the firm retail demands for a six-month period. Further, it defined that these surface storage reserves should reside inside of the major earthquake fault lines that cross the California Aqueduct, CRA, and Los Angeles Aqueduct.

8.7.2 Calleguas Catastrophe Strategies

Located at the northwestern extent of Metropolitan's service area, Calleguas has only one system connection with Metropolitan. In the event that service from this supply is disrupted, Calleguas would be required to meet purveyor demands from water stored in Lake Bard and the local groundwater basins. Providing Calleguas with a second water source was one of the primary reasons for development of the Las Posas ASR Project. Current and planned interconnections with adjacent water districts can also provide supplemental water in the event of an outage in the Calleguas system (see Sections 6.7 and 6.8 for more information on existing and planned interconnections).

Calleguas has several planning efforts completed and underway to address water reliability during a catastrophic imported water outage. These include, but are not limited to, the *2014 Emergency Water Supply Plan (EWSP)*, the District's *Water Supply Alternatives Study (WSAS)*, and the *Imported Water Outage Protocol (IWOP)*.

- The EWSP described measures that the District could implement to improve emergency water supply reliability. Many recommendations included in the 2014 EWSP have since been implemented or addressed in subsequent planning documents.
- The WSAS is a comprehensive planning effort evaluating approximately 100 projects and programs to enhance water supply reliability with emphasis on recommended projects to meet Calleguas' water demands during an extended outage of imported supplies.
- The IWOP details potential methodologies for allocating the District's outage supplies in the event of a catastrophic interruption of imported water. The intended purpose of the IWOP is to prepare and codify a methodology for demand reduction during an outage. The *Calleguas 2020 IWOP Memo* is provided as an attachment to the Calleguas WSCP; see Appendix K.

Metropolitan leases a smaller, parallel pipeline, West Valley Feeder No. 1, to the Los Angeles Department of Water and Power (LADWP). Metropolitan has an agreement for LADWP to provide Calleguas with an average of 40 cfs of LADWP water through West Valley Feeder No.1 when water is not available through West Valley Feeder No.2.

Lake Bard has a total storage capacity of 10,500 AF and is generally kept full in order to be ready to provide water during an outage of imported supply. Due to hydraulic constraints through the LBWFP, 7,500 AF can be treated and delivered as potable water. The remaining 3,000 AF stored in Lake Bard are available as an unfiltered, disinfected, non-potable supply. The LBWFP has a treatment capacity ranging from 30 to 100 cfs. At high flow, it would empty Lake Bard in 5.5 weeks, at low flow in four months.

Calleguas currently has 20,000 AF of groundwater stored in the East Las Posas basin and accessible by the Las Posas ASR Project, which would provide for six months of production at 55 cfs or just over a year of production at 25 cfs.

Additionally, Calleguas has accumulated groundwater storage credits under FCGMA-approved programs in basins within the Calleguas service area that may be able to be pumped by purveyors during an extended outage of imported supplies. Utilizing a combination of Lake Bard and Calleguas stored groundwater, and by limiting water supplies to purveyors to health and safety quantities only, Calleguas can endure an extended disruption in service from Metropolitan.

Metropolitan also has a connection capable of receiving up to 150 cfs of untreated water from LADWP's Los Angeles Aqueduct System, which originates in the Owens Valley east of the Sierra Nevada Mountains. The connection is located in Magazine Canyon, which is about half a mile north of Jensen, and the water could be treated at Jensen. There is no formal agreement with LADWP to provide water to Metropolitan through this connection, but Metropolitan staff has indicated that LADWP has been cooperative about providing water in the past. In addition, Metropolitan is able to wheel about 35 cfs of Colorado River water to Calleguas through LADWP's LA-17 connection in Eagle Rock, West Valley Feeder No. 1, and the CA-0l meter connection in Chatsworth. There is also no formal agreement with LADWP to provide water to Calleguas through this connection.

In 2015, Calleguas began exploring the feasibility of implementing seawater desalination as a baseline supply designed to meet essential water demands during a Stage 3 water shortage (see Table 8-1). A preliminary assessment indicates that the cost of a seawater desalination facility would be very high, in part because much of Calleguas' demand occurs over 20 miles inland and at an elevation up to 1,100 feet. The WSAS is evaluating additional water supply alternatives to identify solutions that will meet Calleguas' reliability needs in the most cost-effective and environmentally-responsible manner. These options include but are not limited to:

- Recycled water and potable reuse of recycled water
- Interconnections with other agencies
- Stormwater capture
- Water use efficiency measures
- Increase Lake Bard capacity
- Add pump to enable treatment of entire Lake Bard capacity
- Additional purveyor well capacity
- Storage in another agency's lake
- New lake
- Additional ASR facilities
- Seawater desalination

The options are evaluated according to the following criteria:

- Technical feasibility
- Cost
- Reliability
- Yield
- Environmental impacts
- Permitability
- Ancillary benefits (e.g., drought proofing)

8.7.3 Calleguas Emergency Pipeline Repair Measures

The Calleguas distribution system has proven highly reliable for over 60 years. However, its potential vulnerability was demonstrated by the 1994 Northridge Earthquake, which resulted in numerous pipeline separations and cracked joints, and again in 1997 by an intense pressure surge that led to the rupture of a 20 linear-foot section of a 66-inch diameter pre-stressed concrete pipe in Simi Valley.

Large diameter pipeline failures, if not addressed promptly and properly, can create health and safety risks for many thousands of customers. Facility failures may be caused by construction activity, earthquakes, power failures, or other conditions such as pressure surges (i.e., water hammer).

Recognizing the inherent vulnerability of water transmission systems, Calleguas has taken the following actions to establish a state of preparedness that facilitates timely emergency response and assures that repairs will be performed in the most efficient manner:

- Maintenance of an extensive inventory of pipe and fittings to repair all of the pipe sizes and types in its potable water system, ranging from 24 to 78 inches in diameter. This inventory is located at Calleguas' wellfield property.
- Development of comprehensive repair drawings for all of the pipeline types and sizes in its potable water system.
- Maintenance of an emergency contact list.
- Maintenance of contracts and insurance with contractors skilled in repair of large diameter pipelines.

8.8 MINIMUM SUPPLY NEXT THREE YEARS

The UWMP Act requires that water agencies provide an estimate of the minimum water supply available during each of the next three water years, 2021, 2022, and 2023. Table 8-4 shows the combined availability of all water sources as the available water supply (imported water and recycled water). The same hydrology was assumed as the historical multiple-dry year period.

Table 8-4. Minimum Supply Next Three Years

	2021	2022	2023
Available Water Supply (AFY)	88,007	96,888	88,248

8.9 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

Calleguas is a participant in the *2015 Ventura County Multi-Hazard Mitigation Plan*[16], which assesses the risks posed by natural and human-caused hazards and establishes mitigation strategies to reduce or avoid these risks. Earthquakes are addressed in this plan.

Calleguas also conducts its own seismic risk and resilience assessments on critical infrastructure, including imported water, the Wood Ranch Dam at Lake Bard, the Lake Bard WFP, pipelines, Las Posas ASR wells, turnouts, and the Santa Susana Tunnel.

As described above, 100 percent of Calleguas' water is provided by Metropolitan at a single point – the East Portal in Chatsworth. It then passes through the Santa Susana Tunnel, a 1.3-mile long 96-inch diameter tunnel that traverses the Santa Susana Pass and delivers water through the West Portal in Simi Valley, where the Calleguas system then branches and distributes water throughout the service area. The Santa Susana Tunnel was completed in 1962 and is tunneled through sandstone with thin shale interbeds. This single point of water delivery to Calleguas' system crosses several

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[16] Online: http://www.vcfloodinfo.com/resources/ventura-county-hazards-mitigation-plan

traces of a mapped fault zone (Figure 8-3), and is vulnerable to damage or even complete collapse in the event of a substantial earthquake.

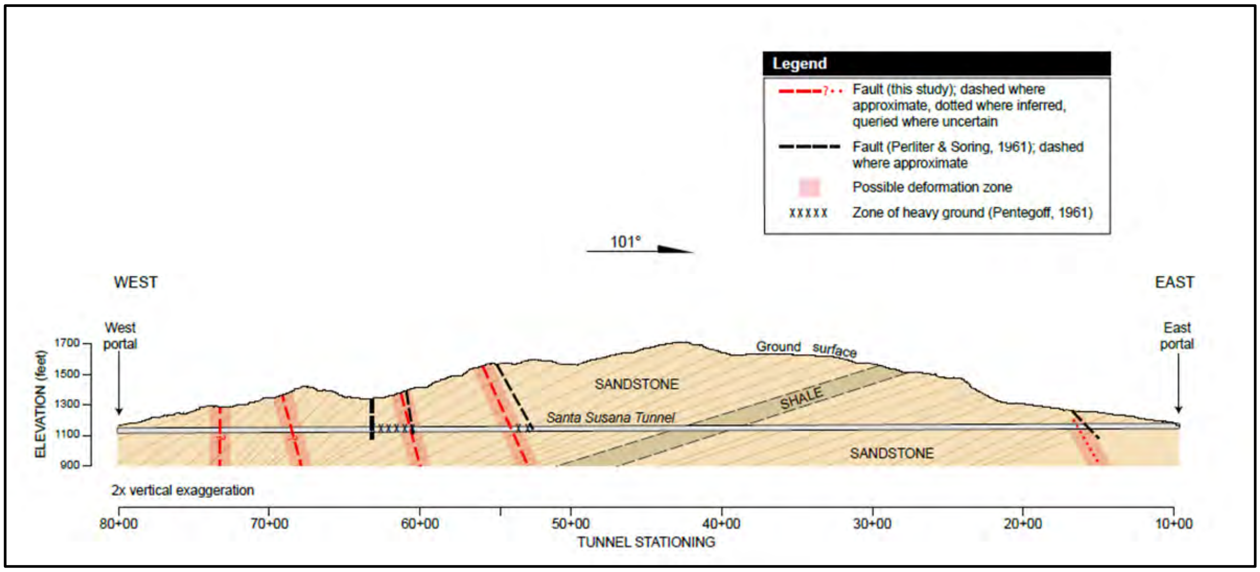


Figure 8-3 Location of Faults along the Alignment of the Santa Susana Tunnel

Calleguas has completed a study of seismic impacts and mitigation options for the Santa Susana Tunnel. The study includes a geologic and geotechnical characterization and a Seismic Hazard Assessment. The assessment identified potential risks to the tunnel in the event of an earthquake. It also analyzed potential improvements to the tunnel to reduce risk of failure, potential repair methods to address failures should they occur, and bypass options around the tunnel to facilitate shutdowns for maintenance and deliver water in the event of a tunnel failure. The District concluded that improvements to mitigate the risk of tunnel damage in an earthquake are more cost-effective than tunnel repairs, and bypass options are cost prohibitive. Implementing projects from the WSAS would be a more cost-effective means of providing a back-up water supply during outages involving the tunnel. The next steps are to conduct a physical inspection of the tunnel, refine tunnel improvement approaches, and implement the improvements. The most current update on the study is included in Appendix J.

9.0 Demand Management Measures

Wholesale agencies must provide narrative descriptions of demand management measures (DMMs) and efforts related to the following:

- Metering
- Public education and outreach
- Water conservation program coordination and staffing support
- Other demand management measures
- Asset management
- Wholesale supplier assistance programs

Additionally, wholesale suppliers are required to address their DMM implementation over the past five years.

The implementation of cost-effective BMPs provides mechanisms for both active conservation and financial incentives for reducing discretionary consumption. Calleguas will continue to work with Metropolitan and regional purveyors to identify new ways to manage water consumption in a cost-effective manner and will continue to measure and evaluate the effectiveness of the current conservation activities.

9.1 METERING

Calleguas' system is fully metered and metered accounts are billed based on volume of water used. All of Calleguas' meters are Venturi meters, which are calibrated annually and receive appropriate scheduled maintenance. All turnouts are connected through land lines or wirelessly to (1) a supervisory control and data acquisition (SCADA) system that provides real-time flow and pressure readings to Calleguas operations staff, and (2) a purveyor web site that provides real-time, historical, and totalized flow data to both Calleguas and purveyor staff.

9.2 PUBLIC EDUCATION AND OUTREACH

Calleguas promotes conservation, education, and public awareness programs through its website, social media sites, tours, and speaking engagements. Calleguas budgeted $100,000 for Public Outreach and Education Programs for FY 19-20. This budget supports advertising Water Use Efficiency (WUE) rebates and other messaging with the intended purpose of increasing water awareness. This includes advertisements in 2020 that reiterate the safety of tap water supplies during the COVID-19 pandemic, production of public service announcements, and other videos.

In addition, as part of water rates paid to Metropolitan, Calleguas contributes to a Water Stewardship fund allowing Metropolitan to continue such programs on behalf of their member agencies. Calleguas' contribution to this fund in 2020 was nearly $5.9 million.

Calleguas is actively involved in a variety of programs designed to increase public awareness of water resource issues and encourage a greater measure of water use efficiency within the community including native plant and rain barrel sales, information fairs, drought-tolerant landscaping and turf removal classes, graywater and rainwater capture workshops, drip irrigation workshops, and drought-tolerant demonstration gardens, and preparation, distribution, and advertising of promotional materials.

Calleguas sponsors and hosts Hands-On Drip Irrigation Workshops presented by the University of California Master Gardeners of Ventura County. Workshops are offered free to the community, and participants work in small groups with Master Gardeners to learn to assemble and install a drip irrigation system. They also receive a copy of the *UC Drip Irrigation Education Guide*. Calleguas also holds periodic turf removal, drought-tolerant landscape, and California-friendly plant classes at its headquarters in Thousand Oaks. After COVID-19 restrictions limited the ability for in-person classes in 2020, Calleguas hosted an online firescaping webinar to educate residents on landscaping practices to reduce risk of wildfire on their properties. Approximately 100 residents participated. All in-person and online classes and workshops are offered free of charge.

University *of* California
Agriculture and Natural Resources
UCCE Master Gardener Program

GROWING WITH THE COMMUNITY...

In 2011, with diminishing water resources in what has become California's historic drought, the Calleguas Municipal Water District, Conejo Recreation and Park District, City of Thousand Oaks and the University of California Master Gardeners of Ventura County joined together to create the True Colors Garden and Learning Center at the Goebel Center in Thousand Oaks. The vision of this ambitious project - to create and select a demonstration garden to showcase plants that, once established, require little maintenance and less water.

Many plants come with impressive credentials – they are among the University of California, Davis "Arboretum All-Stars" whose viability has been tested and then recommended for California gardens.

Since 2012, a series of educational talks are conducted by UC Master Gardeners of Ventura County in conjunction with garden tours from June to September in the Goebel Center.

HAPPY GARDENING!
Master Gardeners of Ventura County

Conejo Recreation & Park District
bewaterwise.com REBATES & DROUGHT UPDATES
CALLEGUAS MUNICIPAL WATER DISTRICT

Since its creation in 2011, Calleguas has co-sponsored the California True Colors Garden and Learning Center (Garden), a water conservation demonstration garden located on property owned by the Conejo Recreation and Park District (CRPD) at 1385 Janss Road in the City of Thousand Oaks. The Garden consists of six subareas, each supporting a different plant palette showcasing California natives and other California-friendly, low water-use plants. The UC Master Gardeners of Ventura County host ongoing garden talks, tours of the Garden, and hands-on education classes for the public to allow residents to learn about water-wise gardening at home. The Garden is a partnership between the UC Master Gardeners of Ventura County, Calleguas, the City of Thousand Oaks, and CRPD.

9.3 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT

Calleguas has staff designated to the oversight and implementation of the conservation BMPs and the promotion of water conservation.

9.4 OTHER DEMAND MANAGEMENT MEASURES

Calleguas performs water audits and balances to monitor the amount of unaccounted water use. Average water loss in the Calleguas distribution system is consistently less than one percent of total water delivered.

9.5 ASSET MANAGEMENT

Calleguas' computer-based Time and Activity Tracking System contains a geographically referenced database of the components of Calleguas' infrastructure. Operations and Maintenance staff schedule and document preventive maintenance and document unplanned maintenance. The system allows for reliable and efficient planning of work and rehabilitation and replacement of components that have a recurring need for unplanned maintenance.

After the Northridge earthquake, all storage reservoirs were analyzed for compliance with new seismic standards. All reservoirs determined to be in need of seismic upgrades have been upgraded or replaced.

Each part of Calleguas' infrastructure that is accessible without dewatering is inspected annually. The Santa Susana Tunnel is inspected periodically and immediately following a significant seismic event. Calleguas has 35 miles of prestressed concrete cylinder pipe, which is subject to failure from breaks in the steel prestressing wires. These pipes are inspected using eddy current technology to proactively identify wire breaks. When such breaks are detected, the at-risk pipes are lined using steel cylinders or carbon fiber material.

Each year Calleguas' entire pipeline system is monitored for corrosion. As needed, cathodic protection systems are installed or replaced to protect pipelines from corrosion. Other facilities are protected through routine recoating and repainting.

Calleguas' Lake Bard Dam is monitored every month using piezometers to measure water levels and every six months to measure settlement. The results are reviewed annually by a registered engineer and submitted to the California Department of Safety of Dams.

9.6 WHOLESALE SUPPLIER ASSISTANCE PROGRAMS

Calleguas works closely with its purveyors and provides financial assistance in the implementation of several BMPs. For FY 19-20, Calleguas budgeted $180,000 for WUE and Conservation Programs. Approximately $45,000 of the WUE budget is reserved for supplementing rebate programs offered by Metropolitan, specifically high-efficiency clothes washers, premium high-efficiency toilets, weather-based irrigation controllers, and soil moisture sensors systems. Calleguas currently offers a $25 incentive on top of the normal Metropolitan incentive for these devices. Table 9-1 shows the Metropolitan rebate amounts, Calleguas supplement, retail agency supplements (currently only Triunfo Water and Sanitation District provides a rebate supplement), and total water-efficient device rebate activity in the Calleguas service area in 2016-2020. Note that eligible devices, rebate amounts, and the maximum number of each device per customer are reassessed on an annual basis. Table 9-1 summarizes cumulative totals for rebate activity over the last five years.

Table 9-1. Device Rebates 2016 - 2020

Device[1]	No. of Rebates[2]	Metropolitan Rebate Total	Calleguas Rebate Supplement Total	Retail Agency Rebate Supplement Total	Total Rebates Paid in Calleguas Service Area
Central Computer Irrigation Controller Systems	16	$7,893	$0	$0	$7,893
Weather-Based Irrigation Controllers and Add-Ons	1,795	$318,439	$35,166	$14,586	$377,122
Hose Bib Irrigation Controller[3]	3	$140	$0	$0	$140
Soil Moisture Sensor Systems	5	$680	$0	$0	$680
Rotating Sprinkler Nozzles	71	$38,107	$0	$0	$39,018
Rain Barrels[4]	1,151	$192,222	$0	$130	$192,432
Cisterns	5	$1,350	$0	$0	$1,350
Premium High-Efficiency Toilets (CII and RES)	471	$280,306	$5,450	$180	$286,451
High-Efficiency Clothes Washers	2,606	$221,170	$49,200	$1,675	$272,590
Flow Regulators	4	$2,544	$0	$0	$2,544
Flow Restrictors	3	$3,740	$0	$0	$3,740
Plumbing Flow Control	1	$610	$0	$0	$610
Ice-Making Machine (CII)	1	$1,000	$0	$0	$1,000
Ultra-Low Water Urinals (CII)	3	$1,000	$0	$0	$1,000
Zero-Water Urinals (CII)	3	$6,200	$0	$0	$6,200
Total	6,138	$1,075,401	$89,816	$16,571	$1,192,770

1 – CII = Commercial, Institutional, and Industrial; RES = Residential

2 – Number of rebate applications paid. The number of devices rebated is higher for many of the devices because a customer may receive a rebate on multiple units.

3 – Rebate offered for the first time in 2020

4 – In 2016, rebates were offered at up to $75 each for up to four rain barrels per customer. In 2017, a customer could receive the rebate on up to two rain barrels. In 2019-2020 the rebate amount was $35 per rain barrel with a limit of two barrels per customer.

The Calleguas WUE budget also supports processing of custom programs implemented by the District's purveyors. These custom programs, such as demonstration gardens, toilet leak detection sensors, and conservation kit giveaways, may be partially reimbursed Metropolitan and/or

Calleguas. Calleguas utilizes funding offered by Metropolitan through its Member Agency Administered Program to support custom WUE programs implemented by the District's purveyors.

Customers of Calleguas' purveyors can participate in Metropolitan's turf replacement program, which provides a rebate of $2 per square foot of irrigated turf grass that is removed and replaced with drought-tolerant landscaping and water efficient irrigation. This program is available for both residential and commercial properties, and can be accessed through Metropolitan's website bewaterwise.com. Table 9-2 summarizes the turf replacement program activity in the Calleguas service area in 2016-2020, and Figure 9-1 shows the locations of the paid rebates. Over the past five years, over 7.6 million square feet (over 175 acres) of irrigated turf grass has been converted to drought-tolerant landscaping in the Calleguas service area, with an estimated water savings of 993 AF per year.

Table 9-2. Turf Replacement Rebates Paid in 2016 - 2020

Year	Total No. of Rebates Paid	Total Rebate Amount	Total Square Feet Converted	Water Saved (AFY)
2016	1,029	$10,511,693	6,457,018	839.4
2017	169	$1,049,147	952,350	123.8
2018	4	$4,860	5,204	0.7
2019	60	$137,835	70,975	9.2
2020	94	$299,384	153,027	19.9
Total	1,356	$12,002,919	7,638,574	993.0

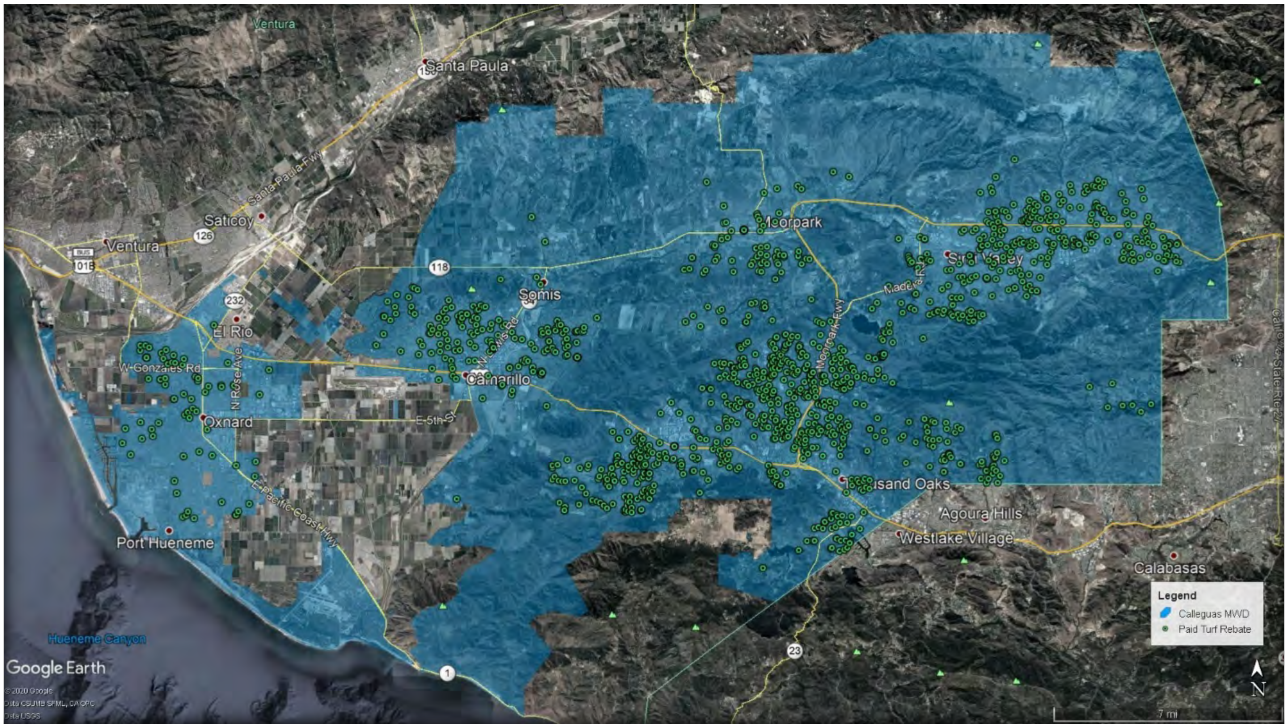


Figure 9-1 Turf Replacement Program Rebates Paid in the Calleguas Service Area, 2016-2020

10.0 Plan Adoption, Submittal, and Implementation

This chapter describes the steps taken by Calleguas to adopt and submit the UWMP and to make it publicly available.

10.1 INCLUSION OF ALL 2020 DATA

This 2020 UWMP includes water use and planning data for the entire calendar year of 2020.

10.2 NOTICE OF PUBLIC HEARING

Water suppliers are required to hold a public hearing prior to adopting the UWMP. The public hearing provides an opportunity for the public to provide input to the UWMP before it is adopted. The governing body shall consider all public input. There are two audiences to be noticed for the public hearing: cities and counties, and the general public. Table 10-1 lists the cities and counties that were notified, and copies of the notices are included in Appendix M.

Table 10-1. Notification to Cities and Counties		
☐	Supplier has notified more than 10 cities or counties in accordance with Water Code Sections 10621 (b) and 10642. Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.	
☑	Supplier has notified 10 or fewer cities or counties. Complete the table below.	
City Name	60 Day Notice	Notice of Public Hearing
City of Camarillo	☑	☑
City of Moorpark	☑	☑
City of Oxnard	☑	☑
City of Simi Valley	☑	☑
City of Thousand Oaks	☑	☑
City of Port Hueneme	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
Ventura County	☑	☑

10.3 PUBLIC HEARING AND ADOPTION

Before submitting the UWMP and WSCP to DWR, Calleguas' Board must formally adopt both plans. Prior to adopting the plans, both the UWMP and WSCP must be made available for public review and Calleguas must hold a public hearing to allow community input. The public hearing may take place at the same meeting as the adoption hearing of the governing board. A copy of the Board meeting agenda showing the public hearing for the 2020 UWMP and 2020 WSCP and the adoption resolutions will be posted on Calleguas' website at www.calleguas.com.

10.4 PLAN SUBMITTAL

2020 UWMPs and WSCPs must be submitted to DWR within 30 days of adoption and by July 1, 2021. UWMP submittal will be done electronically through WUEdata, an online submittal tool. After the UWMP has been submitted, DWR will review the plan utilizing the provided checklist (Appendix A) and make a determination as to whether or not the UWMP addresses the requirements of the CWC. The DWR reviewer will contact the water supplier as needed during the review process. Upon completion of the UWMP review, DWR will issue a letter to the agency with the results of the review.

In addition, no later than 30 days after adoption, Calleguas will submit a CD or hardcopy of the adopted 2020 UWMP to the California State Library as well as an electronic or hardcopy to any city or county to which the supplier provides water.

10.5 PUBLIC AVAILABILITY

No later than 30 days after filing a copy of its 2020 UWMP and its 2020 WSCP with DWR, Calleguas and DWR will make the plans available for public review during normal business hours.

10.6 AMENDING AN ADOPTED UWMP OR WSCP

If Calleguas amends an adopted UWMP, each of the steps for notification, public hearing, adoption, and submittal must also be followed for the amended plan. If the WSCP is revised after DWR has approved the 2020 UWMP, Calleguas must submit to DWR an electronic copy through the WUE Data Portal of its revised WSCP within 30 days of its adoption.

Appendix A

UWMP CHECKLIST

(APPENDIX F OF THE 2020 URBAN WATER MANAGEMENT PLAN GUIDEBOOK)

Appendix: UWMP Checklist

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Chapter 1
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Section 1.3
x	x	Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Chapter 2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Chapter 2
x	x	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Chapter 2, Section 3.4.3, Appendix B Appendix M
x		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	N/A

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Chapter 2, Table 2-4
x	x	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Chapter 3
x	x	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Table 3-2
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier’s water management planning.	System Description	Section 3.4.2
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Section 3.4.1
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 3.4.3

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.1, Section 4.2
x	x	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.3
x	x	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System Water Use	Section 4.2
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Incorporated into projections received from Metropolitan (see Appendix D)
x	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	N/A
x	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Reflected in Section 4.2 and Appendix D
x	x	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 7.2.1, Section 7.2.3

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	N/A
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	N/A
	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Chapter 5, Section 9.6
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	N/A

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	N/A
x		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	N/A
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 7.1.4
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	Section 7.1

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Chapter 6
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Sections 6.7 through 6.9
x	x	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Tables 6-8 and 6-9
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Table 6-1
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Section 6.2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.1
x	x	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Section 6.2.1
x	x	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.3
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6.2.3
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	Section 6.7

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.3
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.4

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.4
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6
x	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier’s service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.5.1
x	x	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Sections 6.7 through 6.9
x	x	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.10

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.1.5
x	x	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.1.4
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.2.1
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.2.2
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 7.2.3
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 7.2
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Appendix K

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix K, Chapter 8
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix K: Section 8
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix K: Section 3
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier’s water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Sections 4.2, 7.1.4, 8.8; Appendix K: Section 2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Section 8.1; Appendix K: Section 4
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	N/A
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Sections 8.2, 8.3, 8.7; Appendix K: Section 4
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Section 8.3; Appendix K: Section 4

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Sections 8.3, 8.7; Appendix K: Section 4
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Sections 8.3, 8.7; Appendix K: Section 4
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Table 8-1/ Table K-1
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Section 8.9, Appendix K: Section 1
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix K: Section 5
x	x	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix K: Section 5

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	N/A
x	x	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Section 8.5, Appendix K: Section 6
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix K: Section 6
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix K: Section 6
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.4, Appendix K: Section 7
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.4, Appendix K: Section 7

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	N/A
x		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	N/A
x		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	N/A
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4, Appendix K: Section 8

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Section 10.4, Appendix K: Section 8
	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Chapter 9
x		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	N/A
x		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	N/A

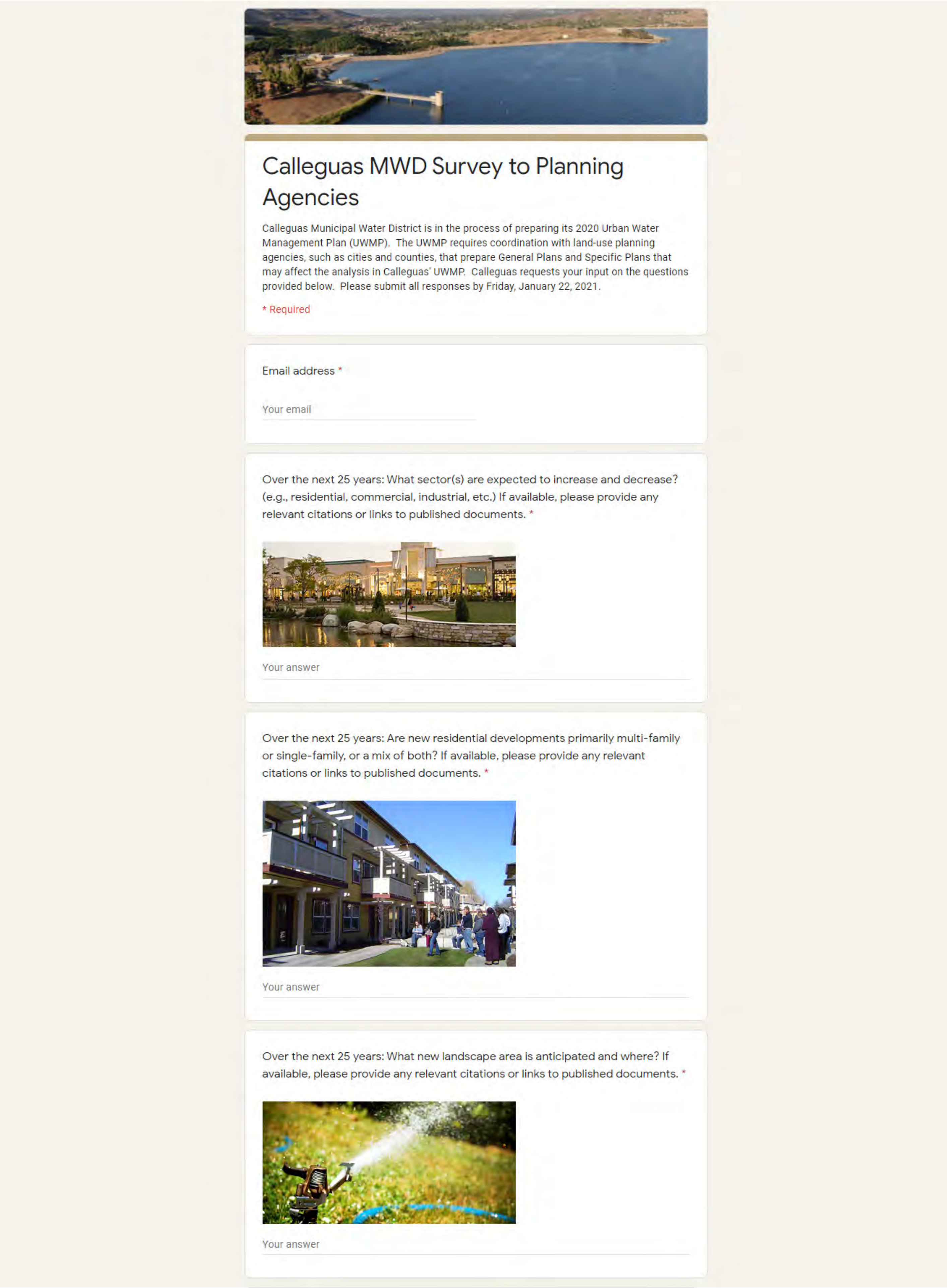
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.2, Table 10-1
x	x	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.4
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Chapter 10, Appendix M
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 10.2, Appendix M
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Appendix M

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4, Appendix M
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4, Appendix M
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Section 10.4
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 10.6, Appendix K: Section 8

Appendix B

SURVEY TO LOCAL PLANNING AGENCIES



Calleguas MWD Survey to Planning Agencies

Calleguas Municipal Water District is in the process of preparing its 2020 Urban Water Management Plan (UWMP). The UWMP requires coordination with land-use planning agencies, such as cities and counties, that prepare General Plans and Specific Plans that may affect the analysis in Calleguas' UWMP. Calleguas requests your input on the questions provided below. Please submit all responses by Friday, January 22, 2021.

* Required

Email address *

Your email

Over the next 25 years: What sector(s) are expected to increase and decrease? (e.g., residential, commercial, industrial, etc.) If available, please provide any relevant citations or links to published documents. *

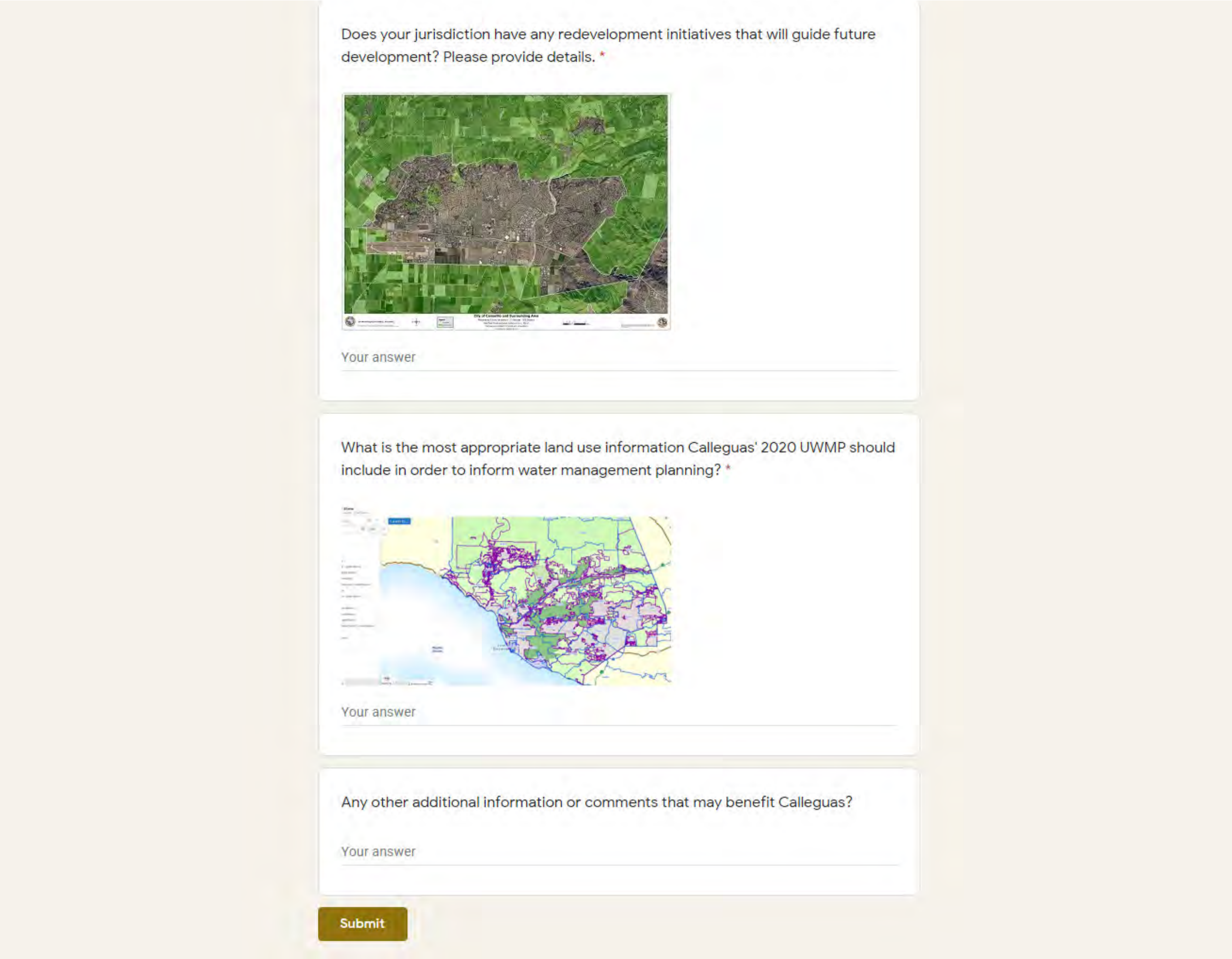
Your answer

Over the next 25 years: Are new residential developments primarily multi-family or single-family, or a mix of both? If available, please provide any relevant citations or links to published documents. *

Your answer

Over the next 25 years: What new landscape area is anticipated and where? If available, please provide any relevant citations or links to published documents. *

Your answer



Does your jurisdiction have any redevelopment initiatives that will guide future development? Please provide details. *

What is the most appropriate land use information Calleguas' 2020 UWMP should include in order to inform water management planning? *

Any other additional information or comments that may benefit Calleguas?

Appendix C

DISTRIBUTION SYSTEM LOSS MODEL OUTPUT SUMMARY

AWWA Free Water Audit Software: Worksheet

FWAS v6.0
American Water Works Association.

Water Audit Report for: **Calleguas Municipal Water District**
Audit Year: **2020** **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	n/a		Acre-ft/Yr			VOSEA
WI	Water Imported:	n	g	8	90,434.600	Acre-ft/Yr	n g	percent	WIEA
WE	Water Exported:	n	g			Acre-ft/Yr			WEEA

WATER SUPPLIED: 90,434.600 Acre-ft/Yr

AUTHORIZED CONSUMPTION

BMAC	Billed Metered:	n	g	8	89,629.700	Acre-ft/Yr	
BUAC	Billed Unmetered:	n	g			Acre-ft/Yr	
UMAC	Unbilled Metered:	n	g			Acre-ft/Yr	choose entry option:
UUAC	Unbilled Unmetered:	n	g	3	224.074	Acre-ft/Yr	0.25% default

Default option selected for Unbilled Unmetered, with automatic data grading of 3

AUTHORIZED CONSUMPTION: 89,853.774 Acre-ft/Yr

WATER LOSSES 580.826 Acre-ft/Yr

Apparent Losses

choose entry option:

SDHE	Systematic Data Handling Errors:	n	g	2	0.100	Acre-ft/Yr		custom	0.100	acre-ft/yr	
CMI	Customer Metering Inaccuracies:	n	g	6	224.636	Acre-ft/Yr	0.25%	percent			under-registration
UC	Unauthorized Consumption:	n	g	1	0.100	Acre-ft/Yr		custom	0.100	acre-ft/yr	

Apparent Losses: 224.836 Acre-ft/Yr

Real Losses

Real Losses: 355.990 Acre-ft/Yr

WATER LOSSES: 580.826 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 804.900 Acre-ft/Yr

SYSTEM DATA

Lm	Length of mains:	n	g	10	160.0	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	10	92		(active *and* inactive)
	Service connection density:				1	conn./mile main	

Are customer meters typically located at the curbstop/property line? No

Lp	Average length of (private) customer service line:	n	g	10		ft	(average distance between property line and meter)
AOP	Average Operating Pressure:	n	g	7	150.0	psi	

COST DATA

CRUC	Customer Retail Unit Charge:	n	g	9	$3.70	$/100 cubic feet (ccf)	Total Annual Operating Cost
VPC	Variable Production Cost:	n	g	9	$1,164.77	$/acre-ft	$123,815,430 $/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: Water Imported (WI)
2: Unauthorized Consumption (UC)
3: Billed Metered (BMAC)

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 D

METROPOLITAN'S DRAFT OVERALL SUPPLY CAPABILITY TABLES AND SUPPLY/DEMAND PROJECTIONS FOR CALLEGUAS' SERVICE AREA

Draft

(February 21, 2021)

Calleguas Municipal Water District

Normal Year

(Average of 1922-2017 Hydrology)

Demographics[1]	**2025**	**2030**	**2035**	**2040**	**2045**
Population	669,437	679,367	689,762	699,089	708,575
Occupied Housing Units	208,856	213,373	217,504	221,049	224,287
Single Family	158,356	160,943	163,334	165,500	167,209
Multi-Family	50,500	52,430	54,170	55,549	57,078
Persons Per Household	3.17	3.15	3.14	3.13	3.13
Urban Employment	250,724	257,028	263,120	268,063	272,156

Conservation	**2025**	**2030**	**2035**	**2040**	**2045**
Conservation[2]	25,732	27,268	29,033	31,081	31,798
Installed Active Device Through FY2019/20	2,844	2,174	1,910	1,870	402
Code-Based and Price-Effect Savings	22,889	25,094	27,123	29,211	31,396

Total Demands After Conservation	**2025**	**2030**	**2035**	**2040**	**2045**
Total Demand	142,158	142,727	143,445	143,545	144,291
Retail Municipal and Industrial[3]	122,569	123,116	123,540	123,886	124,632
Retail Agricultural	18,333	18,356	18,651	18,403	18,403
Seawater Barrier	0	0	0	0	0
Groundwater Replenishment	1,255	1,255	1,255	1,255	1,255

Local Supplies	**2025**	**2030**	**2035**	**2040**	**2045**
Total Local Supplies	55,551	55,007	53,565	52,219	52,507
Groundwater Production	37,305	35,052	33,044	31,130	31,120
Surface Production	0	0	0	0	0
Los Angeles Aqueduct	0	0	0	0	0
Seawater Desalination	0	0	0	0	0
Groundwater Recovery	4,840	4,840	4,840	4,840	4,840
Recycling	13,406	15,115	15,681	16,249	16,547
M&I and Agricultural	13,406	15,115	15,681	16,249	16,547
Groundwater Replenishment	0	0	0	0	0
Seawater Barrier	0	0	0	0	0
Other Non-Metropolitan Imports	0	0	0	0	0

Demands on Metropolitan	**2025**	**2030**	**2035**	**2040**	**2045**
Total Metropolitan Demands	86,607	87,720	89,880	91,326	91,784
Consumptive Use	85,352	86,465	88,625	90,071	90,529
Seawater Barrier	0	0	0	0	0
Replenishment Water[4]	1,255	1,255	1,255	1,255	1,255

All units are acre-feet except in Demographics Section.

1. Growth projections are based on SCAG 2020 Regional Transportation Plan and SANDAG Series 14 Forecast (Version 17).
2. Includes code-based, price-effect and existing active savings through fiscal year 2019/20.
   Does not include future active conservation savings. Conservation is 1990 base year. Pre-1990 add 250,000 acre-feet.
3. Retail M&I projections include conservation.
4. Replenishment Water include direct and in-lieu replenishment.

Draft

(February 21, 2021)

Calleguas Municipal Water District

Single Dry-Year

(Repeat of 1977 Hydrology)

Demographics[1]	**2025**	**2030**	**2035**	**2040**	**2045**
Population	669,437	679,367	689,762	699,089	708,575
Occupied Housing Units	208,856	213,373	217,504	221,049	224,287
Single Family	158,356	160,943	163,334	165,500	167,209
Multi-Family	50,500	52,430	54,170	55,549	57,078
Persons Per Household	3.17	3.15	3.14	3.13	3.13
Urban Employment	250,724	257,028	263,120	268,063	272,156

Conservation	**2025**	**2030**	**2035**	**2040**	**2045**
Conservation[2]	25,732	27,268	29,033	31,081	31,798
Installed Active Device Through FY2019/20	2,844	2,174	1,910	1,870	402
Code-Based and Price-Effect Savings	22,889	25,094	27,123	29,211	31,396

Total Demands After Conservation	**2025**	**2030**	**2035**	**2040**	**2045**
Total Demand	141,051	141,617	142,331	142,430	143,171
Retail Municipal and Industrial[3]	121,829	122,372	122,793	123,138	123,879
Retail Agricultural	18,222	18,245	18,538	18,292	18,292
Seawater Barrier	0	0	0	0	0
Groundwater Replenishment	1,000	1,000	1,000	1,000	1,000

Local Supplies	**2025**	**2030**	**2035**	**2040**	**2045**
Total Local Supplies	55,551	55,007	53,565	52,219	52,507
Groundwater Production	37,305	35,052	33,044	31,130	31,120
Surface Production	0	0	0	0	0
Los Angeles Aqueduct	0	0	0	0	0
Seawater Desalination	0	0	0	0	0
Groundwater Recovery	4,840	4,840	4,840	4,840	4,840
Recycling	13,406	15,115	15,681	16,249	16,547
M&I and Agricultural	13,406	15,115	15,681	16,249	16,547
Groundwater Replenishment	0	0	0	0	0
Seawater Barrier	0	0	0	0	0
Other Non-Metropolitan Imports	0	0	0	0	0

Demands on Metropolitan	**2025**	**2030**	**2035**	**2040**	**2045**
Total Metropolitan Demands	85,500	86,610	88,766	90,211	90,664
Consumptive Use	84,500	85,610	87,766	89,211	89,664
Seawater Barrier	0	0	0	0	0
Replenishment Water[4]	1,000	1,000	1,000	1,000	1,000

All units are acre-feet except in Demographics Section.

1. Growth projections are based on SCAG 2020 Regional Transportation Plan and SANDAG Series 14 Forecast (Version 17).
2. Includes code-based, price-effect and existing active savings through fiscal year 2019/20.
   Does not include future active conservation savings. Conservation is 1990 base year. Pre-1990 add 250,000 acre-feet.
3. Retail M&I projections include conservation.
4. Replenishment Water include direct and in-lieu replenishment.

Draft

(February 21, 2021)

Calleguas Municipal Water District

5-Consecutive Drought Years

(Repeat of 1988-1992 Hydrology)

Demographics[1]	**2025**	**2030**	**2035**	**2040**	**2045**
Population	669,437	679,367	689,762	699,089	708,575
Occupied Housing Units	208,856	213,373	217,504	221,049	224,287
Single Family	158,356	160,943	163,334	165,500	167,209
Multi-Family	50,500	52,430	54,170	55,549	57,078
Persons Per Household	3.17	3.15	3.14	3.13	3.13
Urban Employment	250,724	257,028	263,120	268,063	272,156

Conservation	**2025**	**2030**	**2035**	**2040**	**2045**
Conservation[2]	25,732	27,268	29,033	31,081	31,798
Installed Active Device Through FY2019/20	2,844	2,174	1,910	1,870	402
Code-Based and Price-Effect Savings	22,889	25,094	27,123	29,211	31,396

Total Demands After Conservation	**2025**	**2030**	**2035**	**2040**	**2045**
Total Demand	144,258	144,937	145,607	145,962	146,456
Retail Municipal and Industrial[3]	124,320	124,997	125,478	125,863	126,458
Retail Agricultural	18,658	18,661	18,849	18,819	18,718
Seawater Barrier	0	0	0	0	0
Groundwater Replenishment	1,280	1,280	1,280	1,280	1,280

Local Supplies	**2025**	**2030**	**2035**	**2040**	**2045**
Total Local Supplies	54,556	55,225	54,142	52,757	52,392
Groundwater Production	38,235	35,953	33,847	31,896	31,124
Surface Production	0	0	0	0	0
Los Angeles Aqueduct	0	0	0	0	0
Seawater Desalination	0	0	0	0	0
Groundwater Recovery	4,078	4,840	4,840	4,840	4,840
Recycling	12,243	14,431	15,455	16,022	16,428
M&I and Agricultural	12,243	14,431	15,455	16,022	16,428
Groundwater Replenishment	0	0	0	0	0
Seawater Barrier	0	0	0	0	0
Other Non-Metropolitan Imports	0	0	0	0	0

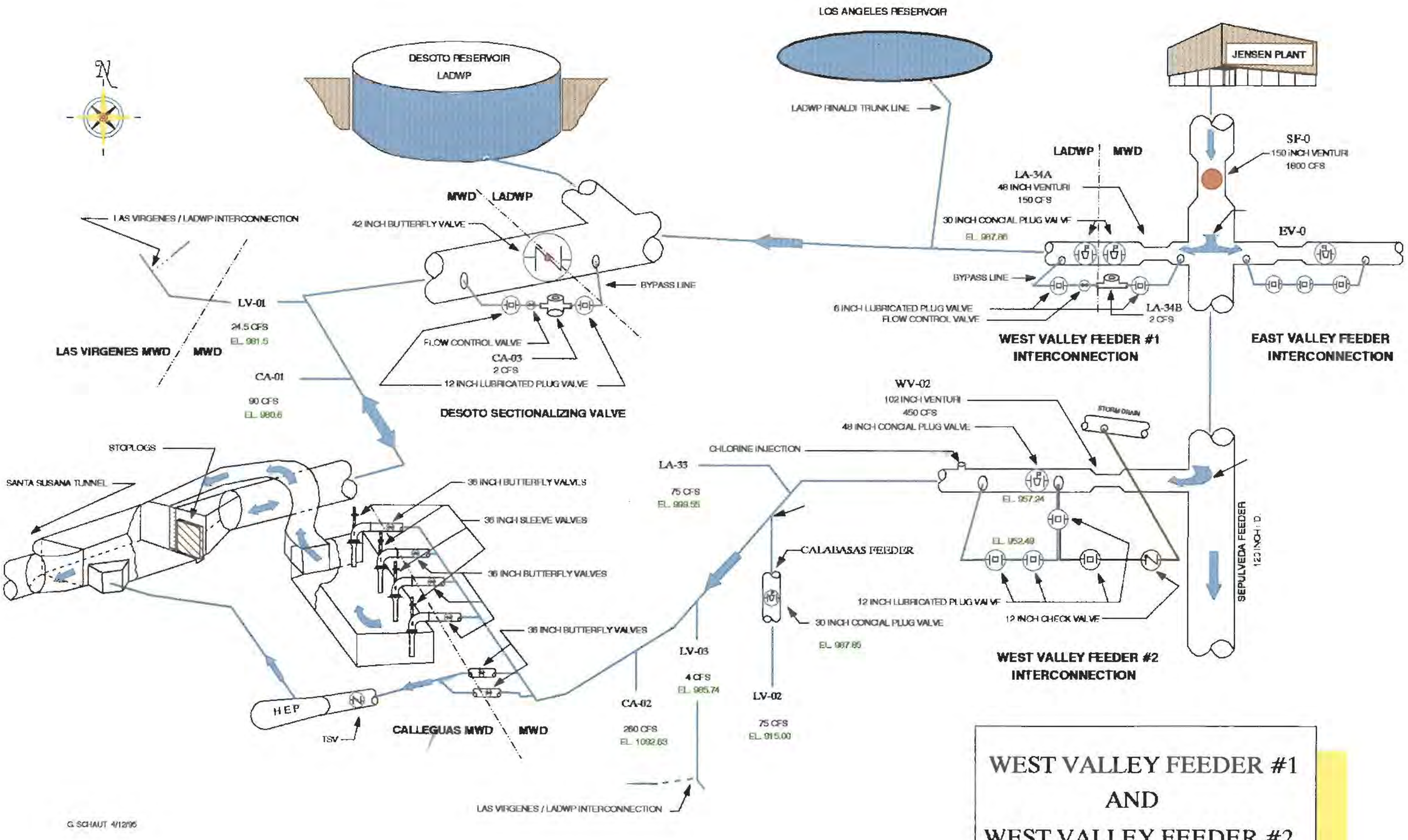
Demands on Metropolitan	**2025**	**2030**	**2035**	**2040**	**2045**
Total Metropolitan Demands	89,702	89,713	91,465	93,204	94,064
Consumptive Use	88,422	88,433	90,185	91,924	92,784
Seawater Barrier	0	0	0	0	0
Replenishment Water[4]	1,280	1,280	1,280	1,280	1,280

All units are acre-feet except in Demographics Section.

1. Growth projections are based on SCAG 2020 Regional Transportation Plan and SANDAG Series 14 Forecast (Version 17).
2. Includes code-based, price-effect and existing active savings through fiscal year 2019/20.
   Does not include future active conservation savings. Conservation is 1990 base year. Pre-1990 add 250,000 acre-feet.
3. Retail M&I projections include conservation.
4. Replenishment Water include direct and in-lieu replenishment.

Appendix E

CALLEGUAS MWD'S METERED CONNECTIONS WITH METROPOLITAN



WEST VALLEY FEEDER #1
AND
WEST VALLEY FEEDER #2

Appendix F

EXAMPLE MONTHLY MASTER METERS AND RESERVOIRS REPORT

CALLEGUAS MUNICIPAL WATER DISTRICT

MASTER METERS AND RESERVOIRS

MONTH ENDING: December 2020

	TERMINAL CALCULATION	PRESENT	PREVIOUS	USAGE FEET	ACRE FEET
1.32	Clearwell Res.	22.0	21.0	-1.0	-1.3
0.52	Conejo Res.	24.6	4.7	-19.9	-10.4
0.46	Grimes Canyon Res.	17.5	25.0	7.5	3.5
0.61	Lindero Res.	17.0	15.7	-1.3	-0.8
0.38	Newbury Park Res.	26.5	19.7	-6.8	-2.6
0.25	Olsen Tank	0.0	0.0	0.0	0.0
0.90	Thousand Oaks Res.	15.2	14.5	-0.7	-0.6
0.95	Westlake Res.	6.0	10.9	4.9	4.6
				TOTAL	-7.6

	ASR WELL INPUTS	PRESENT	PREVIOUS	USAGE FEET	ACRE FEET
	Grimes Canyon Injection CF	0	0	0	9.2
				ASR WELLS INPUT TOTAL	9.2

	ASR WELL OUTPUTS	PRESENT	PREVIOUS	USAGE CUBIC FEET	ACRE FEET
	Grimes Canyon Pumping CF	0	0	0	0.0
				ASR WELLS OUTPUT TOTAL	0.0

	LAKE BARD INPUTS	PRESENT	PREVIOUS	USAGE CUBIC FEET	ACRE FEET
	Conejo Tank Overflow	0	0	5,475,492	125.7
	Lake Bard Reservoir Inlet	3,916,939,000	3,913,928,000	3,011,000	69.1
	V-13	0	0	0	0.0
				TOTAL	194.8

	LAKE BARD OUTPUTS	PRESENT	PREVIOUS	USAGE CUBIC FEET	ACRE FEET
	Lake Bard Water Filtration Plant	0	0	0	0.0
				TOTAL	0.0

	SYSTEM METERS	PRESENT	PREVIOUS	USAGE CUBIC FEET	ACRE FEET
	Calleguas CA - 3	328,966,630	327,733,130	1,233,500	28.3
	Las Virgenes LV-1	2,101,671,900	2,099,274,300	2,397,600	55.0
	Calleguas CA - 1	2,207,966,000	2,207,966,000	0	0.0
	Calleguas CA - 2	128,197,845,000	127,883,349,000	314,496,000	7,219.8
			TOTAL	313,331,900	7,193.1

	SYSTEM METERS	ACRE FEET
	Meter Reconciliation (difference in timing of Wellfield meter reads)	0.0
	Meter Reconciliation (difference in Springville Tank level)	-4.0
	Meter Reconciliation	0.0

	RECYCLED METERS	PRESENT	PREVIOUS	USAGE CUBIC FEET	ACRE FEET
	2801 Madera Rd Viewline Dr Simi Landfill 3"	3,574,228	3,401,648	172,580	4.0
			TOTAL	172,580.0	4.0

MASTER METERS	ACRE FEET
MWD METERS	7,193.1
RECYCLED METERS	4.0
LAKE BARD OUTPUT	0.0
LAKE BARD INPUT	-194.8
METER RECONCILIATION	-4.0
LAKE BARD RECONCILIATION	0.0
ASR WELLS OUTPUT	0.0
ASR WELLS INPUT	-9.2
RES. USAGE	-7.6
TOTAL	6,981.5

-67.0

-0.96%

PURVEYORS	ACRE FEET
SALES - POTABLE	7,044.3
SALES - GSP	0.0
SALES - RECYCLED	4.0
TOTAL	7,048.3

Appendix G

JULY 2020 ANNUAL WATER QUALITY REPORT

CALLEGUAS
MUNICIPAL WATER
DISTRICT

July 2020

Annual Water Quality Report

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Water Quality Is Our Priority

Water quality continues to be a priority for Calleguas Municipal Water District. Our mission since the 1950s has been to provide our service area with a reliable supply of high quality, imported drinking water. A team of highly trained professionals works hard to ensure Calleguas' water supply meets all State and Federal water quality standards. This brochure provides information about the sources and quality of the water delivered by Calleguas in 2019. Included are details about where your water comes from, what it contains, and how it compares to State and Federal standards.

During the year, multiple tests for over 150 drinking water contaminants were performed on Calleguas' water supply to determine concentrations of mineral, physical, bacteriological, inorganic, organic, and radioactive constituents.

Once again, we are proud to report our system did not violate any water quality standards. For additional information on the quality of water delivered by Calleguas, please contact Amy Mueller at (805) 579-7117 or by email at amueller@calleguas.com. You can also visit our website at www.calleguas.com.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Our Mission:

To provide the service area with a reliable supplemental supply of regional and locally developed water in an environmentally and economically responsible manner.

Our Source Water

Calleguas' primary drinking water supply is obtained from the Feather River Watershed, located in the northern Sierras, and conveyed through the State Water Project. Colorado River water serves as a secondary supply source for the District and is transported through Metropolitan Water District's Colorado River Aqueduct.

Originating in northern California, State Water Project deliveries are conveyed over 500 miles through a network of reservoirs, aqueducts, and pump stations. The State Water Project supply is filtered and disinfected at Metropolitan's Joseph Jensen Filtration Plant in Granada Hills.

The Colorado River Aqueduct has been the backbone of Southern California's imported water supply for more than 70 years. Built and operated by Metropolitan, the 242-mile aqueduct delivers water from the Colorado River at Lake Havasu along the California/Arizona border. The Colorado River supply is filtered and disinfected at Metropolitan's F.E. Weymouth Treatment Plant in the City of La Verne.

Metropolitan Water District of Southern California has completed a source water assessment of both the State Water Project and Colorado River supply. The State Water Project source is considered to be most vulnerable to urban and storm water runoff, wildlife, agriculture, recreation, and wastewater. The Colorado River source is considered to be most vulnerable to contamination from recreation, urban and stormwater runoff, increasing urbanization in the watershed, and wastewater. A copy of this assessment can be obtained by contacting Metropolitan at (213) 217-6850.

Following treatment at the Jensen and Weymouth Plants, water is conveyed by pipeline through the San Fernando Valley to Calleguas' mile-long tunnel in the Santa Susana Mountains. While the Weymouth Filtration Plant employs similar treatment technology to the Jensen Filtration Plant, water quality of Colorado River supplies varies from that of State Project supplies. Information on the quality of the treated water can found on the attached water quality tables.

The water is then distributed by Calleguas and its purveyors to an estimated 635,000 Ventura County residents, representing 75% of the County's population. Surplus supplies of imported water are stored in Lake Bard, the District's surface water reservoir near the City of Thousand Oaks, and the Las Posas groundwater basin underlying the City of Moorpark and surrounding area. Through the Las Posas Aquifer Storage and Recovery (ASR) project, Calleguas stores water for later use during Metropolitan system shutdowns and emergencies.

Visit www.calleguas.com for more information on the Las Posas ASR project and other Calleguas water supply reliability programs.

General Information About Source Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before we treat it include:

- *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.

- *Radioactive contaminants* that can be naturally-occurring or be the result of oil and gas production and mining activities.

Our Treated Water

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the Division of Drinking Water prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Calleguas achieves these standards through vigilant watershed protection and treatment techniques used at Metropolitan's Jensen and Weymouth Plants as well as Calleguas' Lake Bard Water Filtration Plant. A good indicator of the effectiveness of our filtration system is the measurement of turbidity. Turbidity, or the cloudiness of water, is listed in the tables included in this report.

Water Quality Data

The following tables list all the drinking water contaminants that we detected during the 2019 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in these tables is from testing done January 1 through December 31, 2019. The State requires that we monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of water quality, is more than one year old.

CALLEGUAS
MUNICIPAL WATER DISTRICT

Summary of Water Quality Results for 2019

			Imported Surface Water Treated at Metropolitan's Jensen Plant		Locally Stored Surface Water Treated by Calleguas		
	Percent of Supply		*97%*		*3%*		
Parameter	MCL [MRDL]	PHG (MCLG) [MRDLG]	Average	Range	Average	Range	Major Sources in Drinking Water
PRIMARY DRINKING WATER STANDARDS - Mandatory Health-Related Standards							
CLARITY *(a)*							
Turbidity (NTU) (TT)	Highest Single Value		0.06		0.06		Soil runoff
	% of samples ≤ 0.3 NTU		100%		100%		
MICROBIOLOGICAL *(b)*							
Total Coliform Bacteria (State Total Coliform Rule)	> 1	(0)	ND	ND	ND	ND – 1	Naturally present in the environment
DISINFECTION BY-PRODUCTS AND DISINFECTANT RESIDUALS							
Bromate (ppb) *(c)*	10	0.1	5.6	1.6 – 8.4	1.7	ND – 5.2	By-product of drinking water disinfection
Haloacetic Acids (ppb) *(d)*	60	n/a	Highest LRAA = 12.3, Range = 2.0 – 21.0				By-product of drinking water disinfection
Total Chlorine Residual (ppm)	[4]	[4]	Highest Running Annual Average = 2.3, Range = 1.3 – 2.5				Drinking water disinfectant added for treatment
Total Trihalomethanes (ppb) *(d)*	80	n/a	Highest LRAA = 24.3, Range = 14.0 – 41.0				By-product of drinking water disinfection
INORGANIC CHEMICALS							
Aluminum (ppb)	1,000	600	58	ND – 290	ND	ND	Erosion of natural deposits, residual from water treatment process
Arsenic (ppb)	10	0.004	ND	ND	3.5	3.0 – 4.0	Erosion of natural deposits, runoff from orchards
Fluoride - Distribution System (ppm) *(e)*	2.0	1.0	Highest Running Annual Average = 0.7, Range = 0.7 – 1.1				Water additive that promotes strong teeth
Nitrate (as N) (ppm)	10	10	0.5	0.5	ND	ND	Runoff & leaching from fertilizer & sewage
Selenium (ppb)	50	30	ND	ND	10	6 – 14	Erosion of natural deposits; discharge from refineries
RADIOLOGICALS *(f)*							
Gross Alpha Particle Activity (pCi/L)	15	(0)	ND	ND – 3.0	3.5	3.1 – 3.9	Erosion of natural deposits
Uranium (pCi/L)	20	0.43	ND	ND – 1.0	ND	ND – 2.7	Erosion of natural deposits

ABBREVIATIONS, DEFINITIONS, and NOTES

LRAA = Locational Running Annual Average
n/a = not applicable
ND = None Detected
NTU = Nephelometric Turbidity Units
ppm = parts per million, or milligrams per liter (mg/L)
ppb = parts per billion, or micrograms per liter (μg/L)
pCi/L = PicoCuries per Liter

Maximum Contaminant Level (MCL) = The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible.

Maximum Contaminant Level Goal (MCLG) = The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL) = The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial pathogens.

Maximum Residual Disinfectant Level Goal (MRDLG) = The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Public Health Goal (PHG) = The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Primary Drinking Water Standard = MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Treatment Technique (TT) = A required process intended to reduce the level of a contaminant in drinking water.

(a) The turbidity level of filtered water shall be less than or equal to 0.3 NTU in 95% of the measurements taken each month and shall not exceed 1.0 NTU at any time.

(b) Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. No more than 1 monthly sample may be total coliform positive. This MCL was not violated in 2019.

(c) Compliance for treatment plants that use ozone is based on a running annual average of monthly samples.

(d) Compliance is based on the LRAA of data collected at distribution system-wide monitoring locations. The range of all samples collected is included.

(e) The Metropolitan Water District (MWD) treats their water by adding fluoride to the naturally occurring level in order to help prevent dental caries in consumers. The fluoride levels in the treated water are maintained within a range of 0.6 – 1.2 ppm, as required by State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW).

(f) MWD collects four consecutive quarters of radiological monitoring triennially. MWD data is from 2017. Calleguas conducts radiological monitoring annually.

CALLEGUAS
MUNICIPAL WATER DISTRICT

Summary of Water Quality Results for 2019

			Imported Surface Water Treated at Metropolitan's Jensen Plant		Locally Stored Surface Water Treated by Calleguas		
	Percent of Supply		*97%*		*3%*		
Parameter	Secondary MCL	Notification Level	Average	Range	Average	Range	Major Sources in Drinking Water
SECONDARY DRINKING WATER STANDARDS—Aesthetic Standards							
Aluminum (ppb) *(a)*	200		58	ND – 290	ND	ND	Erosion of natural deposits, residual from water treatment process
Chloride (ppm)	500		62	62	100	99 – 101	Runoff and leaching from natural deposits; seawater influence
Color (Units)	15		2	1 – 2	ND	ND	Naturally-occurring organic materials
Odor Threshold (Units)	3		ND	ND – 1	ND	ND	Naturally-occurring organic materials
Specific Conductance (µS/cm)	1,600		488	471 – 505	742	726 – 758	Substances that form ions when in water, seawater influence
Sulfate (ppm)	500		59.0	56.0 – 62.0	88.7	84.5 – 92.9	Runoff and leaching from natural deposits
Total Dissolved Solids (ppm)	1,000		283	280 – 286	430	430	Runoff and leaching from natural deposits
ADDITIONAL PARAMETERS (Unregulated)							
Alkalinity (ppm)	NS	NS	82	80 – 84	105	100 – 110	
Boron (ppm)	NS	1	0.2	0.2	0.2	0.2	
Calcium (ppm)	NS	NS	27	26 – 28	31	30 – 32	
Corrosivity (AI) *(b)*	NS	NS	12.2	12.1 – 12.3	12.1	12.0 – 12.1	
Hardness (Total Hardness) (ppm)	NS	NS	114	112 – 117	137	132 – 142	
Magnesium (ppm)	NS	NS	12	12 – 13	14	14 – 15	
pH (pH Units)	NS	NS	8.4	8.4 – 8.5	8.2	8.1 – 8.2	
Potassium (ppm)	NS	NS	2.7	2.7	3.0	3.0	
Sodium (ppm)	NS	NS	52	51 – 54	82	79 – 84	
Total Organic Carbon (ppm)	NS	NS	2.3	2.0 – 2.5	1.5	1.2 – 1.8	
Perfluorohexanoic Acid (PFHxA) (ppt)	NS	NS	2.6	2.6	(c)	(c)	

ABBREVIATIONS, DEFINITIONS, and NOTES

AI = Aggressive Index

ND = None Detected

NS = No Standard

ppm = parts per million, or milligrams per liter (mg/L)

ppb = parts per billion, or micrograms per liter (µg/L)

µS/cm = microSiemen/centimeter

Secondary Maximum Contaminant Level (MCL) = Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Notification Level = The level at which notification of the public water system's governing body is required.

(a) Aluminum has both primary and secondary standards. Compliance with the MCL is based on a running annual average. No secondary standard MCL exceedance occurred in the Jensen treatment plant effluent.

(b) AI measures the aggressiveness of water transported through pipes. Water with AI <10.0 is highly aggressive and would be very corrosive to almost all materials found in a typical water system. AI ≥12.0 indicates non-aggressive water. AI between 10.0 and 11.9 indicates moderately aggressive water.

(c) Calleguas did not sample for Perfluoroalkyl and Polyfluoroalkyl Substances in 2019. MWD data are from two analytical methods based on EPA 537.1 and a research method for 18 different PFAS.

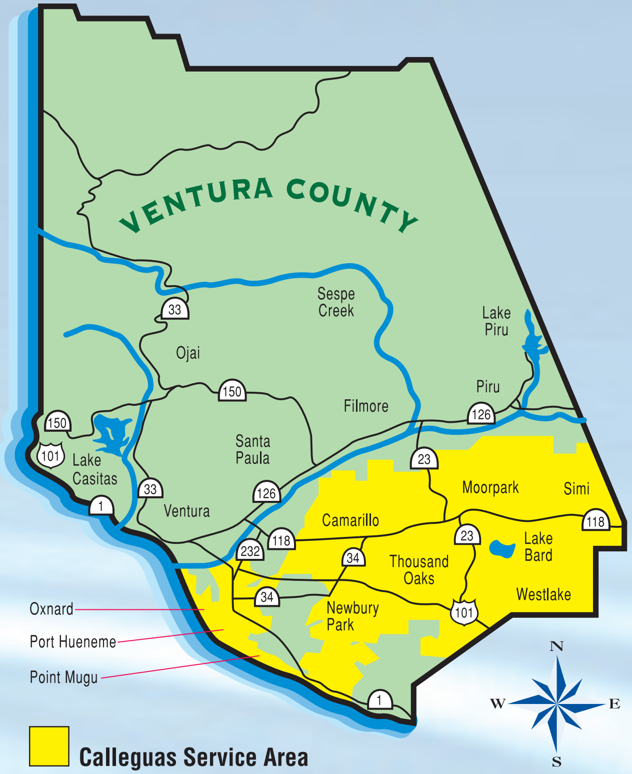
Information for Customers with Special Water Needs

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Constituents Tested for and Not Detected

In addition to the information provided in the Summary of Water Quality Results, Calleguas also monitored for, but did not detect, many other contaminants during 2019. Some of those contaminants were:

Antimony
Asbestos
Beryllium
Cadmium
Chromium 6
Copper
Cyanide
Foaming Agents
Herbicides
Lead
Mercury
MTBE
Nitrite
Perchlorate
Pesticides
Radium 226
Radium 228
Silver
Strontium-90
Thallium
Total Chromium
Tritium
Volatile Organic Chemicals (VOCs)
Zinc



Information on Lead in Household Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Your local utility is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Drinking Water Fluoridation

In 2007, Calleguas' wholesale water provider, Metropolitan Water District of Southern California, joined a majority of the nation's public water suppliers in systematically adding fluoride to drinking water at each of the five water treatment plants in order to help prevent tooth decay.

In line with recommendations from the Division of Drinking Water, as well as the U.S. Centers for Disease Control and Prevention, Metropolitan adjusted the natural fluoride level in the water, which ranges from 0.1 to 0.4 parts per million, to the optimal range for dental health of 0.7 parts per million. Fluoride levels in drinking water are limited under California state regulations at a maximum dosage of 2 parts per million.

Fluoride has been added to U.S. drinking water supplies since 1945. Of the 50 largest cities in the U.S, 43 fluoridate their drinking water.

For more information about the benefits of drinking water fluoridation, please visit the following websites: The American Dental Association at http://www.ada.org/fluoride.aspx and U.S. Centers for Disease Control and Prevention at http://www.cdc.gov/fluoridation/fact_sheets/cwf_qa.htm

Information on Radon

Water suppliers are required to provide information on the presence of radon in water sources. A known human carcinogen, radon is a radioactive gas that one cannot see, taste, or smell. Commonly found in soils throughout the United States, breathing air containing radon may lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. Radon can seep up through the ground and into homes and other structures through cracks and holes in foundations. Over time, concentrations of the gas can increase to high levels potentially exposing inhabitants to greater health risks. It is possible that radon can also be released from tap water when used for showering, washing dishes, and other household activities. However, the concentration of radon released through tap water is in most cases assumed to be considerably lower than concentrations entering a home from underlying ground. If you are concerned about radon, you are advised to test the air in your home. Testing is inexpensive and easy. The EPA recommends taking measures to reduce radon levels in your home if concentrations are 4 PicoCuries per liter of air (pCi/L) or higher. For additional information, call your State radon program (1-800-745-7236), the EPA Safe Drinking Water Act Hotline at (1-800-426-4791), or call the National Safe Council Radon Hotline (1-800-SOS-RADON).

Water Conservation

Calleguas makes water conservation a priority and has long offered rebate programs for water conservation devices. Over the years, water saving technologies have advanced in both quality and effectiveness and these advancements have increased the number of rebate offerings.

Resource Links for Conservation

Education: http://www.mwdh2o.com/inthecommunity/education-programs

Rebates (SoCal WaterSmart): http://socalwatersmart.com

Community Partnering Program:
http://www.mwdh2o.com/inthecommunity/community-outreach/Pages/default.aspx

Regional Conservation Program: http://www.bewaterwise.com

California Native Plant Society: http://www.cnps.org

Gardening Classes: http://www.bewaterwise.com/classes.html

More Information on Water Quality

Calleguas Municipal Water District
2100 Olsen Road • Thousand Oaks, CA 91360-6800
(805) 526-9323
http://www.calleguas.com

Metropolitan Water District of Southern California
Public Affairs • P.O. Box 54153 • Los Angeles, CA 90054-0153
(800) CALL MWD
www.mwdh2o.com

State Water Resources Control Board
Division of Drinking Water • 601 North 7th Street • Sacramento, CA 94234-7320
http://www.waterboards.ca.gov/drinking_water/programs

U.S. Environmental Protection Agency (WH-550)
Office of Ground Water & Drinking Water
401 M. Street, S.W. • Washington, D.C. 20460
Safe Drinking Water Hotline (800) 426-4791
http://water.epa.gov/drink/index.cfm

The Calleguas Municipal Water District Board of Directors meets on the first and third Wednesday of each month at 5:00 pm at the District's administration building, 2100 Olsen Road in Thousand Oaks. The public is welcome to attend these meetings.

CALLEGUAS MUNICIPAL WATER DISTRICT

bewaterwise.com®

Appendix H

CALLEGUAS GROUNDWATER STORAGE ACCOUNT BALANCE REPORTS

THOMAS L. SLOSSON, PRESIDENT
DIVISION 1

ANDY WATERS, SECRETARY
DIVISION 3

STEVE BLOIS, DIRECTOR
DIVISION 5

CALLEGUAS
MUNICIPAL WATER DISTRICT

ANDRES SANTAMARIA, VICE PRESIDENT
DIVISION 4

SCOTT H. QUADY, TREASURER
DIVISION 2

SUSAN B. MULLIGAN
GENERAL MANAGER

website: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

TO: Dan Smith
FROM: Tricia Ferguson
DATE: February 3, 2017
SUBJECT: Groundwater Storage Report for January 2017
EC: Susan Mulligan, Eric Bergh, Henry Graumlich, Sue Taylor, Allyson Levin, Bryan Bondy, Tony Goff

---

Following is the current Calleguas groundwater storage account balance.

Total Balance as of December 31, 2016 **81,476.73 AF**

Basin	Monthly Activity	Cumulative Balance
East Las Posas Basin		
East Las Posas In-Lieu Program	0.00 AF	6,441.88 AF
East Las Posas Wellfield Allocation	1.95 AF	1.95 AF
Wellfield Activities		
Production	0.00 AF	
Injection	3.54 AF	
Well Flushing	-0.14 AF	8,210.88 AF
Other Basins		
West Las Posas In Lieu	0.00 AF	25,314.00 AF
Oxnard In Lieu	0.00 AF	16,524.00 AF
Pleasant Valley In Lieu	0.00 AF	1,736.00 AF
PVCWD Agreement for Storage via Conejo Creek Diversion Project	0.00 AF	23,253.37 AF
	Monthly Change	**5.35 AF**

Total Balance as of January 31, 2017 **81,482.08 AF**

THOMAS L. SLOSSON, PRESIDENT
DIVISION 1

ANDY WATERS, SECRETARY
DIVISION 3

STEVE BLOIS, DIRECTOR
DIVISION 5

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website: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

TO: Dan Smith
FROM: Tricia Ferguson
DATE: February 8, 2018
SUBJECT: Groundwater Storage Report for January 2018
EC: Susan Mulligan, Eric Bergh, Henry Graumlich, Sue Taylor, Allyson Levin, Bryan Bondy, Tony Goff

---

Following is the current Calleguas groundwater storage account balance.

Total Balance as of December 31, 2017 **84,020.69 AF**

Basin	**Monthly Activity**	**Cumulative Balance**
East Las Posas Basin		
East Las Posas In-Lieu Program	0.00 AF	6,441.88 AF
East Las Posas Wellfield Allocation	1.95 AF	1.95 AF
Wellfield Activities		
Production	-0.80 AF	
Injection	463.37 AF	
Well Flushing	-2.72 AF	11,211.29 AF
Other Basins		
West Las Posas In Lieu	0.00 AF	25,314.00 AF
Oxnard In Lieu	0.00 AF	16,524.00 AF
Pleasant Valley In Lieu	0.00 AF	1,736.00 AF
PVCWD Agreement for Storage via Conejo Creek Diversion Project	0.00 AF	23,253.37 AF
	Monthly Change	**461.80 AF**

Total Balance as of January 31, 2018 **84,482.49 AF**

THOMAS L. SLOSSON, PRESIDENT
DIVISION 1

ANDY WATERS, SECRETARY
DIVISION 3

STEVE BLOIS, DIRECTOR
DIVISION 5

CALLEGUAS
MUNICIPAL WATER DISTRICT

ANDRES SANTAMARIA, VICE PRESIDENT
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SUSAN B. MULLIGAN
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website: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

TO: Dan Smith
FROM: Tricia Ferguson
DATE: February 6, 2019
SUBJECT: Groundwater Storage Report for January 2019
EC: Susan Mulligan, Eric Bergh, Henry Graumlich, Sue Taylor, Allyson Levin, Bryan Bondy, Tony Goff

---

Following is the current Calleguas groundwater storage account balance.

Total Balance as of December 31, 2018 **85,160.21 AF**

Basin	**Monthly Activity**	**Cumulative Balance**
East Las Posas Basin		
East Las Posas In-Lieu Program	0.00 AF	6,441.88 AF
East Las Posas Wellfield Allocation	1.69 AF	1.69 AF
Wellfield Activities		
Production	-12.59 AF	
Injection	597.98 AF	
Well Flushing	-6.52 AF	12,469.83 AF
Other Basins		
West Las Posas In Lieu	0.00 AF	25,314.00 AF
Oxnard In Lieu	0.00 AF	16,524.00 AF
Pleasant Valley In Lieu	0.00 AF	1,736.00 AF
PVCWD Agreement for Storage via Conejo Creek Diversion Project	0.00 AF	23,253.37 AF
	Monthly Change	**580.56 AF**

Total Balance as of January 31, 2019 **85,740.77 AF**

THOMAS L. SLOSSON, PRESIDENT
DIVISION 1

ANDY WATERS, SECRETARY
DIVISION 3

STEVE BLOIS, DIRECTOR
DIVISION 5

CALLEGUAS
MUNICIPAL WATER DISTRICT

ANDRES SANTAMARIA, VICE PRESIDENT
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SCOTT H. QUADY, TREASURER
DIVISION 2

ANTHONY GOFF
GENERAL MANAGER

website: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

TO: Dan Smith
FROM: Tricia Ferguson
DATE: February 10, 2020
SUBJECT: Groundwater Storage Report for January 2020
EC: Tony Goff, Dan Drugan, Henry Graumlich, Sue Taylor, Allyson Levin, Bryan Bondy, Rob Peters

---

Following is the current Calleguas groundwater storage account balance.

Total Balance as of December 31, 2019 **103,495.45 AF**

Basin	Monthly Activity	Cumulative Balance
East Las Posas Basin		
East Las Posas In-Lieu Program	0.00 AF	6,347.56 AF
East Las Posas Wellfield Allocation	2.12 AF	2.12 AF
Wellfield Activities		
Production	-8.16 AF	
Injection	1,109.48 AF	
Well Flushing	-3.54 AF	21,058.39 AF
Other Basins		
West Las Posas In Lieu	0.00 AF	25,192.00 AF
Oxnard and Pleasant Valley In Lieu (GMA Reconciliation)	0.00 AF	18,060.00 AF
Conejo Creek Project		
Calleguas Storage Account	0.00 AF	23,453.37 AF
United Storage Account	0.00 AF	10,481.91 AF
	Monthly Change	**1,099.90 AF**

Total Balance as of January 31, 2020 **104,595.35 AF**

STEVE BLOIS, PRESIDENT
DIVISION 5

RAUL AVILA, SECRETARY
DIVISION 1

ANDY WATERS, DIRECTOR
DIVISION 3

CALLEGUAS
MUNICIPAL WATER DISTRICT

ANDRES SANTAMARIA, VICE PRESIDENT
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GENERAL MANAGER

website: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

TO: Dan Smith
FROM: Tricia Ferguson
DATE: February 8, 2021
SUBJECT: Groundwater Storage Report for January 2021
EC: Tony Goff, Dan Drugan, Henry Graumlich, Sue Taylor, Kristen Morgan, Bryan Bondy, Rob Peters

---

Following is the current Calleguas groundwater storage account balance.

Total Balance as of December 31, 2020 **104,306.00 AF**

Basin	Monthly Activity	Cumulative Balance
East Las Posas Basin		
East Las Posas In-Lieu Program	0.00 AF	6,347.56 AF
East Las Posas Wellfield Allocation	2.12 AF	2.12 AF
Wellfield Activities		
Production	-0.32 AF	
Injection	163.94 AF	
Well Flushing	-8.22 AF	20,926.56 AF
Other Basins		
West Las Posas In Lieu	0.00 AF	25,192.00 AF
Oxnard and Pleasant Valley In Lieu	0.00 AF	18,060.00 AF
Conejo Creek Project Calleguas Storage Account	0.00 AF	23,453.37 AF
United Storage Account	0.00 AF	10,481.91 AF
	Monthly Change	**157.52 AF**

Total Balance as of January 31, 2021 **104,463.52 AF**

Appendix I

WATER SUPPLY ALTERNATIVES STUDY PROJECT STATUS SUMMARY

Water Supply Alternatives Study
Project Status Summary

Project No.	Project Name	Evaluation Completed?	Recommendation
1	*Additional Aquifer Storage and Recovery*		
1a	Arroyo Santa Rosa Valley Basin	Y	Did not pass screening
1b	Tierra Rejada Basin	Y	Did not pass screening
1c	Simi Valley Basin	Y	Did not pass screening
1d	Conejo Valley Basin	Y	Did not pass screening
1e	West Las Posas Basin		
1f	South Las Posas Basin		
1g	Pleasant Valley Basin	Y	Remains under Consideration
1h	Oxnard Plain Pressure Basin	Y	Remains under Consideration
1i	Oxnard Plain Forebay Basin	Y	Remains under Consideration
1j	Tapo/Gillibrand Basin	Y	Did not pass screening
1k	Thousand Oaks Basin	Y	Did not pass screening
1l	Santa Paula Basin		
1m	Fillmore Basin		
1n	Piru Basin		
2	*Additional Groundwater from Thousand Oaks Area*		
2a	Lake Sherwood Area	X	Do Not Proceed
2b	Oak Park Area	X	Remains under Consideration
2c	North Ranch Area	X	Remains under Consideration
3	*New Bedrock Wells*		
3a	Arroyo Santa Rosa Groundwater Basin	X	Remains under Consideration
3b	Tierra Rejada Groundwater Basin	X	Remains under Consideration
3c	Simi Valley Groundwater Basin	X	Remains under Consideration
3d	Conejo Valley Groundwater Basin	X	Remains under Consideration
4	*Additional Groundwater Pumping by Ventura County Waterworks District 19*		
4a	Additional Groundwater Pumping by VCWWD19 using West Las Posas Credits		
4b	VCWWD19 Pumps West Las Posas Credits for Multiple Agency Use		
5	Crestview Well No. 8 and Agreement to Deliver Water During an Outage	X	Proceed
6	*Groundwater Projects with the City of Camarillo*		
6a	NPV Desalter + Groundwater Replenishment	X	Not Feasible
6b	Increase NPV Desalter Capacity		
6c	New Springville Area Well + Agreement to Deliver Water During an Outage.	X	Proceed
6d	Pleasant Valley Basin Stormwater Recharge and New Wells	X	Not Feasible
7	Camarillo Recycled Water Storage	X	Support Camarillo's efforts
8	*Projects Related to a Santa Rosa Valley Desalter*		
8a	Santa Rosa Valley Desalter		

Water Supply Alternatives Study
Project Status Summary

Project No.	Project Name	Evaluation Completed?	Recommendation
8b	Santa Rosa Valley Desalter + Replenishment with Camrosa Non-Potable Water at Hill Canyon Road		
8c	Santa Rosa Valley Desalter + Replenishment with Camrosa Non-Potable Water at Tract 5347	X	Not Feasible
8d	Santa Rosa Valley Desalter + Replenishment with Stormwater at Hill Canyon Road		
8e	Santa Rosa Valley Desalter + Replenishment with Stormwater at Tract 5347	X	Not Feasible
8f	Increase Santa Rosa Valley Desalter Capacity		
8g	Santa Rosa Valley Desalter + Replenishment with Camrosa Non-Potable Water at Tract 5347 + New Wellfield		
9	*Projects Related to the Tierra Rejada Groundwater Basin*		
9b	New Tierra Rejada Well(s) + Recharge with Recycled Water	X	Not Feasible
9c	New Tierra Rejada Well(s) + Recharge with Stormwater	X	Not Feasible
10	*Other Projects with Camrosa Water District*		
10a	Preservation of Water Supply through Arundo Removal	X	Remains under Consideration
10b	Expansion of Camrosa Non-Potable Water System	X	Remains under Consideration
11	Oak Park Stormwater for Potable Reuse		
12	*Diversion of Stormwater to Create Additional Recycled Water at the Simi Valley Water Quality Control Plant*		
12a	Diversion of Stormwater to Create Additional Recycled Water at the SVWQCP with Existing Permit	X	Does not produce additional water
12b	Diversion of Stormwater to Create Additional Recycled Water at the SVWQCP with Modified Permit		
13	*Simi Valley Desalter*		
13a	Simi Valley Desalter	X	Support Simi Valley's efforts
13b	Simi Valley Desalter + Replenishment with Recycled Water	X	Not Feasible
13c	Replenishment with Advanced Treated Water – Simi Valley Basin	X	Remains under Consideration
13d	Simi Valley Desalter + Replenishment with Stormwater	X	Not Feasible
13e	Simi Valley Desalter + Replenishment with Recycled Water Enhanced with Stormwater		
13f	Simi Valley Desalter + Replenishment with Advanced Treated Water Enhanced with Stormwater		

Water Supply Alternatives Study
Project Status Summary

Project No.	Project Name	Evaluation Completed?	Recommendation
13g	Increase Simi Valley Desalter Capacity		
13h	Increased Pumping from Simi Valley Basin During Outage		
13i	Simi Valley Desalter + Replenishment with Recycled Water + Additional Pumping	X	Not Feasible
13j	Simi Valley Desalter + Replenishment with Stormwater + Additional Pumping	X	Not Feasible
13k	Simi Valley Desalter + Replenishment with Recycled Water Enhanced with Stormwater + Additional Pumping	X	Not Feasible
14	*Projects Related to the Los Robles Desalter*		
14a	Los Robles Desalter	X	Support TO's efforts
14b	Increase Los Robles Desalter Capacity	X	Monitor operation of Los Robles Desalter once completed
15	*Projects Related to Use of Water from the Conejo Valley Groundwater Basin*		
15a	New Newbury Park Wells	X	Remains under Consideration
15b	New Newbury Park Wells + Treatment	X	Remains under Consideration
15c	Newbury Park Well Water Delivery to Purewater Plant	X	Remains under Consideration
15d	Library Well Desalter	X	Support TO's efforts
15e	Increase Library Well Desalter Capacity	X	Monitor operation of Library Desalter once completed
15f	Library Well Water Delivery to Purewater Plant		
16	*Replenish Lake Bard with Advanced Treated Water*		
16a	Replenish Lake Bard with Advanced Treated Water from the HCTP	X	Do Not Proceed
16b	Replenish Lake Bard with Advanced Treated Water from the SVWQCP	X	Do Not Proceed
17	Provide VCWWD1 Water from Fairview Well	X	Proceed
18	Not Used		
19	Not Used		
20	Not Used		
21	Not Used		
22	*Projects Related to Alternative Delivery Mechanisms for Imported Water*		
22a	Raw Water Pipeline + Storage in Lake Piru		
22b	Conveyance through Piru Creek + Storage in Lake Piru		
22c	Raw Water Supply Pipeline + Storage in Piru Basin		
22d	Conveyance through Piru Creek + Storage in Piru Basin		
22e	Raw Water Supply Pipeline + Storage in Fillmore Basin		

Water Supply Alternatives Study
Project Status Summary

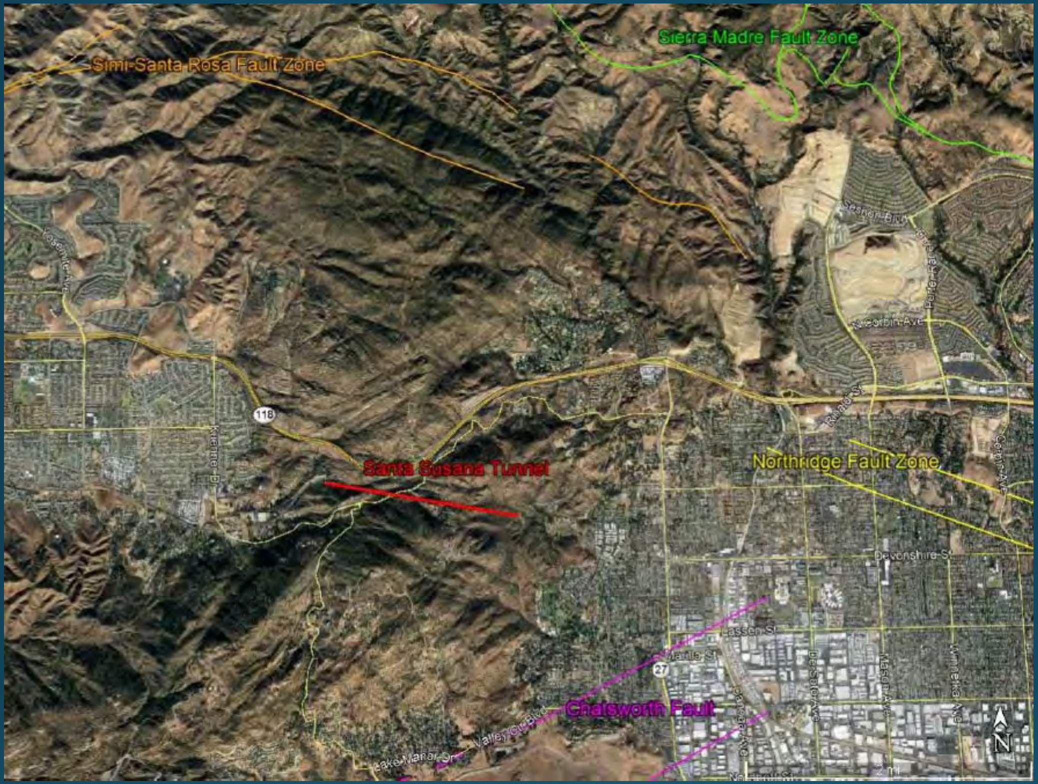
Project No.	Project Name	Evaluation Completed?	Recommendation
23	Improvements to Oxnard-Hueneme Pipeline		
24	*Interconnections with United Water Conservation District*		
24a	UWCD Interconnection at Price Road		
24b	UWCD Interconnection in Somis		
25	South Oxnard Plain Brackish Water Treatment Facility		
26	Storage in Lake Cachuma and Connection to Calleguas		
27	*Projects with Casitas Municipal Water District and City of Ventura*		
27a	Direct Connection to Casitas	X	Remains under Consideration
27b	Enhancements to Ventura's System to Increase Interconnection Flows to Calleguas	X	Infeasible
27c	Store Water in Lake Casitas		
28	*Increase Capacity of Lake Bard*		
28a	Deepen Shallow Parts of Lake Bard via Dredging	X	Remains under Consideration
28b	Deepen Shallow Parts of Lake Bard after Partially Draining	X	Remains under Consideration
28c	Remove Peninsula	X	Remains under Consideration
28d	Expand Lake Bard through Modification of Southern Shoreline	X	Remains under Consideration
29	*Install Pumps to Enable Use of More of Lake Bard's Capacity*		
29a	Lake Bard Barge Pumps	X	Lake Bard land-based pumps are more cost effective
29b	Lake Bard Pumps	X	Proceed
30	Cover Lake Bard	X	Do Not Proceed
31	*New Storage Reservoir*		
31a	New Storage Reservoir and New Surface Water Treatment Plant		
31b	New Storage Reservoir with Treatment at LBWFP		
32	*Groundwater Projects with Oxnard*		
32a	Oxnard Advanced Water Purification Facility ASR Project		
32c	Additional Pumping by Oxnard Wells	X	Remains under Consideration
32d	Additional Pumping from O-H System		
33	Purchases in a Groundwater Market		
34	*Temporary/Portable Seawater Desalination*		
34a	Truck Desalinated Water to Lake Bard		
34b	Deliver Desalinated Water Directly to Oxnard and Port Hueneme		
35	*Water Hauling*		
35a	Hauling Water from Jensen WFP	X	Do Not Proceed
35b	Hauling from City of Santa Barbara to Lake Bard	X	Do Not Proceed
36	*Use of Greywater to Offset Demand*		

Water Supply Alternatives Study
Project Status Summary

Project No.	Project Name	Evaluation Completed?	Recommendation
36a	Incentives for Residential Greywater System Installation	X	Consider as part of Water Conservation as a Way of Life
36b	Install Greywater Systems at Local Colleges	X	Consider as part of Water Conservation as a Way of Life
37	On-Site Stormwater Capture and Use	X	Consider as part of Water Conservation as a Way of Life
38	*Additional Long-Term Water Use Efficiency Measures*		
38a	Residential High-Efficiency Toilets	X	Consider as part of Water Conservation as a Way of Life
38b	High-Efficiency Clothes Washers	X	Consider as part of Water Conservation as a Way of Life
38c	Audits of High Water Users	X	Consider as part of Water Conservation as a Way of Life
38d	High-Efficiency Sprinkler Nozzles	X	Consider as part of Water Conservation as a Way of Life
38e	Weather-Based Irrigation Controllers	X	Consider as part of Water Conservation as a Way of Life
38f	Commercial, Institutional, and Industrial (CII) Water-Efficient Landscape Program	X	Consider as part of Water Conservation as a Way of Life
38g	CII Cooling Efficiency Improvements	X	Consider as part of Water Conservation as a Way of Life
38h	Residential Hot Water Recirculating Devices	X	Consider as part of Water Conservation as a Way of Life
39	Pleasant Valley Basin Pumping Capacity to Withdraw Camrosa Water District Credits		
40	Modify Calleguas' Hill Canyon Turnout to Improve Camrosa's Conejo Wellfield Performance		
41	New Camrosa Wells for Loss Minimization		
42	*Recharge of Arroyo Las Posas Storm Flows*		
42a	Arroyo Las Posas Storm Flow to Las Posas Basin Gravel Pit		
42b	Arroyo Las Posas Storm Flow to Moorpark WWTP Percolation Ponds	X	Not Feasible

Appendix J

STATUS UPDATE FOR THE STUDY OF SEISMIC IMPACTS TO THE SANTA SUSANA TUNNEL (FEBRUARY 2021)



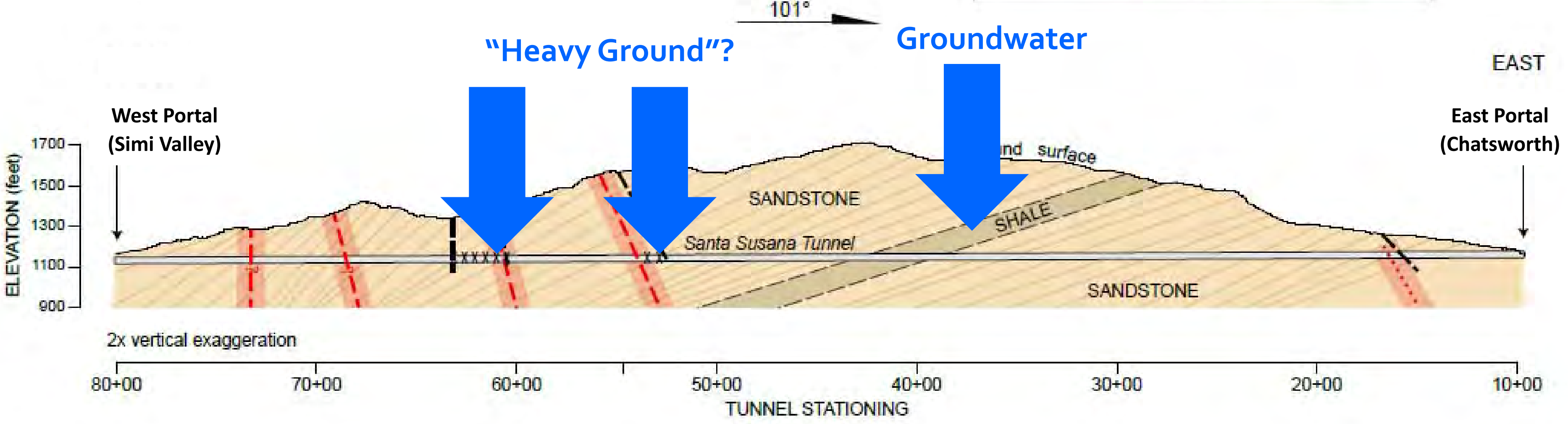
Study of Seismic Impacts to the Santa Susana Tunnel

February 17, 2021

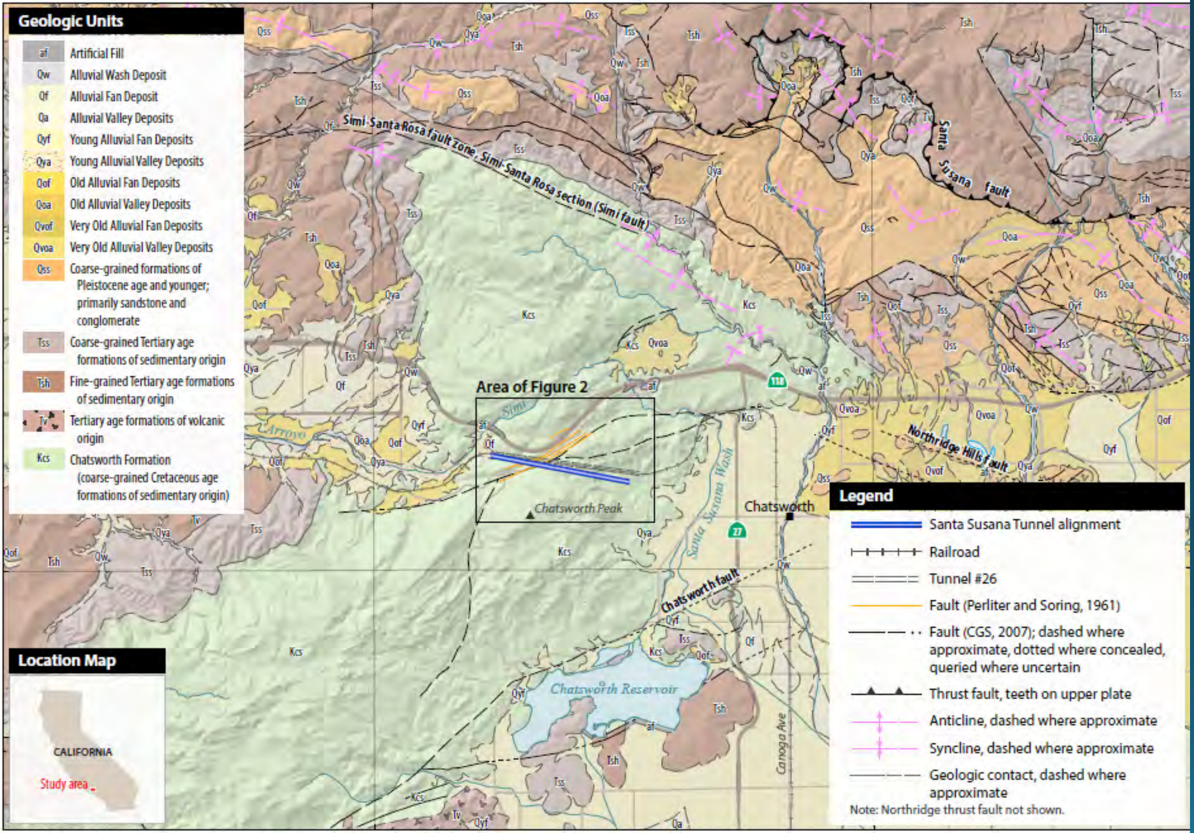
Santa Susana Tunnel

- 1.3 miles long and 96 inches in diameter
- Tunneled through sandstone with thin shale interbeds
- Conveys 100% of Calleguas' water into the service area
- Unreinforced concrete lining
- Completed in 1962

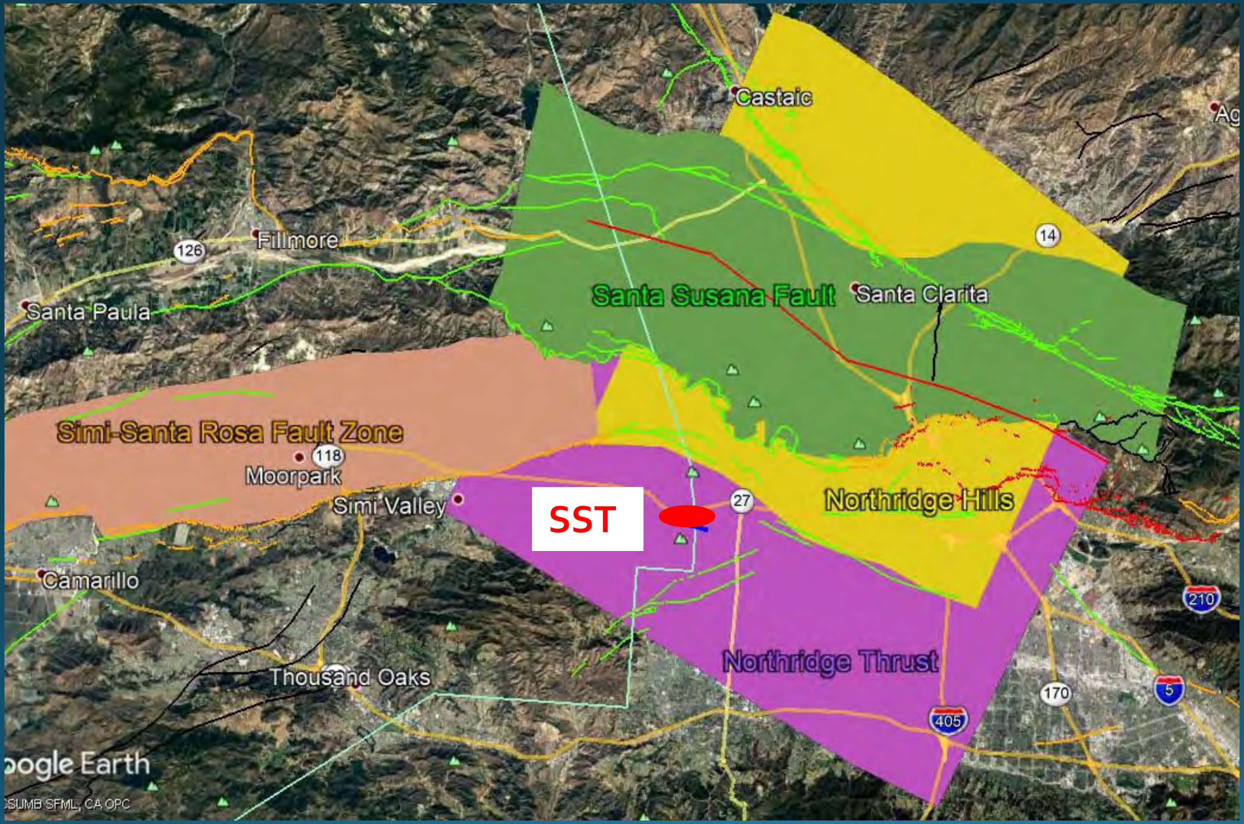
Legend	
🟥 — — ? · ·	Fault (this study); dashed where approximate, dotted where inferred, queried where uncertain
— — — —	Fault (Perliter & Soring, 1961); dashed where approximate
🟥	Possible deformation zone
XXXXX	Zone of heavy ground (Pentegoff, 1961)



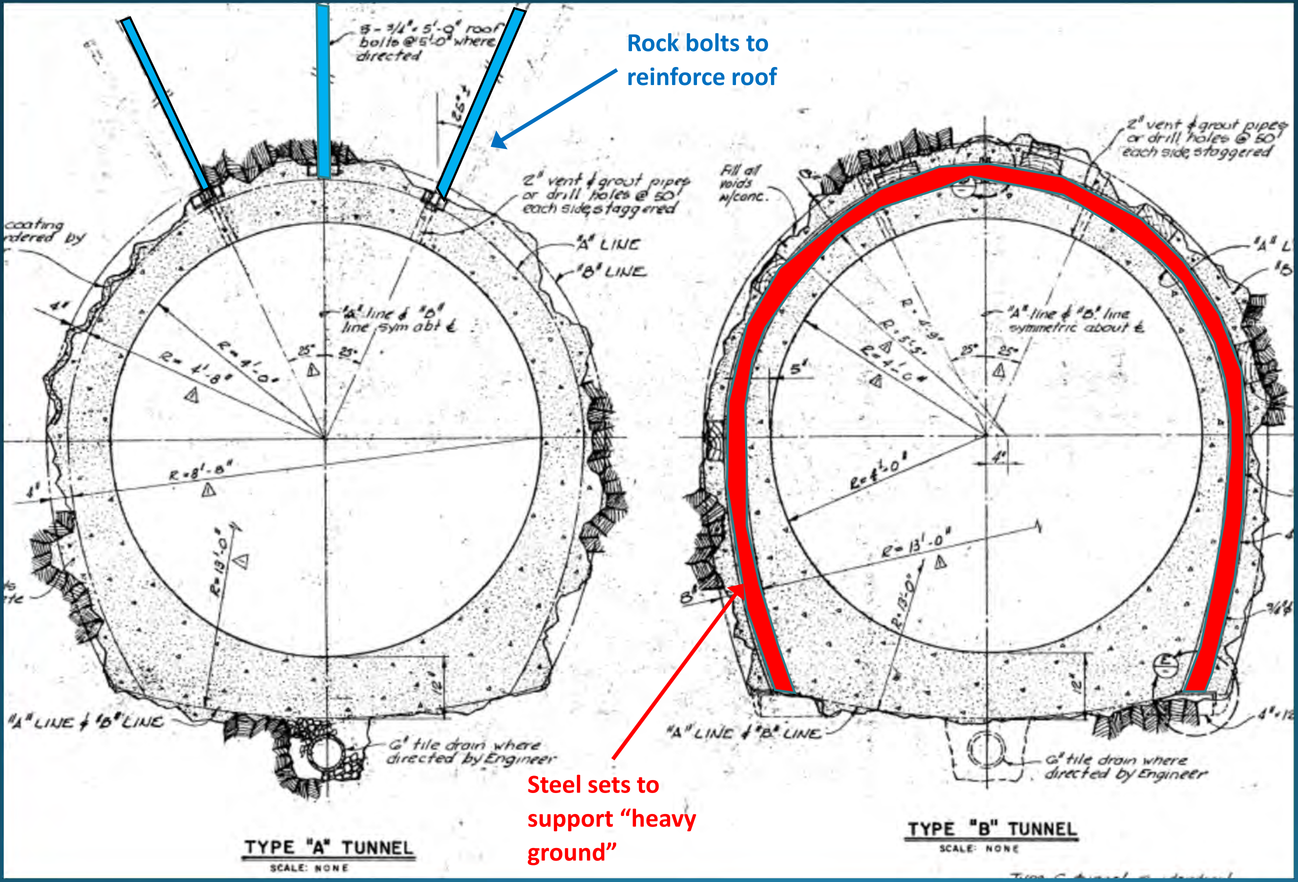
Santa Susana Tunnel



Santa Susana Tunnel



Santa Susana Tunnel



Rock bolts to reinforce roof

Steel sets to support "heavy ground"

Santa Susana Tunnel

Risks

- Liner could be damaged during a worst-case scenario earthquake.
- Highest risk locations:
  - Portals
  - Intersections with traces of the SSPFZ
  - “Heavy ground” conditions
  - Areas with high groundwater levels

Risks

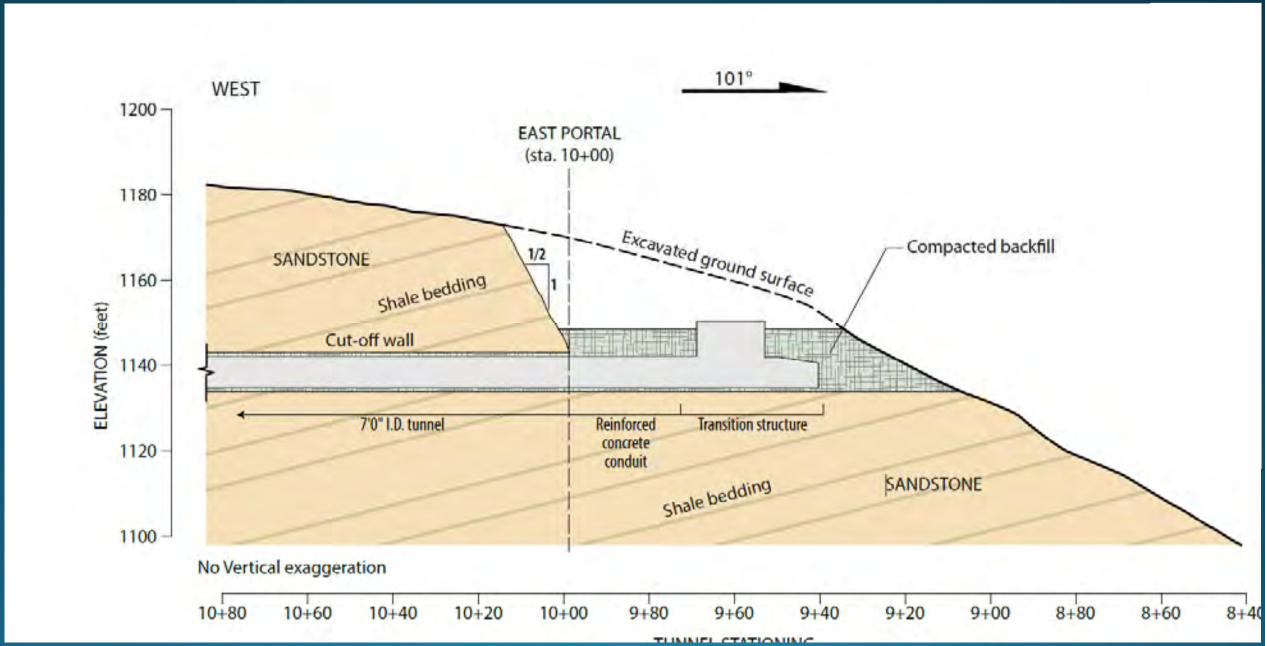
- Potential consequences:
  - Damage limited to circumferential cracking of intact sections of the unreinforced concrete liner and exacerbation of existing cracking in the liner, with partial collapse blocking ~20% of tunnel over distances of 20 ft.
  - More severe damage blocking 40%-100% of tunnel extending several tens of feet in areas of heavy ground and high groundwater levels or where significant cracking already exists.

Risks

- Damage from displacement along an intersecting fault associated with a worst-case scenario earthquake could be significant.
- Damage to the tunnel would be limited to around fault zone when displacements are **<1 in**.
- Significant damage and complete collapse of tunnel that extends up to 30 ft from fault zone could occur when displacements **>2 in**.

Options Considered

- Potential improvements to reduce the risk of failure
- Potential repair methods to address failures should they occur
- Bypass options



Potential Improvements

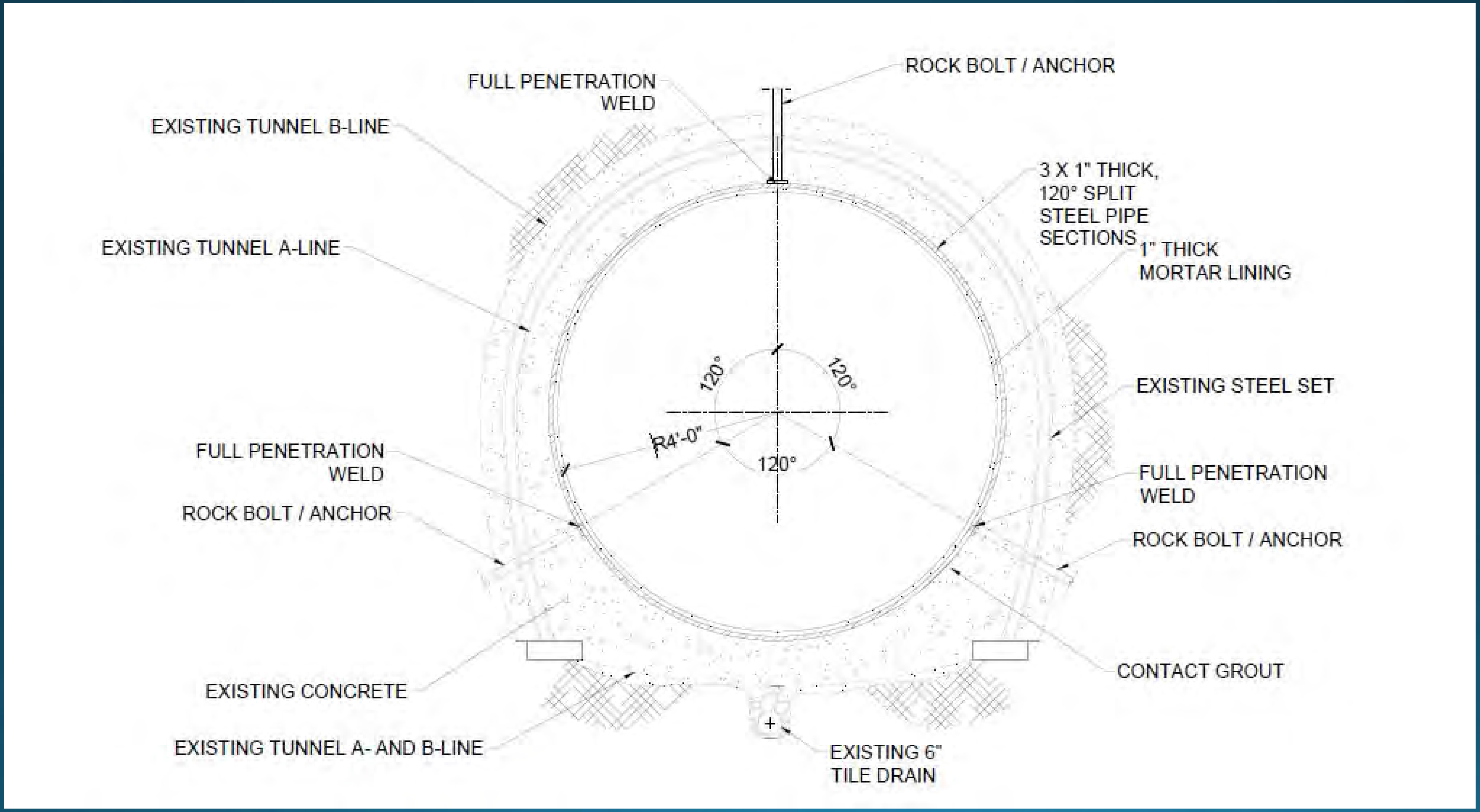
- Potential approaches to reducing the risk and/or consequences of a tunnel failure:
  - Improvement No. 1A - Reinforce tunnel lining at fault splays
  - Improvement No. 1B - Install conduit inside tunnel at fault splays
  - Improvement No. 2 - Replace tunnel lining in high-risk areas
  - Improvement No. 3 - Replace tunnel lining in other areas
- Some level of deformation/damage is acceptable, but significant collapse would be avoided by:
  - Increasing ductility of the liner (1A, 2, and 3)
  - Providing conduit that can survive a collapse (1B)

Improvement No. 1A

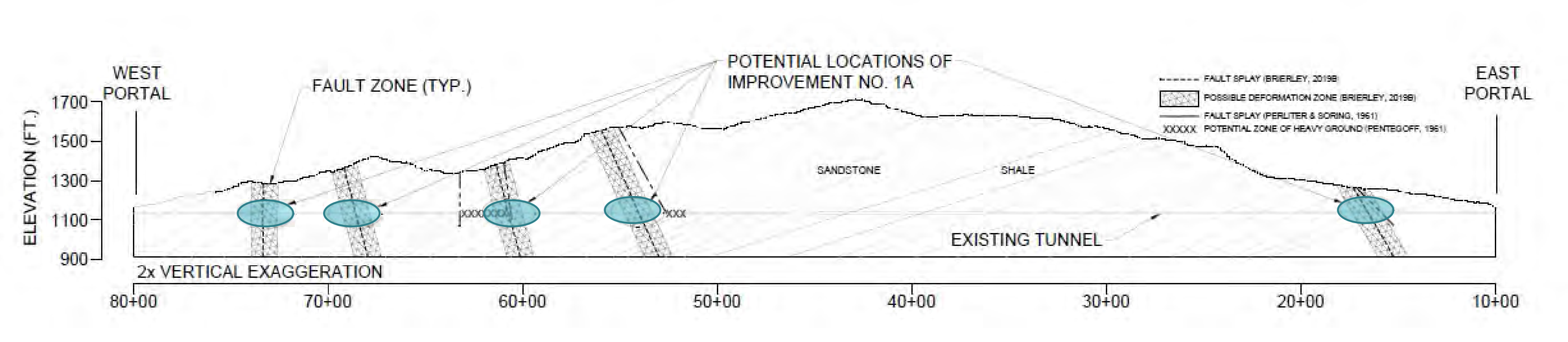
Reinforce Tunnel Lining at Fault Splays

- Adding a steel liner in an existing conduit increases its ductility and is commonly used to mitigate fault rupture displacement hazard in tunnels.
- Thickness of the steel liner is dependent on amount of fault displacement, anticipated ground loads, and capacity and behavior of existing liner.

Improvement No. 1A
Reinforce Tunnel Lining at Fault Splays



Improvement No. 1A
Reinforce Tunnel Lining at Fault Splays

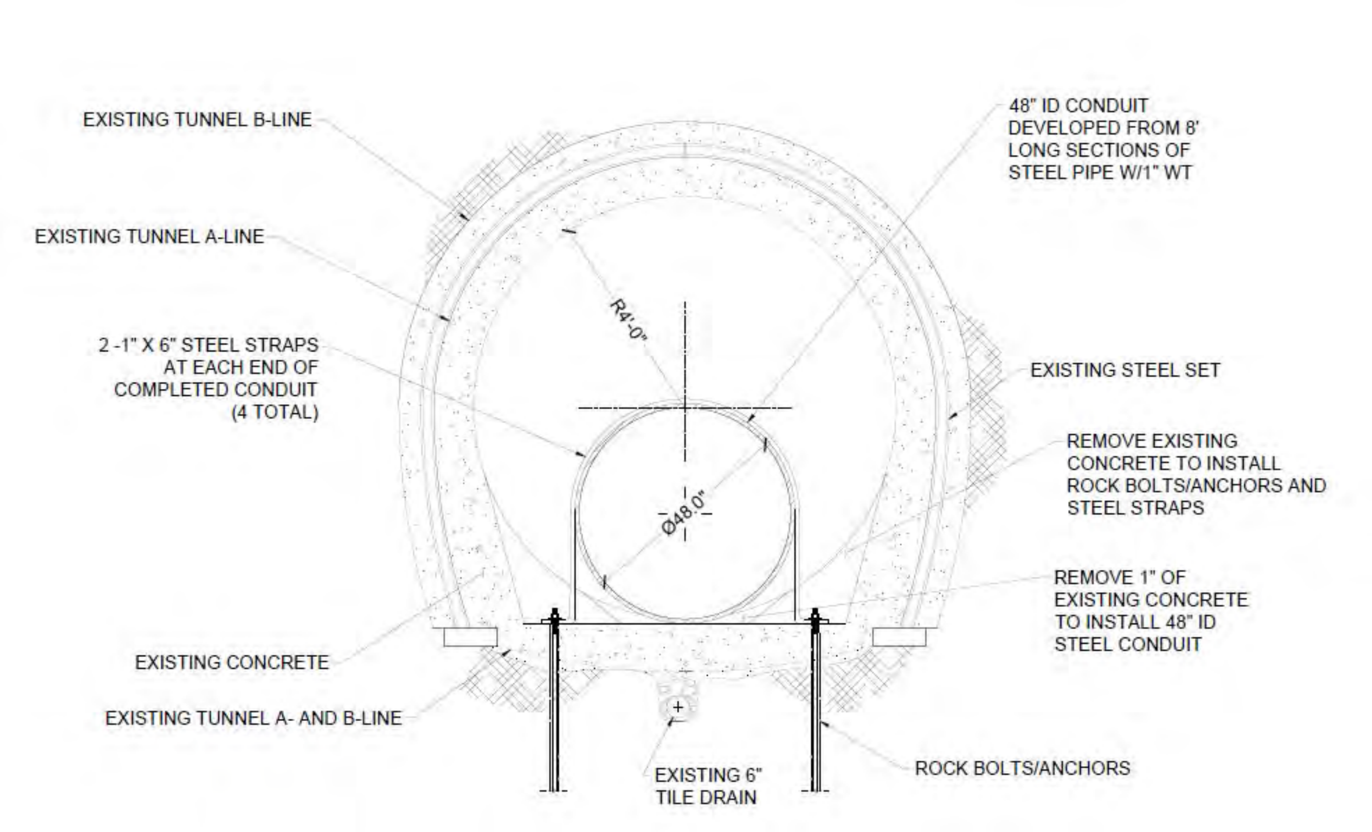


May not need to place in all fault splays shown. Need to identify fault splays most likely to displace during significant earthquake through tunnel inspection and additional field studies.

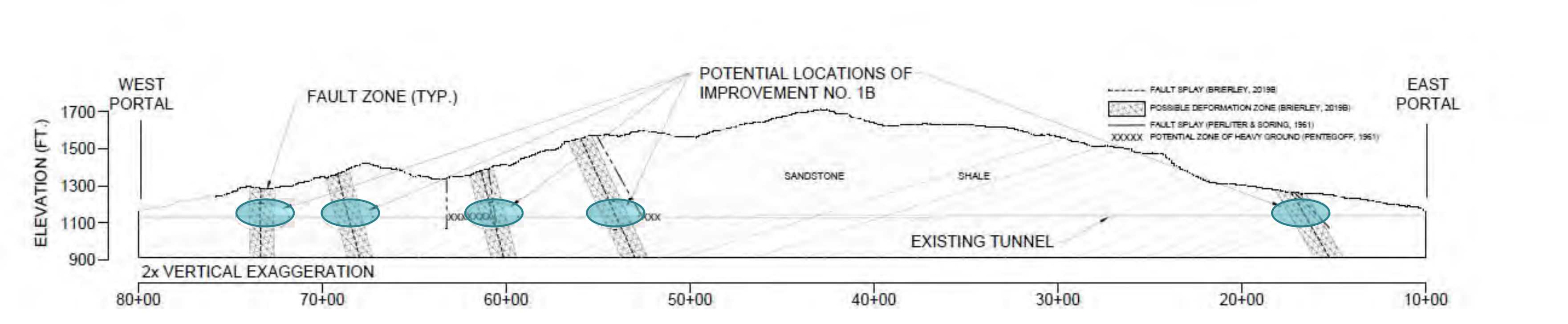
Improvement No. 1B - Install Conduit Inside Tunnel at Fault Splays

- Place a small diameter pipe at the tunnel invert to provide a conduit for water flow should the existing liner collapse and create a blockage.
- Pipe section would be sized to accommodate the impact loading from falling debris and static weight of overlying debris.

Improvement No. 1B - Install Conduit Inside Tunnel at Fault Splays



Improvement No. 1B - Install Conduit Inside Tunnel

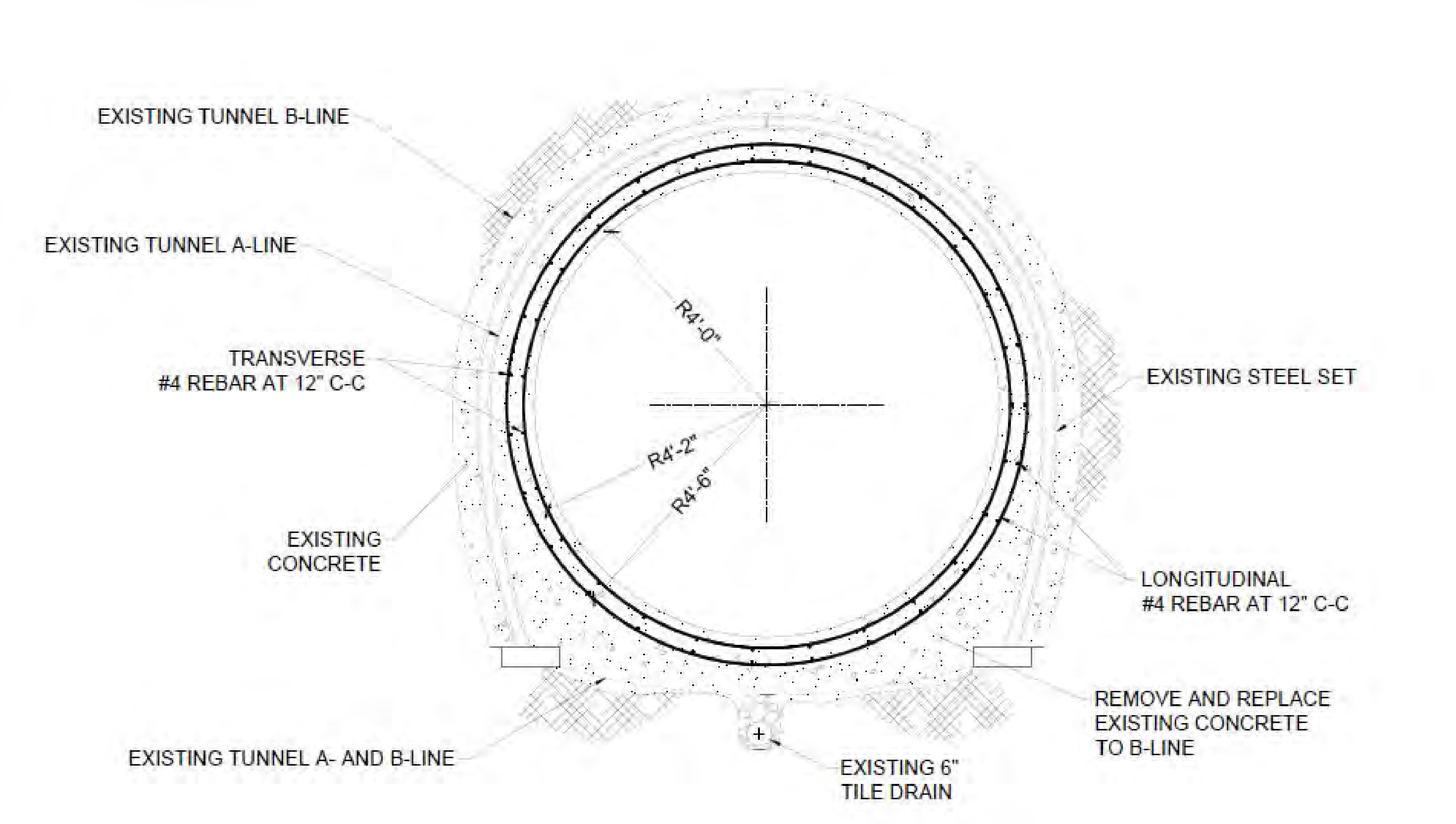


May not need to place in all fault splays shown. Need to identify fault splays most likely to displace during significant earthquake through tunnel inspection and additional field studies.

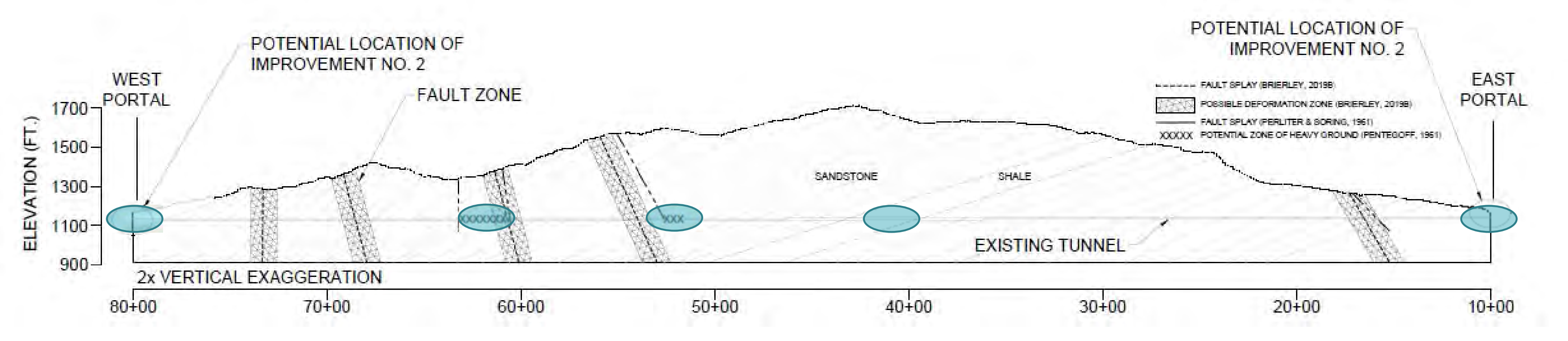
Improvement No. 2
Replace Tunnel Lining in High Risk Areas

- Likely installed at tunnel portals and areas with high static stresses (e.g., "heavy ground", high groundwater).
    - Assumes 50-ft length near tunnel portals.
    - Place in other areas with significant cracking. Length of improvement unknown.
- Scale bedrock and insert rock bolts at the springline and tunnel crown to stabilize loose bedrock and provide anchorage for the liner.
- Place rebar and liner.
- Tie the lining to existing reinforced concrete at the tunnel portals with epoxy dowel.
- Finished internal diameter of the improvement would match the current tunnel diameter.

Improvement No. 2
Replace Tunnel Lining in High Risk Areas



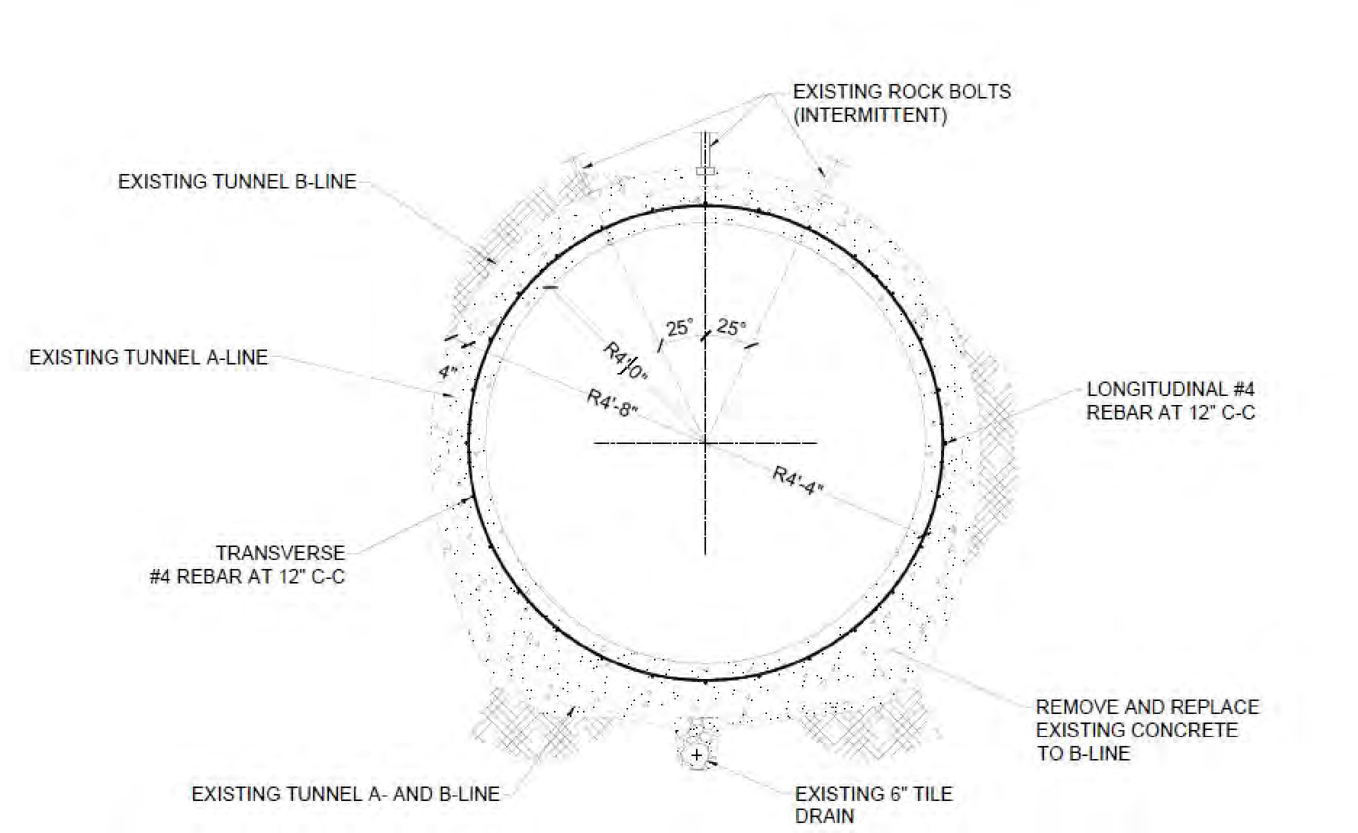
Improvement No. 2
Replace Tunnel Lining in High Risk Areas



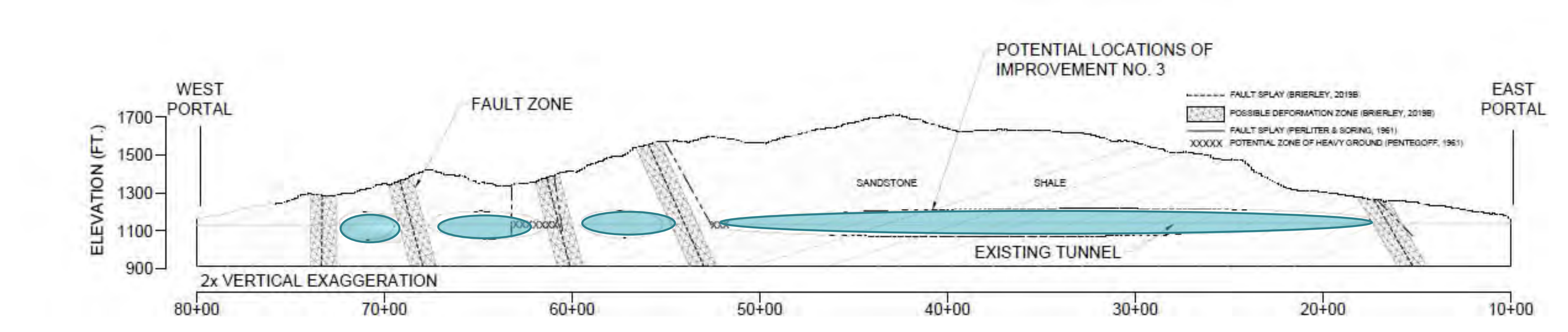
Improvement No. 3
Replace Tunnel Lining in Other Areas

- Similar to Improvement No. 2, but installed in other areas of the tunnel where liner is deteriorated.
    - Assume 20-ft length, but areas would need to be identified during tunnel inspection.
    - Likely located in areas with longitudinal cracking above springline.

Improvement No. 3
Replace Tunnel Lining in Other Areas



Improvement No. 3
Replace Tunnel Lining in Other Areas



Assumes 20LF section within the shaded areas

Potential Improvements Costs and Schedule

No.	Improvement	Assumed Length (ft)	Cost/LF	Estimated Construction Cost	Estimated Shutdown Days
1A	Reinforce Tunnel Lining	100	$20,8000	$2,080,000	34
1B	Install Conduit Inside Tunnel	100	$16,300	$1,630,000	30
2	Replace Tunnel Lining in High Risk Areas	50	$16,700	$835,000	16
3	Replace Tunnel Lining in Other Areas	20	$14,800	$296,000	10

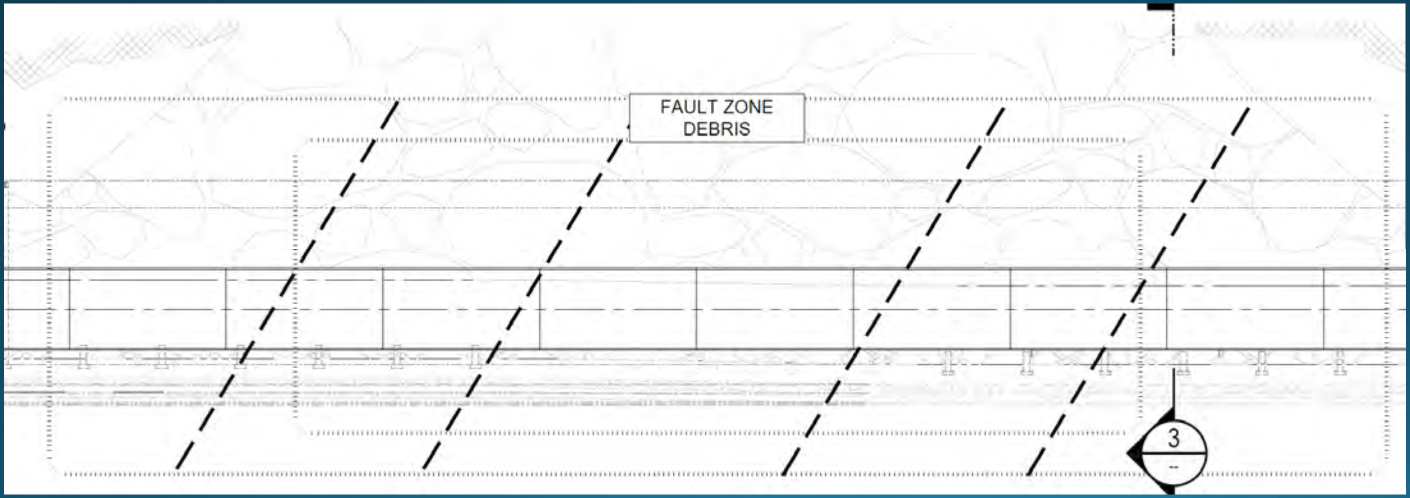
Need for improvements and extents to be determined by tunnel inspection.

Potential Repairs

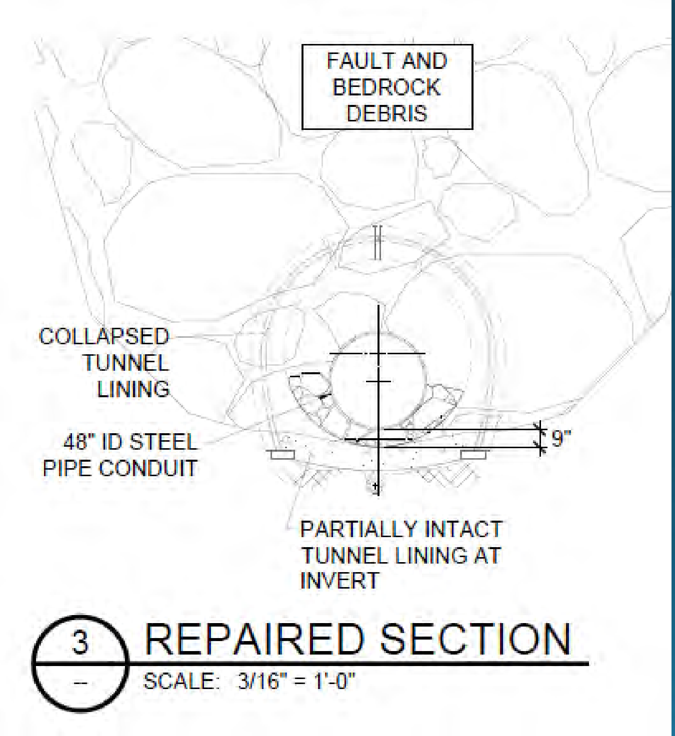
- Potential failure scenarios and repair approaches to obtain a sense of possible modes and order of magnitude:
  - Repair Scenario No. 1 – Conduit Through Blockage
  - Repair Scenario No. 2 – Re-Establish Concrete Liner through Blockage
  - Repair Scenario No. 3 – Re-Establish Concrete Liner with Partial Blockage

Repair Scenario No. 1 – Conduit Through Blockage

- ***Failure:*** Collapse within a fault splay that creates a blockage approximately 110-feet long.
- ***Repair Approach:*** 48-in conduit advanced through the blockage using pipe jacking. No liner repair.

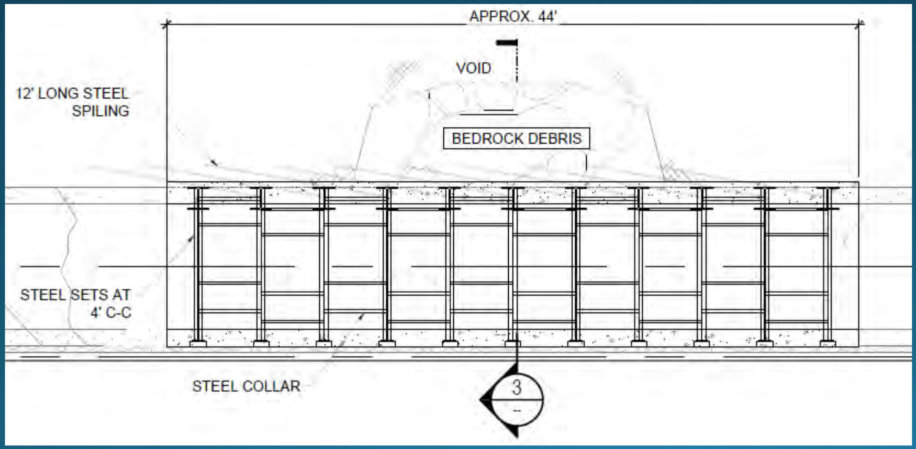


Repair Scenario No. 1 – Conduit Through Blockage

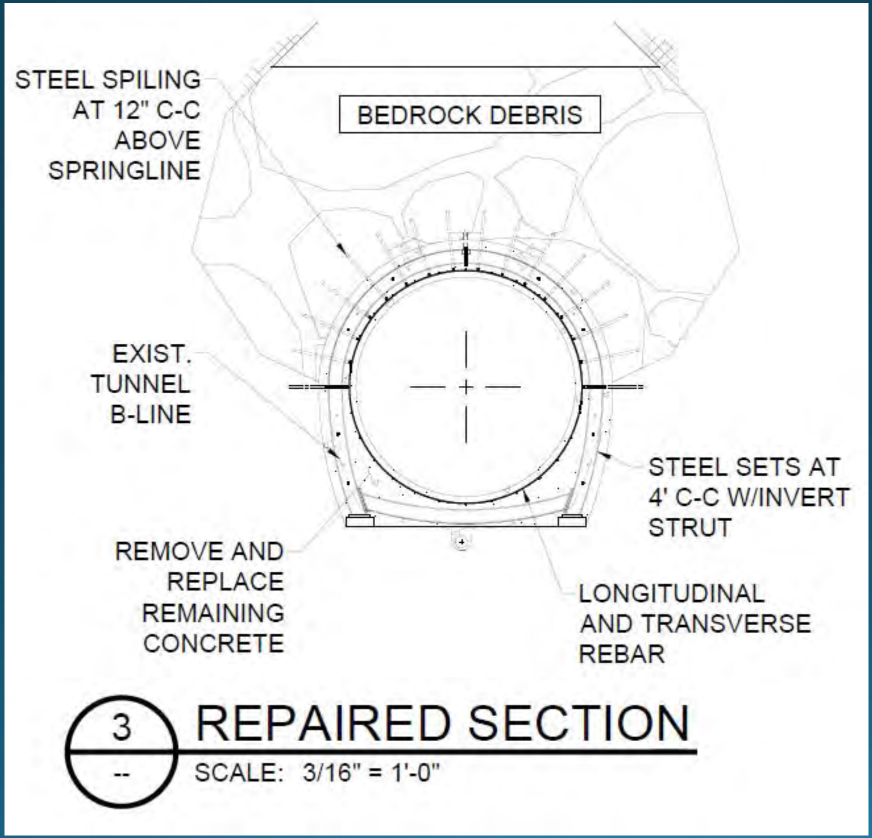


Repair Scenario No. 2 – Re-Establish Concrete Liner through Blockage

- ***Failure:*** Collapse above springline that creates a blockage.
- ***Repair Approach:*** Excavate through the blockage using steel sets and spiles to support the debris then install a reinforced concrete liner with a finished internal diameter of 8-ft.

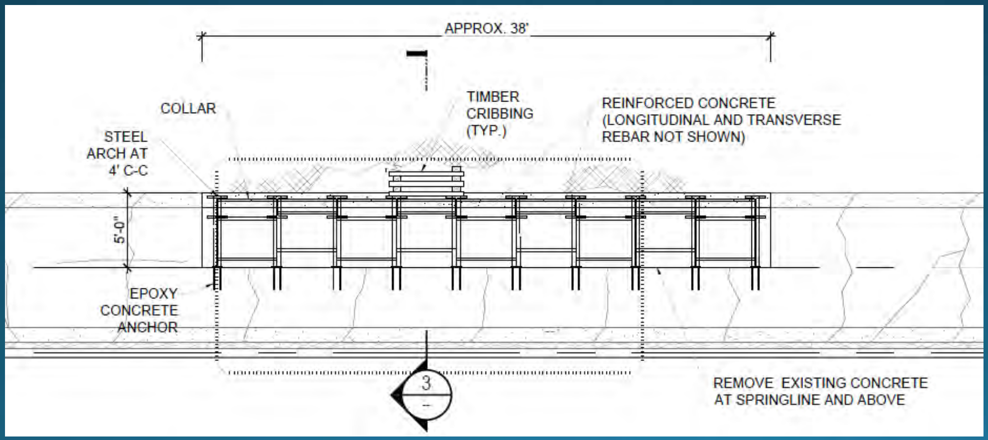


Repair Scenario No. 2 – Re-Establish Concrete Liner through Blockage

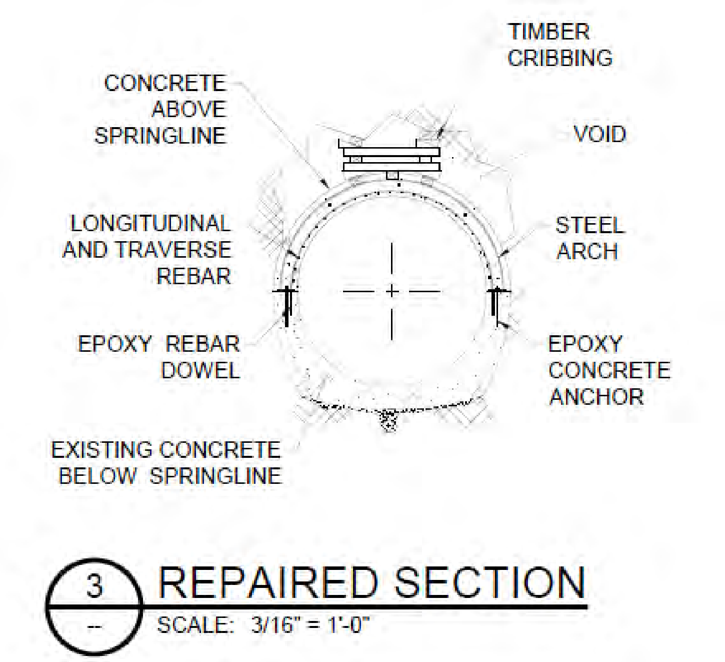


Repair Scenario No. 3 – Re-Establish Concrete Liner with Partial Blockage

- ***Failure:*** Collapse above springline that creates a partial blockage.
- ***Repair Approach:*** Remove the partial blockage and place steel arches, installing timber cribbing between the arch supports and exposed bedrock and constructing a reinforced concrete canopy.



Repair Scenario No. 3 – Re-Establish Concrete Liner with Partial Blockage



Potential Repairs Costs and Schedule

No.	Repair	Assumed Length (ft)	Cost/LF	Estimated Construction Cost	Estimated Repair Duration (days)
1	Conduit Through Blockage	112	$82,600	$9,250,000	158
2	Re-Establish Concrete Liner through Blockage	44	$32,600	$1,400,000	35
3	Re-Establish Concrete Liner with Partial Blockage	38	$18,100	$688,000	22

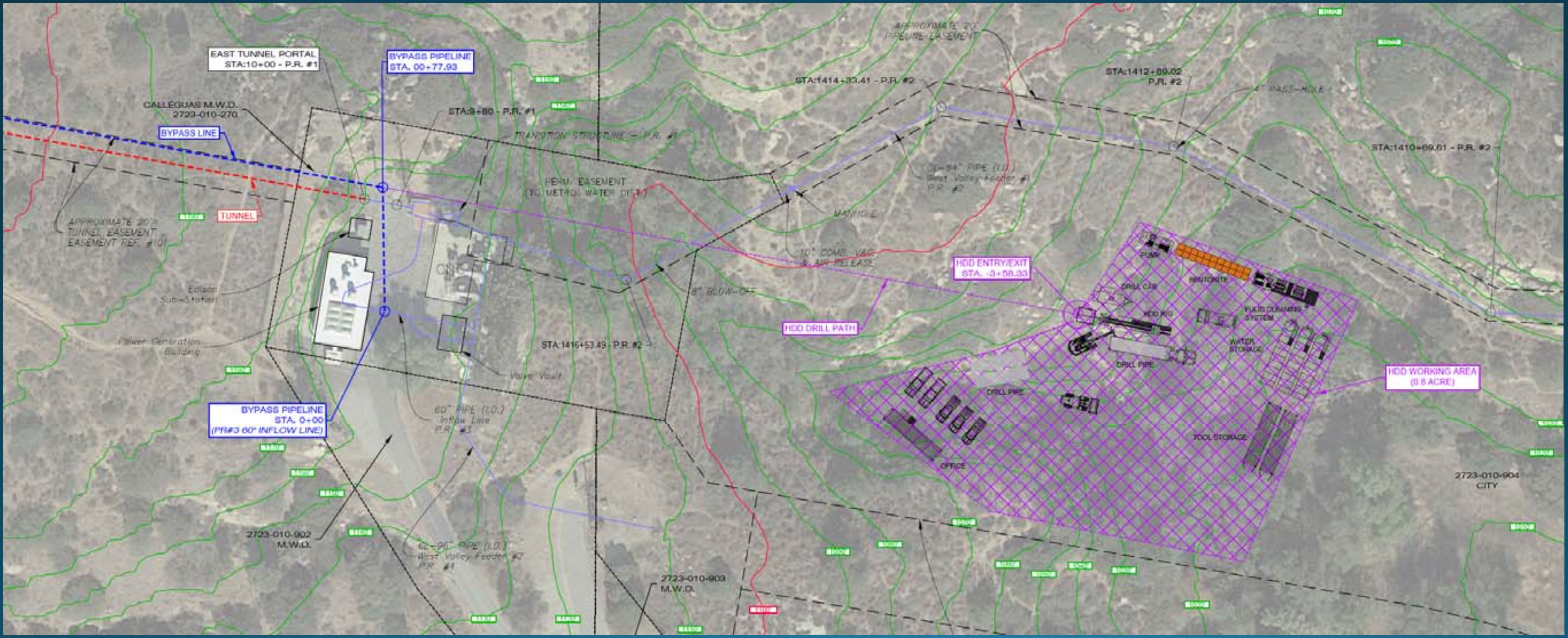
Repair scenarios only give a sense of potential failure modes and repair methods and order of magnitude of costs. Repairs required would be dependent on the type and extent of the failure.

Bypass Options

- Bypass would facilitate tunnel shutdown for performance of improvements to reduce risk and/or deliver water if a tunnel failure occurs:
  - Bypass Option No. 1 – Below Grade Bypass Option
  - Bypass Option No. 2 – Near Grade Bypass Option

Bypass Option No. 1 – Below Grade Bypass Option

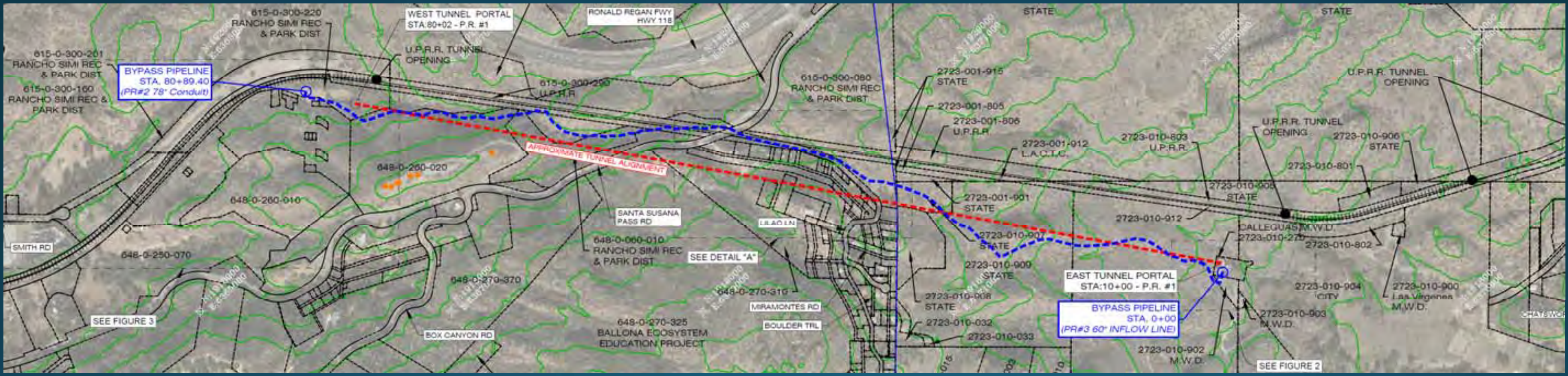
- ~9,200 LF of 48-in ID steel pipeline installed using HDD.



Bypass Option No. 2 – Near Grade Bypass Option

- Permanent installation to pump water overland using an alignment on the existing easements:
  - Booster pump station with two centrifugal pumps
  - 8,100 LF 48-in steel pipe at grade or in shallow trench
  - Diesel back up generator
  - 75,000-gal surge tank
  - Control system

Bypass Option No. 2 – Near Grade Bypass Option



Bypass Options Costs and Schedule

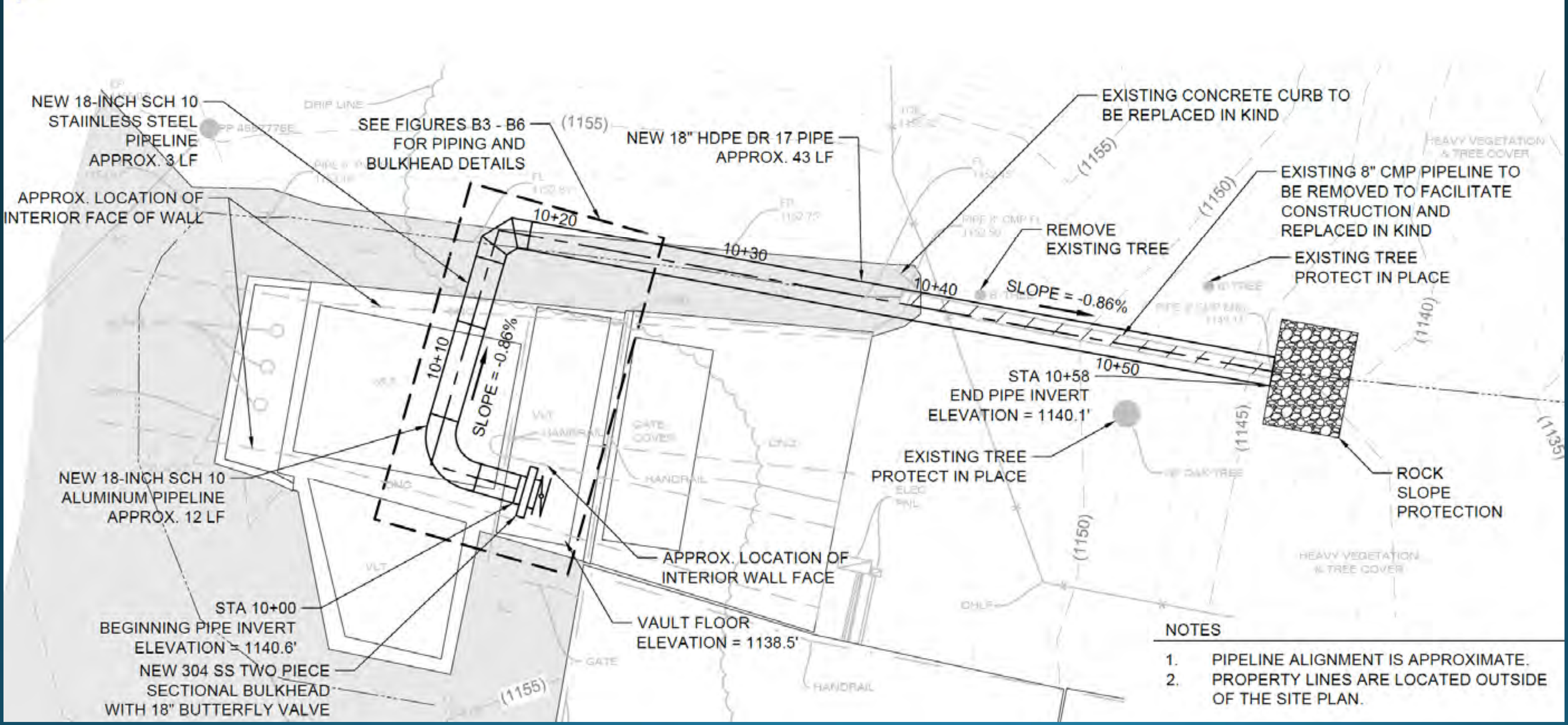
No.	Bypass Options	Estimated Cost	Estimated Construction Days
1	Below Grade Bypass Option	$50,110,000	253
2	Near Grade Bypass Option	$22,490,000	119

Near-grade option does not include right-of-way or operational costs.

Conclusions and Recommendations

- Improvements to mitigate the of tunnel damage are substantially less expensive than tunnel repairs.
- Length of shutdown needed to perform tunnel repairs cannot currently be sustained.
- Too much uncertainty about nature and extent of potential tunnel failures to reasonably prepare by procuring materials in advance.
- Bypass options are extremely expensive and implementing projects from the WSAS is anticipated to be more cost-effective.

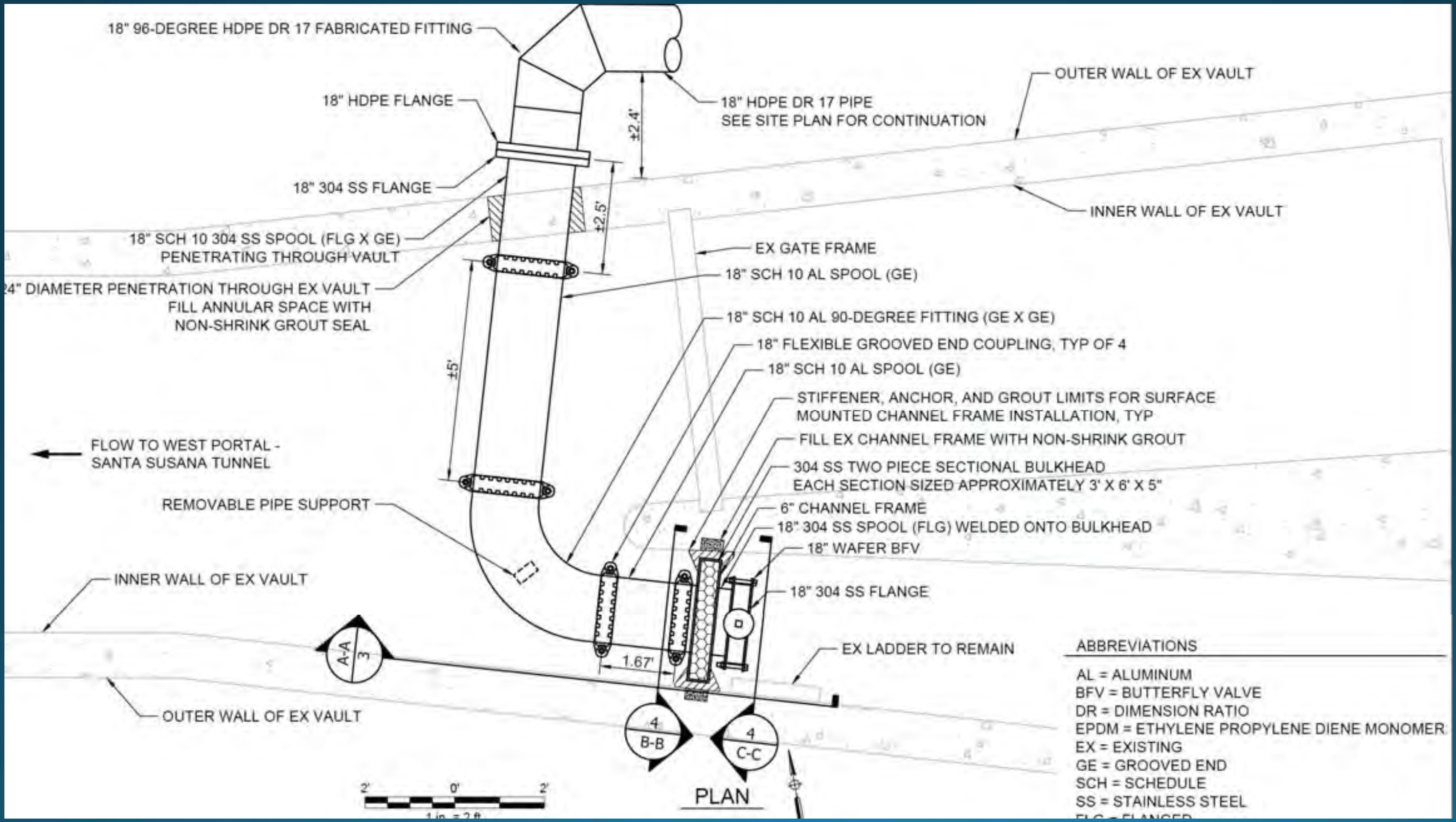
East Portal Isolation Enhancements



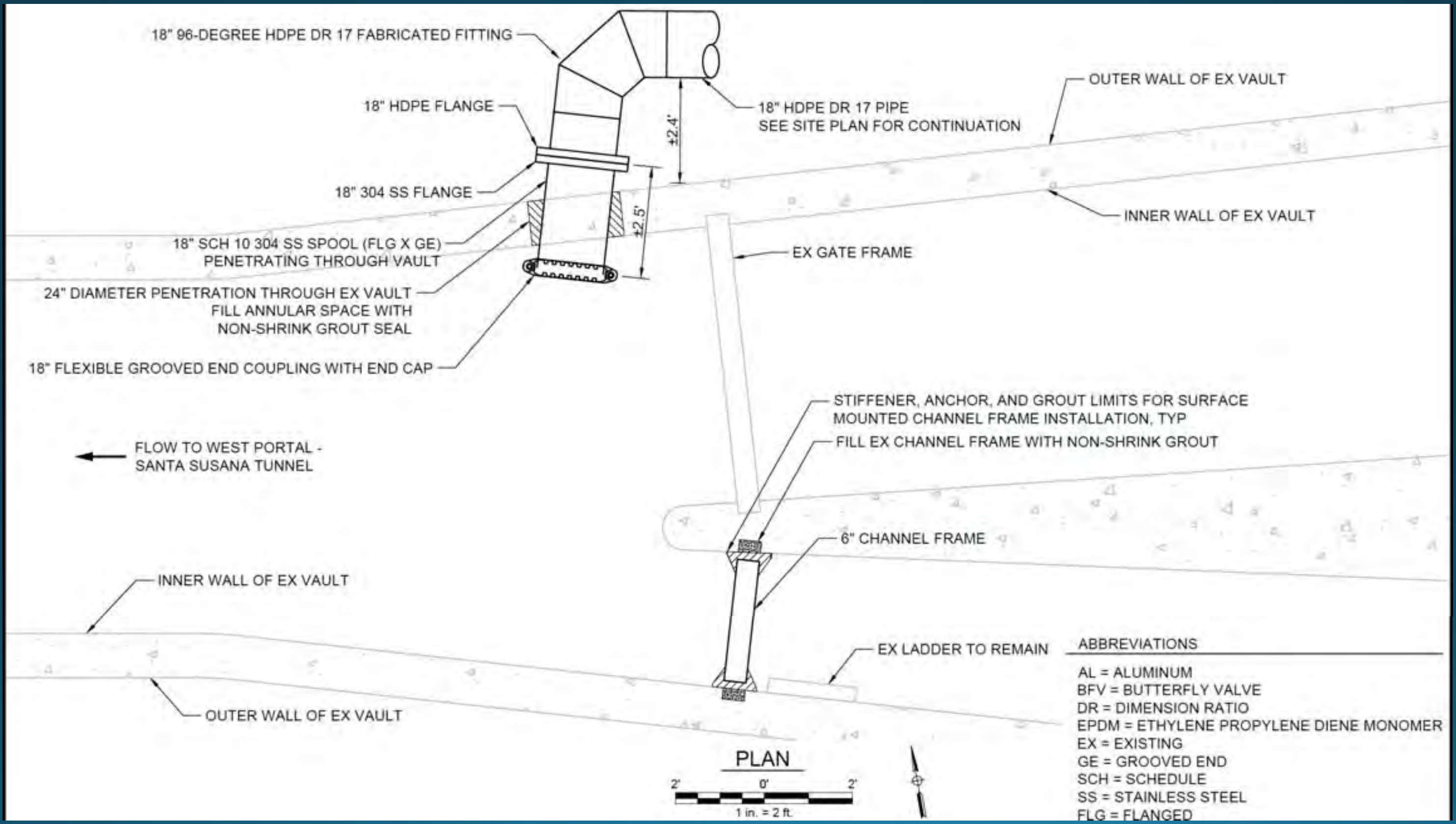
NOTES

1. PIPELINE ALIGNMENT IS APPROXIMATE.
2. PROPERTY LINES ARE LOCATED OUTSIDE OF THE SITE PLAN.

East Portal Isolation Enhancements



East Portal Isolation Enhancements



ABBREVIATIONS

AL = ALUMINUM
BFV = BUTTERFLY VALVE
DR = DIMENSION RATIO
EPDM = ETHYLENE PROPYLENE DIENE MONOMER
EX = EXISTING
GE = GROOVED END
SCH = SCHEDULE
SS = STAINLESS STEEL
FLG = FLANGED

Next Steps

1. Implement improved isolation approach at East Portal. (Winter 2021-22?)
2. Conduct tunnel inspection originally planned for February 2019. (Winter 2022-23?)
3. Refine tunnel improvements approaches based on results of tunnel inspection and potentially additional field geotechnical work.
4. Implement selected WSAS and other water supply reliability projects.
5. Implement tunnel improvements once sufficient alternative water supplies have been implemented to conduct a long enough shutdown to perform the work.

Questions?

Appendix K

WATER SHORTAGE CONTINGENCY PLAN

Calleguas Municipal Water District

Water Shortage Contingency Plan

Introduction

This Water Shortage Contingency Plan (WSCP) complies with California Water Code (CWC) Section 10632, which requires that every urban water supplier shall prepare and adopt a WSCP as part of its Urban Water Management Plan (UWMP). Section 10632.2 provides that, "An urban water supplier shall follow, where feasible and appropriate, the prescribed procedures and implement determined shortage response actions in its water shortage contingency plan...or reasonable alternative actions, provided that descriptions of the alternative actions are submitted with the annual water shortage assessment report pursuant to Section 10632.1." Notwithstanding, the CWC does not prohibit an urban water supplier from taking actions not specified in its WSCP, if needed, without having to formally amend its UWMP or WSCP.

The WSCP is a guide that describes intended actions during water shortage conditions. It is meant to improve preparedness for droughts and other impacts on water supplies by describing the process used to address varying degrees of water shortages. Certain elements of the WSCP are required by the CWC, including response actions that align with six standard water shortage levels based on water supply conditions, as well as shortages resulting from catastrophic supply interruptions.

Calleguas Municipal Water District (Calleguas or District) operates as a Member Agency of the Metropolitan Water District of Southern California (Metropolitan). Metropolitan provides Calleguas with imported water supplies, which Calleguas in-turn distributes on a wholesale basis to its retail water purveyors. The District falls directly under the WSCP of Metropolitan, as Calleguas is fully dependent on Metropolitan for its water supply. While the Calleguas WSCP may be viewed as a restatement of Metropolitan's WSCP, the District continues to develop additional water shortage contingency measures in the event of a catastrophic interruption of supply.

Organization of this Document

The WSCP covers the required elements as set forth by CWC Section 10632. As Calleguas is a wholesale urban water supplier, elements that pertain only to retail water supplies are not addressed in the WSCP.

This document contains eight sections. Section 1 is an introduction that explains the purpose of the WSCP and gives background on the Calleguas service area and system. Section 2 is a summary of the water supply analysis and water reliability findings from the 2020 UWMP, pursuant to CWC Section 10635. Section 3 is a description of procedures to conduct and approve the Annual Assessment. Section 4 explains the WSCP's six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, 50, and more than 50 percent shortages and describes the WSCP's shortage response actions that align with the defined shortage levels. Section 5 addresses communication protocols and procedures to inform customers, the public, interested parties, and local agencies regarding any current or predicted shortages and any resulting shortage response actions. Section 6 is a description of legal authorities to implement and enforce shortage response actions. Section 7 is a description of the financial consequences of and responses for drought conditions. Section 8 describes adoption of the WSCP and procedures for refinement of the plan.

This WSCP includes attachments that are incorporated into Calleguas' water shortage planning. These include the following:

Attachment 1 – The Metropolitan Water District of Southern California Water Surplus and Drought Management Plan

Attachment 2 – The Metropolitan Water District of Southern California Water Supply Allocation Plan

Attachment 3 – The Calleguas Municipal Water District Imported Water Outage Protocol Fact Sheet

Attachment 4 – The Calleguas Municipal Water District Imported Water Outage Protocol Memorandum

Attachment 5 – Calleguas Municipal Water District Ordinance 12

Section 1 – Background and Purpose of the WSCP

Calleguas was incorporated in 1953 for the purpose of providing a supplemental water supply to its service area. Previously, the Municipal Water District Act of 1911 authorized the formation of municipal water districts to acquire and sell water. In 1960, voters approved the annexation of Calleguas to Metropolitan to receive imported water.

Today the imported water that Calleguas receives from Metropolitan is virtually all State Water Project supplies via the California Aqueduct. However, in times of severe drought or supply shortage, Metropolitan does have the ability to provide a limited supply from the Colorado River Aqueduct to Calleguas. Calleguas owns and operates two significant points of imported water storage within its service area: Lake Bard and the Las Posas Aquifer Storage and Recovery (ASR) facility. Lake Bard is a 10,500 AF reservoir located at the District's Headquarters. The Las Posas ASR is a facility that enables injection and extraction of imported water supplies in the Las Posas Basin near the City of Moorpark.

The Calleguas service area encompasses approximately 366 square miles. Calleguas provides potable imported water to 19 retail water purveyors located within the following five service regions: Simi Valley, Conejo Valley, Oak Park, Las Posas, and Camarillo/Oxnard (Figure K-1).

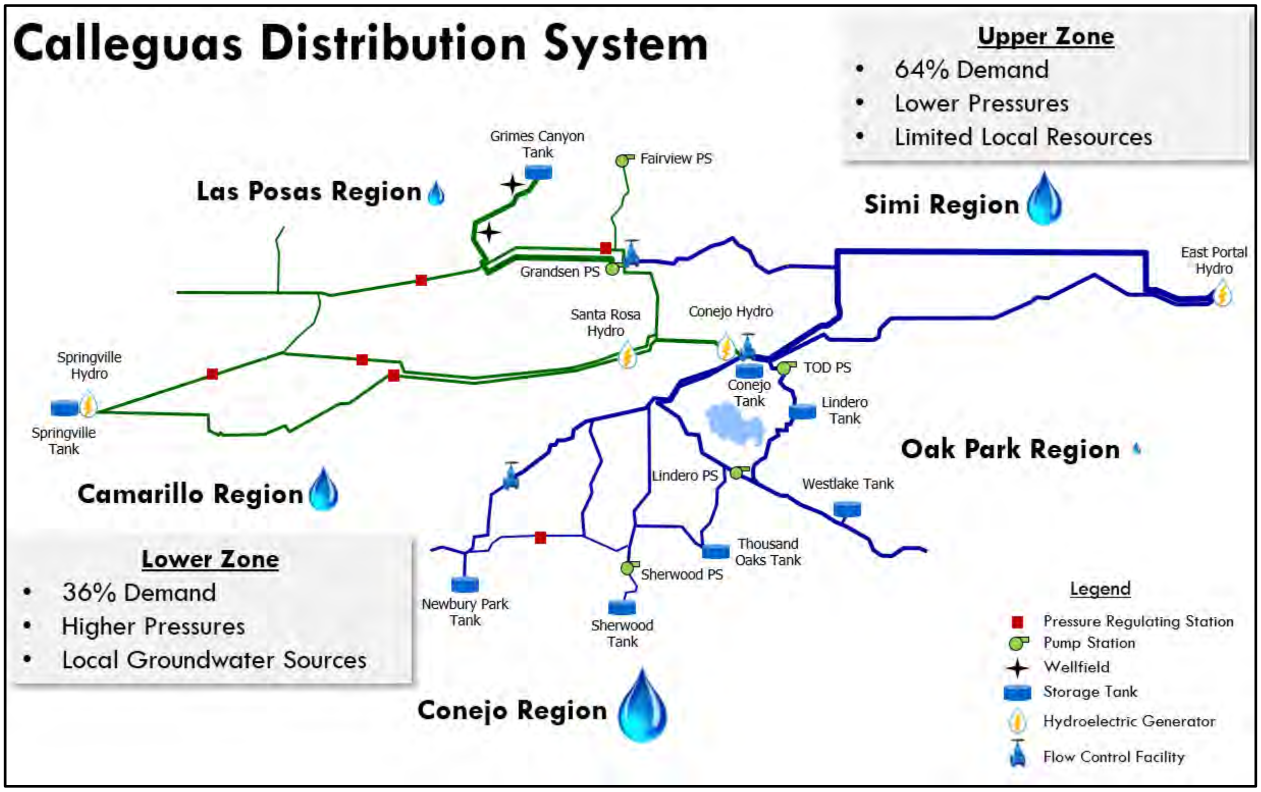


Figure K-1. Calleguas MWD Distribution System

RELIABILITY PLANNING – METROPOLITAN

As described in Metropolitan's UWMP and WSCP, its reliability planning efforts include, but are not limited to, the 1996 Integrated Water Resources Plan (IRP) and its three updates in 2004, 2010, and 2015; the 2020 IRP (currently in development); the Water Surplus and Drought Management (WSDM) Plan; and the Water Supply Allocation Plan (WSAP).

- The IRP is Metropolitan's evolving long-term plan to assure adequate water supplies for Southern California.
- The WSDM Plan provides policy guidance for managing regional water supplies during surplus and shortage conditions. Similar in concept to the WSCP, the WSDM Plan provides an overall vision for operational supply management and characterizes a flexible sequence of actions to minimize the probability of severe shortages and reduce the likelihood of extreme shortages.
- The WSAP is Metropolitan's policy and formula for equitably allocating available water supplies to the member agencies during extreme water shortages when Metropolitan determines it is unable to meet all its demands.

Additional reliability planning efforts by Metropolitan include its Emergency Storage Objective and its Seismic Risk Assessment and Mitigation Plan. More information on all planning efforts listed above can be found in Metropolitan's UWMP.

Both the Metropolitan WSDM Plan and the WSAP are provided as Attachments 1 and 2 to the Calleguas WSCP. The Calleguas WSCP is intended to mirror the WSCP of Metropolitan and the elements of its reliability planning efforts.

OUTAGE PLANNING – CALLEGUAS

Calleguas' efforts related to water outage planning include, but are not limited to, the 2014 Emergency Water Supply Plan (EWSP), the District's Water Supply Alternatives Study (WSAS), and the Imported Water Outage Protocol (IWOP).

- The EWSP described measures that the District could implement to improve emergency water supply reliability. Many recommendations included in the 2014 EWSP have since been implemented or addressed in subsequent planning documents.
- The WSAS is a comprehensive planning effort that will evaluate approximately 100 projects and programs to enhance water supply reliability with emphasis on recommended projects to meet Calleguas' water demands during an extended outage of imported supplies.
- The IWOP details potential methodologies for allocating the District's outage supplies in the event of a catastrophic interruption of imported water. The intended purpose of the IWOP is to prepare and codify a methodology for demand reduction during an outage.

A fact sheet explaining the IWOP is included as Attachment 3, and the Calleguas 2020 IWOP Memo is provided as Attachment 4 to the Calleguas WSCP.

SEISMIC RISK ASSESSMENT

Beginning January 2020, CWC Section 10632.5 mandates urban water suppliers to include in their UWMP a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

Calleguas is a participant in the *2015 Ventura County Multi-Hazard Mitigation Plan*[1] (MHMP), which assesses the risks posed by natural and human-caused hazards and establishes mitigation strategies to reduce or avoid these risks. Earthquakes are addressed in this plan. A link to the most recent MHMP can be found online at: https://www.readyventuracounty.org/stay-informed/.

Calleguas also conducts its own seismic risk and resilience assessments on critical infrastructure, including imported water, the Wood Ranch Dam at Lake Bard, the Lake Bard Water Filtration Plant (LBWFP), pipelines, Las Posas ASR wells, turnouts, and the Santa Susana Tunnel. The Santa Susana Tunnel is a critical infrastructure component for the District as it represents the only pathway for conveying imported water supplies into the Calleguas service area. It crosses several traces of a mapped fault zone (Figure K-2) and is vulnerable to damage or even complete collapse in the event of a substantial earthquake. More information on the Study of Seismic Impacts to the Santa Susana Tunnel can be found in Appendix J to the Calleguas 2020 UWMP.

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[1] Online: http://www.vcfloodinfo.com/resources/ventura-county-hazards-mitigation-plan

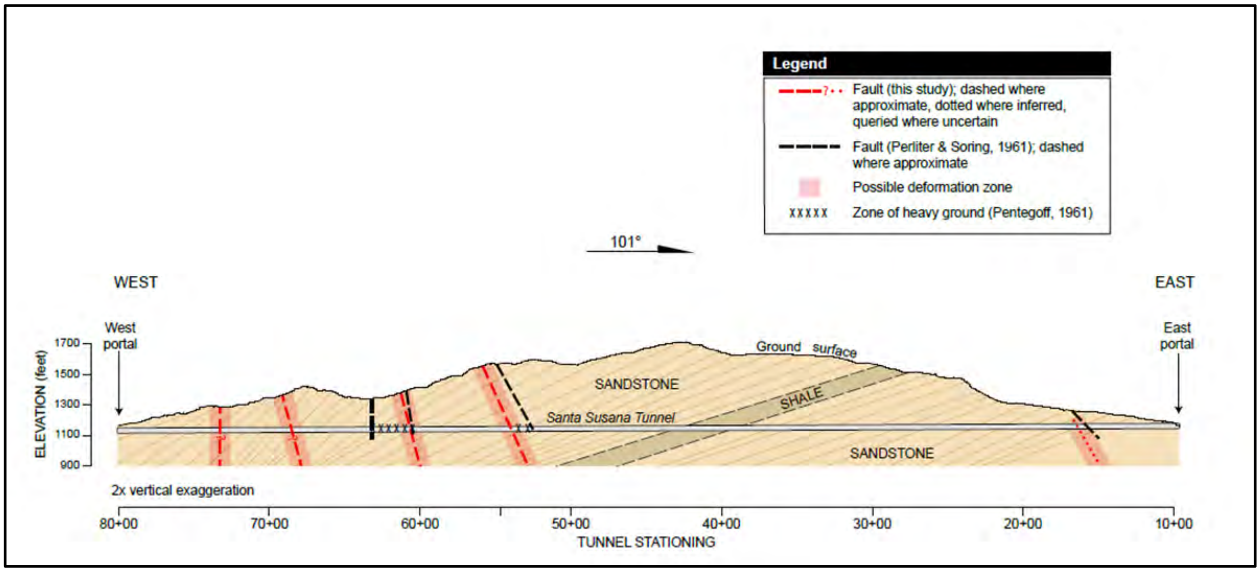

Figure K-2. Location of Faults along the Alignment of the Santa Susana Tunnel

Section 2 – Summary of Water Reliability Assessment and Drought Risk Assessment

Besides the WSCP, the Urban Water Management Planning Act requires suppliers to conduct two other planning analyses to evaluate supply reliability. The first is a Water Reliability Assessment that compares the total water supply sources available to the water supplier with long-term 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 lasting five consecutive water years. The second is a Drought Risk Assessment that evaluates a drought period that lasts five consecutive water years starting from the year following when the assessment is conducted.

Calleguas completed its Water Reliability Assessment (WRA) and Drought Risk Assessment (DRA) as part of the 2020 UWMP, and both assessments determined that Calleguas would have adequate supplies to meet expected demands even under drought conditions. This determination is based on Metropolitan's own WRA and DRA that under the conditions required by the UWMP, it has supply capabilities sufficient to meet expected demands from 2025 through 2045 under a single dry-year condition and a period of drought lasting five consecutive water years, as well as in a normal water year hydrologic condition.

Calleguas' analysis mirrored the approach taken by Metropolitan as the District is fully reliant on Metropolitan for its water supply. However, Lake Bard and the Las Posas ASR provide significant storage capabilities that are within direct control of the District. The District's WSAS has identified projects that may bolster the reliability of Calleguas beyond a baseline reliability provided by Metropolitan. As demonstrated by the findings of both the WRA and the DRA, Calleguas is well positioned to mitigate the challenges posed by hydrologic variability, potential climate change, and regulatory risk through the supply capabilities and investments in storage made on the Metropolitan Regional-level and through Calleguas' own reasonable available outage storage in Lake Bard and the Las Posas ASR.

Section 3 – Annual Water Supply and Demand Assessment Procedures

As an urban water supplier, Calleguas must prepare and submit an Annual Assessment. The Annual Assessment is a determination of the near-term outlook for supplies and demands and how a perceived shortage may relate to WSCP shortage stage response actions in the current calendar year; this determination is based on known circumstances and information available to Calleguas at the time of analysis. Starting in 2022, the Annual Assessment will be due by July 1 of every year, as indicated by CWC Section 10632.1. CWC Section 10632.1 also allows for *"[a]n urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later*." The Annual Assessment and related reporting are to be conducted based on the supplier's procedures indicated in the WSCP.

Calleguas' Annual Assessment determination will be based on Metropolitan's Annual Assessment determination. As described in Metropolitan's WSCP, by the month of June, Metropolitan staff will present a completed Annual Assessment for approval by its Board of Directors or by its Board's authorized designee with expressly delegated authority for approval of Annual Assessment determinations. This presentation would include a request that the approval of the Annual Assessment determination also appropriately triggers any recommended specific shortage response actions resulting from the assessment.

Calleguas will approve its Annual Assessment in parallel with Metropolitan and follow a similar sequence described in the paragraph above. Upon Board approval, Calleguas will formally submit the Annual Assessment to DWR by July 1. Figure K-3, taken from the Metropolitan WSCP, provides a graphic representation of the decision-making process.

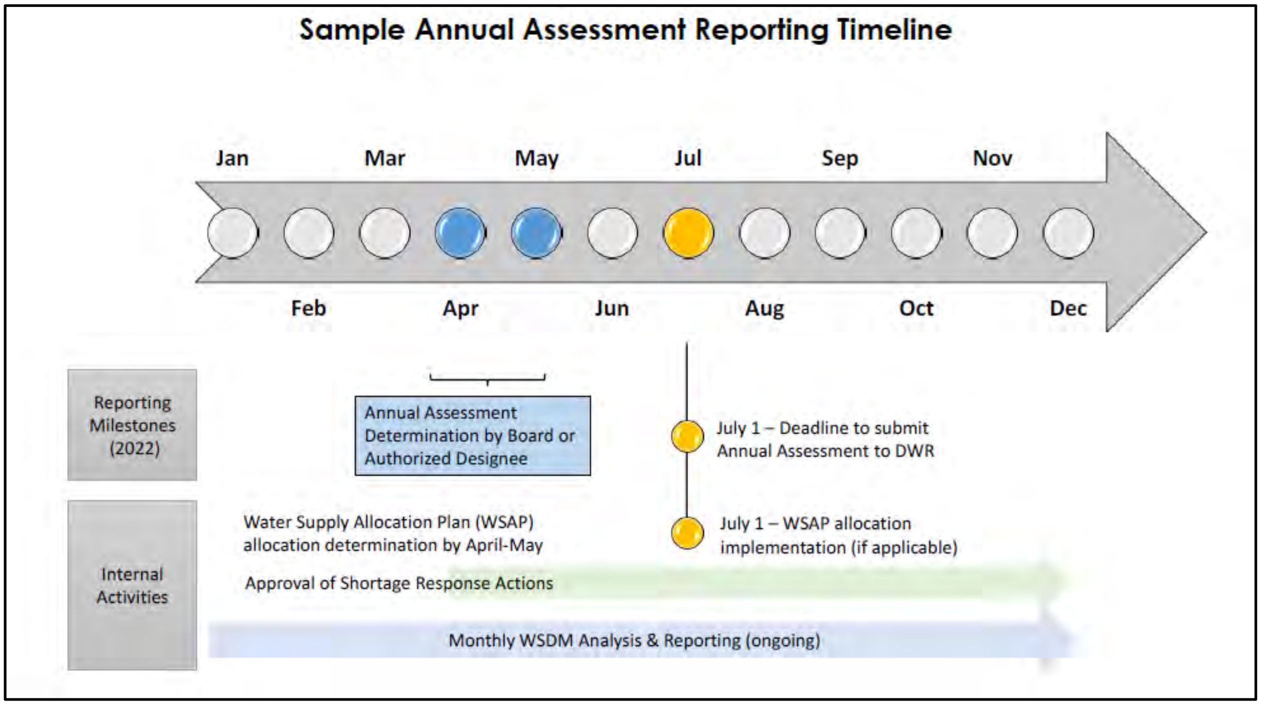

Figure K-3. Sample Annual Assessment Reporting Timeline

Section 4 – Shortage Levels and Shortage Response Actions

SIX STANDARD WATER SHORTAGE LEVELS

As required by California Water Code Section 10632(a)(3)(A), the WSCP is framed around six standard water shortage levels that correspond to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortages. As shown in Table K-1, each of the six shortage levels represents an increasing gap between estimated core supplies and unconstrained demand as determined in the Annual Assessment. This table mirrors Table A.4-4 in Metropolitan's WSCP. Shortage levels also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other emergency events. The shortage levels are defined in terms of the percent shortfall of supplies against demands.

SHORTAGE RESPONSE ACTIONS

California Water Code Section 10632(a)(4) requires the WSCP to specify shortage response actions that align with the defined shortage levels, and include, at a minimum, all of the following:

- Locally appropriate supply augmentation actions
- Locally appropriate demand reduction actions to adequately respond to shortages
- Locally appropriate operational changes
- Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions (Not applicable to Calleguas)
- An estimate of the extent to which the gap between supplies and demand will be reduced by implementation of each action

As indicated in Table K-1, shortage responses will be customized to meet the circumstances for the shortage level. Shortage response actions follow the principles of Metropolitan's WSDM Plan. The WSDM Plan identifies a broad sequence of actions during surpluses and shortages to minimize probability of severe shortages, based on detailed modeling of Metropolitan's existing and expected resource mix. The WSDM Plan recognizes the link between surplus and shortages and integrates planned operational actions with respect to both conditions. The WSDM Plan is included as Attachment 1 to this document.

Also included in Stage 6 are additional Shortage Response Actions by Calleguas relating to a catastrophic interruption of water supply. These actions correspond to Calleguas' water outage planning through its development of an Imported Water Outage Protocol (IWOP). The IWOP seeks to address how Calleguas might manage supplies during an outage, with emphasis on potential allocation methods. A fact sheet on the IWOP is included as Attachment 3, and the 2020 IWOP Memo is included as Attachment 4 to this document.

Table K-1. Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range[1] *Numerical value as a percent*	Shortage Response	
1	Up to 10%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
2	Up to 20%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
3	Up to 30%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
4	Up to 40%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation
5	Up to 50%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation

Table K-1. Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range[1] *Numerical value as a percent*	Shortage Response	
6	>50%	Metropolitan: Take from Storage Execute Flexible Supplies Implement Demand Reduction Implement Water Supply Allocation Plan Calleguas: *Catastrophic Interruption* Conduct Initial Assessment of Outage (increased communication and coordination with the District's Purveyors, assessment of Calleguas Outage Supplies and Purveyor Local Supplies) Make Call for Conservation: "No Outdoor Water Use" Determine if Imported Water Outage Protocol (IWOP) - Allocation should be Implemented (based on system demand reductions and additional information on potential duration of the Outage Event) Board Action to Implement Allocation System	Metropolitan: • 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base demand met by WSAP supply allocation Calleguas: *Catastrophic Interruption* (based on 2020 modeling - 6-mo. Outage) Dec. to May: Approx. 15% conservation (1st 4 months), 40% conservation after Lake Bard Water Filtration Plant (LBWFP) potable supply exhausted June to Nov.: Approx. 35% conservation (1st 4 months), 45% conservation after LBWFP potable supply exhausted Note: Call for "No Outdoor Water Use" may bring immediate 40% to 60% reductions in overall demand, which would extend availability of outage supplies.

[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*

NOTES: 2020 Imported Water Outage Protocol Memo – Attachment 4

Section 5 – Communication Protocols

Calleguas works closely with Metropolitan in implementing strategies that effectively communicate vital information for each of the six standard water shortage levels. Metropolitan has a detailed communications strategy for each water shortage level as described in its WSCP.

During the record-breaking drought of 2012-2016, in April 2015 Metropolitan voted to implement its WSAP at a Level 3 (to achieve a 15% region-wide reduction in demands) for FY 2015-2016. Calleguas and its member purveyors communicated this condition to various stakeholders and end water users that would be asked to conserve water. Ultimately, the FY 2015-2016 Level 3 allocations were terminated in May 2016 due to improved imported water conditions.

Calleguas maintains a list of Public Information Officers, Conservation Coordinators, and other purveyor staff that would be involved in disseminating information about the duration and severity of water shortage levels. Purveyors interact directly with end water users and are best equipped to implement demand management measures on the retail level. Examples of tools that Calleguas and its purveyors have used to communicate with the public include:

- Social Media
- Large signs at key locations
- LED flashing traffic signs
- Coordination with Ventura County to issue notices via VC Alert
- Press conferences/releases/briefings and media kits
- Electronic newsletter to customers, stakeholders, elected officials, business, civic and community groups
- TV and radio interviews/appearances
- Op-ed columns
- Presentations at local government or organization meetings, public outreach events, homeowner associations and more
- Targeted media placements such as ad space in major dailies and/or inserts in the local papers (example provided in Figure K-4)
- Online presence that includes specific information on the circumstances necessitating water demand reductions, current restrictions, fact sheet/FAQs, reporting waste violations, specific measures that can be taken to reduce water use, etc.
- Citizen information “hotline” which can be used for customers to report incidents of waste and to disseminate information

Figure K-4. “Lose the Lawn” Outreach Campaign during the 2012-2016 Drought

Section 6 – Legal Authorities

This section describes the legal authorities that empower Calleguas to implement and enforce its shortage response actions. Calleguas’ Ordinance No. 12 gives its Board of Directors authority to take actions necessary to manage available supplies, including passing through to purveyors allocations and penalties for exceeding allocated deliveries. A copy of Ordinance No. 12 is included as Attachment 5.

If necessary, Calleguas shall declare a water shortage emergency in accordance with CWC Chapter 3 (commencing with Section 350) of Division 1. In addition, Calleguas shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

Section 7 – Financial Consequences

As described in Metropolitan’s WSCP, a water shortage may be created by a reduction in water supply, an increase in water demand, or a combination of both. Revenues vary according to local weather and the availability of water supplies. In dry years, imported demands increase, and Calleguas may receive higher than anticipated revenues due to increased sales volumes. In wet years, imported demands decrease, and revenues drop due to lower sales volumes.

Calleguas maintains financial reserves that may be utilized to mitigate the impacts of water shortages. For example, in 2014 during the 2012-2016 Drought, Calleguas utilized a portion of its reserves to increase its conservation budget by $1M for the purpose of extending a supplemental contribution to the Metropolitan Turf Removal Rebate. As show in Table 9-2 in the 2020 UWMP, approximately $10.5M in Turf Removal Rebates were distributed in 2016 throughout the Calleguas service area.

As stated in Calleguas Resolution No. 1829, "reserve funds may be used to smooth rate increases passed on to the purveyors from Metropolitan Water District." More information on the Calleguas Reserve Policy can be found here: www.calleguas.com/financials/index.asp.

Section 8 – WSCP Adoption and Refinement Procedures

Calleguas provided notice of the availability of the draft 2020 UWMP (including Appendix L which will also be a new Appendix L to its 2015 UWMP) and 2020 WSCP, and notice of the public hearing to consider adoption of both plans and Appendix L as an addendum to its 2015 UWMP in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066.

In addition, CWC Section 10642 now requires that notices must be provided pursuant to Chapter 17.5 of the Government Code, which requires that public notification be provided in any non-English language spoken by a substantial number of the public served by the agency. The public review drafts of the 2020 UWMP, Appendix L to the 2015 UWMP, and the 2020 WSCP were posted prominently on Calleguas' website, calleguas.com, on March 24, 2021, more than 60 days in advance of the public hearing on June 2, 2021. The notice of availability of the documents was sent to Calleguas' purveyor agencies, as well as cities within the Calleguas service area.

In addition, a public notice advertising the public hearing was published in English in the Ventura County Star and local Acorn Newspapers and in Spanish in the La Vida Newspaper on multiple dates in April 2021, satisfying the requirement for non-English language notification. Copies of: (1) the notification letter sent to the member purveyors, cities, and the County in Calleguas' service area, and (2) the notices published in the newspapers are included in the 2020 UWMP Appendix M.

SUBMISSION AND AVAILABILITY OF FINAL 2020 UWMP AND 2020 WSCP

Calleguas' Final 2020 UWMP, Appendix L to its 2015 UWMP, and its 2020 WSCP will be posted on the calleguas.com website in June 2021, following their adoption by the Calleguas Board. This satisfies the requirement to make the plans available for public review. In fulfillment of CWC Sections 10632(c), 10635(c) and 10644(a)(1), Calleguas will also mail copies of the final 2020 UWMP, Appendix L to the 2015 UWMP, and 2020 WSCP (in electronic pdf format) to the California State Library and all cities and the County within Calleguas' service area within 30 days of Board adoption.

In fulfillment of CWC Section 10621(f) and Sections 10644(a)(1), (2), and (b), Calleguas' final 2020 UWMP and WSCP will be electronically submitted to the State of California through DWR's WUE data website https://wuedata.water.ca.gov/secure/ in June 2021. In addition, no later than 30 days after adoption, Calleguas will submit a copy of the adopted 2020 UWMP and 2020 WSCP to its purveyors, Ventura County, and all cities to which it provides water.

WSCP REEVALUATION AND IMPROVEMENT PROCEDURES

The WSCP will be periodically re-evaluated to ensure that its shortage risk tolerance is adequate, and the shortage response actions are effective and up to date based on lessons learned from implementing the WSCP. The WSCP will be revised and updated during the UWMP update cycle to incorporate updated and new information. For example, new supply augmentation actions will be added, and actions that are no longer applicable for reasons such as program expiration will be removed. However, if revisions to the WSCP are warranted before the UWMP is updated, the WSCP will be updated outside of the UWMP update cycle. In the course of preparing the Annual Assessment each year, Calleguas will routinely consider the functionality the overall WSCP and will prepare recommendations for its Board of Directors if changes are found to be needed.

Attachment K-1

Metropolitan's Water Surplus and Drought Management Plan

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

WATER SURPLUS AND DROUGHT MANAGEMENT PLAN

REPORT NO. 1150

AUGUST 1999

ACKNOWLEDGMENTS

The consensus reached in the Water Surplus and Drought Management Plan would not have been possible without the dedication and participation of the Rate Refinement Process Workgroup, comprises made by the General Manager, staff from Metropolitan's member agencies, Metropolitan staff, and the dedication and work of the consultants.

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WATER SURPLUS AND DROUGHT MANAGEMENT PLAN

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

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EXECUTIVE SUMMARY

INTRODUCTION

The Water Surplus and Drought Management (WSDM) Plan for the Metropolitan Water District of Southern California (Metropolitan) is a ten-year plan that will be used to direct Metropolitan's resource operations to help attain the region's 100% reliability goal. The WSDM Plan recognizes the interdependence of surplus and shortage actions and is a coordinated plan that utilizes all available resources to maximize supply reliability. The overall objective of the WSDM Plan is to ensure that shortage allocation of Metropolitan's imported water supplies is not required.

The central effort in developing the WSDM Plan was a participatory process involving Metropolitan and its member agencies. Metropolitan staff and member agency representatives coordinated the Plan's development during a series of meetings of the Rate Refinement Team.

To lay a foundation for the WSDM Plan, participants in the Rate Refinement Process developed a set of proposed WSDM Principles and Implementation Goals which were subsequently adopted by the Metropolitan Board of Directors in September 1998. These Principles and Implementation Goals outline fundamental policies for guiding surplus and shortage management and establish a basis for dealing with shortages in an equitable and efficient manner.

WSDM PRINCIPLES AND IMPLEMENTATION GOALS

Guiding Principle

- Metropolitan will encourage storage of water during periods of surplus and work jointly with its Member Agencies to minimize the impacts of water shortages on the region's retail consumers and economy during periods of shortage.

Supporting Principles

- Maintain an ongoing coordinated effort among Metropolitan and its Member Agencies to encourage efficient water use, develop cost-effective local resource programs, and inform the public on water supply and reliability issues

- Encourage local and regional storage during periods of surplus and use of storage during periods of shortage

- Manage and operate Metropolitan's regional storage and delivery system in coordination with local facilities to capture and store surplus water in local groundwater and surface reservoirs

- Arrange for secure sources of additional water from outside the region for use during periods of shortage

- Call upon sources of additional water from outside the region and water stored locally to meet the needs of consumers and protect the economy during periods of shortage

WSDM Plan Implementation Goals

- Avoid mandatory import water allocations to the extent practicable

- Equitably allocate imported water on the basis of agencies' needs

  Considerations to create an equitable allocation of imported water may include:

  - Impact on retail consumers and economy
  - Reclamation/Recycling
  - Conservation
  - Population and economic growth
  - Investment in local resources
  - Change and/or loss of local supply
  - Participation in Metropolitan's Non-firm (interruptible) programs
  - Investment in Metropolitan's facilities

- Encourage storage of surplus supplies to mitigate shortages and improve water quality

SURPLUS AND SHORTAGE ACTIONS

The region's ability to implement a long-term WSDM Plan results from the significant investments Metropolitan and its member agencies have made in a variety of resources since 1991. These additional resources include increased local conservation and water recycling, improvements in the reliability of imported supplies, increased regional storage, and increased conjunctive use groundwater programs. Together these improvements allow a comprehensive approach to water management.

The growing variety of resources available to the region is transforming Metropolitan from an agency with relatively modest storage capacity to one that will have storage sufficient to manage many shortages without impacts to its member agencies or retail customers. To attain this level of reliability, all storage programs and facilities, along with conservation, recycling, and other programs, must be managed as an integrated set of regional resources. To accomplish this, the WSDM Plan establishes the linkage between surplus and shortage resource management actions.

When imported supplies exceed projected demands for imported water within Metropolitan's service area, Metropolitan can operate available storage facilities to maximize the benefits of stored water to its member agencies. A number of factors affect Metropolitan's ability to divert surplus water into storage. Some of these factors include facility outages, system capacity, water quality (including requirements for managing total dissolved solids), and varying supply and demand patterns. The WSDM Plan provides a description of storage options available to Metropolitan and a framework for storing water in these programs and facilities when surplus supplies are available.

Except in severe or extreme shortages (defined in the Introduction) or emergencies, Metropolitan's resource management will allow shortages to be mitigated without impacting retail Municipal and Industrial (M&I) customers. A list of resource management actions and their descriptions are provided below. This list emphasizes critical storage programs and facilities, and conservation programs that make up part of Metropolitan's response to shortages. The order in which these actions are presented does not imply the exact operational management of resources that would occur during a shortage, rather it represents a general framework and guide. In fact, several actions are likely to be taken concurrently. Many factors will dictate the exact order in which these actions will be taken during shortages. One action, however, will have an assigned prioritization: the curtailment of Full Service (firm) deliveries will be last. The following summarizes the drought actions:

- Draw on storage in the Eastside Reservoir Project
- Draw on out-of-region storage in Semitropic and Arvin-Edison
- Reduce/suspend long-term seasonal and groundwater replenishment deliveries
- Draw on contractual groundwater storage programs in the region
- Draw on State Water Project (SWP) terminal reservoir storage (per Monterey Agreement)
- Call for extraordinary drought conservation and public education
- Reduce Interim Agricultural Water Program (IAWP) deliveries
- Call on water transfer options contracts
- Purchase transfers on the spot market
- Implement the allocation of Metropolitan's imported supplies to its member agencies

For the ten-year period addressed by the WSDM Plan, 1999-2008, the majority of shortage contingencies will be managed by withdrawals from storage, groundwater management and options transfers. Shortages managed using these actions would not impact the quantity of water delivered to member agencies for consumptive uses. In fact, when coupled with other drought actions such as extraordinary conservation and reduction of agricultural deliveries, it is fully expected that an allocation of firm imported water supplies will not be necessary during the next ten years. Under this worse-case scenario, an approach to allocate Metropolitan's firm imported water supplies in a fair and equitable manner will be developed.

The overall policy objective of the allocation method will be to minimize the impacts to any one agency and the region as a whole. To meet that objective, the method of allocating firm imported supply will account for:

- Each agency's demands on Metropolitan,
- Each agency's local resources
- Each agency's total retail demands.

The WSDM Plan allocation method would address each of these supply and demand components and account for each agency's conservation and recycled water programs. A pricing structure will be coupled with the WSDM allocation method to accomplish two goals:

- Encourage conservation and water recycling
- Ensure that the regional impact of the shortage is as small as possible

To provide as much water as possible without changing wholesale prices, the allocation of all available supplies will be made at the prevailing rates for firm deliveries. In order to encourage conservation to the level of allocation, the rate for agency usage from 100-102% of its allocation will be the Full Service rate plus $175. Usage above 102% of allocated supply will be charged at three times the Full Service rate. Any substantial change in Metropolitan's water rate structure may require these rates to be revised.

During severe or extreme shortage conditions, public outreach will play a critical role in shaping consumer response. Public information campaigns will send clear signals if extraordinary drought conservation is required. An effective public information campaign requires a joint effort among Metropolitan and its member agencies. Under this Plan, the administration of the Public Information and Government Affairs program will be the responsibility of a Drought Program Officer (DPO). The DPO will be responsible for integrating the various activities in these areas, coordinating efforts with Metropolitan's Board of Directors and member agencies, and designing the region-wide messages for the general public and various target audiences. Important constituencies are residential users, industrial and institutional users, business interests, agricultural users, elected officials, officials of various agencies such as the Department of Water Resources, and the media.

INTEGRATED RESOURCES MANAGEMENT

Throughout the Integrated Resources Planning process and the development of the WSDM Plan, extensive analysis of resource management strategies focused on maximizing supply reliability while minimizing overall resource costs. Various management strategies were analyzed trader shortage scenarios based on historical hydrologic data. The WSDM Plan presents a resource management framework to guide Metropolitan's integrated approach to supply management.

The resource management framework does not dictate a scripted response to shortage or surplus. The framework recognizes the complexity and variety of conditions that require action. Supporting this framework are general rules that describe the actions to be taken in each stage of surplus or shortage. These rules depend on shortage stage, account for monthly delivery requirements, and depend on when various supplies would be available.

One of the fundamental trade-offs in dealing with supply shortages is the need to maintain flexibility while providing supply certainty to member agencies and consumers. A central focus of the WSDM Plan is the analysis of information about supplies and demands. When do various pieces of information about the supply/demand balance become more certain? When should this information impact policy-making and trigger various resource actions? The WSDM Plan addresses these questions and the actual implementation of the Plan during a shortage.

Appendix A of this report provides a ten-year simulation of projected demands and supplies showing an example of how the region can maintain 100% reliability.

INTRODUCTION

The Metropolitan Water District of Southern California (Metropolitan) provides water to a service area covering approximately 5,200 square miles. Over 16.5 million people live within the service area, which supports a $500 billion economy. Metropolitan provides supplemental supplies to twenty-seven member agencies, both retail and wholesale agencies, who in turn provide water to over three hundred cities and local agencies providing supplies at the retail level. In recent years Metropolitan supplemental deliveries have accounted for about one-half to two-thirds of the region's total water demands. With supplies from its Colorado River Aqueduct (CRA) and the State Water Project (SWP), Metropolitan delivers water for municipal and industrial (M&I) uses, agricultural uses, and augmentation of local storage.

As part of the implementation of the regional Integrated Resources Plan (IRP), Metropolitan and its member agencies have developed the Water Surplus and Drought Management (WSDM) Plan for Southern California. This ten-year plan will direct Metropolitan's resource operations to help attain the region's 100% reliability goal. Over this ten-year period, the WSDM Plan will be updated to account for changes impacting supplies from the Colorado River and California's Bay-Delta. In the past, Metropolitan has developed drought management plans that simply addressed shortage actions and primarily focused on issues of short-term conservation and allocation of imported water. The WSDM Plan recognizes the interdependence of surplus and shortage actions and is a coordinated plan that utilizes all available resources to maximize supply reliability. The overall goal of the WSDM Plan is to ensure that shortage allocation of Metropolitan's imported water supplies is no---At required.

Because it addresses both surplus and shortage contingencies, the WSDM Plans draws clear distinctions among the terms *surplus, shortage, severe shortage,* and *extreme shortage.*

> ***Surplus****: Supplies are sufficient to allow Metropolitan to meet Full Service demands, make deliveries to all interruptible programs (replenishment, long-term seasonal storage, and agricultural deliveries), and deliver water to regional and local facilities for storage.*
>
> ***Shortage****: Supplies are sufficient to allow Metropolitan to meet Full Service demands and make partial or full deliveries to interruptible programs, sometimes using stored water and voluntary water transfers.*
>
> ***Severe Shortage****: Supplies are insufficient and Metropolitan is required to make withdrawals from storage, call on its water transfers, and possibly call for extraordinary drought conservation and reduce deliveries under the IAWP.*
>
> ***Extreme Shortage****: Supplies are insufficient and Metropolitan is required to allocate available imported supplies.*

WSDM PRINCIPLES AND IMPLEMENTATION GOALS

The central effort in developing the WSDM Plan was a participatory process involving Metropolitan and its member agencies. Metropolitan staff and member agency representatives coordinated the Plan's development during a series of meetings of the Rate Refinement Team and the Integrated Resources Planning Workgroup. To lay a foundation for the WSDM Plan, participants in the Rate Refinement Process developed a set of "WSDM Principles and Implementation Goals."

Guiding Principle

- Metropolitan will encourage storage of water during periods of surplus and work jointly with its Member Agencies to minimize the impacts of water shortages on the region's retail consumers and economy during periods of shortage.

Supporting Principles

- Maintain an ongoing coordinated effort among Metropolitan and its Member Agencies to encourage efficient water use and cost-effective local resource programs and to inform the public on water supply and reliability issues

- Encourage local and regional storage during periods of surplus and use of storage during periods of shortage

- Manage and operate Metropolitan's regional storage and delivery system in coordination with local facilities to capture and store surplus water in local groundwater and surface reservoirs

- Arrange for secure sources of additional water from outside the region for use during periods of shortage

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- Avoid mandatory import water allocations to the extent practicable

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  Considerations to create an equitable allocation of imported water may include:
    - Impact on retail consumers and economy
    - Reclamation/Recycling
    - Conservation
    - Population and economic growth
    - Investment in local resources
    - Change and/or loss of local supply
    - Participation in Metropolitan's Non-firm (interruptible) programs
    - Investment in Metropolitan's facilities.

- Encourage storage of surplus supplies to mitigate shortages and improve water quality

REGIONAL RESOURCES AND DEMANDS

Southern California receives its water supplies from a variety of different sources, both local to the region and imported from outside the region. These sources are summarized below.

Local Supplies

Local supplies include groundwater pumping of local aquifers, surface reservoir production, recycled water, and supplies imported through wheeling arrangements or through the Los Angeles Aqueduct, which is owned and operated by the City of Los Angeles. Local supplies have, in the past, provided as much as 2.1 million acre-feet (maf) of water to meet the region's water demands. By far the largest component of local supplies is groundwater pumping, providing over 75% of historical local supplies.

Colorado River Supplies

The distribution and management of Colorado River water is governed by a complex body of laws, court decrees, compacts, agreements, regulations, and an international treaty collectively known as the "Law of the River." Metropolitan's entitlement is established by the fourth and fifth priorities of California's Seven Party Agreement, included in Metropolitan's 1931 and 1946 contracts with the Secretary of the Interior. These priorities provide 550,000 acre-feet (af) per year and 662,000 af per year, respectively. In addition, Metropolitan holds a surplus water contract for delivery of 180,000 af. The physical capacity of the CRA is slightly in excess of 1.3 maf per year, based on a pumping capacity of 1,800 cubic feet per second (cfs). Metropolitan's long-held objective is to maximize the availability of Colorado River water, up to the maximum capacity of the CRA, subject to environmental, contractual, legal, political, financial, and institutional constraints. A California 4.4 Plan is being developed among California parties that will help ensure that full CRA deliveries are maintained, while addressing the concerns of the other Colorado River basin states that rely on the river. The California 4.4 Plan includes core transfers (such as the IID/MWD conservation agreement and the proposed IID/SDCWA transfer), system conservation (such as the lining of the All American Canal), offstream storage (such as the Arizona groundwater storage program), dry year option transfers (such as PVID land fallowing), and river re-operations.

State Water Project

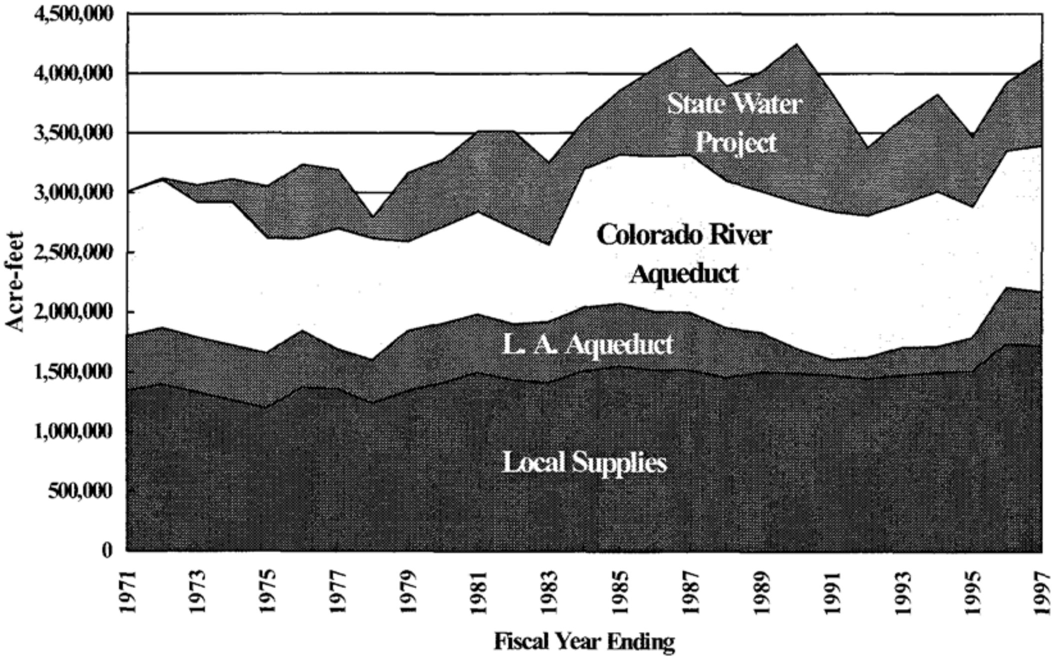
Metropolitan is one of 29 water agencies that have contracted with the State of California, through the Department of Water Resources (DWR), for water deliveries from the SWP system. Metropolitan's contracted entitlement is for 2.01 maf per year, or about 48 percent of the total contracted entitlement of 4.2 maf per year. SWP deliveries to Metropolitan are made via the SWP's California Aqueduct.

Initial SWP facilities, completed in the early 1970's, have produced average supply yields adequate to meet just over half of the total contracted entitlement. While it was intended that additional SWP facilities would be constructed as SWP contractor demands increased up to their contracted entitlements, few facilities have been constructed since that time.

The SWP obtains its supplies primarily from the Sacramento River Basin. About half of the total supply diverted from the Delta for the SWP is regulated flow from the Feather River (a tributary to the Sacramento River), while the other half is unregulated flow from runoff downstream of Sacramento River reservoirs and from other rivers that flow into the Delta. The Sacramento River watershed is subject to wide annual variations in total runoff. The Sacramento River Index (SRI), which measures runoff in the watershed, has averaged about 18 maf per year over the last 90 years. However, runoff varies widely from year to year. For example, the SRI measured 7.8 mafin 1994 and 32.5 mafin 1995.

Figure 1 shows the historical total regional supply production by type. As shown in Figure 1, water supplies were as high as 4.25 mafin 1990 and within two years dropped to 3.4 mar, a 20% decrease.

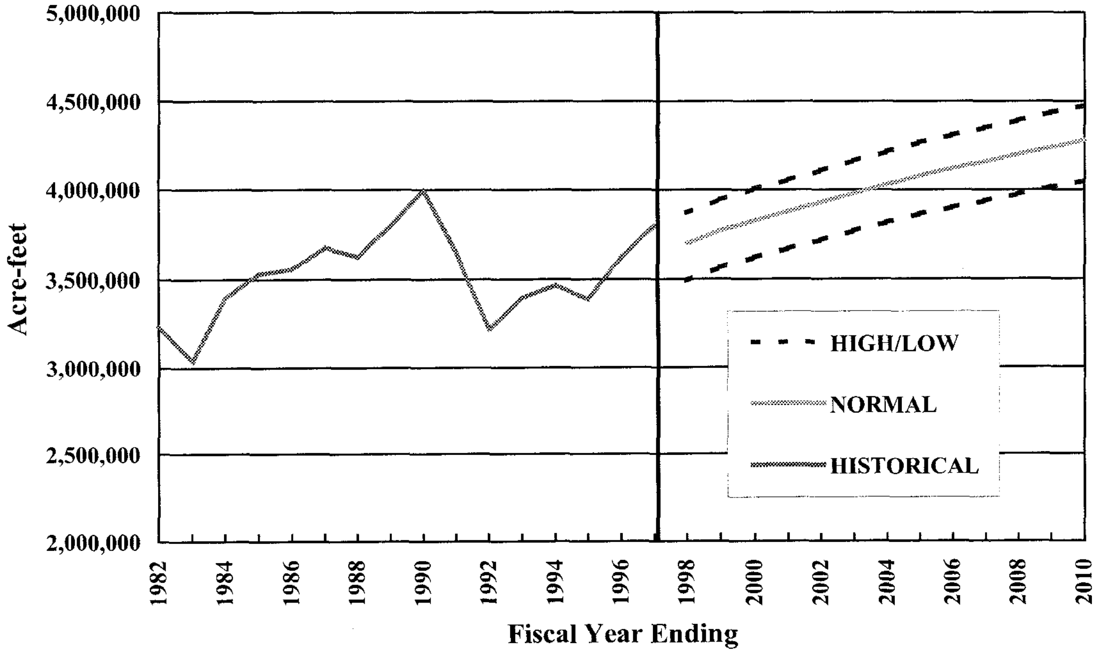
Figure 1. Historical Supply Production by Type of Supply



RETAIL DEMANDS

From 1982 through 1995, the region experienced retail water demands averaging 3.5 mar. In dry years retail demands are approximately 5 to 7% greater than normal years, while demands in wet years are about 6 to 8% below normal demands. Under normal weather conditions, assuming full implementation of conservation best management practices, total regional retail demands are projected to increase from about 3.7 mar in 1997 to almost 4.3 mar in 2010. Without conservation, demands in 2010 would be about 10 to 12% greater than projected. Increases in retail demand are driven by demographics and economics, including changes in population, housing, employment, and income. Figure 2 shows the historical and projected retail demands in Metropolitan's service area.

Figure 2. Regional Retail Water Demands



The historical variability in demands from 1982 to 1997 is mainly due to weather and the economy. In 1983, extreme wet weather caused a significant drop in retail demands. During the period from 1985 to 1990, hot and dry weather coupled with a strong economy resulted in increased demand from 3.5 maf to 4.0 maf, a 14% increase. In 1991, the 5th year of a prolonged drought, conditions forced many communities to implement mandatory supply reductions. These mandatory reductions coupled with extraordinary drought conservation caused a 10 to 15% decrease in retail demands for the region. In addition, the period between 1992 and 1995 was very wet (with the exception of 1994, which was dry), and was a period of severe economic recession. Southern California alone lost some 700,000 jobs from 1990 through 1995. The combination of wet weather, economic recession, and conservation resulted in demands decreasing by over 17%.

DEMANDS ON METROPOLITAN

For many member agencies, Metropolitan's water deliveries represent a supplemental supply. Most member agencies have local water supplies, but agencies differ in how much their supplies alone can meet their respective retail demands. Local supplies are often base-loaded (maximized subject to various constraints) and purchases from Metropolitan are used to meet remaining demands. In addition, to meeting consumptive demands, Metropolitan's deliveries are used to replenish local groundwater and surface reservoirs. To project demands on Metropolitan, projections of member agency's retail water demands and local water supplies are made. Local supplies are then subtracted from retail demands to get consumptive demands on Metropolitan. A projection of Metropolitan's long-term seasonal and replenishment deliveries are made based on safe groundwater yield and weather/hydrology.

Metropolitan forecasts its demands for three different broad categories: Full Service, Seasonal (reservoir storage and groundwater replenishment delivered for shift or long-term storage purposes and sold at a discount), and Agricultural (deliveries of water sold at a discount for agricultural use). Overall, demands on Metropolitan can vary -+ 11 to 18% from normal conditions due to weather and hydrology.

The following four figures show historical and projected demands on Metropolitan by category. Figure 3 shows Basic Water Deliveries, Figure 4 shows Seasonal Water Deliveries, Figure 5 shows Interim Agricultural Water Program (IAWP) Deliveries, and Figure 6 shows Total Water Deliveries for Metropolitan.

Figure 3. MWD Basic Water Deliveries

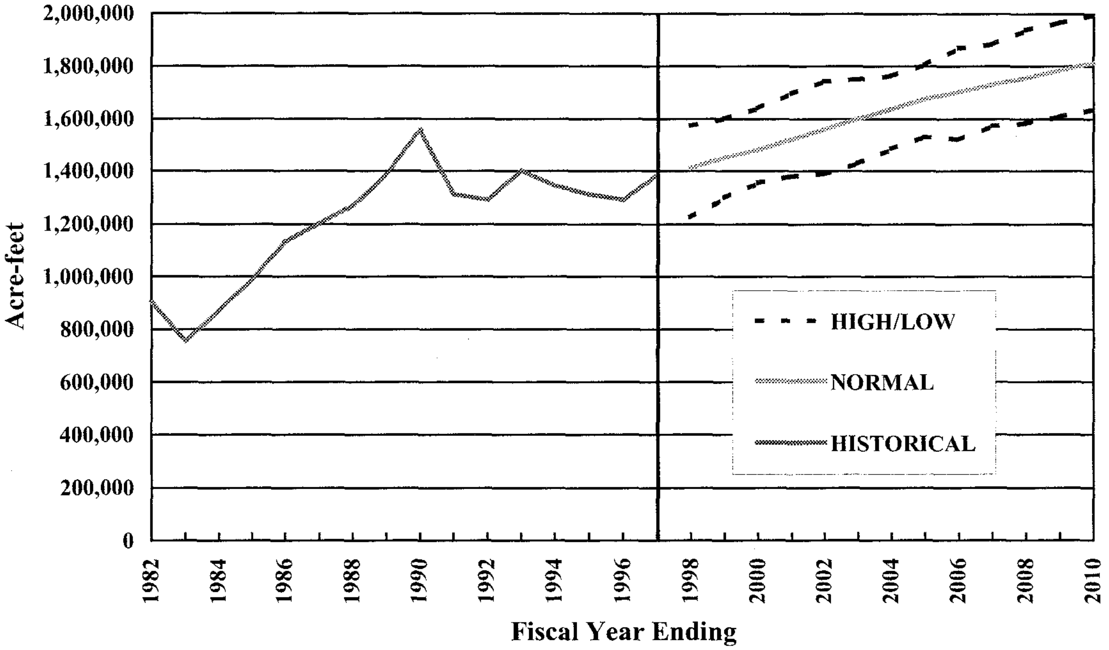


Figure 4. MWD Seasonal Water Deliveries

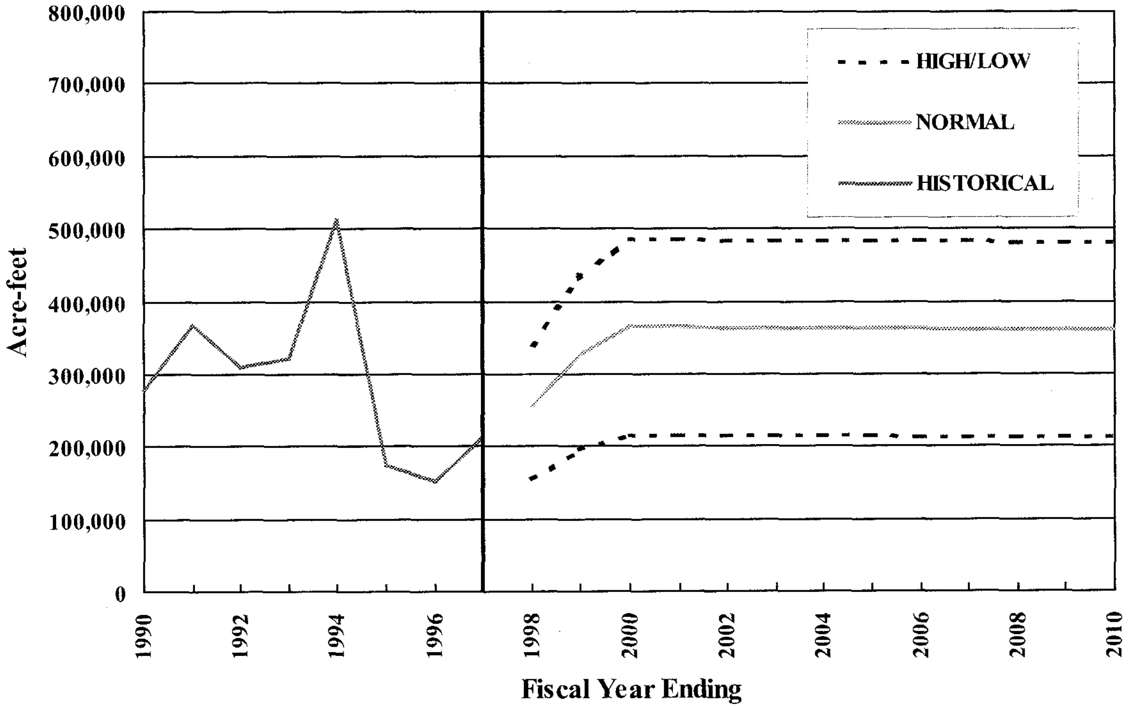


Figure 5. MWD Interim Agricultural Water Program (IAWP) Deliveries

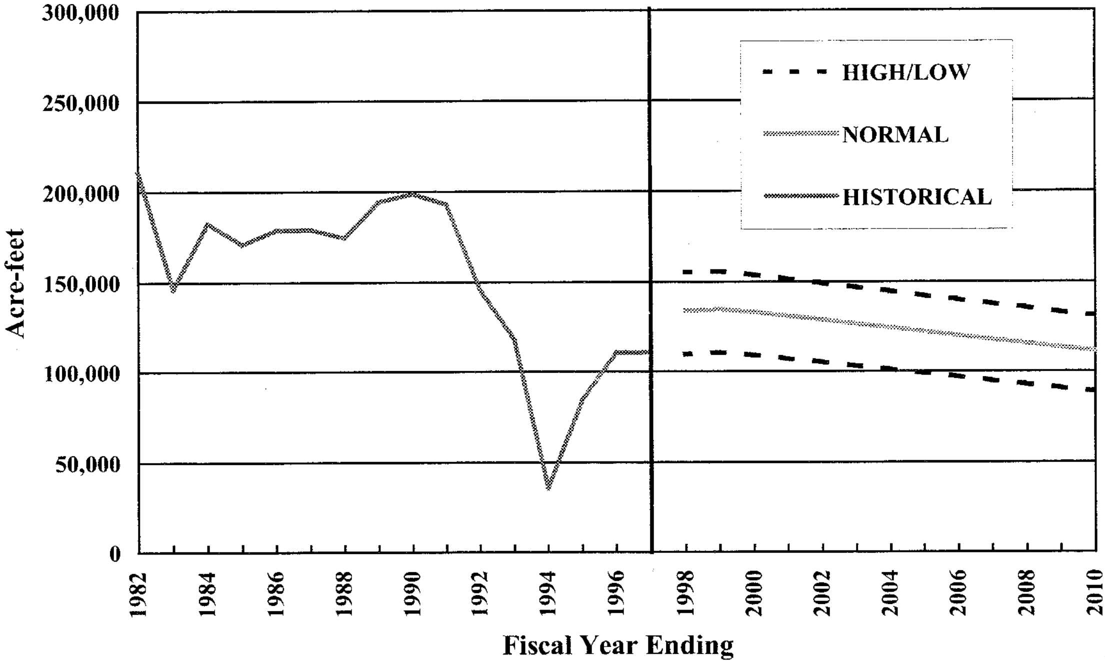
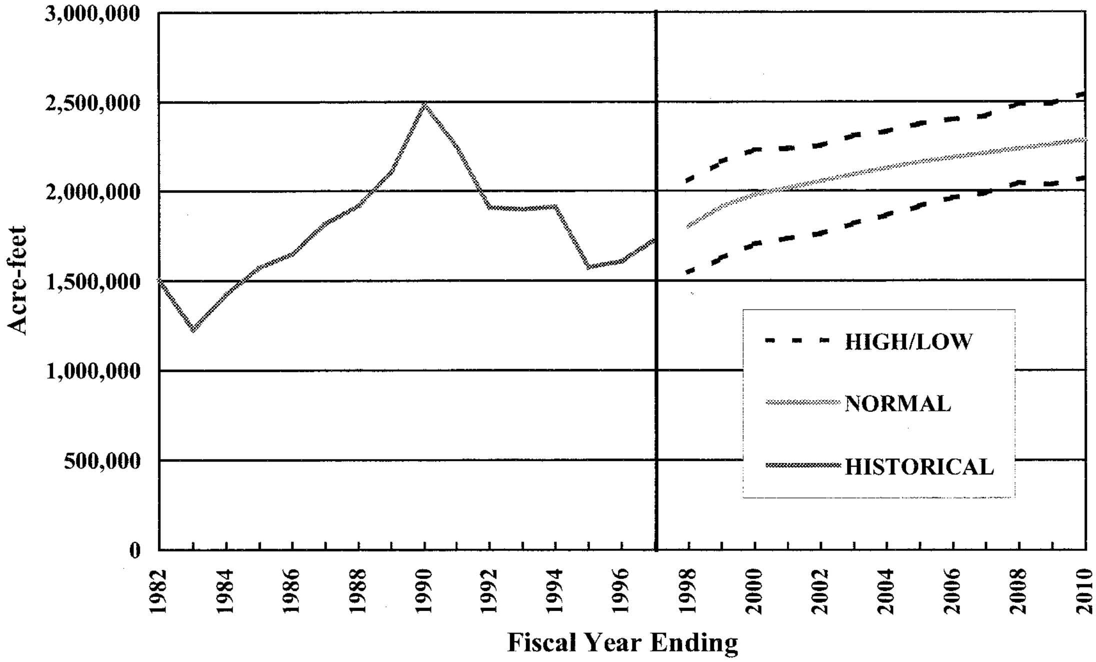


Figure 6. MWD Total Water Deliveries



INTEGRATED RESOURCES PLANNING

To ensure supply reliability under various drought conditions, Metropolitan and its member agencies developed an Integrated Resources Plan (IRP). The IRP, adopted by Metropolitan's Board of Directors in January 1996 and periodically updated, guides Metropolitan's resource and capital improvements investments. The region's ability to develop a long-term WSDM Plan results from the significant investments Metropolitan and its member agencies have made in resources since 1991. To date, these investments include:

- Local supplies: Metropolitan co-funded over 23 local projects and 200 conservation programs that will yield a total of 160,000 af per year.

- **Colorado River Aqueduct:** Metropolitan developed transfers and storage programs to help ensure a full aqueduct. The landmark Metropolitan/Imperial Irrigation District Conservation Program (IID), will result in a savings of 107,000 af per year. Storage programs in Arizona and California, combined with the IID savings, yield a total of 280,000 af of annual core, dry year options, and storage supply.

- **State Water Project:** Metropolitan and other parties negotiated the Bay-Delta Accord and the Monterey Amendment. The Bay-Delta Accord and subsequent efforts will increase the reliability of Metropolitan's entitlement deliveries. The Monterey Amendment provides access to 220,000 af of SWP storage.

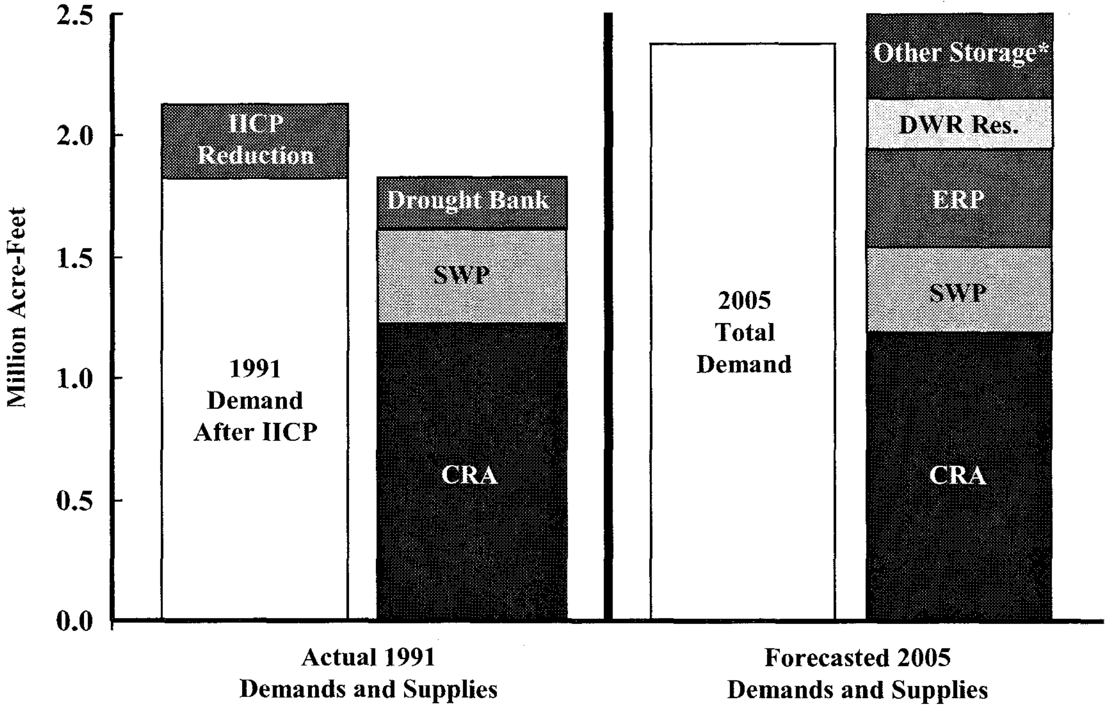
- **In-Basin Storage:** Metropolitan is constructing the Eastside Reservoir Project, with 800,000 af of storage (400,000 af of which is emergency storage for use in case of facility failure as a result of earthquake or other event).

- **Groundwater Conjunctive Use Storage:** Metropolitan developed a conjunctive use storage program in the North Las Posas Basin in Ventura County with an anticipated capacity of 210,000 af and a dry-year withdrawal rate of up to 70,000 af.

- **Transfers and Storage:** Metropolitan developed the Semitropic Storage Program, with 350,000 af of storage and dry-year withdrawals averaging about 60,000 af. Metropolitan also approved the Arvin-Edison Storage and Transfer Program, with 250,000 af of storage and dry-year withdrawals averaging about 70,000 af. Metropolitan is also exploring storage and transfer programs with the Coachella Valley Water District and the Cadiz Land Company.

As a result of these investments, it is anticipated that Metropolitan and its member agencies will be 100% reliable over the next 10 years even under a repeat of the 1991 drought condition. Figure 7 compares actual Metropolitan demands and supplies during 1991 (the last year in a multiyear severe drought) and projected demands and supplies in year 2005 (assuming a repeat of 1991 conditions). In 1991, the region faced shortages that required Metropolitan to allocate water under the Incremental Interruption and Conservation Plan (IICP). The reduction in deliveries came after demands had already been reduced as a result of local conservation. In addition, water had to be purchased from the Governor's drought emergency water bank. By the year 2005 with the investments made to date, Metropolitan's additional water supplies will be more than adequate to meet demands under a repeat of the 1991 drought event--even with increased demands due to growth.

Figure 7. Historical and Projected Metropolitan Supplies and Demands Under Drought Conditions



* Groundwater management, Semitropic Storage Program, and Arvin-Edison Storage Program

SURPLUS AND SHORTAGE RESOURCE ACTIONS

Metropolitan's investments in water resources, facilities, and programs has transformed it from an agency with relatively modest storage capacity to one that will have storage sufficient to manage many shortages without negative impacts to its member agencies or retail customers. To attain this level of reliability, storage programs and facilities, along with conservation, recycling, and other programs, must be managed as an integrated set of regional resources. To accomplish this, the WSDM Plan recognizes the linkage between surplus and shortage resource management actions.

SURPLUS ACTIONS

The combination of Metropolitan's regional storage facilities, such as Lake Mathews, Lake Skinner, the future Eastside Reservoir Project, and the storage capacity available to Metropolitan in Castaic Lake and Lake Perris as a result of the Monterey Amendment, allows Metropolitan great flexibility in managing its water resources. The development of storage programs both outside and within the service area provides even greater flexibility in storing surplus water. Each of the storage facilities and programs plays an important role in achieving Metropolitan's reliability goal.

When imported supplies exceed projected demands for imported water within Metropolitan's service area, Metropolitan can operate storage facilities to maximize stored water to benefit its member agencies. A number of factors affect Metropolitan's ability to divert surplus water into storage. Some of these factors include facility outages, system capacity, water quality (including requirements for managing total dissolved solids), and varying supply and demand patterns. This section provides a description of storage options available to Metropolitan and a framework for storing water in these programs and facilities when surplus supplies are available.

Storage of Colorado River Supplies

Metropolitan has participated in a number of programs to maximize the reliability of supplies from the Colorado River. The landmark Metropolitan/Imperial Irrigation District Conservation Program will result in a savings of 107,000 af per year. These supplies will increase the reliability of Metropolitan's entitlement of Colorado River water. Other programs yield shortage benefits by increasing amounts of water stored for use during shortages. Between August 1992 and July 1994, Metropolitan and the Palo Verde Irrigation District conducted a Test Land Fallowing Program. Approximately 20,000 acres of farmland in the Palo Verde Valley were not irrigated, saving 186,000 af of water which was stored in Lake Mead for later use by Metropolitan. With Arizona and Nevada water agencies, Metropolitan is participating in a Central Arizona Groundwater Storage Demonstration Program that has encouraged the storage of water. To date, 139,000 af of supplies have been stored in groundwater basins in Central Arizona. The Desert Coachella program is an exchange and storage program with agencies situated along the Colorado River Aqueduct. Metropolitan releases Colorado River water for storage in the Coachella Groundwater Basin. Metropolitan then exchanges these supplies for the participating agencies' SWP supplies. These programs serve as models for future programs that could increase the reliability of Colorado River supplies. Metropolitan continues to explore other possible options that would increase the reliability of supplies. The California 4.4 Plan is being developed among California parties to increase storage programs for Colorado River supplies. In addition to core transfers and conservation programs, the California 4.4 Plan includes offstream storage (such as the Arizona groundwater storage program), dry year option transfers (such as PVID land fallowing), and river re-operations. These programs, in conjunction with favorable supply determinations by the Secretary of Interior, will ensure the highest possible reliability of Colorado River supplies.

In addition to the programs mentioned above, the Colorado River system itself contributes to the high reliability of Metropolitan's Colorado River supplies. Currently, the average Colorado River runoff exceeds basin-wide demands by over 1.0 maf per year. The Colorado River system also contains a great deal of reservoir storage capacity. The total storage capacity in the Colorado River Basin is approximately 60 maf, almost four times the Colorado River's average annual flow. For much of 1997, system storage levels were at 80% or more of total capacity. These factors allow the Bureau of Reclamation, operators of the Colorado River system, to store significant supplies for use during shortages.

Storage of State Water Project Supplies

Total storage capacity is a critical factor in comparing the operations of the Colorado River system with the SWP. On average, both systems have similar amounts of water available on an annual basis. The SWP's watersheds in the Sacramento River Basin have produced about 18 maf per year over the long term, as represented by the Sacramento River Index (SRI.) Long-term runoff on the Colorado River has averaged more than 16 maf annually since 1906. However, the ability to carry over unused water from a wet year for use in a dry year differs substantially between the two systems. State Water Project storage facilities have storage capacity of about 4.5 maf, while system storage in the Colorado River Basin totals nearly 60 maf. This gives the operators of the Colorado River reservoirs much more flexibility in storing unused water from a wet year for use in a subsequent dry year.

When water from the SWP cannot be put to immediate use in Metropolitan's service area, the water may be stored for future use. Provided storage capacity is available, the water may remain in either Oroville Reservoir (as SWP storage for delivery to all contractors the following year) or San Luis Reservoir (as carryover storage assigned to Metropolitan). Through the carryover storage program, as amended by the Monterey Amendment, Metropolitan can place a maximum of 200,000 af per year of allocated supplies in SWP surface reservoirs. The program also allows for carryover storage in non-project facilities, including surface reservoirs and groundwater basins. In the case of carryover storage in San Luis Reservoir, SWP supplies allocated to but unused by a contractor may, under certain conditions, be assigned as carryover if storage capacity is available at the end of the calendar year. However, carryover water stored for a contractor has lower priority than storage of SWP water and consequently "spills" first as San Luis Reservoir fills.

Also, in a wet year such as 1995, low demands may allow DWR to operate San Luis Reservoir nearly full, eliminating any possibility of contractor carryover storage into the following year. As a result, carryover storage on the SWP may not be possible, and even when possible, is subject to spilling.

Due to these carryover storage limitations, Metropolitan has invested a great deal to expand its ability to store surplus SWP supplies. Metropolitan has entered into a number of water transfer and storage agreements. The Semitropic Water Banking and Exchange program allows Metropolitan to store up to 350,000 afin the groundwater basin underlying the Semitropic Water Storage District. The storage and withdrawal capacities of the program are shared with other participants in the storage program, with Metropolitan's share equaling 35%. Dry-year withdrawals will average about 60,000 af.

Metropolitan and the Arvin-Edison Water Storage District have developed a program that allows Metropolitan to store water in the groundwater basin in the Arvin-Edison service area. The program would allow the storage and withdrawal of 250,000 af of supplies over the next 25430 years. Dry-year withdrawals will average about 70,000 af.

Storage in Regional Facilities

In addition to the storage of Colorado River and SWP supplies outside the region, Metropolitan has established a number of programs for storing supplies within the region. Metropolitan owns and operates two main surface reservoirs, Lake Mathews and Lake Skinner, which have a combined storage of about 226,000 af. Only a small portion of this capacity is available for shortages, with the balance being used to regulate flows in Metr0Politan's delivery system. The Eastside Reservoir Project, currently under construction, will have a total capacity of 800,000 af, with approximately 400,000 af of operational drought and seasonal storage and 400,000 af of emergency storage. Through the Monterey Amendment, Metropolitan obtained the fight to use up to 220,000 af of water stored in the SWP terminal reservoirs. However, withdrawals from these terminal reservoirs must be replaced within five years.

Metropolitan and its member agencies have established the cyclic storage program to increase storage in groundwater basins within the service area. Regional groundwater basins offer an economical way for Metropolitan to improve supply reliability by storing water within the service area. This makes water readily accessible in times of need, either in emergency situations or during shortages. Some limitations are imposed by the fact that such water can generally only be used through pumping from the groundwater basin by an overlying member agency or local agency. Storage in groundwater basins takes place either by direct replenishment (spreading or injection), or through in-lieu means. Spreading (or injection) is desirable because direct measurement of the amount of stored water is a relatively simple, verifiable transaction. The main disadvantage to direct spreading is that spreading can occur only under certain conditions. For example, spreading cannot occur when spreading facilities are being used to capture local storm runoff for flood control purposes, or when the amount of local runoff precludes the need for imported water to replenish the basins. Also, spreading basins require frequent maintenance to assure maximum efficiency. These and other conditions can limit the ability to deliver water for spreading at a time when surplus supplies are available.

In-lieu replenishment allows most member agencies to participate in groundwater replenishment without needing direct access to replenishment facilities. Their wells, in effect, become their replenishment facilities. Both direct and in-lieu replenishment from 1986 through 1990 served the region well during the critical drought years from 1991 through 1993.

The overall objective of the various storage programs is to maximize the availability of imported water during times of need by storing surplus water in a strategic manner and utilizing the storage available within the region. Many factors affect the availability of storage capacity and Metropolitan's ability to move water to and from various facilities. After reviewing the full range of shortage actions available to Metropolitan, a framework for prioritizing the full range of surplus and shortage actions will be presented.

In addition to pricing incentives used to encourage local agencies to store water in groundwater basins, Metropolitan has developed a conjunctive use contractual storage program with the Calleguas MWD in the North Las Posas Basin. Metropolitan will fund the construction of wells which will be called upon to meet demands during dry years. This program will yield a dry year supply of about 70,000 af.

SHORTAGE ACTIONS

Except in severe or extreme shortages or emergencies, Metropolitan's management of available resources will allow shortages to be mitigated without negatively impacting retail M&I demands. Below is a list of drought actions that will be taken during periods of shortage. The goal of these actions is to avoid, to the extent practicable, the allocation of Metropolitan's firm supplies. The order in which these actions are presented does not imply the exact operational management of resources that would occur. In fact, several actions are likely to be taken concurrently. Many factors dictate the particular order in which actions will be taken during an actual shortage, although it is clear that the last action will be the curtailment of firm deliveries to the member agencies.

- Draw on storage in the Eastside Reservoir Project
- Draw on out-of-region storage in Semitropic and Arvin-Edison
- Reduce/suspend long-term seasonal and groundwater replenishment deliveries
- Draw on contractual groundwater storage programs in the region
- Draw on SWP terminal reservoir storage (per Monterey Agreement)
- Call for extraordinary drought conservation and public education
- Reduce IAWP deliveries
- Call on water transfer options contracts
- Purchase transfers on the spot market
- Implement an allocation of Metropolitan's imported supplies to its member agencies

Even with dedicated programs to meet the reliability goal for the region, proper management and operations of these resources is critical to ensure reliability. The prioritization of both surplus and shortage actions need to account for several important criteria. It is also important to recognize that these criteria will need to be balanced. The criteria include:

Location: Out-of-region storage is more vulnerable than in-basin-storage due to the risks of seismic events. To only maximize out-of-region storage will put reliability at risk.

Take capacity: Surface reservoirs generally have the ability to be filled and drawn down very quickly. Certain groundwater storage programs have limited take capacities--requiring several years at full take capacity to withdraw **all** available storage. Stored water will be balanced so that dry year supplies are maximized.

Cost: Programs vary with respect to their marginal operating costs. Program actions will be taken to maximize supply reliability while minimizing cost.

Flexibility: Not all storage programs and transfers offer the same flexibility to Metropolitan. Some programs can only meet specific overlying demands, while others can meet demands anywhere in the system.

DESCRIPTIONS OF RESOURCE ACTIONS

Draw on storage in the Eastside Reservoir Project: Withdrawals from the Eastside Reservoir Project would provide a flexible supply for meeting a shortage. Eastside Reservoir Project supplies can be drawn upon quickly. The amount of water drawn from the Eastside Reservoir Project before exercising other shortage actions will depend on the severity of the shortage and the overall condition of other resources available to Metropolitan.

Draw on out-of-region storage in Semitropic and Arvin-Edison programs: Out-of-region programs such as Semitropic and Arvin-Edison provide cost-effective shortage supplies. These supplies also provide flexibility, as they can be distributed as effectively as any SWP supplies coming into Metropolitan's service area. Exercising these programs relatively early in the order of actions reduces the risk of leaving supplies out-of-region. Based upon the ratio of storage capacity to take capacity, these programs will generally provide supplies over several years. This provides the rationale for calling on these programs relatively early in a shortage.

Reduce Long-Term Seasonal and Replenishment Deliveries, and call on cyclic storage accounts: Certain interruptible supply programs provide benefits during shortage. Reducing deliveries to interruptible programs established for storage purposes, while continuing expected levels of groundwater production, allows limited supplies to go toward meeting direct consumptive uses. In addition, calling on cyclic storage accounts can extend the replenishment needs for several years. Most replenishment supplies would be expected to be interruptible for a minimum of two years before agencies would be allowed to claim a local supply adjustment on such supplies. Some programs have longer interruption requirements. For example, most Groundwater Recovery Programs are governed by contracts that require supply production through a three-year interruption in service.

Draw on contractual groundwater storage programs: In-region contractual groundwater programs provide cost-effective supplies that would be drawn upon during shortages. These programs are also limited by their take capacities and generally have several years of withdrawals in storage. For this reason, these programs might be called upon before withdrawing heavily from surface reservoir storage.

Draw on SWP terminal reservoir storage: The storage available in the SWP terminal reservoirs provides a flexible and cost-effective shortage supply. Supplies withdrawn from this program must be replaced within five years of withdrawal. For this reason, the storage in these reservoirs would be reserved for more serious shortage conditions and would be utilized after the programs and facilities listed above were used to meet the shortage.

Call for extraordinary drought conservation: Voluntary conservation programs have historically been effective in reducing water demand during drought. However, voluntary conservation programs are not without impact to the retail customer and can be perceived as a failure of water agencies to properly plan for shortages. Therefore, the call for extraordinary drought conservation will only be taken with the consent of Metropolitan's Board of Directors.

Reduce agricultural deliveries: The Interim Agricultural Water Program (IAWP) offers interruptible water to southern California's agricultural industry at discounted rates. These supplies will be interrupted as part of Metropolitan's shortage actions. Metropolitan will work with IAWP participants to provide as much advance warning of interruption as possible. The IAWP reflects current policies toward agricultural water users. The policies underlying this program are due to be reviewed during the ten-year period of the WSDM Plan. The WSDM Plan will be changed accordingly.

Call on water transfer option contracts: Transfer options programs provide cost-effective supplies when the region is faced with reducing deliveries to meet consumptive demands. These programs might also be used to increase storage levels in Metropolitan storage facilities. Replenishment of these facilities reduces the risk of leaving available supplies outside the region and helps to protect the region during extended shortages.

Purchase transfers on the spot market: During the 1987-92 drought, the Drought Water Bank proved to be one mechanism for California to reduce the overall impacts of the shortage. However, the cost of spot market supplies may cause Metropolitan to use them as a last increment of supply before the region implements reductions in M&I deliveries. It is likewise possible that availability and cost will make spot market options more favorable under certain conditions. If this occurs then spot market supplies will be sought prior to calls on option transfers. However, participation in the spot market may be restricted to those agencies that have already taken significant actions in response to the shortage.

Implement allocation plan: As the final stage in responding to shortages, Metropolitan will implement an allocation plan to deliver reduced supplies to its member agencies. The issues of allocation and the methods of allocation are outlined in the following section.

ALLOCATION OF SUPPLY FOR M&I DEMANDS

The equitable allocation of supplies is addressed by the Implementation Goals established for the WSDM Plan, with the first goal being to "avoid mandatory import water allocations to the extent practicable." The second fundamental goal is to "equitably allocate imported water on the basis of agencies' needs." Factors for consideration in establishing the equitable allocation include retail and economic impacts, recycled water production, conservation levels, growth, local supply production, and participation and investment in Metropolitan's system and programs. In the event of an extreme shortage an allocation plan will be adopted in accordance with the principles of the WSDM Plan.

INTEGRATED RESOURCE MANAGEMENT STRATEGY

Throughout the Integrated Resources Planning process and the development of the WSDM Plan, extensive analysis of resource management strategies focused on maximizing supply reliability while minimizing overall resource costs. Various management strategies were analyzed under shortage scenarios based on historical hydrologic data. Certain strategies yield high reliability but incur very high costs. This is the case for strategies that utilize relatively costly transfer programs early in a shortage while maintaining high storage levels. If a shortage is short, this results in high transfer costs and shortage storage programs that are not fully utilized. Other strategies draw more heavily on storage early in a shortage and do not use options transfer programs. Later in a shortage, the yields from these transfer programs, combined with low yields from depleted storage facilities, might not make up for continuing or deepening shortages. Overall, such approaches may be inexpensive to pursue at the wholesale level but have high costs associated with retail level impacts. The resource management framework presented results from extensive analysis of various strategies for managing available resources under a variety of surplus and shortage conditions. Although the extent to which various actions are exercised may still vary depending on specific shortage conditions, the ordering presented does reflect Metropolitan's anticipated order of actions during shortages.

RESOURCE MANAGEMENT FRAMEWORK

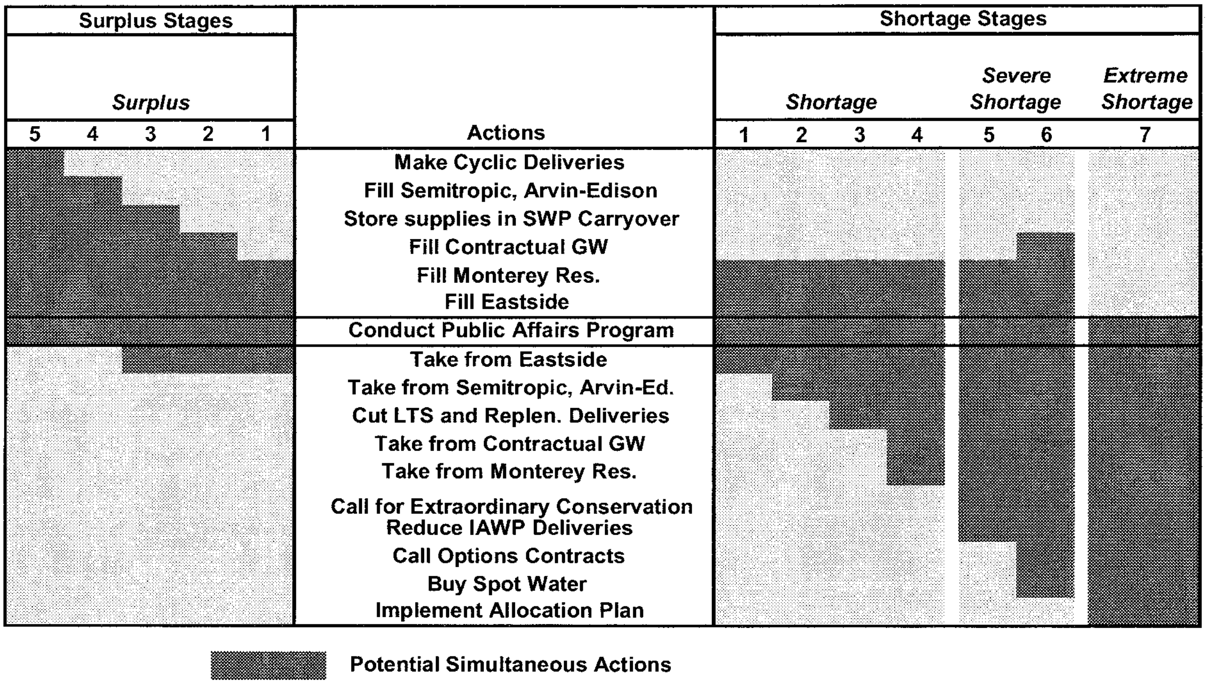
The analysis of surplus and shortage actions yields a water management framework that accounts for the degree or "stage" of surplus and shortage. These stages are defined by parameters such as storage levels and expected SWP supplies. Each stage has associated actions that could be taken as part of the response to prevailing shortage conditions. For example, Surplus Stage 1 might have as associated actions to place water in the highest-priority storage resources. Figure 8 shows the mapping between actions and stages. The darkly shaded diagonal area identifies actions that can be undertaken concurrently, while the lightly shaded areas show actions that will not be taken. For example, Metropolitan will not withdraw water from most storage resources during a surplus.

Figure 8 highlights several aspects of the WSDM Plan's approach to supply management. First and most importantly, it does not dictate a response to shortage or surplus. The framework recognizes the complexity and variety of conditions that could require various responses. Supporting this framework are general "rule curves" that dictate the extent to which particular actions are taken in various stages of surplus or shortage. For example, the rule curves indicate approximately how much water should be taken from the Eastside Reservoir Project before calling on supplies from the Semitropic or Arvin-Edison storage programs. If a shortage were greater than the desired initial withdrawal from the Eastside Reservoir Project, then Stage 2 actions would be taken. The rule curves for a particular resource would take into account shortage stage, monthly delivery requirements, and when various supplies are available.

Surplus and Shortage Stages are determined by the total amount of water that would be stored or produced by exercising the actions in that Stage. Overall storage levels in each stage are determined by the extent to which storage is increased or reduced by earlier actions. Therefore, each Stage is defined by supplies (stored or produced) and an approximate overall level of storage remaining in all resources. Up through Shortage Stage 4, the actions taken will not result in negative impacts to any consumptive uses. Shortage Stages 1 through 4 constitute shortage management without retail level impacts. The conservation efforts and reductions in IAWP deliveries in Shortage Stage 5 will result in retail impacts.

Action by the Metropolitan Board of Directors would be required before actions corresponding to Stages 5, 6, and 7.

Figure 8. Resource Stages and Actions Matrix



Surplus Stages						Shortage Stages						
Surplus						*Shortage*				*Severe Shortage*		*Extreme Shortage*
5	4	3	2	1	Actions	1	2	3	4	5	6	7
▨					Make Cyclic Deliveries							
▨	▨				Fill Semitropic, Arvin-Edison							
▨	▨	▨			Store supplies in SWP Carryover							
▨	▨	▨	▨		Fill Contractual GW						▨	
▨	▨	▨	▨	▨	Fill Monterey Res.	▨	▨	▨	▨	▨	▨	
▨	▨	▨	▨	▨	Fill Eastside	▨	▨	▨	▨	▨	▨	
▨	▨	▨	▨	▨	Conduct Public Affairs Program	▨	▨	▨	▨	▨	▨	▨
		▨	▨	▨	Take from Eastside	▨	▨	▨	▨	▨	▨	▨
					Take from Semitropic, Arvin-Ed.		▨	▨	▨	▨	▨	▨
					Cut LTS and Replen. Deliveries			▨	▨	▨	▨	▨
					Take from Contractual GW				▨	▨	▨	▨
					Take from Monterey Res.				▨	▨	▨	▨
					Call for Extraordinary Conservation					▨	▨	▨
					Reduce IAWP Deliveries					▨	▨	▨
					Call Options Contracts						▨	▨
					Buy Spot Water						▨	▨
					Implement Allocation Plan							▨

▨ Potential Simultaneous Actions

The Stages and Actions Matrix (Figure 8) is read from the center moving outward. Moving from the center to the left, are actions that Metropolitan will take during surplus conditions. For instance, in a Stage 3 Surplus, Metropolitan will be adding water to the Eastside Reservoir Project, the Monterey Reservoirs (if any water is due for repayment), Contractual Groundwater Programs, and carryover storage on the State Water Project. Moving from the center to the right are actions that Metropolitan will take during periods of shortage. For instance, in a Stage 3 Shortage, Metropolitan will be pulling water from the Eastside Reservoir Project, the Semitropic and Arvin Edison programs, and interrupting deliveries of Long-Term Seasonal and Replenishment program water. In addition, the Stages and Actions Matrix allows for surplus actions to be taken during shortages and vice versa, but these actions are strictly a result of prudent water management. For example, in a Stage 6 Shortage, Figure 8 shows Metropolitan potentially filling the Eastside Reservoir Project, the Monterey Reservoirs, and contractual groundwater programs while calling on spot transfers and buying spot water. Through these actions Metropolitan will be ensuring that water supply opportunities during a drought are realized--ultimately adding to the drought reserves of southern California.

Figure 8 also highlights the on-going efforts by Metropolitan and its member agencies in the conduct of public outreach and active conservation programs. Through all conditions, effective pubilc outreach and conservation programs are an integral part of Metropolitan's management of resources. In addition to ongoing conservation and water efficiency programs, Stage 5 of the Stages and Actions Matrix calls for participation of the citizens of southern California to take extraordinary conservation measures to cut water demand during droughts.

As with the listing of shortage actions earlier in the report, the Stages/Actions matrix in Figure 8 only highlights certain programs and response actions. However, unlike the discussion of actions earlier, Figure 8 is intended to convey Metropolitan's currently anticipated ordering for those actions listed. As the supply and demand outlooks, programs, and other factors continue to change, the analysis of the ordering of actions will continue during the ten-year period of the WSDM Plan.

SUPPLY CERTAINTY AND THE TIMING OF RESOURCE ACTIONS

One of the fundamental trade-offs in dealing with supply shortages is the need to maintain flexibility while providing supply certainty to member agencies and consumers. A central focus of the WSDM Plan is the analysis of information about supplies and demands. When do various pieces of information about the supply/demand balance become more certain? When should this information impact policy-making and trigger various resource actions? The WSDM Plan addresses these questions and the actual implementation of the Plan during a shortage.

Figure 9 shows a hypothetical shortage year. With respect to the supply and demand outlook, a typical shortage year will have periods of certainty and stability, and other periods of relative uncertainty and transition. Important supply components--such as the SWP, CRA, Los Angeles Aqueduct (LAA), and local supplies--are closely monitored through the early part of the year. These supplies and demands are fairly well-known through the April-September period. Storage is assessed in the post-summer period and decisions about certain programs, such as long-term (LT) seasonal deliveries could be made at this time.

Figure 9. Water Supply Outlook Throughout the Year

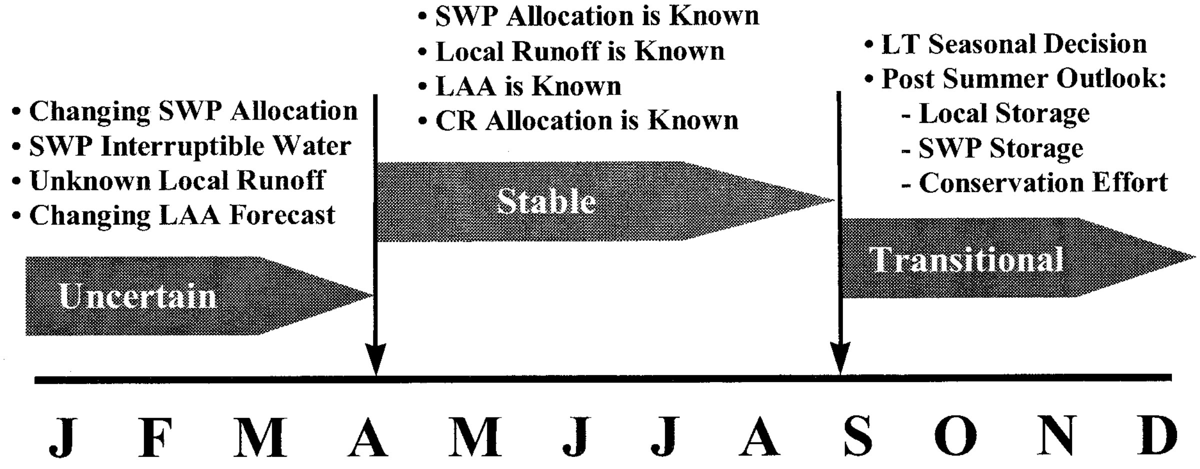
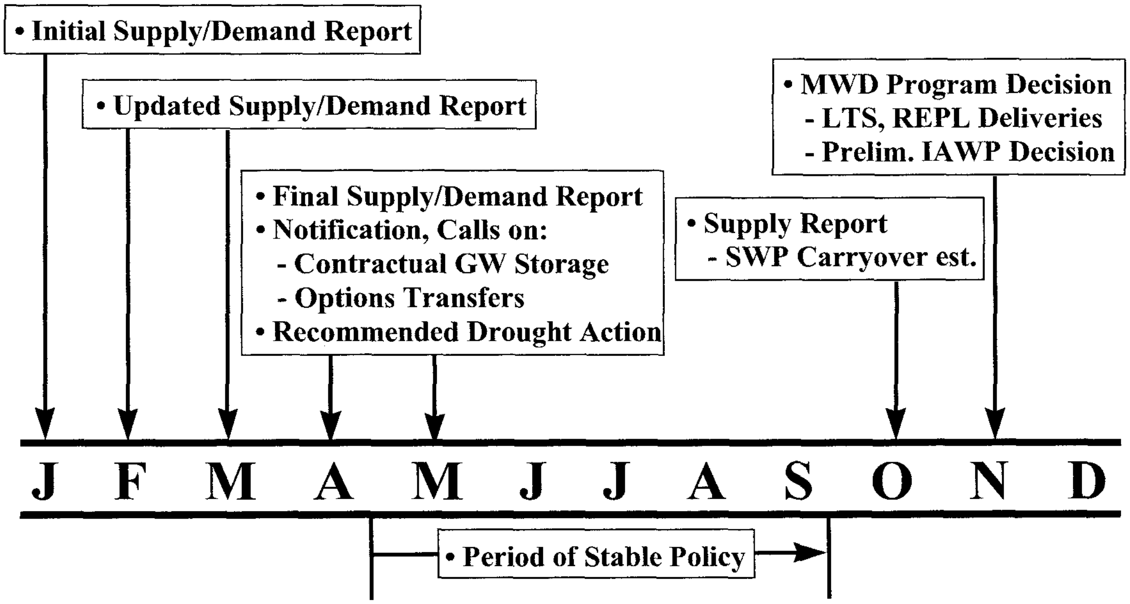


Figure 10 presents the annual schedule for actions taken in response to shortage conditions. Starting in January, an initial supply/demand report will be presented to the Metropolitan Board of Directors. SWP allocations are still only estimates in January and become more certain towards April and May. Demands for Metropolitan deliveries depend in part on how the winter hydrology develops and the condition of local supplies. These factors start to become known during the February-March period and will be reported to the Board in the Supply Report Update. By April-May, the outlook for imported supplies is known to a fairly high degree of certainty and a Final Supply Report will be produced. The May-September period will be one in which the import supply situation does not change drastically and drought policies can be implemented. Demands can be more or less than anticipated as a result of unusually hot or cool weather. At the end of summer, carryover SWP storage will be determined. October through December is a transitional period during which early assessments of available supplies for the following year will be made. During this period, Board actions would determine the management of various Metropolitan programs such as long-term seasonal (LTS) and IAWP deliveries. The following list presents major information and decision points during the year.

Month	**<u>Information/Action</u>**
January	**Initial Supply/Demand Reports**
February, March	**Updated Supply/Demand Reports**
April, May	**Final Supply/Demand Report**
	Notification on Contractual GW and Options Transfer Programs
	Recommended Drought Actions
May-September	**Stable Policy Period**
October	**Supply and Carryover Storage Report**
November	**MWD Program Decisions - LT Seasonal, Replenishment, IAWP**

**Figure 10. One Year of a Hypothetical Shortage -
Supply and Demand Reports and Response Actions**



PUBLIC OUTREACH AND CONSERVATION

Mechanisms are already in place to implement most of the water management actions and programs that are addressed in the WSDM Plan. Under the majority of supply and demand conditions, the actions of Metropolitan's Board of Directors, the General Manager, the operational activities of Metropolitan, and its member agencies would constitute all actions necessary to mitigate the shortage. Several aspects of the WSDM Plan, however, require additional attention to the administration of programs and actions. In particular, a shortage contingency requires special programs in the areas of public and governmental affairs and conservation. Metropolitan maintains an on-going public information program to encourage efficient water use. Public outreach programs are conducted at all times under both surplus and shortage conditions (see Figure 8). The actions discussed in this section constitute special actions in times of shortage.

During shortage conditions, public outreach will play a critical role in shaping consumer response. Public information campaigns need to send clear signals if extraordinary drought conservation is to achieve needed reductions in demands. Given Metropolitan's diverse set of customers and the varying impacts that shortages can have on different consumer groups, an effective public information campaign will require a joint effort among Metropolitan and its member agencies. Under this Plan, the administration of the Public Information and Government Affairs programs will be the responsibility of a Drought Program Officer (DPO). The DPO will be responsible for integrating the various activities in these areas, coordinating efforts with Metropolitan's Board of Directors and member agencies, and designing the region-wide messages for the general public and various target audiences. Important constituencies that have been identified in the process are residential users, business interests, agricultural users, elected officials, officials of various agencies (such as the Department of Water Resources), and the media.

Many conservation programs, such as Metropolitan's ultra-low flush toilet rebate program, are driven by member agency requests. Based on history, Metropolitan expects member agency requests to increase during droughts. Metropolitan is committed to increasing overall conservation program funding to meet member agency requests during droughts and attain higher levels of savings. These programs will be implemented by Metropolitan and member and local agency conservation staff. As many of the short-term conservation objectives during a shortage would be dependent upon an effective public information program, the Drought Program Officer will also be responsible for monitoring the effectiveness of the augmented conservation programs. A monthly conservation reporting process will be implemented. Quarterly estimates of regional conservation will be developed to track the progress of various actions in mitigating the shortage.

APPENDIX A: RESOURCE AND STORAGE SIMULATION

The Water Surplus and Drought Management Plan (WSDM Plan) uses the Stages and Actions Matrix (Figure 8) as a guide for the operation of storage and transfers for the next ten years, 1999-2008**.** Metropolitan asserts that the investments that Metropolitan and its member agencies have made in water supply and storage, managed in a coordinated manner as presented in the WSDM Plan, will be sufficient to assure that retail firm water demands will be met 100% of the time through the year 2008. Metropolitan performed an extensive analysis of projected water demands, current and expected water supplies, along with hydrologic variations to support this assertion. Appendix A presents a summary of this analysis which includes statistical probabilities of actions under the WSDM Plan and two illustrative examples of how supply resources may be used in the future under worst-case drought events. Although the WSDM Plan is intended to be in effect through 2008, for the purposes of analysis the planning horizon was extended through 2010.

The WSDM Plan seeks to define the operational envelope for the Metropolitan system into the near future. Although the WSDM Plan only looks out ten years, it nonetheless involves the operation of some storage and water transfer projects that have not yet become fully operational. This makes the estimation of storage and transfers operations difficult. Compounding this problem is the lack of certainty around future demands, economic conditions, or even the weather over the next ten years. To manage these uncertainties, Metropolitan has developed a computer based simulation model called the Integrated Resources Planning Simulation Model or IRPSIM.

IRPSIM uses a modeling method known as sequentially indexed monte-carlo simulation. Simply put, the model looks at projected regional retail demand and supplies of water over the next twelve years and adjusts each, up or down, based on an assumed pattern of future weather. For instance, if Metropolitan expected the weather over the next twelve years (1999-2010) to be the same as the last twelve years (1987-1998), then IRPSIM would adjust the projected 1999 demands and supplies based on the historical 1987 hydrology, and adjust the projected 2000 demands and supplies using the historical 1988 hydrology, and so on. One obvious drawback to this approach is that Metropolitan does not know what future weather will be. Therefore, Metropolitan runs the models over and over again until all recorded hydrologies, 70 in all, have been tried. In this way, Metropolitan can look at probabilistic results of being in shortage year by year through 2010.

Although the projections of water supplies used in this analysis required certain assumptions to be made, they were based on most likely or probable outcomes. In most cases, projected water supplies represented projects that are currently operational, under construction, or in the final stages of negotiations. The following represents a summary of these assumptions:

- Local recycling and groundwater recovery: assumes currently operational projects with expected increases in supply yield as demand increases

- Conjunctive use groundwater storage: assumes Las Posas (under final stages of construction) and implementation of similar programs which are under negotiation (such as Raymond, Orange, and Chino Basins)

- Semitropic and Arvin-Edison storage: assumes use of both programs which are operational with water already stored

- Eastside Reservoir Project: assumes use of non-emergency storage from the reservoir currently under construction and an initial fill projected to start in approximately one year

- The Monterey Reservoirs: assumes use of State Water Project terminal reservoir supplies, Castaic and Perris Reservoirs, per the Monterey Amendment

- Colorado River Aqueduct: assumes a full aqueduct through the implementation of the California Plan (including lining of All American and Coachella canals, SD/IID water transfer/exchange, conjunctive use off-aqueduct storage, and river re-operations)

- State Water Project: assumes continuance of Bay-Delta Accord (with only current facilities)

One way of viewing the result of Metropolitan's WSDM Plan analyses is by summary statistics. Table A- 1 gives the probabilities of shortage actions over the next twelve years.

Table A-1. Probability of Shortage Stage[1] by Forecast Year

1999	13%	13%	11%	7%	3%	0%	O%
2000	13%	13%	11%	9%	3%	O%	0%
2001	19%	17%	13%	10%	6%	O%	0%
2002	19%	17%	13%	10%	4%	1%	0%
2003	19%	19%	14%	11%	4%	0%	0%
2004	20%	19%	16%	13%	4%	0%	0%
2005	21%	19%	17%	13%	6%	O%	O%
2006	21%	19%	19%	13%	6%	0%	0%
2007	23%	20%	19%	13%	4%	0%	0%
2008	26%	21%	19%	16%	6%	1%	0%
2009	26%	24%	19%	17%	6%	1%	0%
2010	26%	26%	19%	19%	6%	1%	O%

Table A-1 can be read in one of two ways, by column or row. The Stage 7 column indicates that there are no historical weather conditions that require allocation over the next twelve years. This is the single most important conclusion of the WSDM Plan analysis. The Stage 6 column indicates that only in a few years--2002, and 2008 through 2010--would Metropolitan need have a need for option or spot transfer water. Read by row, Table A-1 indicates that in the year 2008 there is a 21% likelihood of taking some water from the Eastside Reservoir Project, a 19% likelihood of taking water from Semitropic or Arvin-Edison storage programs, a 17% likelihood of interrupting long-term seasonal and replenishment deliveries for two years, and so on. It should be noted that these probabilities represent the best current estimates by Metropolitan, but are based entirely on historical weather conditions. Conditions that fall outside of historical ranges, either in duration or severity, are not represented by this data.

Another way to view the WSDM Plan analysis is by observing the operation of a single hydrology. Table A-2 provides an example of resource operations for the period 1999 through 2010 assuming a repeat of the 1923 through 1934 hydrology. The table provides descriptions of hydrologic conditions to aid in understanding the example.

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[1] Stage 1 consists of withdrawal from the Eastside Reservoir Project. Stage 2 consists of the above plus withdrawals from the Semitropic and Arvin-Edison water storage and transfer projects. Stage 3 consists of the above plus an interruption of Long-Term Seasonal and Replenishment discount water. Stage 4 consists of the above plus withdrawal from contractual groundwater programs and the Monterey Reservoirs. Stage 5 consists of the above plus a call for extraordinary drought conservation and interruption in agricultural discount water. Stage 6 consists of the above plus calls on option contract water and purchases of water on the open market. Stage 7 consists of the above plus allocation of remaining shortages. For a full description of stages and action, see Surplus and Shortage Resource Actions section and Figure 8 above.

For instance, 1923 was considered to be a dry year in southern California (defined as less than 9 inches of rain at the Los Angeles Civic Center) and is categorized by the California Department of Water Resources (DWR) as a below normal year for State Water Project deliveries. In this example, 1923 weather increases southern California's demand for water and decreases imported State Water Project supplies. The Colorado River Aqueduct supplies are influenced by yet another hydrologic indicator, but for the next ten year Metropolitan expects the Aqueduct to be full.

Table A-2 indicates that retail water demands in 1999, assuming a 1923 hydrology, will be 3.979 million acre-feet (maf). Adding expected long-term seasonal and replenishment demands of 0.165 maf gives a regional total water demand of 4.144 maf. After subtracting local supplies of 2.192 maf, which are also adjusted for 1923 weather, Metropolitan expects to see a demand of 1.952 maf. In 1999, under a 1923 hydrology, Metropolitan expects to see 2.954 maf of supply. This is enough to meet all expected demands and put over 1.0 maf into storage.

The 1923 through 1934 hydrology is significant because it starts and ends dry with little recovery in the middle. However, even in these most adverse conditions the actions proposed by the WSDM Plan provides the region with enough water to avoid shortage allocation. Again the most important result of this example is read from the last line, which indicates that there are no remaining shortages through 2008

Table A-3 provides a second example of using the 1980 through 1991 hydrology. This hydrology contains the most significant drought in recent record, ending with a critically dry year on the State Water Project that is expected to yield a mere 0.389 maf. However, even under these conditions the WSDM Plan provides a method to avoid firm water allocation.

The analyses performed using the prioritized action of the Stages and Actions Matrix support Metropolitan's assertion that water supply reliability can be attained through the use of regional storage, interruption of discounted water supplies, and transfers. And, through the implementation of the WSDM Plan, Metropolitan does not expect to allocate firm water deliveries for at least the next ten years.

Table A-2. A Simulation of Water Supplies and Demands 1923-1934 Hydrology

Forecast Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hydrology Year	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Hydrologic Conditions												
Southern California Year Type	Dry	Dry	Dry	Wet	Wet	Dry	Dry	Normal	Wet	Normal	Wet	Normal
Sacramento River Index D1630 Year Type	Below Normal	Critically Dry	Dry	Dry	Wet	Above Normal	Critically Dry	Dry	Critically Dry	Dry	Critically Dry	Critically Dry
Demands												
Retail Demand	3.979	4.152	4.149	4,018	4.005	**4.249**	4.237	4.223	4.280	4.280	4.407	4.500
Long-term/Replenishment Demand	0.165	0.182	0.226	0.188	0.149	0.176	0,213	0.203	0.164	0.175	0.141	0.163
Total Demand	4.144	4.334	4.375	4.205	4.154	4.425	4.450	4.426	4,443	4.455	4.548	4,663
Local Supplies												
Groundwater Production	1.529	1.545	1.537	1.288	1.299	1.575	**1.568**	1.434	1.307	1.439	1.318	1.454
L. A. Aqueduct Production	0.383	0,287	0.304	0.316	0.392	0.302	0,245	0.235	0.174	0,324	0.251	0.220
Recycling Production	0.152	0.162	0.174	0.186	0,197	0.207	0.217	0.230	0,242	0.254	0.266	0.277
Surface Production	0,128	0,089	0,076	0.116	0.154	0.147	0.108	0.094	0,133	0,136	0.151	0.145
Total Local Supply	2,192	2.084	2.091	1.905	2,043	2.231	2,139	1.993	1.856	2.153	1.986	2,097
Total MWD Demand	1.952	2.250	2,284	2,300	2.112	2.194	2.311	2.433	2.587	2.302	2.562	2.566
MWD Supply Sources												
Colorado River Aqueduct Supply	1.200	1.200	1.200	1.200	1.200	**1.200**	1.200	1.200	1.200	1.200	1.200	1.200
State Water Project Supply	1.754	0.812	0.783	1.280	1.678	1.438	0,764	1.163	0,589	0.843	0.559	0.620
MWD Cyclic Groundwater Deliveries	0.000	0.060	0.060	0.000	0.000	0,000	0.060	0,060	0.060	0.059	0.000	0.000
Eastside Reservoir	0.000	0.066	0.058	0.000	0.000	0.000	0,060	0.010	0.425	0.023	0.219	0.041
Arvin/Semitropic Groundwater Storage	0.000	0.111	0.115	0,000	0.000	0,000	0,119	0,000	0.115	0.117	0.059	0.041
Longterm Seasonal Demand Cuts	0.000	0,000	0,166	0.000	0.000	0.000	0.153	0.000	0.104	0,116	0.000	0.000
Cyclic Benefits	0.000	0.000	0.000	0.000	0.000	0.000	0,000	0,000	0,000	0,000	0.060	0.060
Contractual Groundwater Storage	0.000	0.000	0.000	0,000	0.000	0.000	0.000	0,000	0.095	0.000	0.095	0.084
DWR Reservoirs (Monterey Agreement)	0.000	0.000	0,000	0.000	0.000	0.000	0.000	0.000	0,000	0,000	0.131	0.088
Voluntary Conservation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0,000	0.000	0.206	0.210
MWD Ag Cuts	0.000	0.000	0.000	0.000	0.000	0,000	0.000	0.000	0.000	0.000	0.033	0.031
Central Valley Transfers	0.000	0.000	0,000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.193
Storage Puts	1.003	0.000	0.097	0.180	0.549	0.438	0.045	0.000	0,000	0.056	0.000	0.000
Remaining Shortage	0,000	0,000	0.000	0,000	0.000	0.000	0.000	0,000	0.000	0.000	0.000	0.000

Table A-3. A Simulation of Water Supplies and Demands 1980-1991 Hydrology

Forecast Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hydrology Year	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Hydrologic Conditions												
Southern California Year Type	Wet	Normal	Normal	Wet	Dry	Dry	Wet	Normal	Normal	Dry	Dry	Normal
Sacramento River Index D1630 Year Type	Above Normal	Dry	Wet	Wet	Wet	Dry	Wet	Dry	Critically Dry	Dry	Critically Dry	Critically Dry
Demands												
Retail Demand	3.781	4.170	3.930	3.647	4.308	4.250	4.151	4.281	4.380	4.550	4.663	4.497
Lon£1-term/Replenishment Demand	0.105	0.141	0.171	0.101	0.136	0.187	0.183	0.201	0.191	0.219	0.224	0.214
Total Demand	3.886	4.311	4.101	3.748	4.444	4.437	4.334	4.483	4.572	4.769	4.887	4.712
Local Supplies												
Groundwater Production	1.292	**1.440**	**1.381**	1.248	1.546	1.565	1.275	1.413	1.438	1.588	1.600	1.446
L. A. Aqueduct Production	0.462	0.372	0.499	0.529	0.516	O.367	0.472	0.400	0.326	0.278	0.213	0.223
Recycling Production	0.152	0.162	0.174	0.186	0.197	0.207	0.217	0.230	0.242	0.254	0.266	0.277
Surface Production	0.225	0.175	0.154	0.194	0.195	0.151	0.115	0.116	0.115	0.081	0.068	0.081
Total Local Supply	2.131	2.149	2.208	2.156	2.455	2.290	2.081	2.159	2.122	2.200	2,146	2.027
Total MWD Demand	1.755	2.162	1.894	1.591	1.989	2.147	2.253	2.324	2.450	2.569	2.741	2.684
MWD Supply Sources												
Colorado River Aqueduct Supply	1.200	1.200	1.200	1,200	1.200	1.200	1.200	1.200	**1.200**	1.200	1.200	1.200
State Water Project Supply	1.561	1.441	1.725	1.886	1.643	1.590	1.441	1.292	0.611	1.285	0.877	0.389
MWD Cyclic Groundwater Deliveries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060	0.060	0.060	0.060
Eastside Reservoir	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.199	0.024	0.222	0.209
Arvin/Semitropic Groundwater Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.115	0.000	0.122	0.104
Long-term Seasonal Demand Cuts	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.131	0.000	0.164	0.154
Cyclic Benefits	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contractual Groundwater Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.133	0.000	0.095	0.085
DWR Reservoirs (Monterey Agreement)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.216
Voluntary Conservation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.235
MWD Ag Cuts	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032
Central Valley Transfers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Storage Puts	1.006	0.260	0.344	0.240	0.200	0.200	0.388	0.168	0.000	0.000	0.000	0.000
Remaining Shortage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment K-2

Metropolitan's Water Supply Allocation Plan

ATTACHMENT B

Water Supply Allocation Plan

December 2014 Revision

Metropolitan Water District of
Southern California

ATTACHMENT B

Inside cover: Photo courtesy of Cora Edmonds/ArtXchange for the Healing Planet

Water Supply Allocation Plan

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List of Tables and Figures

ATTACHMENT B

List of Acronyms

AF – Acre-feet
CUP – Groundwater Conjunctive Use Program
CWD – County Water District
DWP – Drought Management Plan
IAWP – Interim Agricultural Water Program Reductions and Rates
IICP – Incremental Interruption and Conservation Plan
IRP – Integrated Resources Plan
GPCD – Gallons per Capita per Day
M&I – Municipal and Industrial
MWD – Municipal Water District
RUWMP – Regional Urban Water Management Plan
SWP – State Water Project
WSAP – Water Supply Allocation Plan
WSDM – Water Surplus and Drought Management

Definitions

Extraordinary Supplies- Deliberate actions taken by member agencies to augment the total regional water supply only when Metropolitan is allocating supplies through the WSAP.

Groundwater Recovery- The extraction and treatment of groundwater making it usable for a variety of applications by removing high levels of chemicals and/or salts.

In-lieu deliveries- Metropolitan-supplied water bought to replace water that would otherwise be pumped from the groundwater basins.

Seawater Barrier- The injection of fresh water into wells along the coast to protect coastal groundwater basins from seawater intrusion. The injected fresh water acts like a wall, blocking seawater that would otherwise seep into groundwater basins as a result of pumping.

Section 1: Introduction

Calendar Year 2007 introduced a number of water supply challenges for the Metropolitan Water District of Southern California (Metropolitan) and its service area. Critically dry conditions affected all of Metropolitan's main supply sources. In addition, a ruling in the Federal Courts in August 2007 provided protective measures for the Delta Smelt in the Sacramento-San Joaquin River Delta which brought uncertainty about future pumping operations from the State Water Project. This uncertainty, along with the impacts of dry conditions, raised the possibility that Metropolitan would not have access to the supplies necessary to meet total firm demands[1] and would have to allocate shortages in supplies to the member agencies.[2]

In preparing for this possibility, Metropolitan staff worked jointly with the member agency managers and staff to develop a Water Supply Allocation Plan (WSAP). The WSAP includes the specific formulas for calculating member agency supply allocations and the key implementation elements needed for administering an allocation should a shortage be declared. The WSAP became the foundation for the urban water shortage contingency analysis required under Water Code Section 10632 and was incorporated into Metropolitan's 2010 Regional Urban Water Management Plan (RUWMP).

Section 2: Development Process

Member Agency Input

Between July 2007 and February 2008, Metropolitan staff worked cooperatively with the member agencies through a series of member agency manager meetings and workgroups to develop a formula and implementation plan to allocate supplies in case of shortage. These workgroups provided an arena for in-depth discussion of the objectives, mechanics, and policy aspects of the different parts of the WSAP. Metropolitan staff also met individually with fifteen member agencies for detailed discussions of the elements of the recommended proposal. Metropolitan introduced the elements of the proposal to many nonmember retail agencies in its service area by providing presentations and feedback to a number of member agency caucuses, working groups, and governing boards. The discussions, suggestions, and comments expressed by the member agencies during this process contributed significantly to the development of this WSAP.

Board of Directors Input

Throughout the development process Metropolitan's Board of Directors was provided with regular progress reports on the status of this WSAP, with oral reports in September, October, and December 2007, an Information Board of Directors Letter with a draft of the WSAP in November 2007, and a Board of Directors Report with staff recommendations in January 2008. Based on Water Planning and Stewardship Committee discussion of the staff recommendations and further review of the report by

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[1] Firm demands are also referred to as uninterruptable demands; likewise non-firm demands are also called interruptible demands.

[2] See Appendix A: Metropolitan Member Agencies.

the member agencies, refinements were incorporated into the WSAP for final consideration and action in February 2008. The WSAP was adopted at the February 12, 2008 Board of Directors meeting.[3]

The 12-Month Review Process

When the Board adopted the WSAP in February 2008, the decision specified a formal revisit of the WSAP commencing in February 2010. The scheduled revisit was meant to ensure the opportunity for Metropolitan staff and the member agencies to re-evaluate the WSAP and recommend appropriate changes to the Board of Directors.

In April 2009, the Board voted to implement the WSAP for the first time. The WSAP was implemented at a Level 2 allocation level, and was in effect for the period of July 1, 2009, through June 30, 2010. Since implementation of the 2009/10 WSAP began in July 2009, a number of practical issues relating to the WSAP were identified by staff and the member agencies for further consideration during the 12-Month Review Process. Metropolitan staff engaged with the member agencies in a formal review of the WSAP from January through May 2010. During the review process the member agency managers participated in a series of six workshops. The focus of these workshops was to facilitate in-depth discussion on WSAP-related issues and lessons learned since the WSAP was implemented in July 2009. The proposed adjustments to the WSAP developed during the review process were adopted at the August 17, 2010 Board of Directors meeting[4].

The Three-Year Review Process

The Board action to adopt of the WSAP in February 2008 also directed staff to review the WSAP formula three years after the February 2008 adoption. February 2011 marked the three-year anniversary since the adoption of the WSAP. Similar to the 12-Month Review Process, the purpose of the Three-Year Review Process was to provide an opportunity for Metropolitan staff and the member agencies to re-evaluate the plan and recommend appropriate changes for board consideration.

Metropolitan staff met with the member agencies in a formal review of the WSAP from February through August 2011. Staff and member agency managers participated in a series of eleven workshops. Proposed adjustments to the WSAP developed during the process were adopted at the September 13, 2011 Board of Directors meeting.[5]

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[3] A complete listing of member agency meetings and Board of Directors reporting activities is contained in Appendix B: Water Supply Allocation Plan Process Timeline.

[4] A complete listing of member agency meetings and Board of Directors reporting activities is contained in Appendix C: 12-Month Review Process and Results.

[5] A complete listing of member agency meetings and Board of Directors reporting activities is contained in Appendix D: Three-Year Review Process and Results.

2014 Review Process

In 2014, California was challenged with a third year of severe drought.[6] Metropolitan managed its operations through significant use of regional storage reserves. It was anticipated that end of year total dry storage reserves would approach levels similar to those when the WSAP was last implemented in 2009.

Following discussion at the June 2014 Water Planning and Stewardship Committee, Metropolitan staff convened a member agency working group to revisit the WSAP. The purpose of the working group was to collaborate with member agencies to identify potential revisions to the WSAP in preparation for mandatory supply allocations in 2015. There were eight working group meetings and three discussions at the monthly Member Agency Managers' Meetings.

The process focused on three areas of the WSAP: the Base Period, the Allocation Formula, and the Allocation enforcement mechanism. Proposed adjustments to the WSAP developed during the process were adopted at the December 9, 2014 Board of Directors meeting. [7]

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[6] The Governor of California proclaimed a State of Emergency due to drought conditions on January 17, 2014 and, on April 24, 2014 issued an Executive Order proclaiming a continued State of Emergency noting drought conditions have persisted for the last three years and authorizing adoption and implementation of emergency regulations.

[7] A complete listing of member agency meetings and Board of Directors reporting activities is contained in Appendix E: 2014 Review Process and Results.

Section 3: Review of Historical Shortage Plans[8]

The WSAP incorporates key features and principles from the following historical shortage allocation plans but will supersede them as the primary and overarching decision tool for water shortage allocation.

Interruptible Water Service Program

As part of the new rate structure implemented in 1981, Metropolitan's Board of Directors adopted the Interruptible Water Service Program (Interruptible Program) which was designed to address short-term shortages of imported supplies. Under the Interruptible Program, Metropolitan delivered water for particular types of use to its member agencies at a discounted rate. In return for this discounted rate, Metropolitan reserved the right to interrupt delivery of this Interruptible Program water so that available supplies could be used to meet municipal and industrial demands.

Incremental Interruption and Conservation Plan

The ability to interrupt specific deliveries was an important element of Metropolitan's strategy for addressing shortage conditions when it adopted the Incremental Interruption and Conservation Plan (IICP) in December 1990. Reductions in IICP deliveries were used in concert with specific objectives for conservation savings to meet needs during shortages. The IICP reduced Interruptible Service deliveries in stages and provided a pricing incentive program to insure that reasonable conservation measures were implemented.

1995 Drought Management Plan

The 1995 Drought Management Plan (DMP) was a water management and allocation strategy designed to match supply and demand in the event that available imported water supplies were less than projected demands. Adopted by the Metropolitan Board of Directors in November 1994, the 1995 DMP was a short-term plan designed to provide for the 1995 calendar year only. The primary objective of the 1995 DMP was to identify methods to avoid implementation of mandatory reductions. The 1995 DMP included various phases and a step-by-step strategy for evaluating supply and demand conditions and utilizing Metropolitan's available options, with the final phase being implementation of the revised IICP.

1999 Water Surplus and Drought Management Plan

Metropolitan staff began work on the Water Surplus and Drought Management (WSDM) Plan in March 1997 as part of the Integrated Water Resources Plan (IRP), which was adopted by Metropolitan's Board of Directors in January 1996. The IRP established regional water resource targets, identifying the need for developing resource management policy to guide annual operations. The WSDM Plan defined Metropolitan's resource management policy by establishing priorities for the use of regional resources to achieve the region's reliability goal identified in the IRP. In April 1999, Metropolitan's Board of Directors adopted the WSDM Plan.

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[8] A summary of the key elements in the following allocation plan is found in Appendix F: Summary of Historical Shortage Plans.

The WSDM Plan also included a set of principles and considerations for staff to address when developing specific allocation methods. The WSDM Plan stated the following guiding principle to be followed in developing any future allocation scheme:

> *"Metropolitan will encourage storage of water during periods of surplus and work jointly with its member agencies to minimize the impacts of water shortages on the region's retail consumers and economy during periods of shortage."*[9]

This principle reflects a central desire for allocation methods that are both equitable and minimize regional hardship to retail water consumers. The specific considerations postulated by the WSDM Plan to accomplish this principle include the following:[10]

- The impact on retail customers and the economy
- Allowance for population and growth
- Change and/or loss of local supply
- Reclamation/Recycling
- Conservation
- Investment in local resources
- Participation in Metropolitan's interruptible programs
- Investment in Metropolitan's facilities.

Section 4: Water Supply Allocation Formula

Based on the guiding principle and considerations described in the WSDM Plan, Metropolitan staff and the member agencies developed a specific formula for allocating water supplies in times of shortage. The formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level, and takes into account growth, local investments, changes in supply conditions and the demand hardening[11] aspects of non-potable recycled water use and the implementation of conservation savings programs. The formula, described below, is calculated in three steps: base period calculations, allocation year calculations, and supply allocation calculations.[12] The first two steps involve standard computations, while the third section contains specific methodology developed for this WSAP.

Base Period Calculations

The first step in calculating a water supply allocation is to estimate water supply and demand using a historical base period with established water supply and delivery data. The base period for each of the different categories of demand and supply is calculated using data from the fiscal years (July through June) ending 2013 and 2014.[13]

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[9] WSDM Plan, p. 1. Emphasis added.

[10] WSDM Plan, p. 2.

[11] Demand hardening is the effect that occurs when all low-cost methods of decreasing overall water demand have been applied (e.g., low-flow toilets, water recycling) and the remaining options to further decrease demand become increasingly expensive and difficult to implement.

[12] Detailed operational elements of these objectives and a numerical example are discussed in Appendix G: Water Supply Allocation Formula Example.

[13] Exceptions to this methodology are noted in the descriptions of base period calculations.

Base Period Local Supplies: Local supplies for the base period are calculated using a two-year average of groundwater production, groundwater recovery, Los Angeles Aqueduct supply, surface water production, and other imported supplies. Non-potable recycling production is not included in this calculation due to its demand hardening effect.

Base Period Wholesale Demands: Demands on Metropolitan for the base period are calculated using a two-year average of firm purchases and in-lieu deliveries to long-term groundwater replenishment, conjunctive use, cyclic, and supplemental storage programs.

Base Period Retail Demands: Total retail-level municipal and industrial (M&I) demands for the base period are calculated by adding the Base Period Wholesale Demands and the Base Period Local Supplies. This estimates an average total demand for water from each agency.

Base Period Mandatory Conservation Credit: Metropolitan allows a consultation process that enables member agencies to describe mandatory water use restrictions and/or rationing restrictions that were in place within their service areas during the Base Period. Restrictions may vary among agencies but include restricted water uses, fines, and water budget or penalty based rate structures that are enacted by the governing body of the member agency or retail agency. Following the consultation process, Metropolitan staff will recommend adjustments based on evidence of reduced GPCD. To qualify for an adjustment, GPCD reductions would have to be observed that are beyond those expected from the agency's ongoing conservation efforts and trends.

Allocation Year Calculations

The next step in calculating the water supply allocation is estimating water needs in the allocation year. This is done by adjusting the base period estimates of retail demand for population or economic growth and changes in local supplies.

Allocation Year Retail Demands: Total retail M&I demands for the allocation year are calculated by adjusting the Base Period Retail Demands for baseline inflation and growth.

Baseline Inflation Adjustment: Baseline inflation occurs when non-potable recycling or conservation is developed after the Base Period. The development of these supplies reduces actual demands for water in the Allocation Year. Because non-potable-recycling and conservation are excluded from the WSAP formula, the actual need for water in the Allocation year is overestimated. The Baseline Inflation Adjustment removes increases in non-potable recycling and conservation annually from the Base Period forward to better reflect the true need for water in the Allocation Year.

Growth Adjustment: The growth adjustment is calculated using the estimated actual annual rate of population growth at the county level, as generated by the California Department of Finance, whenever possible. For years without complete data, the growth rate is calculated using an average of the three most recent years available. Growth will be allocated based on historical per capita water use during the Base Period, with a cap equal to Metropolitan's IRP Target for Water Use Efficiency. For allocation years up to and including 2014, the cap will be 163 GPCD, and for allocation years 2015-2020 the cap will reduce linearly from 163 to 145 GPCD. On an appeals basis, member agencies may request that their adjustment be calculated using member agency level population growth. A weighted combination of actual population and actual employment growth rates may also be requested.

Allocation Year Local Supplies: Allocation Year Local Supplies include groundwater production, groundwater recovery, Los Angeles Aqueduct supply, surface water production, seawater desalination, and other imported supplies. Estimates of Allocation Year Local Supplies are provided by the member agencies upon implementation of a WSAP. If estimates are not provided, Metropolitan will use the sum of the Base Period Local Supplies and Base Period In-Lieu Deliveries as a default. Agencies may provide updated estimates at any time during the Allocation Year to more accurately reflect their demand for Metropolitan supplies.

Extraordinary Supplies: Under the WSAP formula, local supply production in the Allocation Year can either be designated as a “planned” supply, or as an “extraordinary” supply.[14] This is an important designation for a member agency because the two types of supplies are accounted for differently in the WSAP formula. Local supplies classified at Extraordinary Supply are only partially included (scaled depending on the WSAP Level) as local supplies. This has the effect of providing significantly more benefit to the member agency in terms of total water supply that is available to the retail customer.[15]

Allocation Year Wholesale Demands: Demands on Metropolitan for the allocation year are calculated by subtracting the Allocation Year Local Supplies from the Allocation Year Retail Demands.

Water Supply Allocation Calculations

The final step is calculating the water supply allocation for each member agency based on the allocation year water needs identified in Step 2. The following table displays the elements that form the basis for calculating the supply allocation. Each element and its application in the allocation formula are discussed below.

Table 1: Shortage Allocation Index

(a) Regional Shortage Level	(b) Wholesale Minimum Percentage	(c) Maximum Retail Impact Adjustment Percentage
1	92.5%	2.5%
2	85.0%	5.0%
3	77.5%	7.5%
4	70.0%	10.0%

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[14] Appendix H: Board Policy Principles on Determining the Status of Extraordinary Supply lists the key Board principles used in determining if a supply qualifies as an Extraordinary Supply.

[15] See Appendix G: Water Supply Allocation Formula Example for specific allocation formulae.

5	62.5%	12.5%
6	55.0%	15.0%
7	47.5%	17.5%
8	40.0%	20.0%
9	32.5%	22.5%
10	25.0%	25.0%

Regional Shortage Level: The WSAP formula allocates shortages of Metropolitan supplies over ten levels.

Wholesale Minimum Allocation: The Wholesale Minimum Allocation ensures a minimum level of Metropolitan supplied wholesale water service to each member agency.

Maximum Retail Impact Adjustment: The purpose of this adjustment is to ensure that agencies with a high level of dependence on Metropolitan do not experience disparate shortages at the retail level compared to other agencies when faced with a reduction in wholesale water supplies. The Maximum Retail Impact Percentage is prorated on a linear scale based on each member agency's dependence on Metropolitan at the retail level. This percentage is then multiplied by the agency's Allocation Year Wholesale Demand to determine an additional allocation.

Conservation Demand Hardening Credit: The Conservation Demand Hardening Credit addresses the increased difficulty in achieving additional water savings at the retail level that comes as a result of successful implementation of water conserving devices and conservation savings programs. To estimate conservation savings, each member agency will establish a historical baseline Gallons Per Person Per Day (GPCD) calculated in a manner consistent with California Senate Bill SBx7-7.[16] Reductions from the baseline GPCD to the Allocation Year are used to calculate the equivalent conservation savings in acre-feet. The Conservation Demand Hardening Credit is based on an initial 10 percent of the GPCD-based Conservation savings plus an additional 5 percent for each level of Regional Shortage set by the Board during implementation of the WSAP. The credit will also be adjusted for:

- The overall percentage reduction in retail water demand
- The member agency's dependence on Metropolitan

The credit is calculated using the following formula:

Conservation Demand Harding Credit = Conservation Savings x (10% + Regional Shortage Level Percentage) x (1 +((Baseline GPCD – Allocation Year GPCD)/Baseline GCPD)) x Dependence on MWD Percentage

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[16] California Department of Water Resources, February 2011, "Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use. Available at: http://www.water.ca.gov/wateruseefficiency/sb7/docs/MethodologiesCalculatingBaseline_Final_03_01_2011.pdf

This provides a base demand hardening credit equal to 10 percent of conservation savings and increases the credit as deeper shortages occur, which is when conservation demand hardening has a bigger impact on the retail consumer. The credit also increases based on the percentage of an agency's demand that was reduced through conservation. This accounts for increased hardening that occurs as increasing amounts of conservation are implemented. Lastly, the credit is scaled to the member agency's dependence on Metropolitan to ensure that credits are being applied to the proportion of water demand that is being affected by reductions in Metropolitan supply.

Minimum Per-Capita Water Use Credit: This adjustment creates a minimum per capita water use threshold. Member agencies' retail-level water use is compared to two different thresholds. The proposed minimum thresholds are based upon compliance guidelines established under Senate Bill X7-7.

- 100 GPCD total water use
- 55 GPCD residential water use

Agencies that fall below either threshold under the WSAP will receive additional allocation from Metropolitan to bring them up to the minimum GPCD water use level. If an agency qualifies under both thresholds, the one resulting in the maximum allocation adjustment will be given.[17] To qualify for this credit, member agencies must provide documentation of the total agency level population and the percent of retail level demands that are residential; no appeal is necessary.

Total WSAP Allocation: The allocation to an agency for its M&I retail demand is the sum of the Wholesale Minimum Allocation, the Retail Impact Adjustment, the Conservation Demand Hardening Credit, and the Minimum Per-Capita Water Use Credit.[18]

Total Metropolitan Supply Allocations: In addition to the WSAP Allocation described above, agencies may also receive separate allocations of supplies for and seawater barrier and groundwater replenishment demands. Allocations of supplies to meet seawater barrier demands are to be determined by the Board of Directors independently but in conjunction with the WSAP. Separating the seawater barrier allocation from the WSAP allocation allows the Board to consider actual barrier requirements in the Allocation Year and address the demand hardening issues associated with cutting seawater barrier deliveries. According to the principles outlined for allocating seawater barrier demands, allocations should be no deeper than the WSAP Wholesale Minimum Percentage implemented at that time.

The WSAP also provides a limited allocation for drought-impacted groundwater basins based on the following framework:[19]

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[17] See Appendix J: Per Capita Water Use Minimum Example for specific minimum per-capita water use credit formulae and example.

[18] See Appendix G: Water Supply Allocation Formula Example for specific allocation formulae.

[19] See Appendix L: Groundwater Replenishment Allocation for more information.

1. Metropolitan staff will hold a consultation with the requesting member agency and the appropriate groundwater basin manager to document whether the basin is in one of the following conditions:
    a. Groundwater basin overdraft conditions that will result in water levels being outside normal operating ranges during the WSAP allocation period; or
    b. Violations of groundwater basin water quality and/or regulatory parameters that would occur without imported deliveries
2. An allocation is provided based on the verified need for groundwater replenishment. The allocation would start with a member agency's ten-year average purchases of imported groundwater replenishment supplies (excluding years in which deliveries were curtailed). The amount would then be reduced by the declared WSAP Regional Shortage Level.

Section 5: WSAP Implementation

The WSAP will take effect if a regional shortage is declared by the Board of Directors. The following implementation elements are necessary for administering the WSAP during a time of shortage. These elements cover the processes needed to declare a regional shortage level as well as provide information pertaining to the allocation surcharge.

Allocation Period

The allocation period covers twelve consecutive months, from July of a given year through the following June. This period was selected to minimize the impacts of varying State Water Project (SWP) allocations and to provide member agencies with sufficient time to implement their outreach strategies and rate modifications.

Setting the Regional Shortage Level

Metropolitan staff is responsible for recommending a Regional Shortage Level for the Board of Directors' consideration. The recommendation shall be based on water supply availability, and the implementation of Metropolitan's water management actions as outlined in the WSDM Plan. Metropolitan staff will keep the Board of Directors apprised to the status of water supply conditions and management actions through monthly reports to the Water Planning and Stewardship Committee. To further facilitate staff in the development of a recommended regional shortage level, member agency requests for local supply adjustments shall be submitted by April 1st.

Metropolitan's Board of Directors, through the Water Planning and Stewardship Committee, is responsible for approving the final Regional Shortage Level at its April meeting. By the April meeting, the majority of the winter snowfall accumulation period will have passed and will allow staff to make an allocation based on more stable water supply estimates. Barring unforeseen large-scale circumstances, the Regional Shortage Level will be set for the entire allocation period, which will provide the member agencies an established water supply level for their planning.

Exit Strategy

While the Board ultimately has discretion to implement or lift and allocation at any point of time during the year; the WSAP includes a two-part exit strategy that is meant to streamline the WSAP implementation decision making process.

- If the Board decides to implement the WSAP, then any current WSAP allocation would remain in place until the end of the Allocation Year.
- If the Board decides not to implement the WSAP, then any current WSAP allocation would be terminated concurrent with the Board decision.

Allocation Appeals Process

An appeals process is necessary for the administration of any changes or corrections to an agency's allocation. Metropolitan's General Manager will designate, subsequent to a declaration of an allocation by the Board of Directors, an Appeals Liaison as the official point of contact for all information and inquiries regarding appeals. All member agency General Managers will be notified in writing of the name and contact information of the Appeals Liaison. Only appeals that are made through the Appeals Liaison and in accordance with the provisions outlined in Appendix N: Allocation Appeals Process will be evaluated. Basis for appeals claims can include but are not limited to:

- Adjusting erroneous historical data used in base period calculations
- Adjusting for population growth rates
- Determining if a local supply qualifies as Extraordinary Supply

Additional details and a checklist for the appeals process are available in Appendix N: Allocation Appeals Process and Appendix O: Appeals Submittal Checklist.

Allocation Surcharge

Member agency allocations are supported by an Allocation Surcharge. The Allocation Surcharge is charged to water use above the Member Agency allocation and is charged in addition to Metropolitan's standard rates for water service. Allocation Surcharges will only be assessed to the extent that an agency's total annual usage exceeds its total annual allocation. Any revenues collected through the Allocation Surcharge will be applied towards Metropolitan's Water Management Fund, which is used to in part to fund expenditures in dry-year conservation. No billing or assessment of allocation surcharges rates will take place until the end of the twelve-month allocation period.

Allocation Surcharge: The application of the Allocation Surcharge structure is a two tier structure that provides a lower level of Allocation Surcharge for minor overuse of allocations and a higher level of Allocation Surcharge for major overuse of allocations. The structure and applicable Allocation Surcharges are listed in Table 2.

Table 2: Allocation Surcharge			
Water Use	**Base Water Rate**[20]	**Allocation Surcharge**[21]	**Total Rate**
100% of Allocation	Tier 1	0	Tier 1
Between 100% and 115%	Tier 1	$1,480	Tier 1 + ($1,480)
Greater than 115%	Tier 1	$2,960	Tier 1 + ($2,960)

Qualifying Income-Based Rate Allocation Surcharge Adjustment:[22] Any Allocation Surcharges incurred by a member agency under the WSAP will be adjusted to reflect the extent to which retail customers within a member agency's service area are served under a "lifeline" or similar qualified discounted rate program based on income or ability to pay ("Income-Based Rate").

Any member agency who is assessed Allocation Surcharges under the WSAP may submit an acre-foot equivalent of water used by retail customers served under a qualifying Income-Based Rate.[23] This amount of water use would be multiplied by the percentage of retail-level reduction in allocation year demand necessary for that member agency to avoid exceeding its WSAP allocation. The monetary amounts resulting from these acre feet are subtracted from the total monetary amounts incurred by an agency for exceeding its allocation. In the case that the monetary amounts associated with the Income-Based Rate are greater than the total Allocation Surcharges an agency incurs, no Allocation Surcharges will be incurred. The end result of this adjustment is that the member agency will not be subject to Allocation Surcharges for the use of water by their retail customers served under a qualifying Income-Based Rate.

Growth Rate Allocation Surcharge Adjustment": In recognition of member agency differences in geography and climate, a Growth Rate Allocation Surcharge Adjustment will be given to any agency that exceeds its WSAP Allocation. The Allocation Surcharge reduction will be based on the difference in acre-feet between the Growth Adjustment applied at Metropolitan's IRP planning goal rate, and the greater of the following:

- The IRP planning goal rate adjusted for the member agency's ETo, or
- The member agency's certified and documented 20x2020 targeted GPCD

If both of these alternatives result in a lower growth adjustment than the IRP planning goal, no Allocation Surcharge reduction will be made.

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[20] The base water rate shall be the applicable water rate for the water being purchased. In most cases, it will be the Tier 1 rate (plus Treatment Surcharge for treated water deliveries). However, it is possible that the water being purchased would be in the amount that would put an agency beyond its Tier 1 limit. In that case, the base water rate will be the Tier 2 rate (plus Treatment Surcharge for treated water deliveries).

[21] Allocation Surcharge is applied to water use in excess of an agency's WSAP allocation.

[22] See Appendix K: Qualifying Income-Based Rate Allocation Surcharge Adjustment Example for specific penalty adjustment formulae and example.

[23] Appropriate documentation and certification will be required.

Tracking and Reporting

Subsequent to a declared regional shortage by the Board of Directors, Metropolitan staff will produce monthly reports of each member agency's water use compared to its allocations based on monthly delivery patterns to be submitted by the member agency. In order to produce these reports, member agencies are requested to submit their local supply use on a monthly basis and certify end of allocation year local supply use. These reports and comparisons are to be used for the purposes of tracking and communicating potential underage/overage of an agency's annual allocations.

Key Dates for Water Supply Allocation Implementation

The timeline for implementation of an allocation is shown in Table 3. A brief description of this timeline follows:

January to March: Water Surplus and Drought Management reporting occurs at Metropolitan's Water Planning and Stewardship Committee meetings. These reports will provide updated information on storage reserve levels and projected supply and demand conditions.

April: Member agencies report their projected local supplies for the coming allocation year. This information is incorporated in staff analysis of storage reserves and projected supply and demand conditions in order to provide an allocation recommendation to the Board. Metropolitan's Board will consider whether an allocation is needed. A declaration of an allocation will include the level of allocation to be in effect for the allocation year. Likewise, member agencies will report their projected demands and local supplies needed to meet seawater barrier and groundwater replenishment requirements for the allocation year. Metropolitan's Board will consider whether allocations for seawater barrier demands and groundwater replenishment demands are needed independently from the WSAP allocation decision.**July 1st**: If the Board declared an allocation in April, then it will be effective starting July 1st. The allocation level will be held through June 30th, barring unforeseen circumstances. Member agencies will now be requested to submit their local supply use on a monthly basis and certify end of allocation year local supply use. Local production data must be reported to Metropolitan by the end of the month following the month of use (use in July must be reported by the end of August). This information will be combined with Metropolitan sales information in order to track retail water use throughout Metropolitan's service area. Each month Metropolitan will report on member agency water sales compared to their allocation amounts.

June 30th: The allocation year is complete.

July: Member agency local supplies must be certified for the month of June, the last month of the previous allocation year.

August: Metropolitan will calculate each member agency's total potable water use based on local supply certifications and actual sales data for the allocation year of July through June. Allocation surcharges will be assessed for usage above a given member agency's final adjusted allocation (reflecting the actual local supply and imported water use that occurred in the allocation year).

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Table 3: Board Adopted Allocation Timeline

Year	Month	Year 1 Board Decision	Year 1 Allocation Year	Year 2 Board Decision	Year 2 Allocation Year
Year 1	January				
	February				
	March				
	April	Declaration *			
	May				
	June				
	July		**Effective Period** Continuous Tracking of Member Agency Local Supply and Imported Water Use		
	August				
	September				
	October				
	November				
	December				
Year 2	January				
	February				
	March				
	April			Declaration *	
	May				
	June				
	July				**Effective Period** Continuous Tracking of Member Agency Local Supply and Imported Water Use
	August		Assess		
	September				
	October				
	November				
	December				
Year 3	January				
	February				
	March				
	April				
	May				
	June				

*Member agency projections of local supplies are due on April 1st to assist Metropolitan staff in determining the need for an allocation in the coming allocation year.

Appendix A: Metropolitan Member Agencies

Table 4: Member Agencies		
City of Anaheim	City of Glendale	City of San Marino
City of Beverly Hills	Inland Empire Utilities Agency	City of Santa Ana
City of Burbank	Las Virgenes MWD	City of Santa Monica
Calleguas MWD	City of Long Beach	Three Valleys MWD
Central Basin MWD	City of Los Angeles	City of Torrance
City of Compton	MWD of Orange County	Upper San Gabriel MWD
Eastern MWD	City of Pasadena	West Basin MWD
Foothill MWD	San Diego CWA	Western MWD
City of Fullerton	City of San Fernando	

Source: http://mwdh2o.com/WhoWeAre/Member-Agencies/

Appendix B: Water Supply Allocation Plan Process Timeline

July 2007

- City of Long Beach Water Department staff briefing
- Member Agency Managers/Member Agency Workgroup meeting
- Northern Managers Group meeting
    - Foothill MWD, City of Pasadena, City of Long Beach, Calleguas MWD, City of Los Angeles, West Basin MWD, City of Burbank, Three Valleys MWD, City of Glendale, Upper San Gabriel MWD

August 2007

- Central Basin MWD staff briefing
- Eastern MWD staff briefing
- San Diego CWA staff briefing
- Member Agency Managers/Member Agency Workgroup meeting
- Western MWD staff briefing
- City of Beverly Hills staff briefing

September 2007

- Member Agency Subgroup meetings
    - MWD of Orange County, San Diego CWA, West Basin MWD, Central Basin MWD
- MWD of Orange County staff briefing
- Member Agency Workgroup meeting
- Member Agency Workgroup meeting
- MWD Board of Directors Oral Report

October 2007

- Inland Empire Utilities Agency staff briefing
- Central Basin MWD Caucus Meeting (included sub-agencies)
- Three Valleys MWD staff briefing
- MWD of Orange County staff briefing
- West Basin MWD staff briefing
- MWD Board of Directors Oral Report

November 2007

- West Basin MWD Caucus Meeting (included sub-agencies)
- West Basin Water Users Association presentation
- Walnut Valley MWD staff briefing (sub-agency of Three Valleys MWD)
- Foothill MWD Managers Meeting (included sub-agencies)
- Central Basin MWD staff briefing
- City of Claremont City Council (sub-agency of Three Valleys MWD)
- MWD Board of Directors Information Letter with Draft Proposal

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December 2007

- Northern Managers Group Meeting
- California Department of Public Health staff briefing
- City of Long Beach Water Department staff briefing
- Santa Ana River Watershed Project Authority presentation
- Foothill MWD Managers Meeting (included sub-agencies)
- MWD Board of Directors Oral Report

January 2008

- Northern Managers Group Meeting
- Water Replenishment District Board of Directors presentation
- Three Valleys MWD staff briefing
- Member Agency Conservation Coordinator's Group presentation
- Member Agency Managers/Member Agency Workgroup meeting
- City of Chino Hills presentation (sub-agency of IEUA)
- Member Agency Workgroup meeting
- Hemet/San Jacinto Exchange Club presentation
- MWD Board of Directors Report with Staff Recommended Water Supply Allocation Plan

February 2008

- MWD of Orange County and Irvine Ranch WD staff briefing
- MWD Board of Directors Action Item
- San Gabriel Valley Water Association Meeting
- Orange County Water Policy Meeting
- SCAG Water Policy Task Force Meeting

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Appendix C: 12-Month Review Process and Results

January 2010

- WSAP 12-Month Review Process workshop #1
    - Focused discussion of WSAP issues identified by Metropolitan staff and by member agencies since the July 2009 implementation began.

February 2010

- WSAP 12-Month Review Process workshop #2
    - Continuation of focused discussion
- WSAP 12-Month Review Process workshop #3
    - Continuation of focused discussion

March 2010

- WSAP 12-Month Review Process workshop #4
    - Continuation of focused discussion
- MWD Board of Directors information item
    - Review of potential modifications to the WSAP definition of Extraordinary Supply

April 2010

- WSAP 12-Month Review Process workshop #5
    - Recap of identified issues and discussion of Metropolitan staff proposals for adjustments to the WSAP
- Member Agency Managers Meeting
    - Update on the 12-Month Review Process
- WSAP 12-Month Review Process workshop #6
    - Discussion of WSAP issues related to groundwater replenishment
- Member Agency Managers conference call
    - Clarification of WSAP definition for Extraordinary Supply

May 2010

- Member Agency Managers Meeting
    - Discussion of proposed Extraordinary Supply policy principles and WSAP Local Supply certification process.
- Member Agency Managers conference call
    - Discussion of proposed Extraordinary Supply policy principles

June 2010

- MWD Board of Directors action item

July 2010

- MWD Board of Directors information item
    - Review of proposed adjustments to the WSAP developed in the 12-Month Review Process

August 2010

- MWD Board of Directors action item

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Resulting Changes

- Removed references to Gains and Losses of Local Supply
  - Removed references in the WSAP to “gains and losses of local supplies” in order to better facilitate the accounting of historical base year and allocation year local supplies. This change did not affect the WSAP formula or allocations.
- Removed references to the Regional Shortage Percentage
  - Removed references to the “Regional Shortage Percentage” in the WSAP to reduce unintended confusion between calculation factors and shortage amounts. This change did not affect the WSAP formula or allocations.
- Included the Retail Impact Adjustment in all shortage levels
  - Included the Retail Impact Adjustment for Regional Shortage Levels 1 and 2. This change results in additional allocations to Metropolitan-dependent agencies under Level 1 and Level 2 regional shortages.
- Revised the accounting of Extraordinary Supplies
  - Revised the methodology for accounting of Extraordinary Supply in the WSAP formula by:
    - Removing the Base Period Local Supply threshold provision,
    - Removing the sliding-scale sharing mechanism from the formula, and
    - Including the full amount of the Extraordinary Supply in the calculation of the Retail Impact Adjustment.
- Included a Minimum Per Capita Water Use Threshold
  - Developed a minimum water use credit based on two GPCD water use thresholds. Member agencies would receive additional Metropolitan allocation for an acre-foot equivalent of GPCD below the minimum threshold. Member agency water use, on a gallon per capita per day (GPCD) basis, is compared to the following minimum thresholds established under Senate Bill X7-7 (Water Conservation Act of 2009)
    - 100 GPCD total use or
    - 55 GPCD residential indoor use
- Excluded Seawater Barrier from the WSAP Formula
  - Excluded seawater barrier supplies from the WSAP Base Period and Allocation Year local supply calculations. This allows the Board to determine allocations for seawater barrier demands separately from the WSAP.

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Appendix D: Three-Year Review Process and Results

February 2011

- WSAP 3-Year Review Process workshop #1
    - Review of the existing WSAP policy formula; review of the process timeline; and focused discussion of WSAP issues identified by Metropolitan staff and by member agencies since the WSAP's adoption in February 2008

March 2011

- WSAP 3-Year Review Process workshop #2
    - Discussion of issues related to local supplies and baseline inflation due to adjustments for recycling in the WSAP formula
- WSAP 3-Year Review Process workshop #3
    - Continuation of prior workshop

April 2011

- WSAP 3-Year Review Process workshop #4
    - Discussion of issues and alternatives related to base period selection and baseline inflation in the WSAP formula
- WSAP 3-Year Review Process workshop #5
    - Discussion of recommendations to address baseline inflation in the WSAP formula

May 2011

- WSAP 3-Year Review Process workshop #6
    - Discussion of issues and alternatives for the growth adjustment methodology in the WSAP formula
- WSAP 3-Year Review Process workshop #7
    - Continuation of prior workshop

June 2011

- WSAP 3-Year Review Process workshop #8
    - Continuation of prior workshop, discussion of WSAP implementation exit strategy
- WSAP 3-Year Review Process workshop #9
    - Continuation of exit strategy discussion, discussion of baseline inflation due to conservation and related conservation demand hardening issues

July 2011

- WSAP 3-Year Review Process workshop #9
    - Continued discussion of baseline inflation and conservation issues, and discussion of sharing allocations between agencies with common local resources

August 2011

- WSAP 3-Year Review Process workshop #10
    - Discussion of WSAP Allocation Year timing vs. Tier 1-Tier 2 rate cycle timing, discussion of approaches for encouraging completion of WSAP local supply certifications
- Review WSAP at Member Agency Managers Meeting
    - Discussion of proposed WSAP adjustments to address baseline inflation issues, revise the growth adjustment methodology, and establish a WSAP exit strategy

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September 2011

- MWD Board of Directors action item

Resulting Changes

- Baseline Inflation Adjustment
    - Removed non-potable recycling and conservation from the WSAP baseline
        - Increases in recycling and conservation will be subtracted annually from the Base Period forward
        - The annual population growth rate will be applied after deducting the annual increases in recycling and conservation
        - If an agency ends up in allocation penalty, a penalty reduction will be applied in an amount equal to the Code-Based and rate Structure conservation savings that were removed from the WSAP baseline
- Changed the Growth Adjustment methodology
    - Growth will be allocated at historical per capita rate capped at the 2010 Integrated Water Resource Plan (IRP) Target for Water Use Efficiency
        - For years up to and including 2014, the cap will be 163 GPCD
        - For years 2015-2020, the cap will reduce linearly from 163 to 145 GPCD
    - If an agency exceeds its allocation, a penalty reduction will be applied based on either:
        - The differential Evapotranspiration (ETo) of its service area compared to the MWD average, or
        - Certified and documented 20 x 2020 targeted GPCD
- Exit Strategy
    - Clarified the course of action for an existing WSAP allocation when Metropolitan's Board makes a declaration decision for the following WSAP year
        - If there is an allocation for the next year, then the current allocation stays in place
        - If there is no allocation for the next year, then the current allocation is lifted concurrent with the April decision

Appendix E: 2014 Review Process and Results

July 2014

- WSAP Workgroup Meeting #1
  - First meeting of the 2014 WSAP Review process; review of the existing WSAP policy and formula; review of the process timeline; began discussion of issues related to base period selection
- WSAP Workgroup Meeting #2
  - Discussion of base period selection

August 2014

- WSAP Workgroup Meeting #3
  - Continuation of prior workshop discussion; comparison of base period alternatives

September 2014

- WSAP Workgroup Meeting #4
  - Discussion of a base period proposal; discussion of replenishment issues in the WSAP; discussion of 2015 water supply scenarios
- Review WSAP at Member Agency Managers Meeting
  - Review of WSAP workgroup process; discussion on issues related to base period, demand hardening, and local resources development
- WSAP Workgroup Meeting #5
  - Review of base period recommendation; discussion of issues regarding agencies in mandatory conservation during a base period; discussion on replenishment in the WSAP

October 2014

- WSAP Workgroup Meeting #6
  - Continuation of prior workshop discussion; discussion of alternative methods for conservation demand hardening credit; discussion of new and existing local supplies
- Review WSAP at Member Agency Managers Meeting
  - Review of WSAP workgroup process; discussion of issues related to base period and demand hardening

November 2014

- WSAP Workgroup Meeting #7
  - Review and discussion of issues and potential methods for base period selection and adjustment, replenishment allocation, and conservation demand hardening credit; review of estimated effects of potential WSAP changes at the regional level
- WSAP Workgroup Meeting #8
  - Review of proposed recommendations for the WSAP based on workgroup discussion
- Review WSAP at Member Agency Managers Meeting
  - Review of proposed recommendations for the WSAP based on workgroup discussion

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Resulting Changes

- Base Period Update to FY2013 and FY2014
    - Changed the WSAP Base Period from calendar years 2004-2006 to fiscal years ending July 2013 and 2014
    - Mandatory Conservation Adjustment
        - Agencies with mandatory conservation in effect during the base period (FY 2013 and/or FY 2014) may qualify for a demand hardening adjustment, adjustment is subject to a consultation process that includes consideration historical demand and GPCD information

- Modify Conservation Demand Hardening Credit
    - Replaced device calculation-based estimates of conservation savings with a GPCD-based method
        - Conservation savings are calculated by comparing GPCD from a historical baseline to the Allocation Year; the difference is converted to acre-feet using the Allocation Year population.
            - Baseline GCPD is 10-year average ending between 2004 and 2010, with gross water, using gross water use minus non-potable recycled water production and documented historical population
    - Replaced formula for calculating the credit for each Regional Shortage Level
    - Conservation Demand hardening credit will be based on an initial 10 percent of GPCD-based conservation savings plus an additional 5 percent for each level of Regional Shortage; the credit will also be adjusted for the overall percentage reduction in retail water demand and the member agency's dependence on Metropolitan.
- Allocation Surcharge
    - Replaced the WSAP Penalty Rate with an Allocation Surcharge based on the estimated cost of Turf Replacement conservation programs

Appendix F: Summary of Historical Shortage Plans

These five elements incorporated into the WSAP have, in four out of five instances, been used in previous shortage plans. Both the IICP and the 1995 DMP used a historical base period calculation, adjusted for growth, made local supply adjustments, and used conservation hardening credits in their formulations. The retail impact adjustment is the only feature of the WSAP that has not been used historically.

Table 5: Historical Shortage Plan Overview

Plan Element	1991 IICP	1995 DMP	WSAP
Historical Base Period	√	√	√
Growth Adjustment	√	√	√
Local Supply Adjustment	√	√	√
Conservation Hardening Credit	√	√	√
Retail Impact Adjustment			√

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Appendix G: Water Supply Allocation Formula Example

The following example gives a step-by-step description of how the formula would be used to calculate an allocation of Metropolitan supplies for a hypothetical member agency. All numbers are hypothetical for the purpose of the example and do not reflect any specific member agency.

Step 1: Calculate Base Period Retail Demand

Base Period Local Supplies: Calculated using a two-year average of groundwater (gw), groundwater recovery (gwr), Los Angeles Aqueduct supply (laa), surface water (sw), seawater desalination (sd), and other non-Metropolitan imported supplies (os). For the purpose of this example, assume that the two year average is 59,000 af.

$$[(gw1+gwr1+laa1+sw1+sd1+os1) + (gw2+gwr2+laa2+sw2+sd2+os2)] \div 2 = 59{,}000 \text{ af}$$

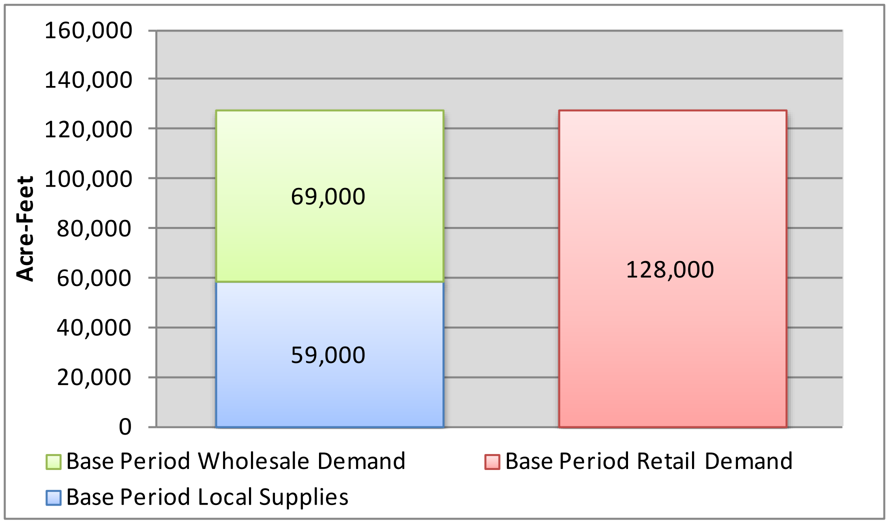
Base Period Wholesale Demands: Calculated using the same two-year time period as the Base Period Local Supplies. The Base Period Wholesale Demands include firm purchases (fp) and in-lieu deliveries to long-term groundwater replenishment (il), conjunctive use (cup), cyclic (cyc), and supplemental storage programs (ss). For the purpose of this example, assume that the two year average is 69,000 af.

$$[(fp^1++il^1+cup^1+cyc^1+ss^1) + (fp^2+il^2+cup^2+cyc^2+ss^2)] \div 2 = 69{,}000 \text{ af}$$

Base Period Retail Demands: Calculated as the sum of the Base Period Local Supplies and Base Period Wholesale Demand.

$$59{,}000 + 69{,}000 = 128{,}000 \text{ af}$$

Figure 1: Base Period Retail Demand Calculation



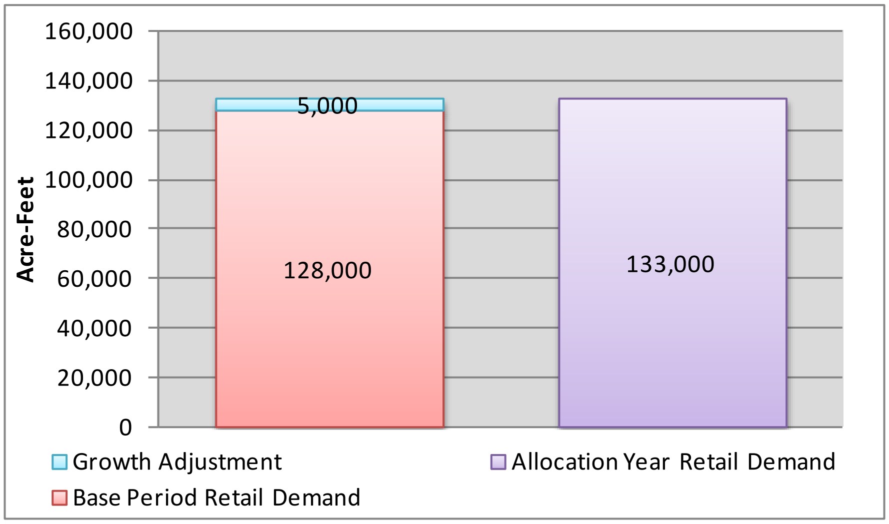
Calculate Adjustment for Base Period Mandatory Rationing (if applicable): The hypothetical agency used in this example is assumed not to qualify for the Base Period Mandatory Rationing Adjustment. A detailed discussion of the adjustment methodology can be found in Appendix I: Base Period Rationing Adjustment Example.

Step 2: Calculate Allocation Year Retail Demand

Allocation Year Retail Demand: Calculated by adjusting the Base Period Retail Demand for any baseline inflation and growth that occurred since the Base Period.

128,000 af + 5,000 af (net adjustment to retail demand) = 133,000 af

Figure 2: Allocation Year Retail Demand Calculation



Step 3: Calculate Allocation Year Wholesale Demand

Allocation Year Local Supplies: Estimates of Allocation Year Local Supplies are provided by the member agencies upon implementation of a WSAP. If estimates are not provided, Metropolitan will use the sum of the Base Period Local Supplies and Base Period In-Lieu Deliveries as a default. Agencies may provide updated estimates at any time during the Allocation Year to more accurately reflect their demand for Metropolitan supplies. For this example assume that the Allocation Year Local Supplies total 65,000 acre-feet.

Allocation Year Local Supplies = 65,000 af

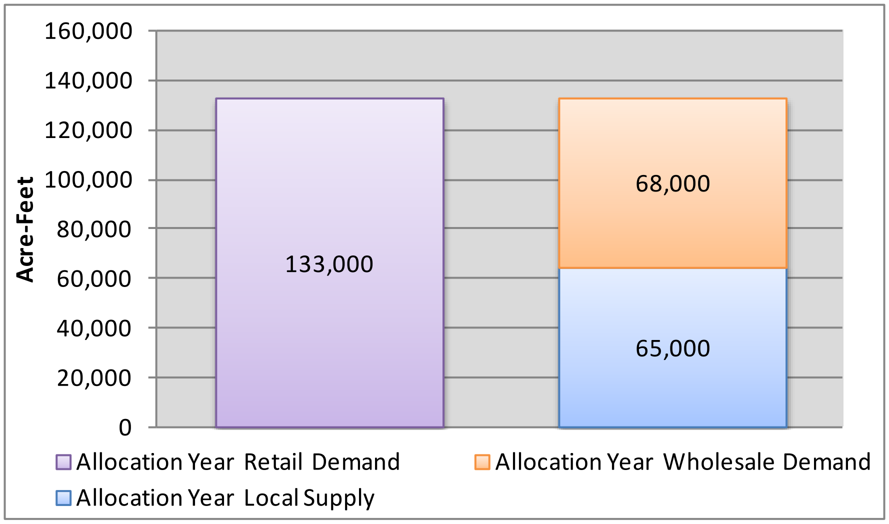
For this example assume also that this agency has an additional 5,000 acre-feet of supplies that meet the determinations for Extraordinary Supply. These supplies are withheld from the allocation formula except for in calculating the Retail Impact Adjustment Allocation.

Extraordinary Local Supplies = 5,000 af

Allocation Year Wholesale Demands: Calculated by subtracting the Allocation Year Local Supplies (65,000 af) from the Allocation Year Retail Demands (133,000 af).

133,000 af - 65,000 af = 68,000 af

Figure 3: Allocation Year Wholesale Demand Calculation



Step 4: Calculate the Wholesale Minimum Allocation

Wholesale Minimum Percentage: Calculate from Table 1 for Regional Shortage Level 4.

Table 1: Shortage Allocation Index		
(a) Regional Shortage Level	(b) Wholesale Minimum Percentage	(c) Maximum Retail Impact Adjustment Percentage
4	70.0%	10.0%

Wholesale Minimum Allocation: Calculated by multiplying the agency’s Allocation Year Wholesale Demand (68,000 af) by the Wholesale Minimum Percentage (70%) from the Table 1 for Regional Shortage Level 4.

68,000 af * 70% = 47,600 af

Step 5: Calculate the Retail Impact Adjustment Allocation

Maximum Retail Impact Adjustment Percentage: Calculate from Table 1 for Regional Shortage Level 4.

Retail Impact Adjustment Allocation: Calculated first by determining the agency’s dependence on Metropolitan by dividing the Allocation Year Wholesale Demand (68,000 af) minus the Extraordinary Supply (5,000 af) by the Allocation Year Retail Demand (133,000 af) and multiplying by 100.

[(68,000 af - 5,000 af)/ 133,000 af] * 100 = 47%

Next, this percentage dependence on Metropolitan (47%) is multiplied by the Maximum Retail Impact Percentage for Shortage Level 4 (10%).

47% * 10% = 4.7%

This percentage is now multiplied by the Allocation Year Wholesale Demand (68,000 af) for the Retail Impact Adjustment Allocation.

68,000 af * 4.7% = 3,221 af

Step 7: Calculate the Conservation Demand Hardening Adjustment

Calculate Baseline GPCD: To estimate conservation savings, each member agency will establish a historical baseline GPCD calculated in a manner consistent with California Senate Bill SBx7-7, using a 10 or 15-year average ending between 2004 and 2010, using gross water use minus non-potable recycle water production and documented historical population. For this example assume that the Baseline GPCD is 154 GPCD

Baseline GPCD = 154 GPCD

Calculate Allocation Year GPCD: Next, calculate the allocation year GPCD by converting the Allocation Year Retail Demand to GPCD and dividing by the Allocation Year Population from the WSAP. For this example the Allocation Year Retail Demand is 133,000 AF (see Step 2 above) and assume the Allocation Year Population is 905,000 persons. The resulting GPCD is 131 GPCD.

Allocation Year GPCD = 133,000 af/year * 325,851 gallons/af ÷ 365 days/year ÷ 905,000 persons = 131 GPCD

Calculate Reduction in GPCD: Subtract Allocation Year GPCD from Baseline GPCD to determine the GPCD Reduction.

GPCD Reduction = 154 GPCD – 131 GPCD = 23 GPCD

Calculate Conservation Savings: Convert the GPCD Reduction to the equivalent annual conservation savings in acre-feet, using the Allocation Year Population.

$$\text{Conservation Savings} = \frac{\text{((GPCD Reduction) x 365 days/yr x Population)}}{\text{325,851 gallons/af}}$$

Conservation Savings = 23 x 365 x 905,000 ÷ 325,851 = 23,316 af

Multiply by Regional Shortage Level Percentage: Multiply the Conservation Savings by 10 percent plus an additional 5 percent for each level of Regional Shortage (see Step 4 above). This example assumes a Regional Shortage Level of 4. This scales the hardening credit by the level of regional shortage, thereby increasing the credit as deeper shortages occur when demand hardening has a larger impact on the retail consumer.

23,316 af x (10% + (4 x 5%) = 6,995 af

Multiply by Conservation Savings Percentage: Next, multiply by the percentage of an agency's demand that was reduced through conservation. This scales the hardening by the total percentage reduction to recognize that increased hardening occurs as increasing amounts of conservation are implemented.

Conservation Savings Percentage = 1 + ((Baseline GPCD – Allocation Year GPCD)/Baseline GPCD)

Conservation Savings Percentage = 1+ ((154 GPCD – 131 GPCD)/154 GPCD) = 115%

6,995 af x 115% = 8,044 af

Multiply by Dependence on MWD: Next, multiply by the agency's percentage dependence on MWD as shown in Step 5 above. This scales the credit to the member agency's dependence on MWD to ensure that credits are being applied to the proportion of water demand that is being affected by reductions in MWD's supply. For this example, dependence on MWD is 47%.

8.044 af x 47% = 3,781 af

Summary: The Conservation Demand Hardening Adjustment calculation is summarized by the following formula:

Conservation Demand Hardening Adjustment = Conservation Savings x (10% + Regional Shortage Level %) x (1+Conservation%) x Dependence on MWD %

Conservation Demand Hardening Adjustment = 23,316 af x (10% + (4 x 5%)) x (115%) x (47%) = 3,781 af

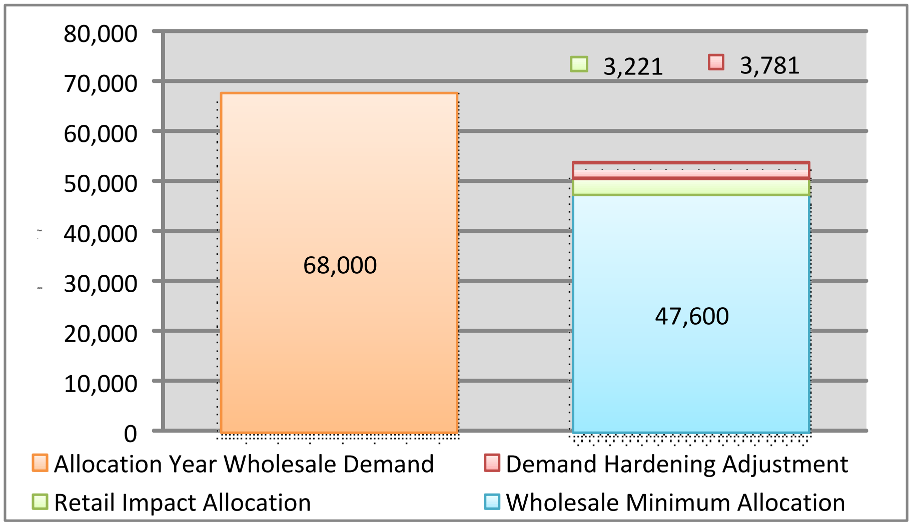
Step 8: Calculate the Low Per-Capita Adjustment Allocation: The hypothetical agency used in this example is assumed not to qualify for the Low Per-Capita Adjustment. A detailed discussion and example of the Low Per-Capita Adjustment calculation can be found in Appendix J: Per Capita Water Use Minimum Example.

Step 9: Calculate the total WSAP Allocation

WSAP Allocation: Calculated by adding the Wholesale Minimum Allocation (47,600 af), the Maximum Retail Impact Adjustment (3,221 af), the Demand Hardening Adjustment (3,781 af), and the Low Per-Capita Adjustment (0 af).

47,600 af + 3,221 af + 3,781 af + 0 af = 54,602 af

Figure 4: WSAP Allocation Regional Shortage Level 4



Step 10: Calculate total retail level reliability

Retail level reliability: Calculated by adding the WSAP Allocation (54,602 af), the Allocation Year Local Supply (65,000 af) and the Extraordinary Local Supply (5,000 af) and dividing by the Allocation Year Retail Demand (133,000 af).

(54,602 af + 65,000 af + 5,000 af) ÷ 133,000 af = 93.7%

Total Metropolitan Supply Allocations: In addition to the WSAP Allocation described above, agencies may also receive separate allocations of supplies for groundwater replenishment and seawater barrier demands. More information on the groundwater replenishment allocation is located in Appendix L: Groundwater Replenishment Allocation.

ATTACHMENT B

Appendix H: Board Policy Principles on Determining the Status of Extraordinary Supply

At the June 8, 2010 Water Planning and Stewardship Committee meeting Metropolitan's Board of Directors adopted the following policy principles to guide staff in determining the Extraordinary Supply status of future member agency supply programs.

No Negative Impacts to Other Member Agencies

> A potential Extraordinary Supply for a member agency should not decrease the amount of Metropolitan water supply that would be available to the other member agencies in a WSAP. Programs that utilize Metropolitan supplies as a primary or in-lieu source or as a means of payback or future replenishment may have the effect of decreasing supplies, available to other agencies, if designated as Extraordinary Supply.

Provides Supply in Addition to Existing Regional Supplies

> A potential Extraordinary Supply should provide a water supply that increases the overall water supplies that are available to the region in a WSAP. A program that is designed to move existing regional supplies from year to year would not qualify.

Specifically Designed Program or Supply Action

> A potential Extraordinary Supply must be intentionally created and operated to provide additional supply yield. Normal variations in existing and planned local supply programs would not qualify.

Intended for Consumptive Use in a WSAP

> A potential Extraordinary Supply should be designed with the primary intention to deliver water supply to a member agency only at a time when Metropolitan is allocating supplies. Programs designed to deliver water on a regular basis would not qualify. Exceptions for reasonable use of a supply program for emergency or other extenuating local circumstances should be considered.

Fully Documented Resource Management Actions

> A potential Extraordinary Supply should have a full description as to the source, transmission, distribution, storage, and delivery of the water supply.

These principles are intended to identify deliberate actions taken by member agencies to augment supplies only when Metropolitan is allocating supplies through the WSAP. Production from existing local supplies, programs that are operated on an ongoing basis, and incidental increases in water supply would not qualify as Extraordinary Supply. The intent of the Extraordinary Supply designation is to recognize programs and actions that are additive to the total regional water supply as the region continues to confront the water supply challenges from drought and regulatory conditions. To that end, any supply actions taken after the initial implementation of the WSAP in July 2009 that utilize Metropolitan supplies either as a primary source, or to refill or replenish an incurred obligation or deficit at a future date would not qualify as Extraordinary Supply.

Appendix I: Base Period Mandatory Rationing Adjustment

Agencies that were under mandatory water use restrictions during the Base Period may have water use that is lower due to the mandatory actions already taken. Without adjusting for this, those agencies could be required to enforce even higher levels of restrictions under an allocation than those agencies that had not started mandatory restrictions.

To qualify for a Base Period Mandatory Rationing Adjustment, the member agency must provide Metropolitan staff with the following information:

- Time period when the mandatory conservation was in effect; it must be in effect during the Base Period
- A statement, with documentation, of how drought restrictions comply with the following Mandatory Conservation qualifications:
    - Governing Body-authorized or enacted
    - Includes mandatory demand reduction actions, restrictions or usage limitations including penalty-backed water budgets
    - Enforced by assessing penalties, fines, or rates based upon violating restrictions or exceeding usage limitations
- If the agency in question is a retail subagency, then the retailer's base period water demands during the Base Period in order to determine proportion to the member agency's total demand
- Historical data to construct GPCD base and trend for the consultation

Calculating the Base Period Rationing Adjustment involves following steps:

- Use the Baseline GPCD 10 or 15-year period selected by member agency for the Conservation Demand Hardening Adjustment calculation.
- Interpolate from the GPCD value of the midpoint of the Baseline GPCD period to the average GPCD of the two years preceding the agency's mandatory conservation
- Extrapolate to the WSAP Base Period (FY2013 and FY2014)
- Calculate the difference between estimated and observed GPCD for FY2013 and FY2014
- Convert to Acre-Feet and add to the member agency's Base Period Retail Demands

Appendix J: Per-Capita Water Use Minimum Example

This adjustment creates a minimum per capita water use threshold. Member agencies' retail-level water use under the WSAP is compared to two different thresholds. The minimum water use levels are based on compliance guidelines for total and residential water use established under Senate Bill X7-7.

Total Retail Level Use: 100 GPCD
Residential Retail Level Use: 55 GPCD

Agencies that fall below either threshold under the WSAP would receive additional allocation from Metropolitan to bring them up to the minimum GPCD water use level. To qualify for this credit, member agencies must provide documentation of the total agency level population and the percent of retail level demands that are residential; no appeal is necessary.

The following example gives a step-by-step description of how the Low Per-Capita Water Use Adjustment would be calculated for a hypothetical member agency. All numbers are hypothetical for the purpose of the example and do not reflect any specific member agency. This example was calculated using the following assumptions:

Allocation Year Retail Demand: 50,000 acre-feet
Allocation Year Local Supplies: 25,000 acre-feet;
Allocation Year Wholesale Demand: 25,000 acre-feet
Base Period Conservation: 5,000 acre-feet
Agency Population: 375,000
Percent of Retail Demands that are Residential: 60%

Step 1: Calculate Total Retail-Level Allocation Year Supplies

Table 6 shows the Allocation Year Local Supply, WSAP Allocation, and the total Allocation Year Supplies for the example agency at each Regional Shortage Level. The WSAP Allocation was calculated using the methodology detailed in Appendix G: Water Supply Allocation Formula Example and the assumptions listed above.

Table 6: Total Retail Level Allocation Year Supplies			
Regional Shortage Level	**Allocation Year Local Supply**	**WSAP Allocation**	**Total Allocation Year Supply**
1	25,000	23,594	48,594
2	25,000	22,188	47,188
3	25,000	20,781	45,781
4	25,000	19,375	44,375
5	25,000	17,969	42,969
6	25,000	16,563	41,563
7	25,000	15,156	40,156
8	25,000	13,750	38,750
9	25,000	12,344	37,344
10	25,000	10,938	35,938

Step 2: Calculate the Equivalent Total and Residential GPCD

The next step is to calculate the equivalent water use in gallons per capita per day (GPCD) for the Total Allocation Year Supply. The following equation shows the GPCD calculation under Regional Shortage Level 10.

35,938 af * 325,851 gallons ÷ 375,000 people ÷ 365 days = 85.6 GPCD

The residential per-capita water use is calculated in the same manner. Based on the assumption that 60% of the agency demands are residential, the following equation shows the residential GPCD calculation under Regional Shortage Level 10.

35,938 af * 60% * 325,851 gallons ÷ 375,000 people ÷ 365 days = 51.3 GPCD

Step 3: Compare the Total and Residential GPCD to the Minimum Water Use Thresholds

The next step is to compare the total GPCD water use to the 100 GPCD total water use threshold. In a Regional Shortage Level 10, the WSAP results in an allocation that is 14.4 GPCD below the minimum threshold.

100 GPCD – 85.6 GPCD = 14.4 GPCD

Likewise the residential GPCD water use is compared to the 55 GPCD residential water use threshold.

55 GPCD – 51.3 GPCD = 3.7 GPCD

Step 4: Determine the Allocation Adjustment in Acre-Feet

The final step is to calculate the acre-foot equivalent of the GPCD that fell below the minimum threshold. In a Regional Shortage Level 10, the adjustment provides 6,068 acre-feet of additional allocation to the agency; the results for Shortage Levels 1-10 are shown in Table 7.

14.4 GPCD ÷ 325,851 gallons * 375,000 people * 365 days = 6,068 acre-feet

Table 7: Total Per-Capita Water Use Adjustment

Regional Shortage Level	Allocation Year Supply	Equivalent GPCD	GPCD Below Threshold	Allocation Adjustment
1	48,594	115.7	0	0
2	47,188	112.3	0	0
3	45,781	109.0	0	0
4	44,375	105.6	0	0
5	42,969	102.3	0	0
6	41,563	98.9	1.1	443
7	40,156	95.6	4.4	1,849
8	38,750	92.3	7.7	3,255
9	37,344	88.9	11.1	4,662
10	35,938	85.6	14.4	6,068

Again, this step is repeated for the residential water use. In a Regional Shortage Level 10, the adjustment provides 1,540 acre-feet of additional allocation to the agency; the residential water use results for Regional Shortage Levels 1-10 are shown in Table 8.

3.7 GPCD ÷ 325,851 gallons * 375,000 people * 365 days = 1,540 acre-feet

Table 8: Residential Per-Capita Water Use Adjustment

Regional Shortage Level	Allocation Year Supply	Equivalent GPCD	GPCD Below Threshold	Allocation Adjustment
1	29,156	69.4	0	0
2	28,313	67.4	0	0
3	27,469	65.4	0	0
4	26,625	63.4	0	0
5	25,781	61.4	0	0
6	24,938	59.4	0	0
7	24,094	57.4	0	0
8	23,250	55.4	0	0
9	22,406	53.3	1.7	697
10	21,563	51.3	3.7	1,540

Agencies that fall below either threshold under the WSAP would receive additional allocation from Metropolitan to bring them up to the minimum GPCD water use level. If an agency qualifies under both thresholds, the one resulting in the maximum allocation adjustment would be given. Under this example the agency would receive 6,068 acre-feet of additional allocation in a Regional Shortage Level 10.

ATTACHMENT B

Appendix K: Qualifying Income-Based Rate Allocation Surcharge Adjustment Example

The following example provides a step by step description of how the qualifying income-based rate allocation surcharge adjustment is calculated. To qualify for this adjustment, member agencies must provide documentation showing the amount of retail demands that are covered by a qualifying income-based rate; no appeal is necessary.

The following list summarizes the allocation year demands, local supplies, and allocation as calculated in Appendix G: Water Supply Allocation Formula Example for a hypothetical agency under a Level 4 Regional Shortage. For detailed instructions on how to calculate these figures, reference Appendix G: Water Supply Allocation Formula Example.

Allocation Year Retail Demand: 133,000 acre-feet
Allocation Year Local Supplies: 68,000 acre-feet;
Level 4 WSAP Allocation: 52,735 acre-feet

Step 1: Allocation Surcharge Calculation

(a) **Water Use above Allocation:** The first step in calculating the income-based rate Allocation Surcharge adjustment is to calculate the agency's total Allocation Surcharge under the WSAP. If the agency did not incur any Allocation Surcharge from the allocation year, the income-based rate allocation surcharge adjustment would not apply. For the purpose of this example, the agency used 61,000 acre-feet of MWD supplies in the allocation year. This represents 8,265 acre-feet of use above the water supply allocation.

WSAP Allocation	52,735 af
Actual MWD Water Use	61,000 af
Use Above WSAP Allocation	8,265 af

(b) **Total Allocation Surcharge:** In this example the agency used 115.7% of its water supply allocation. 7,910 of the 8,265 acre-feet of use above the allocation would be assessed the Allocation Surcharge at an amount of $1,480 per acre-foot and 354 of the 8,265 acre-feet of use above the allocation would be assessed the Allocation Surcharge at an amount of $2,960.

Between 100% and 115% of Allocation	7,910 af	$1,480/af	$11,706,800
Greater than 115% of Allocation	354 af	$2,960/af	$1,047,840
Total	8,265 af		$12,754,640

Step 2: Effective Income-Based Rate Cutback

(a) **Calculate Retail Cutback:** The second step in calculating the income-based rate allocation surcharge adjustment is to calculate the amount of supply cutback that would have been expected from qualifying income-based rate customers under the WSAP. Using the water supply allocation that was calculated above, the total retail level impact on the agency can be determined. In this example the agency receives a retail level cutback of 15,265 acre-feet, or 11.5% of their retail level demand.

WSAP Allocation + Allocation Year Local Supplies	117,735 af
Allocation Year Retail Demand	133,000 af
Effective Cutback	**15,265 af (11.5%)**

(b) **Income-based Rate Customer Retail Cutback:** To calculate the effective income-based rate cutback, the amount of demand covered by a qualifying income-based rate is multiplied by the effective retail level cutback. For this example assume that the agency has 10,000 acre-feet of qualifying demands.

Qualifying Income-Based Rate Demand	10,000 af
Effective Cutback Percentage	11.5%
Effective Income-Based Rate Cutback	**1,148 af**

(c) **Income-based Rate Cutback Allocation Surcharge:** Once the effective cutback has been calculated, the amount of Allocation Surcharge that is associated with qualifying income-based rate customers can be determined.

Between 100% and 115% of Allocation	794 af	$1,480/af	$1,175,120
Greater than 115% of Allocation	354 af	$2,960/af	$1,047,840
Total	**1,148 af**		**$2,222,960**

(d) **Adjusted Allocation Surcharge Calculation:** Finally, the Allocation Surcharge attributable to qualifying income-based rate customers is subtracted from the total Allocation Surcharge that was calculated above to determine the qualifying income-based rate adjusted allocation surcharge. In the case that the monetary amounts associated with the Income-Based Rate are greater than the total amounts an agency incurs, no Allocation Surcharge will be incurred.

Total Allocation Surcharge	$12,754,640
Qualifying Income-Based Rate Allocation Surcharge	$2,222,960
Qualifying Income-Based Rate Adjusted Allocation	**$10,531,680**

Appendix L: Groundwater Replenishment Allocation

Groundwater basins help provide vital local supplies that can buffer the region from short-term drought impacts. Longer droughts can result in reductions to the many sources of water that replenish groundwater basins, resulting in lower basin levels and potential impacts to the overlying consumptive demands. Limited imported deliveries under these conditions may help avoid impacts to the basins that may be drawn out of their normal operating range or subject to water quality or regulatory impacts. To this end, Metropolitan provides a limited allocation for drought impacted groundwater basins based on the following framework:

a) Staff hold a consultation with qualifying member agencies who have taken groundwater replenishment deliveries since 2010 and the appropriate groundwater basin managers to document whether their basins are in one of the following conditions:
   i. Groundwater basin overdraft conditions that will result in water levels being outside normal operating ranges during the WSAP allocation period; or
   ii. Violations of groundwater basin water quality and/or regulatory parameters that would occur without imported deliveries.

b) Provide an allocation based on the verified need for groundwater replenishment. The allocation would start with a member agency's ten-year average purchases of imported groundwater replenishment supplies (excluding years in which deliveries were curtailed). The amount would then be reduced by the declared WSAP Regional Shortage Level (5 percent for each Regional Shortage Level).

c) Any allocation provided under this provision for drought impacted groundwater basins is intended to help support and maintain groundwater production for consumptive use. As such, a member agency receiving an allocation under this provision will be expected to maintain groundwater production levels equivalent to the average pumping in the Base Period. Any adjustments to a member agency's M&I allocation due to lower groundwater production would be reduced by deliveries made under this provision.

d) Agencies for which this allocation does not provide sufficient supplies for the needs of the groundwater basin may use the WSAP Appeals Process to request additional supply (subject to Board approval). The appeal should include a Groundwater Management Plan that documents the need for additional supplies according to the following tenets:
   i. Maintenance of groundwater production levels;
   ii. Maintenance of, or reducing the further decline of, groundwater levels;
   iii. Maintenance of key water quality factors/indicators;
   iv. Avoidance of permanent impacts to groundwater infrastructure or geologic features; and
   v. Consideration of severe and/or inequitable financial impacts.

Final amounts and allocations will be determined following the consultations with groundwater basin managers and member agencies.

ATTACHMENT B

Appendix M: Water Rates, Charges, and Definitions

Table 9: Water Rates and Charges
Dollars per acre-foot (except where noted)

Rate	Effective 1/1/2014	Effective 1/1/2015	Effective 1/1/2016
Tier 1 Supply Rate	$148	$158	$156
Tier 2 Supply Rate	$290	$290	$290
System Access Rate	$243	$257	$259
Water Stewardship Rate	$41	$41	$41
System Power Rate	161	$126	$138
Tier 1	$593	$582	$594
Tier 2	$735	$714	$728
Treatment Surcharge	$297	$341	$348
Full Service Treated Volumetric Cost			
Tier 1	$890	$923	$942
Tier 2	$1,032	$1,055	$1,076
Readiness-to-Serve Charge (millions of dollars)	$166	$158	$153
Capacity Charge (dollars per cubic foot second)	$8,600	$11,100	$10,900

Definitions:

(1) **Tier 1 Supply Rate -** recovers the cost of maintaining a reliable amount of supply.

(2) **Tier 2 Supply Rate** - set at Metropolitan's cost of developing additional supply to encourage efficient use of local resources**.**

(3) **System Access Rate** – recovers a portion of the costs associated with the delivery of supplies.

(4) **System Power Rate** – recovers Metropolitan's power costs for pumping supplies to Southern California.

(5) **Water Stewardship Rate** – recovers the cost of Metropolitan's financial commitment to conservation, water recycling, groundwater clean-up and other local resource management programs.

(6) **Treatment Surcharge** – recovers the costs of treating imported water.

(7) **Readiness-to-Serve Charge -** a fixed charge that recovers the cost of the portion of system capacity that is on standby to provide emergency service and operational flexibility.

(8) **Capacity Charge** – the capacity charge recovers the cost of providing peak capacity within the distribution system.

Source: http://www.mwdh2o.com/WhoWeAre/Management/Financial-Information

Appendix N: Allocation Appeals Process

Step 1: Appeals Submittal

All appeals shall be submitted to the Appeals Liaison in the form of a written letter signed by the member agency General Manager. Each appeal must be submitted as a separate request, submittals with more than one appeal will not be considered. The appeal request is to include:

- A designated member agency staff person to serve as point of contact.
- The type of appeal (erroneous baseline data, loss of local supply, etc.).
- The quantity (in acre-feet) of the appeal.
- A justification for the appeal which includes supporting documentation.

A minimum of 60 days are required to coordinate the appeals process with Metropolitan's Board process.

Step 2: Notification of Response and Start of Appeals Process

The Appeals Liaison will phone the designated member agency staff contact within 3 business days of receiving the appeal to provide an initial receipt notification, and schedule an appeals conference. Subsequent to the phone call, the Liaison will send an e-mail to the Agency General Manager and designated staff contact documenting the conversation. An official notification letter confirming both receipt of the appeal submittal, and the date of the appeals conference, will be mailed within 2 business days following the phone contact

Step 3: Appeals Conference

All practical efforts will be made to hold an appeals conference between Metropolitan staff and member agency staff at Metropolitan's Union Station Headquarters within 15 business days of receiving the appeal submittal. The appeals conference will serve as a forum to review the submittal materials and ensure that there is consensus understanding as to the spirit of the appeal. Metropolitan staff will provide an initial determination of the size of the appeal (small or large) and review the corresponding steps and timeline for completing the appeals process.

Steps 4-7 of the appeals process differ depending upon the size of the appeal

Small Appeals

Small appeals are defined as those that would change an agency's allocation by less than 10 percent, or are less than 5,000 acre-feet in quantity. Small appeals are evaluated and approved or denied by Metropolitan staff.

Step 4: Preliminary Decision

Metropolitan staff will provide a preliminary notice of decision to the member agency within 10 business days of the appeals conference. The preliminary decision timeline may be extended to accommodate requests for additional information, data, and documentation. The Appeals Liaison will mail a written letter to the member agency staff contact and General Manager, stating the preliminary decision and the rationale for approving or denying the appeal.

Step 5: Clarification Conference

Following the preliminary decision the Appeals Liaison will schedule a clarification conference. The member agency may choose to decline the clarification conference if they are satisfied with the preliminary decision. Declining the clarification conference serves as acceptance of the preliminary decision, and the decision becomes final upon approval by Metropolitan's executive staff.

Step 6: Final Decision

Metropolitan staff will provide a final notice of decision to the member agency within 10 business days of the clarification conference, pending review by Metropolitan's executive staff. The Appeals Liaison will mail a written letter to the member agency staff contact and General Manager, stating the final decision and the rationale for the decision. A copy of the letter will also be provided to Metropolitan executive staff.

Step 6a: Board Resolution of Small Appeal Claims

Member agencies may request to forward appeals that are denied by Metropolitan staff to the Board of Directors through the Water Planning and Stewardship Committee for final resolution. The request for Board resolution shall be submitted to the Appeals Liaison in the form of a written letter signed by the member agency General Manager. This request will be administered according to Steps 6 and 7 of the large appeals process.

Step 7: Board Notification

Metropolitan staff will provide a report to the Board of Directors, through the Water Planning and Stewardship Committee, on all submitted appeals including the basis for determination of the outcome of the appeal.

Large Appeals

Large appeals are defined as those that would change an agency's allocation by more than 10 percent, and are larger than 5,000 acre-feet. Large appeals are evaluated and approved or denied by the Board of Directors.

Step 4: Preliminary Recommendation

Metropolitan staff will provide a preliminary notice of recommendation to the member agency within 10 business days of the appeals conference. The preliminary decision timeline may be extended to accommodate requests for additional information, data, and documentation. The Appeals Liaison will mail a written letter to the member agency staff contact and General Manager, stating the preliminary recommendation and the rationale for the recommendation. A copy of the draft recommendation will also be provided to Metropolitan executive staff.

Step 5: Clarification Conference

Following the preliminary recommendation the Appeals Liaison will schedule a clarification conference. The member agency may choose to decline the clarification conference if the satisfied with preliminary recommendation. Declining the clarification conference signifies acceptance of the preliminary recommendation, and the recommendation becomes final upon approval by Metropolitan's executive staff.

ATTACHMENT B

Step 6: Final recommendation

Metropolitan staff will provide a final notice of recommendation to the member agency within 10 business days of the clarification conference, pending review by Metropolitan executive staff. The Appeals Liaison will mail a written letter to the member agency staff contact and General Manager, stating the final recommendation and the rationale for the recommendation. A copy of the final recommendation will also be provided for Metropolitan executive review.

Step 7: Board Action

Metropolitan staff shall refer the appeal to the Board of Directors through the Water Planning and Stewardship Committee for approval.

ATTACHMENT B

Appendix O: Appeals Submittal Checklist

Appeal Submittal

- ☐ Written letter (E-mail or other electronic formats will not be accepted)
- ☐ Signed by the Agency General Manager

Mailed to the appointed Metropolitan Appeals Liaison

Contact Information

- ☐ Designated staff contact
  - Name
  - Address
  - Phone Number
  - E-mail Address
- ☐ General Manager
  - Name
  - Address
  - Phone Number
  - E-mail Address

Type of Appeal

- ☐ State the type of appeal
  - Erroneous historical data used in base period calculations
    - Metropolitan Deliveries
    - Local Production
    - Growth adjustment
    - Conservation savings
  - Exclusion of physically isolated areas
  - Extraordinary supply designation
  - Groundwater Replenishment Allocation
  - Base Period Mandatory Rationing Adjustment
  - Other

Quantity of Appeal

- ☐ State the quantity in acre-feet of the appeal

Justification and Supporting Documentation

- ☐ State the rationale for the appeal
- ☐ Provide verifiable documentation to support the stated rationale
  - Examples of verifiable documentation Include, but are not limited to:
    - Billing Statements
    - Invoices for conservation device installations
    - Basin Groundwater/Watermaster Reports
    - California Department of Finance economic or population data
    - California Department of Public Health reports

Attachment K-3

Calleguas MWD Imported Water Outage Protocol Fact Sheet

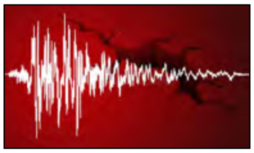
CALLEGUAS
MUNICIPAL WATER DISTRICT

IMPORTED WATER OUTAGE PROTOCOL

How will Calleguas manage water supplies in the event of a catastrophic interruption of imported water?

FAST FACTS

- 2020 Imported Water Outage Protocol (IWOP) Memo completed with assistance from the California Data Collaborative (CaDC).
- Memo describes potential allocation methodologies that specify how Calleguas' limited available supplies are to be divided among its member purveyors.
- CaDC provided Calleguas a spreadsheet model that calculates monthly allocations for the purveyors.
- A summary of the allocation methods studied is provided on Page 15.
- Public outreach and messaging considerations are discussed starting on Page 11.
- Additional work and identified next steps to further define the IWOP are provided on Page 16.



EVENT STRIKES ➡ CONDUCT ASSESSMENT ➡ INCREASE COMMUNICATION ➡ TAKE ACTION

Calleguas Municipal Water District continues to build on previous efforts related to water outage planning through the development of an Imported Water Outage Protocol (IWOP). The IWOP is a local planning effort and follows a recommendation from the District's Water Supply Alternatives Study to "*prepare and codify a methodology for demand reduction during an outage.*"

<u>Why is there a need for an IWOP?</u>
In the event of a catastrophic interruption of imported water supply, the quantity of water supplies will be limited. A system to allocate available water supplies may need to be put into action by the District. Calleguas Ordinance 12 states: "*During times of threatened or actual water shortage,* [Calleguas] *shall apportion the available water supply among* [the member purveyors]".

<u>How do the allocation methods compare?</u>
One set of methods (1 and 1W) enables purveyors who have a diverse mix of local supplies to meet a higher percentage of their overall demand during an outage by leveraging both imported and local supplies. A separate method (2) achieves a uniform reduction in demand throughout the District. In effect, when compared to Methods 1 and 1W, Method 2 would provide greater allocations to purveyors who are mostly or entirely dependent on imported water. All methods can be adjusted to address the potential loss of local supplies. A comparison of allocation methods for each purveyor can be found in Appendix 4 of the Memo.

<u>What are next steps?</u>
Calleguas will cite the IWOP in its 2020 Urban Water Management Plan, specifically as a component to its Water Shortage Contingency Plan. The IWOP memo is a working draft for discussion and feedback. Calleguas would like to schedule individual meetings with its purveyors to review and refine the elements described in the IWOP memo. Future tabletop exercises with the District's purveyors will also be beneficial to simulate various outage scenarios and the implementation of allocations. These actions will assist the District in moving closer to codifying a methodology for demand reduction during an outage.

FEB 2021

Attachment K-4

Calleguas MWD Imported Water Outage Protocol Memorandum

CALIFORNIA
DATA
COLLABORATIVE

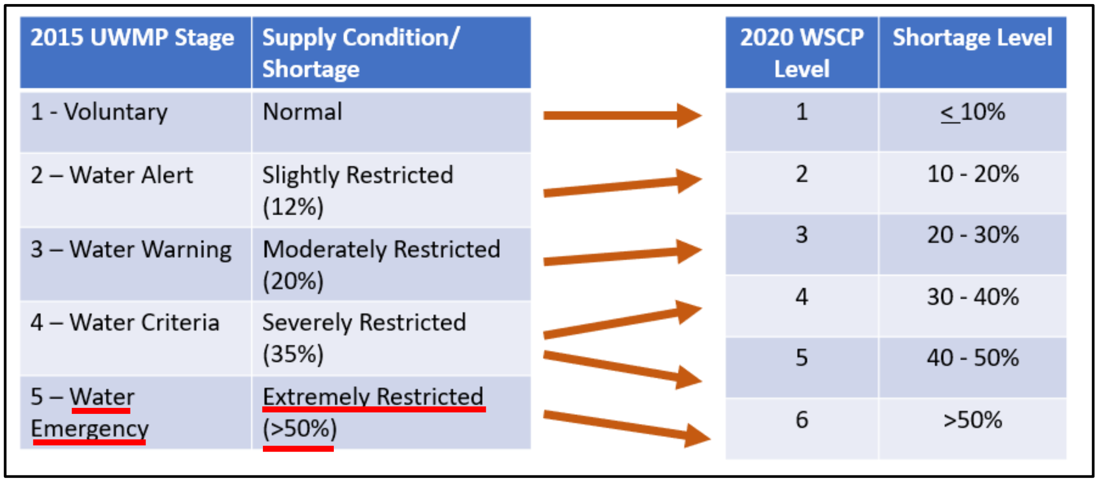
To: Dan Drugan, Calleguas Municipal Water District
From: Christopher Tull, California Data Collaborative
Subject: Imported Water Outage Protocol – Allocation Framework & Public Outreach
Date: 1 February 2021

IMPORTED WATER OUTAGE PROTOCOL

Introduction: A Framework for Allocating Scarce Supplies

Calleguas Municipal Water District (Calleguas or District) continues to build on its previous efforts related to water outage planning through the development of an Imported Water Outage Protocol (IWOP).

The IWOP is a local planning effort and follows a recommendation from the Water Supply Alternatives Study – Task B Memo to "*prepare and codify a methodology for demand reduction during an outage.*"[1] The IWOP is a component of the District's own Water Shortage Contingency Plan (WSCP) consistent with requirements outlined in the Urban Water Management Planning Act. Per UWMP requirements, (i.e., CWC 10632 (a)(3)) WSCP shortage levels shall apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events. The IWOP seeks to specifically address District-wide actions in the event of a medium to long-term outage of imported water service, also defined as a Catastrophic Interruption in Water Supplies or Water Emergency (i.e., greater than 50% reduction in water supply):



2015 UWMP Stage	Supply Condition/ Shortage
1 - Voluntary	Normal
2 – Water Alert	Slightly Restricted (12%)
3 – Water Warning	Moderately Restricted (20%)
4 – Water Criteria	Severely Restricted (35%)
5 – Water Emergency	Extremely Restricted (>50%)

2020 WSCP Level	Shortage Level
1	≤ 10%
2	10 - 20%
3	20 - 30%
4	30 - 40%
5	40 - 50%
6	>50%

Figure 1. Water Shortage Contingency Plan (WSCP) Levels – Department of Water Resources 2020 UWMP Guidebook

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[1] Task B: Minimum Potential Achievable Demand During a 6-Month Outage (2019) https://bit.ly/3otzu1t

While the District's WSCP mirrors the WSCP of the Metropolitan Water District of Southern California (Metropolitan), the IWOP is intended to enhance Calleguas actions should a localized Catastrophic Interruption occur. For example, Calleguas maintains a single point of connection to Metropolitan to receive imported water supplies. These supplies flow into the Calleguas distribution system via a 1.5-mile-long, 8-foot diameter tunnel through the Santa Susana Mountains. Should the tunnel collapse in an earthquake, Calleguas would rely on its own outage supply capabilities until service from Metropolitan could be restored.

This document contributes to the Imported Water Outage Protocol (IWOP) by outlining methodologies being considered to ensure that Calleguas' water supplies are distributed among its member purveyors in the event of a complete or partial outage of imported water. First, a general framework and definitions are given, and then specific potential methods to allocate supplies are discussed. Following review of the potential allocation methods, the document describes additional background on the IWOP, including considerations for public outreach and messaging. Finally, a summary of allocation methodologies is presented along with proposed next steps to ensure the IWOP remains relevant into the future.

General Concepts

This memo seeks to address how Calleguas might manage supplies during an outage, with emphasis on describing potential allocation methods. The following sequence is an example of how the District may arrive to weighing the implementation of an allocation system[2]:

- Event strikes – an imported water outage occurs.
- Calleguas conducts an initial assessment of the outage.
- Increased communication and coordination with the District's purveyors. Assessment of Purveyor local supply availability.
- Make call for conservation: "No Outdoor Water Use", if necessary.
- Determine if IWOP – Allocations should be brought to the Board for consideration (based on system demand reductions and additional information on potential duration of the event).
- Board action to implement IWOP – Allocation.

In the event of a complete or partial outage of imported water, the volume and peak flows that Calleguas is capable of delivering would be severely restricted. For the purposes of this planning process, we define Calleguas' **available supplies** to be the maximum volume and/or flow of water that Calleguas could deliver during a given period (e.g., per month), subject to a variety of constraints. These constraints include the maximum pumping rate of the Las Posas Wellfield, the minimum and maximum production rates of the Lake Bard Water Filtration Plant, the accessible volume of water stored in Lake Bard at a point in time, and the volume and flow of water available through interconnections, among others.

An assumption made throughout this work is the desire to stretch out available supplies for as long as possible while still maximizing their total yield. For example, during a 6-month outage, we assume that it is preferable to stretch out the supplies from Lake Bard for as long as possible to

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[2] See Appendix 2 – Example Scenarios.

ensure a steady supply of water, rather than production at a higher rate earlier in the outage leading to even more severely impaired supplies when Lake Bard runs dry.[3]

An important piece of the Imported Water Outage Plan is the development of **allocations** for each purveyor that specify how Calleguas' limited available supplies are to be divided among the purveyors during the outage period. An allocation could consider many factors either implicitly or explicitly, including purveyor access to local supplies, types of end water uses, or water use efficiency. To ensure that allocations are adhered to, water demand will need to be monitored and an **enforcement** mechanism will need to be in place. Calleguas could adopt an incremental approach to enforcement to allow for flexibility. For example, an approach that relies on increased communication, reporting, and adaptive management rather than defaulting to a system that collects fees for over-consumption or enacting physical restriction at turnouts to limit flow rates.

Allocation Methods

The goal of an allocation model is to determine an allocation A_i for each purveyor i so that the sum of all allocations is less than the available supply.

$$\sum_i A_i \leq Available\ Supply$$

There are many ways to do this, and each comes with tradeoffs in terms of which types of water uses are prioritized, which sorts of behaviors are incentivized, and how drastically demands must change to stay under allocation. Here we discuss three broad categories of allocation methods and their tradeoffs.

Method 1: Allocation Proportional to Historical Deliveries

The first method allocates CMWD supplies to purveyors as a fraction of the baseline deliveries they typically receive from CMWD.

$$A_i = BaselineDeliveries_i \times F_i$$

$$= (Demand - LocalSupply_i) \times F_i$$

Where F_i is a scaling factor calculated as the proportion of baseline deliveries that are available during the outage.

$$F_i = \frac{AvailableSupply}{BaselineDeliveries}$$

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[3] See Appendix 3 – General Observations for Calleguas.

Characteristics

The primary driver of this allocation method is an equal percent reduction in imported deliveries for all purveyors. This method has the benefit of being simple to calculate and intuitive to understand, and it resembles the approach of Metropolitan's 2014 Water Supply Allocation Plan (WSAP).

If calculated using baseline deliveries, this method only considers local supply implicitly, and cannot account for a local supply picture that differs from the past. This could be important if local supply availability is impaired by the same event that impairs CMWD's supplies (e.g., an earthquake). However, if the allocation is calculated using baseline demand and local supply, then allocations can be dynamically updated based on changing local supply availability.

A drawback of this approach is that it does not consider each purveyor's dependence on imported supply. As highlighted in the example scenario below, a purveyor with large availability of local supplies would be better equipped to meet more of its overall system demand than a purveyor highly dependent on imported water. The Metropolitan WSAP attempts to account for this through adjustments, such as a Maximum Retail Impact Adjustment that increases a purveyor's allocation proportional to their dependence on imported water. Instead of creating specific adjustments to the allocation, the issue of differing dependence can also be addressed by using a different allocation method like those described below.

To reiterate, this method allocates based on an equal percentage reduction in historical imported water purchases for all purveyors relative to a baseline period. During a summer outage, for example, purveyors that historically purchase more imported water in the summer from Calleguas would receive higher allocations. Because this method only considers historical imported water purchases, purveyors with greater local supply capacity are able to meet more of their overall demand.

Method 1 Example:

In the example scenario below, Purveyor A typically purchases 90 AF during the baseline period while Purveyor B typically purchases 10 AF. The total deliveries from CMWD are typically 100 AF in in the baseline period.

If an outage limits the amount of water that CMWD can provide to 50 AF during the outage period, then that 50 AF is allocated proportional to historical purchases.

- Purveyor A is allocated 45 AF, 50% of their typical deliveries from CMWD. They can meet 50% of their baseline demand.

- Purveyor B is allocated 5 AF, 50% of their typical deliveries from CMWD. They can meet 75% of their baseline demand.

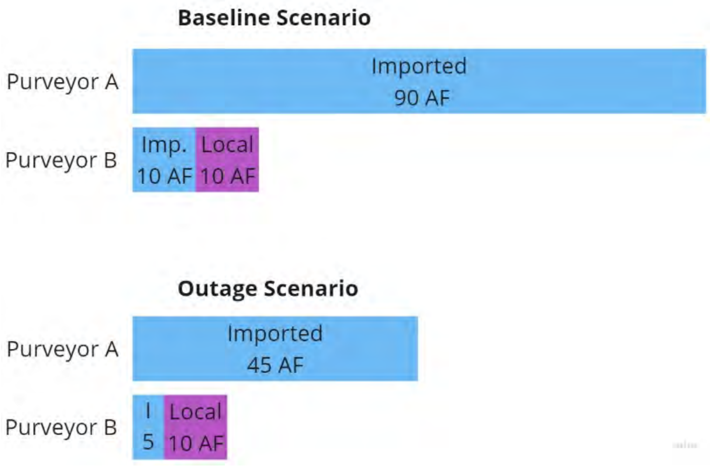

Figure 2. A schematic illustration of the outage and allocation scenario detailed in Table 1.

Table 1. Example scenario with demonstration of the impacts of allocation Method 1.

Purveyor	**A**	**B**
Baseline Imported Deliveries	90 AF	10 AF
Baseline Local Supply	0 AF	10 AF
Percent Reduction in Imported Deliveries	50%	50%
Allocation	45 AF	5 AF
Total Outage Supplies	45 AF	15 AF
Percent of Baseline Demand Attainable	50%	75%

Variations:

A variation on Method 1 would be to always allocate imported deliveries proportional to a *Winter* baseline period rather than basing allocations on imported deliveries during a baseline period that matches the timeframe of the outage.

This would discount the contribution of seasonal irrigation to a purveyor’s allocation, and instead the primary drivers would be indoor residential use, CII use, and residual Winter irrigation. However, any seasonality in the availability or use of supplies could impact this assumption, such as if a purveyor avoids purchasing imported water in the summer (to avoid Capacity Charges) and that purveyor typically only receives imported water in the Winter. This variation is modeled in Appendix 4 – Modeling Allocation Methods.

Method 2: Allocation to Achieve Equal Demand Reductions

The second method allocates CMWD supplies to purveyors in order to achieve an equal percent reduction in attainable demands for all purveyors.

$$A_i = \max(BaselineDemand_i \times F_i - LocalSupply_i, \quad 0)$$

Where F_i is a scaling factor representing a percentage reduction in water demand from baseline levels.

In cases where required demand reductions are small relative to local supplies, we can calculate the allocation using a simple formula (see Appendix 1). In cases where demand reductions are large or local supplies form a large percentage of available supplies, the problem can be reframed more generally as a constrained optimization problem over some sort of fairness metric. Using the common Gini Coefficient G as a fairness metric, and aiming to come up with the most equal change in achievable demand possible, this becomes:

$$Minimize\ G(x), \ \ x = (x_1, \dots, x_n)$$

Where x_i is the ratio of achievable demand to baseline demand:

$$x_i = \frac{A_i + LocalSupply_i}{BaselineDemand_i}$$

Subject to the constraints $\sum_i A_i = Available\ Supply$ and $A_i \geq 0 \ \forall\ i$

Characteristics

The primary driver of this allocation method is an equal[4] percent reduction in achievable demand for each purveyor. Rather than allocating available supplies directly, emergency conservation goals are set for each purveyor as a percentage of baseline demand, and then available supplies are allocated to meet those goals.

While Method 1 resembles calculations used within Metropolitan's WSAP, the intended result and actual implementation of Metropolitan's WSAP aligns more with Method 2. Method 2 seeks to achieve a uniform level of overall demand reduction throughout the District. This method takes into account local supplies available to each purveyor and allocating an equal demand reduction that is achievable while considering each purveyor's total demand and the available outage supply to the District including purveyors' local resources.

This method explicitly accounts for baseline demand and local supply, so allocations can be dynamically updated based on changing local supply availability.

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[4] As equal as possible, given constraints.

Method 2 Example:

In the example scenario below, Purveyor A typically purchases 90 AF during the baseline period while Purveyor B typically purchases 10 AF. The total deliveries from CMWD are typically 100 AF in in the baseline period.

If an outage limits the amount of water that CMWD can provide to 50 AF during the outage period, then that 50 AF is allocated in a way that results in the most equal possible reduction in achievable demand.

- Purveyor A is allocated 49.09 AF, 54.55% of their typical deliveries from CMWD. They can meet 54.55% of their baseline demand.

- Purveyor B is allocated 0.91 AF, 9.1% of their typical deliveries from CMWD. They can meet 54.55% of their baseline demand.

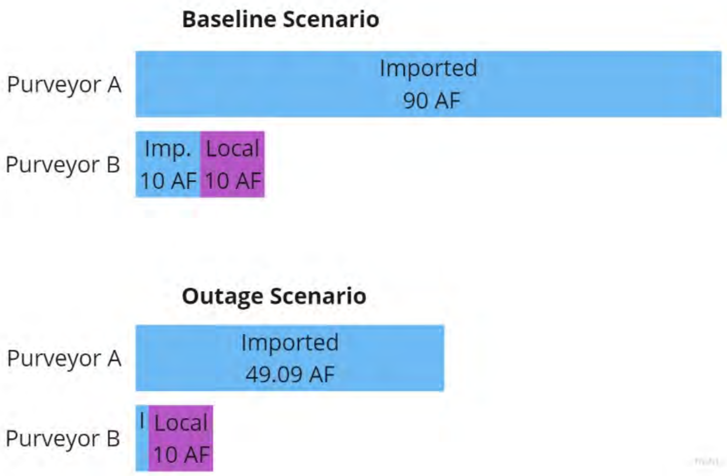


Figure 3. A schematic illustration of the outage and allocation scenario detailed in Table 2.

Table 2. Example scenario with demonstration of the impacts of allocation method 2.

Purveyor	**A**	**B**
Baseline Imported Deliveries	90 AF	10 AF
Baseline Local Supply	0 AF	10 AF
Percent of Baseline Imported Deliveries Received	54.55%	9.1%
Allocation	49.09 AF	0.91 AF
Total Outage Supplies	49.09 AF	10.91 AF
Percent of Baseline Demand Attainable	54.55%	54.55%

Method 3: Allocation to Achieve Equal Reductions from Efficient Demand

This method can be viewed as a variation on Method 2. Rather than ensure equal reductions from baseline demands, equal reductions are made from **efficient demands**. Efficient demands are defined using some sort of efficiency framework, for example by specifying that efficient demands are a function of population served, irrigable landscape area, CII water use, etc. This is similar to the approach being undertaken by the state of California to set efficiency goals for each urban water supplier in the state.

$$A_i = \max(d(p_i) \times F_i - LocalSupply_i, \qquad 0)$$

Where d is a function that estimates efficient demand levels given purveyor characteristics, and p_i represents the characteristics of purveyor i. As in Method 2, F_i is a scaling factor representing a percentage reduction in water demand, except rather than a reduction from baseline levels, it represents a reduction from efficient levels. This problem can also be viewed as a constrained optimization problem solved similarly to Method 2.

Characteristics

The primary driver of this allocation method is an equal percent reduction from efficient demand for each purveyor. Rather than allocating available supplies directly, emergency conservation goals are set for each purveyor as a percentage from efficient water use, and then available supplies are allocated to meet those goals.

This method explicitly accounts for local supply, so allocations can be dynamically updated based on changing local supply availability.

This method incentivizes water efficiency investments as purveyors that are more efficient during the baseline period will end up being able to satisfy a greater percentage of their baseline demands during an outage. This recognizes that purveyors that are already more efficient may have less-elastic demands, and therefore more difficulty reducing demand during an outage.

Method 3 Example:

Purveyor A typically purchases 90 AF from CMWD during the baseline period. Purveyor A has a population of 7,000 and they normally consume 140 GPCD across all end uses.

Purveyor B typically purchases 10 AF from CMWD during the baseline period and typically uses 10 AF of local supply. Purveyor B has a population of 2,000 and they normally consume 108 GPCD across all end uses.

For the case of this simple example, let's assume that efficient demand is defined only as a function of population (this is likely not realistic in practice, but serves as a good demonstration). Let's choose an efficient GPCD of 120.

- Purveyor A is allocated 46.67 AF, 51.9% of their typical deliveries from CMWD. They can meet 51.9% of their baseline demand.

- Purveyor B is allocated 3.34 AF, 33.4% of their typical deliveries from CMWD. They can meet 66.7% of their baseline demand.

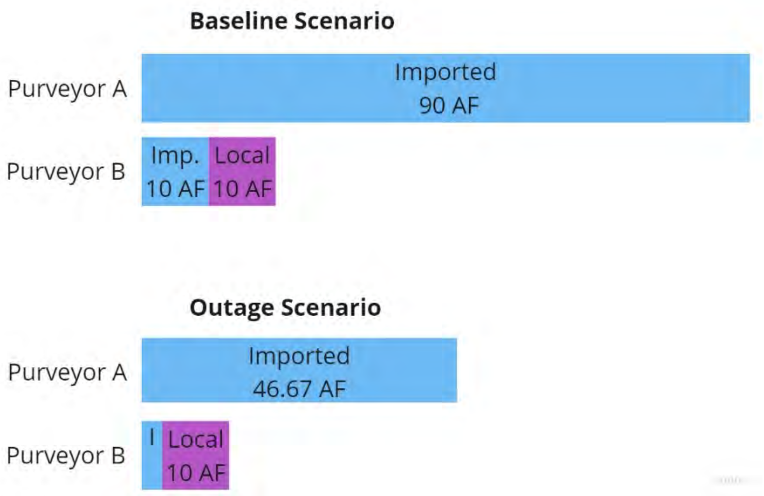


Figure 4. A schematic illustration of the outage and allocation scenario detailed in Table 3.

Compared to Method 2, Method 3 leaves Purveyor B with a higher allocation because they used less water per capita before the outage and may have less room to make calls for conservation.

Table 3. Example scenario with demonstration of the impacts of allocation method 3.

Purveyor	**A**	**B**
Baseline Imported Deliveries	90 AF	10 AF
Baseline Local Supply	0 AF	10 AF
Percent of Baseline Imported Deliveries Received	51.9%	33.4%
Allocation	46.67 AF	3.34 AF
Total Outage Supplies	46.67 AF	13.34 AF
Percent of Baseline Demand Attainable	51.9%	66.7%

Method 3 Excluded from Additional Modeling:

At this time, Method 3 is excluded from additional modeling due to potentially problematic messaging of setting unique emergency conservation goals for each purveyor based on Calleguas' definition of efficient demand. Further, that the District's definition of "efficient demand" may be viewed as subjective and rely on multiple data inputs that are beyond the control of the Calleguas.

However, the upcoming “Make Conservation a CA Way of Life” budgets could serve as an acceptable definition of efficiency that factors into an allocation calculation (i.e., a purveyor with total demand that meets or is under its water budget would receive a less stringent emergency conservation goal than a purveyor that exceeds its water budget). As the District learns more from the roll-out and implementation of the State-mandated water budgets, the IWOP could be amended in the future to model Method 3.

Water Markets

Allocations decided by CMWD can take many different forms, but they will always impose some rigidity that may not reflect the dynamics of an emergency outage situation. To add additional flexibility to the allocation of available supplies, fixed allocations could be supplemented by a water market. Some of the potential options are shown below.

- **Fixed Allocation** – The full amount of available supplies could be allocated among the purveyors and these amounts are fixed. Allocations would be wholly determined by the allocation methods discussed above.

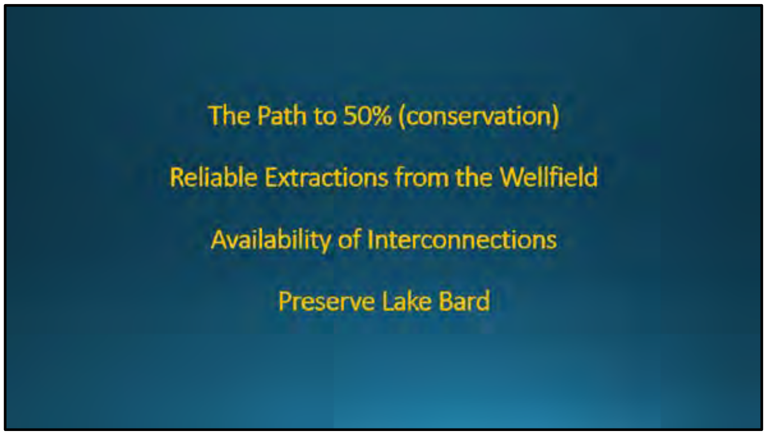
- **Full Auction** – All available supplies could be auctioned off to purveyors, with portions of the available supply being sold to the highest bidder. This would not require the allocation methods discussed above.

- **Cap and Trade** – The full amount of available supplies could be allocated among the purveyors using one of the methods above, and then a mechanism is put into place allowing purveyors to buy and sell portions of their allocation among themselves. This would allow purveyors with lower marginal utility for their water to sell part of their allocation to purveyors that could put the water to a more valuable use.

- **Allocation and Auction** – A certain percentage of available supplies (e.g., 80%) could be allocated among the purveyors to ensure a baseline level of water supply, and the remaining unallocated supplies could then be auctioned off. Similar results to cap and trade with slightly different implementation.

Additional Background, Public Outreach, & Other Considerations

In the Summer and Fall 2020, Calleguas conducted two workshops with its Purveyors (August 24th and September 23rd) to present and develop the IWOP. During the August 24th workshop, a guiding set of principles in addressing a District-wide Water Emergency was presented:



The Path to 50% (conservation)

Reliable Extractions from the Wellfield

Availability of Interconnections

Preserve Lake Bard

Figure 5. Slide from August 24, 2020 IWOP Workshop No. 1

Each principle would factor into an overall public message immediately following an event that precipitated the Water Emergency. However, “The Path to 50%” is intended to prioritize the need for water conservation at the onset of the crisis. A coordinated public outreach and messaging campaign will be critical to achieving demand reduction levels in conjunction with any system to allocate available outage supplies. To generate timely reductions in overall system demand, a strong call for water conservation would need to be implemented as soon as the severity of the outage is known.

Figure 6. Example Artwork & Graphics – “No Outdoor Water Use”

Recent models estimating demands that can be met with outage supplies available to the District, demonstrate that a minimum 50-percent reduction in overall Calleguas system demand would be necessary to successfully manage through a 6-month outage event (i.e. no Unmet Demand):

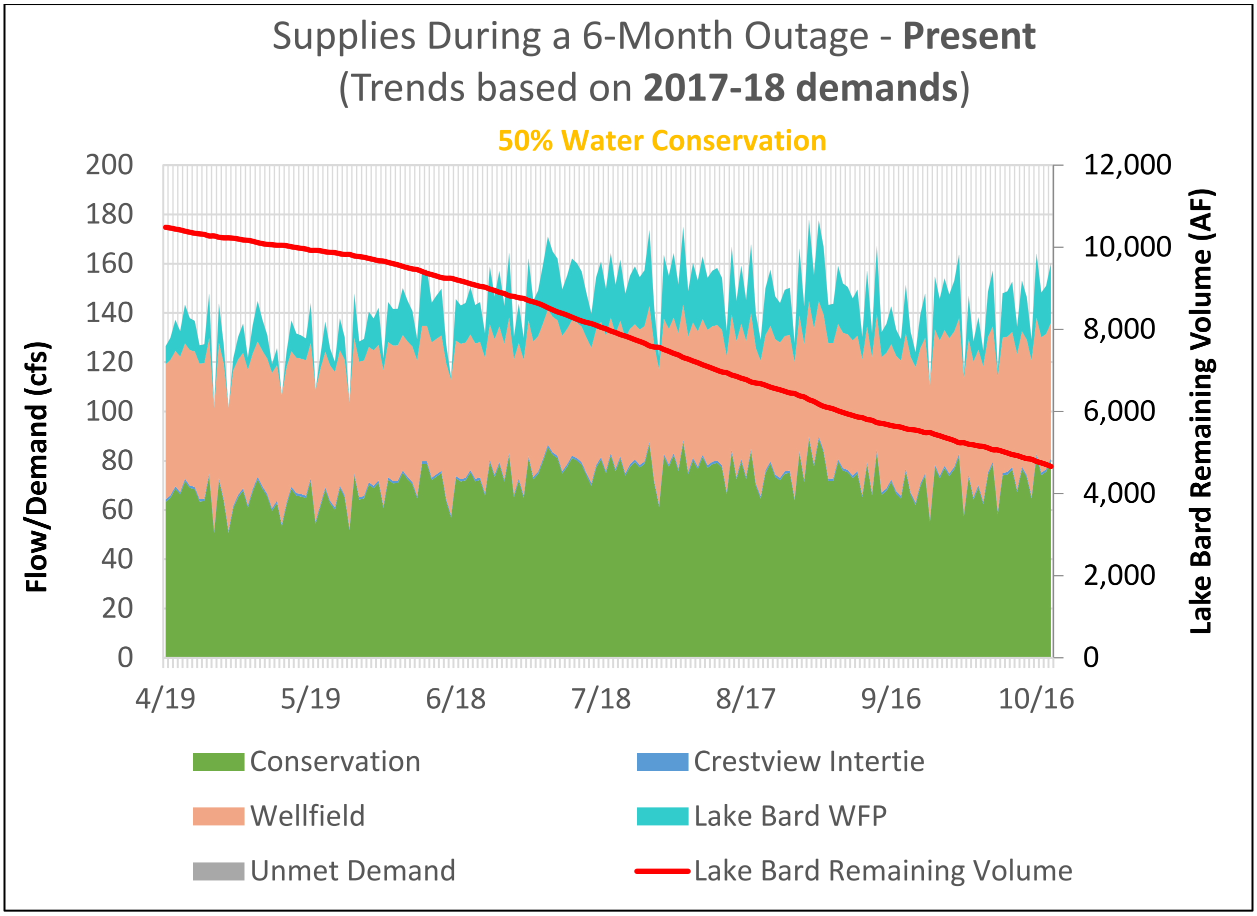


Figure 7. Modeling a 6-mo. Outage Event w/present (2020) Outage Supply Capabilities

Managing through a Water Emergency, in this case a 6-month outage of imported water service, will be a reactive process. The above example model is for illustrative purposes only. It does not account for time required to put any specific outage supply into service, including the ramp up of conservation, as well as peak-demand softening that may occur from conservation. Further, the model assumes availability of each outage supply without complication.

Recognizing that the situation does constitute a Water Emergency, Calleguas would internally activate its Emergency Operations Center (EOC) and follow steps as outlined in its Emergency Response Plan (ERP). In that process, District staff would prepare outreach materials, in coordination with the Calleguas Purveyors, that effectively communicate the need for water conservation.

Calleguas staff actively maintains a list of Public Information Officers / Conservation Coordinators (PIO / CC) purveyor staff that would be involved in disseminating information about the duration and severity of the imported water outage. Purveyors interact directly with end water users and are best equipped to implement demand management measures (DMMs) on the retail level.

A call for "No Outdoor Water Use" by both Calleguas and its Purveyors is consistent with a signal that water supplies should only be used for health and safety needs. Any watering or irrigation of lawn, landscape, or other vegetated area with potable water should be prohibited. It is expected that a call for "No Outdoor Water Use" could result in system demand reductions well above 50% due to the largely suburban characteristic of the Calleguas service area and that approximately 40% to 80% of water use goes toward irrigation of outdoor landscapes.[5] This would benefit the District by extending the availability of outage supplies.

Calleguas acknowledges that its Purveyors have access to a diverse, water supply resource mix that may include non-potable M&I supplies, such as: Recycled M&I, Non-Potable Groundwater M&I, and Surface M&I. These local supplies were excluded from data utilized in modeling the imported water allocations discussed in this document as they do not directly support health and safety needs in an outage. It is anticipated that demand for these water sources would decrease in a Water Emergency that prompts a "No Outdoor Water Use" message.

The initial assessment of the Water Emergency, messaging to the public, and actions to bring about demand reductions are critically important. However, the duration of a medium to long-term outage also presents challenges with end-user "water conservation fatigue" should managing through the Water Emergency develop into a relatively static condition for the District.

In this situation, system demands are effectively met through any combination of the Allocation System, District & Purveyor Actions, and available Outage Supplies, but the overall trendline for system demand begins to increase in an unexpected manner as the water saving ethic wanes. Should water demands rise in an uncontrolled manner, Calleguas has the capability to impose physical restrictions at its turnouts to limit flow rates.

Recent examples of water supply outages within the Metropolitan service area have typically been short in duration.[6] To develop and maintain authentic messaging throughout the Water Emergency will rely on active participation from the Calleguas Purveyors and implementation of appropriate DMMs consistent with each purveyor's WSCP. The Water Supply Alternatives Study – Task B Memo, describes various tools used to communicate with the public, such as:

- Social Media
- Large signs at key locations
- LED flashing traffic signs
- Coordination with Ventura County to issue notices via VC Alert
- Press conferences/releases/briefings and media kits
- Electronic newsletter to customers, stakeholders, elected officials, business, civic and community groups
- TV and radio interviews/appearances
- Op-ed columns

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[5] Lawns and Water Demand in California, PPIC (2006) https://www.ppic.org/content/pubs/cep/EP_706EHEP.pdf

[6] 250k Western Riverside County Residents asked to Stop Outdoor Water Use, (2020) https://www.msn.com/en-us/news/us/250k-western-riverside-county-residents-asked-to-stop-outdoor-water-use-during-emergency-repair-on-major-pipeline/ar-BB13tnsj. Pasadena Limits Outdoor Watering February 25 to March 10 (2016) https://www.cityofpasadena.net/city-manager/news-releases/no-outdoor-water-restrictions-begin-february-25-2016/.

- Presentations at local government or organization meetings, public outreach events, homeowner associations and more
- Targeted media placements such as ad space in major dailies and/or inserts in the local papers
- Online presence that includes specific information on the circumstances necessitating water demand reductions, current restrictions, fact sheet/FAQs, reporting waste violations, specific measures that can be taken to reduce water use, etc.
- Citizen information "hotline" which can be used for customers to report incidents of waste and to disseminate information

Calleguas staff is also in the process of preparing a public outreach toolkit to be ready to distribute in the event of an outage that requires significant extraction from the Las Posas Wellfield. This operation by the District would produce water supplies that could contain iron (Fe) and manganese (Mn) at levels that cause discoloration, potentially resulting in customer complaints. Las Posas Wellfield water supplies are expected to meet all primary MCLs[7] but may not meet secondary MCLs or customer expectations for aesthetics. Figure 8 provides some examples of public outreach materials that could be included in Calleguas' toolkit.

Figure 8. Example public notification materials addressing the potential for discolored water supplies utilized during an emergency imported water outage.

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[7] Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water by state and federal regulations. Primary MCLs address health concerns, while secondary MCLs address aesthetics such as color, taste, and odor.

Summary of Allocation Methods

Method 1: Allocation Proportional to Historical Deliveries

This method allocates based on an equal percentage reduction in historical imported water purchases for all purveyors relative to a baseline period. During a summer outage, for example, purveyors that historically purchase more imported water in the summer from Calleguas would receive higher allocations. Because this method only considers historical imported water purchases, purveyors with greater local supply capacity are able to meet more of their overall demand.

Method 1W: Allocation Proportional to Historical Deliveries (Winter Baseline)

A variation of Method 1 that always allocates imported deliveries proportional to a *Winter* baseline period, rather than basing allocations on imported deliveries during a baseline period that matches the timeframe of the outage.

Generally, this would discount the contribution of seasonal irrigation to a purveyor's allocation, and instead the primary drivers would be indoor residential use, CII use, and residual Winter irrigation. However, any seasonality in the availability or use of supplies could impact this assumption, such as if a purveyor avoids purchasing imported water in the summer (to avoid Capacity Charges) and that purveyor typically only receives imported water in the Winter.

Method 2: Allocation to Achieve Equal Demand Reductions

Method 2 seeks to achieve a uniform level of overall demand reduction throughout the District. This method accounts for local supplies available to each purveyor and allocating an equal demand reduction that is achievable while considering each purveyor's total demand and the available outage supply to the District including purveyors' local resources.

This method explicitly accounts for baseline demand and local supply, so allocations can be dynamically updated based on changing local supply availability.

Method 3: Allocation to Achieve Equal Reductions from Efficient Demand

This method can be viewed as a variation on Method 2. Rather than ensure equal reductions from baseline demands, equal reductions are made from efficient demands. Efficient demands are defined using an efficiency framework, for example by specifying that efficient demands are a function of population served, irrigable landscape area, CII water use, etc. This is similar to the approach being undertaken by the state of California to set efficiency goals for each urban water supplier in the state. Note: Method 3 was excluded from additional modeling due to potentially problematic messaging of setting unique emergency conservation goals for each purveyor. However, as the District learns more from the roll-out and implementation of the State-mandated water budgets, the IWOP may be amended in the future to model Method 3.

Next Steps

This IWOP, including the Demand Assumptions/Allocation Methodologies and Public Outreach components, should be reevaluated on a cycle consistent with the District's UWMP and WSCP preparation. It is recommended that the District continue to refine its graphics and outreach materials to maintain a current public outreach toolkit to effectively respond to a Water Emergency.

The Demand Assumptions/Allocation Methodologies should be updated regularly to reflect changes in supplies and demands. Calleguas continues to evaluate water supply project options through its Water Supply Alternatives Study (WSAS). The IWOP model should be updated to reflect additional outage supply capabilities as they become available to the District.

Finally, coordination between Calleguas and its member purveyors for the IWOP is essential, as the purveyors are critical partners in implementing DMMs for end users. To this end, Calleguas should consider scheduling individual meetings with its purveyors to review and refine the elements described in this memo. Future tabletop exercises with the District's purveyors may also be beneficial to simulate various outage scenarios and the implementation of allocations.

Additional elements that could be addressed in the IWOP in the future include:

- A template for compensable transfer agreements between purveyors,
- An allocation appeals process to address purveyor requests for changes or corrections to an allocation,
- Procedures for Calleguas to enact, revise, and conclude implementation of the IWOP during an emergency,
- Penalties and actions triggered if an allocation is exceeded, and
- Tracking and reporting procedures.

Appendix 1 – Calculating Allocations Under Method 2

The equation below shows a closed formula for calculating allocations under Method 2, assuming all demand reduction percentages are equal.

$$A_i = \frac{R_i\left(AvailableSupply + \sum_{j \neq i} LocalSupply_j\right) - LocalSupply_i}{R_i}$$

Where

$$R_i = \frac{BaselineDemand_i}{\sum_{j \neq i} BaselineDemand_j}$$

Mathematically, the goal for each purveyor's allocation from Calleguas is to be greater than or equal to zero. This prevents the situation of a negative allocation.

The formula above does not allow specifying a constraint like this. Instead of strictly equal demand reductions, the goal for Method 2 should be to allocate supplies to each agency such that their demand reductions are *as equal as possible, subject to some constraints.* In the IWOP Model, this is accomplished through the use of constrained optimization, where a goal (also called the "objective function") is set, and some constraints are imposed (e.g. allocations must be >= 0). The system of objective function and constraints is then solved using a specific algorithm to either minimize of maximize the objective function.

In the IWOP Model, the objective function is to minimize the Gini Coefficient of the percentage demand reductions. This captures the "as equal as possible" criterion. The constraints are that allocations must be greater than or equal to zero, demands must go down or stay the same (no using more water than normal), and the total amount of water that is allocated must equal CMWD's available supplies during the period. All these factors are plugged into Excel's "Solver" tool, and an algorithm called GRG Nonlinear is applied to find a set of allocations that meet the criteria.

Appendix 2 – Example Scenarios

Scenario	Frequency or likelihood of occurrence	WSCP Shortage Level	Estimated Duration of Outage	How Metropolitan would manage water supplies during the outage	How Calleguas would manage water supplies during the outage	Available Outage Supplies as of Dec. 2020	Required Reduction in Demand
CALLEGUAS INFRASTRUCTURE - Catastrophic Interruption							
CMWD-1: Failure of Santa Susana Tunnel or the East Portal facilities	Low probability. Tunnel has held up well in past large earthquakes.	**Stage 6**: Catastrophic Interruption in Water Supplies or Water Emergency (i.e., greater than 50% reduction in water supply)	Approx. 6 months to make repairs	No water delivered to Calleguas due to Calleguas' system limitations. In the future, potentially indirect service from Metropolitan through the Las Virgenes MWD - Calleguas Interconnection.	**Conduct initial assessment of Outage and make call for conservation** : "No Outdoor Water Use". **Determine if IWOP - Allocations should be implemented** (based on system demand reductions & additional information on potential duration of the event). **Board Action to Implement Allocation System.**	1) Wellfield (55 cfs, decreasing over time) 2) LBWFP at minimum operable flow (30 cfs) 3) Crestview Interconnection & Well 8 (0-5 cfs)	Dec. to May: Approx. 15% (1st 4 months), 40% after LBWFP potable supply exhausted June to Nov: Approx. 35% throughout outage event (1st 4 months), 45% after LBWFP potable supply exhausted Note: Call for "No Outdoor Water Use" may bring immediate 40% to 60% reductions in overall demand, which would extend availability of outage supplies.
CMWD-3: Failure of a single pipe on Calleguas Conduit North Branch	Potentially once every 10-15 years, with increasing frequency as facilities age	**Stage 6**: Catastrophic Interruption in Water Supplies or Water Emergency (i.e., greater than 50% reduction in water supply)	Approx. 3 months to make repairs	Depending on system limitations, Metropolitan may be able to deliver up to 80 cfs to Calleguas. **However, for the sake of this exercise - no water is anticipated from Metropolitan**.	**Conduct initial assessment of Outage and make call for conservation** : "No Outdoor Water Use". **Determine if IWOP - Allocations should be implemented** (based on system demand reductions & additional information on potential duration of the event). **Board Action to Implement Allocation System.**	1) Wellfield (55 cfs, decreasing over time) 2) LBWFP at minimum operable flow (up to 40 cfs) 3) Crestview Interconnection & Well 8 (0-5 cfs)	Dec. to Feb: No conservation needed June to Aug: Approx. 30% throughout outage event Note: Call for "No Outdoor Water Use" may bring immediate 40% to 60% reductions in overall demand, which would extend availability of outage supplies.

Appendix 3 – General Observations

Conservation Levels are Expected to Increase Towards the End of a Long Outage

At a minimum operable flow of 30 CFS, the potable water supply from LBWFP will be exhausted after approximately 4 months. During an extended outage, this means that the tail end of the outage could require higher levels of conservation than the beginning of the outage. Depending on the allocation method and the start time of the outage, required conservation levels are expected to step up by an additional 10% - 30%. This step up is most noticeable when the outage begins during the low demand Winter months and carries over into the higher demand Summer months.

This effect would be compounded by any degradation of the Wellfield below a yield of 55 cfs, but this degradation is not being modeled at this time.

The Impact to Purveyors is Highly Dependent on the Timing of the Outage

Calleguas is expected to be able to weather a three-month Winter outage with little to no required conservation from purveyors. In contrast, a longer outage, or one that starts during or lasts into the summer months is expected to require significant reductions in demand. The most severe scenario in terms of required conservation would likely be an extended six-month outage that begins in the Spring (March, April, May) when demands are beginning to ramp up after the Winter. Under this scenario, the potable water supply from LBWFP is expected to be exhausted leading into the peak demand months of July and August.

Allocation Methods That Reduce Imported Water Purchases by a Fixed Amount Create Groups of Purveyors with Differential Impacts

Allocation Methods 1 and 1W are based on an equal percent reduction in imported water purchases for each purveyor. This creates roughly three groups of purveyors which are impacted differently by an outage:

- Purveyors who are highly dependent on Calleguas have minimal or no local supply sources, so the overall demand reductions required of their customers will be proportional to available supplies from Calleguas.
- Purveyors who are moderately dependent on Calleguas have local supply sources they can lean on, but still depend on Calleguas to meet their full demands and blending requirements. These purveyors are able to meet a higher proportion of their typical demand and so require less drastic conservation than highly dependent purveyors.
- A last group of purveyors are able to operate largely independent of Calleguas, depending on the availability of local supplies. This group may be able to weather an outage without severe conservation requirements.

Note: the first two groups become one group under allocation Method 2 which explicitly accounts for local supplies to achieve an equal demand reduction across purveyors with differing access to local supplies.

Appendix 4 – Modeling Allocation Methods

The option highlighted in green is the most favorable allocation method for each purveyor. This is the method that allows the purveyor to meet the highest percentage of their overall demand during an outage by leveraging both imported and local supplies. The allocation method most favorable for each purveyor primarily depends on that purveyor's local supply availability and seasonal water demand patterns.

Three different tables are shown corresponding to three different outage scenarios: 6-month outages on June 1st and December 1st, and a 3-month outage on June 1st. The 3-month outage on December first is not shown because no required demand reductions are expected. The most favorable method for each purveyor is the same in each scenario, indicating that the tradeoffs among methods do not appear to be overly sensitive to the timing and duration of an outage.

6-Month Outage starting on June 1st

	Percent of Historical Demand Met			
Purveyor:	**1**	**1W**	**2**	**Most Favorable**
Berylwood Heights MWC	45.8%	71.0%	55.6%	1W
Brandeis MWC	54.6%	33.3%	62.9%	2
California American Water Co.	53.9%	55.4%	62.3%	2
California Water Service Co.	53.9%	48.6%	62.3%	2
Camarillo, City of	72.3%	72.9%	62.3%	1W
Camrosa Water District	71.6%	64.2%	62.3%	1
Crestview MWC	97.4%	143.3%	95.1%	1W
Golden State Water Company	60.1%	63.2%	62.3%	1W
Triunfo Water & Sanitation	53.9%	58.9%	62.4%	2
Oxnard, City of	77.2%	83.6%	62.7%	1W
Pleasant Valley Mutual	79.3%	71.6%	64.1%	1
Simi Valley, City of	54.0%	51.5%	62.8%	2
Solano Verde MWC	53.9%	35.5%	62.3%	2
Thousand Oaks, City of	53.8%	54.8%	62.4%	2
Ventura Co WWD #1	60.6%	55.9%	62.5%	2
Ventura Co WWD #19	76.2%	64.2%	62.5%	1
Ventura Co WWD #38	54.1%	37.3%	62.5%	2
Zone MWC	100.0%	100.0%	100.0%	1

Most Common Favorable Method: 2

6-Month Outage starting on December 1st

	Percent of Historical Demand Met			
Purveyor:	**1**	**1W**	**2**	**Most Favorable**
Berylwood Heights Mutual Water Co.	91.2%	144.3%	92.9%	1W
Brandeis Mutual Water Co.	68.1%	61.8%	74.7%	2
California American Water Co.	72.2%	72.9%	77.9%	2
California Water Service Co.	71.4%	70.7%	77.3%	2
Camarillo, City of	83.6%	81.9%	78.0%	1
Camrosa Water District	83.1%	80.5%	77.2%	1
Crestview Mutual Water Co.	90.5%	109.9%	87.7%	1W
Golden State Water Company	77.1%	78.7%	78.4%	1W
Triunfo Water & Sanitation	72.8%	75.4%	78.4%	2
Oxnard, City of	87.7%	88.7%	79.2%	1W
Pleasant Valley Mutual	90.7%	89.2%	81.1%	1
Simi Valley, City of	71.8%	71.5%	77.5%	2
Solano Verde Mutual Water Co.	69.3%	64.0%	75.6%	2
Thousand Oaks, City of	72.3%	73.0%	78.9%	2
Ventura Co WWD #1	76.4%	74.6%	77.3%	2
Ventura Co WWD #19	87.0%	80.4%	77.8%	1
Ventura Co WWD #38	69.1%	63.1%	75.4%	2
Zone Mutual Water Co	100.0%	100.0%	100.0%	1

Most Common Favorable Method 2

3-Month Outage starting on June 1st

	Percent of Historical Demand Met			
Purveyor:	**1**	**1W**	**2**	**Most Favorable**
Berylwood Heights MWC	63.8%	6805.0%	71.5%	1W
Brandeis MWC	64.2%	34.4%	71.1%	2
California American Water Co.	64.2%	66.0%	71.2%	2
California Water Service Co.	64.2%	57.7%	71.1%	2
Camarillo, City of	79.2%	80.8%	71.1%	1W
Camrosa Water District	77.5%	68.1%	71.1%	1
Crestview MWC	100.0%	158.6%	100.0%	1W
Golden State Water Company	69.5%	73.7%	71.1%	1W
Triunfo Water & Sanitation	64.2%	69.5%	71.1%	2
Oxnard, City of	82.6%	91.0%	70.9%	1W
Pleasant Valley Mutual	83.9%	75.2%	71.1%	1
Simi Valley, City of	64.3%	60.3%	71.0%	2
Solano Verde MWC	64.2%	42.1%	71.1%	2
Thousand Oaks, City of	64.2%	65.3%	71.1%	2
Ventura Co WWD #1	70.5%	66.0%	71.1%	2
Ventura Co WWD #19	79.9%	62.9%	71.0%	1
Ventura Co WWD #38	64.2%	42.9%	71.1%	2
Zone MWC	100.0%	100.0%	100.0%	1

Most Common Favorable Method: 2

6 Month Outage on June 1st

Allocation by Month (Method 1)

purveyor	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Berylwood Heights Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.0
Brandeis Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	4.4	5.0	4.3	3.5	2.3	1.8	0.0
California American Water Co.	0.0	0.0	0.0	0.0	0.0	823.3	862.0	869.6	840.6	595.5	543.1	0.0
California Water Service Co.	0.0	0.0	0.0	0.0	0.0	394.8	425.0	428.0	414.2	288.7	254.6	0.0
Camarillo, City of	0.0	0.0	0.0	0.0	0.0	248.6	254.6	256.7	251.6	188.7	181.2	0.0
Camrosa Water District	0.0	0.0	0.0	0.0	0.0	304.5	313.2	323.5	316.7	223.7	176.1	0.0
Crestview Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.1	0.0
Golden State Water Company	0.0	0.0	0.0	0.0	0.0	300.4	312.8	313.0	310.6	223.8	197.0	0.0
Triunfo Water & Sanitation	0.0	0.0	0.0	0.0	0.0	117.4	124.8	125.8	117.5	83.0	77.4	0.0
Oxnard, City of	0.0	0.0	0.0	0.0	0.0	684.0	621.3	581.4	578.2	470.3	481.6	0.0
Pleasant Valley Mutual	0.0	0.0	0.0	0.0	0.0	28.8	23.6	19.6	29.9	12.5	15.4	0.0
Simi Valley, City of	0.0	0.0	0.0	0.0	0.0	1121.1	1182.0	1174.7	1114.8	790.6	689.8	0.0
Solano Verde Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	20.3	22.7	23.5	22.4	15.8	13.0	0.0
Thousand Oaks, City of	0.0	0.0	0.0	0.0	0.0	570.6	597.0	600.6	582.2	415.8	373.7	0.0
Ventura Co WWD #1	0.0	0.0	0.0	0.0	0.0	437.7	459.7	474.8	462.4	343.3	306.0	0.0
Ventura Co WWD #19	0.0	0.0	0.0	0.0	0.0	37.0	52.0	57.8	41.2	28.2	21.1	0.0
Ventura Co WWD #38	0.0	0.0	0.0	0.0	0.0	84.2	93.8	96.2	91.0	60.0	47.1	0.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5176.9**	**5349.5**	**5349.5**	**5176.9**	**3742.8**	**3391.7**	**0.0**

Allocation by Month (Method 1W)

purveyor	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Berylwood Heights Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.3	0.3	0.0
Brandeis Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	2.4	2.5	2.5	2.4	1.7	1.6	0.0
California American Water Co.	0.0	0.0	0.0	0.0	0.0	856.3	884.8	884.8	856.3	619.1	561.0	0.0
California Water Service Co.	0.0	0.0	0.0	0.0	0.0	365.4	377.5	377.5	365.4	264.2	239.4	0.0
Camarillo, City of	0.0	0.0	0.0	0.0	0.0	258.4	267.0	267.0	258.4	186.8	169.3	0.0
Camrosa Water District	0.0	0.0	0.0	0.0	0.0	236.2	244.1	244.1	236.2	170.8	154.7	0.0
Crestview Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	46.9	48.5	48.5	46.9	33.9	30.7	0.0
Golden State Water Company	0.0	0.0	0.0	0.0	0.0	325.1	336.0	336.0	325.1	235.1	213.0	0.0
Triunfo Water & Sanitation	0.0	0.0	0.0	0.0	0.0	129.7	134.1	134.1	129.7	93.8	85.0	0.0
Oxnard, City of	0.0	0.0	0.0	0.0	0.0	780.4	806.4	806.4	780.4	564.2	511.3	0.0
Pleasant Valley Mutual	0.0	0.0	0.0	0.0	0.0	16.5	17.0	17.0	16.5	11.9	10.8	0.0
Simi Valley, City of	0.0	0.0	0.0	0.0	0.0	1,064.1	1,099.6	1,099.6	1,064.1	769.4	697.2	0.0
Solano Verde Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	14.2	14.7	14.7	14.2	10.3	9.3	0.0
Thousand Oaks, City of	0.0	0.0	0.0	0.0	0.0	586.5	606.0	606.0	586.5	424.0	384.2	0.0
Ventura Co WWD #1	0.0	0.0	0.0	0.0	0.0	409.6	423.2	423.2	409.6	296.1	268.3	0.0
Ventura Co WWD #19	0.0	0.0	0.0	0.0	0.0	25.1	25.9	25.9	25.1	18.1	16.4	0.0
Ventura Co WWD #38	0.0	0.0	0.0	0.0	0.0	59.8	61.8	61.8	59.8	43.2	39.2	0.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5,176.9**	**5,349.5**	**5,349.5**	**5,176.9**	**3,742.9**	**3,391.8**	**0.0**

Allocation by Month (Method 2)

purveyor	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Berylwood Heights Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.9	0.0
Brandeis Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	4.9	5.7	4.9	4.0	2.8	2.2	0.0
California American Water Co.	0.0	0.0	0.0	0.0	0.0	919.2	988.6	994.0	955.4	732.2	656.7	0.0
California Water Service Co.	0.0	0.0	0.0	0.0	0.0	440.5	487.6	492.6	467.0	355.0	307.9	0.0
Camarillo, City of	0.0	0.0	0.0	0.0	0.0	171.1	178.3	180.7	189.6	105.4	122.3	0.0
Camrosa Water District	0.0	0.0	0.0	0.0	0.0	233.0	244.6	252.1	257.7	126.5	77.1	0.0
Crestview Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Golden State Water Company	0.0	0.0	0.0	0.0	0.0	304.8	323.4	323.4	331.0	246.8	206.1	0.0
Triunfo Water & Sanitation	0.0	0.0	0.0	0.0	0.0	131.2	143.1	144.2	133.2	102.1	93.6	0.0
Oxnard, City of	0.0	0.0	0.0	0.0	0.0	458.4	296.3	229.5	268.4	91.5	193.1	0.0
Pleasant Valley Mutual	0.0	0.0	0.0	0.0	0.0	18.3	9.0	0.9	21.3	0.0	1.1	0.0
Simi Valley, City of	0.0	0.0	0.0	0.0	0.0	1291.2	1355.8	1362.8	1257.5	969.7	833.4	0.0
Solano Verde Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	22.7	26.1	26.9	25.3	19.5	15.7	0.0
Thousand Oaks, City of	0.0	0.0	0.0	0.0	0.0	637.8	685.0	688.8	661.2	511.4	451.8	0.0
Ventura Co WWD #1	0.0	0.0	0.0	0.0	0.0	430.7	464.4	496.3	477.7	375.2	342.5	0.0
Ventura Co WWD #19	0.0	0.0	0.0	0.0	0.0	19.1	34.0	42.7	24.4	0.0	1.8	0.0
Ventura Co WWD #38	0.0	0.0	0.0	0.0	0.0	94.1	107.6	109.6	103.2	73.5	56.9	0.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	28.7	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5176.9**	**5349.5**	**5349.5**	**5176.9**	**3742.9**	**3391.8**	**0.0**

6 Month Outage on December 1st

Allocation by Month (Method 1)

purveyor	1	2	3	4	5	6	7	8	9	10	11	12
Berylwood Heights Mutual Water Co.	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Brandeis Mutual Water Co.	2.1	2.3	2.5	2.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.3
California American Water Co.	876.1	791.7	850.0	659.6	584.2	0.0	0.0	0.0	0.0	0.0	0.0	830.9
California Water Service Co.	362.5	337.2	374.0	302.6	269.0	0.0	0.0	0.0	0.0	0.0	0.0	354.5
Camarillo, City of	275.7	235.7	248.9	199.0	185.9	0.0	0.0	0.0	0.0	0.0	0.0	313.4
Camrosa Water District	245.5	218.7	230.5	224.8	215.1	0.0	0.0	0.0	0.0	0.0	0.0	236.3
Crestview Mutual Water Co.	38.0	36.5	62.8	15.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.9
Golden State Water Company	334.1	304.6	317.4	235.1	206.5	0.0	0.0	0.0	0.0	0.0	0.0	318.2
Triunfo Water & Sanitation	134.7	117.6	129.3	94.4	81.6	0.0	0.0	0.0	0.0	0.0	0.0	121.4
Oxnard, City of	805.1	732.7	757.5	494.7	409.3	0.0	0.0	0.0	0.0	0.0	0.0	912.2
Pleasant Valley Mutual	14.6	13.1	20.6	13.4	13.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7
Simi Valley, City of	1083.7	980.2	1064.6	858.7	755.0	0.0	0.0	0.0	0.0	0.0	0.0	1049.2
Solano Verde Mutual Water Co.	14.7	14.5	12.7	14.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	14.3
Thousand Oaks, City of	606.9	533.8	583.9	455.4	394.5	0.0	0.0	0.0	0.0	0.0	0.0	573.2
Ventura Co WWD #1	423.7	378.7	402.2	334.3	297.0	0.0	0.0	0.0	0.0	0.0	0.0	452.7
Ventura Co WWD #19	25.5	27.1	21.2	20.2	22.0	0.0	0.0	0.0	0.0	0.0	0.0	51.8
Ventura Co WWD #38	56.4	56.6	62.5	62.4	55.9	0.0	0.0	0.0	0.0	0.0	0.0	60.7
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**5300.3**	**4781.1**	**5140.7**	**3986.8**	**3504.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5341.9**

Allocation by Month (Method 1W)

purveyor	1	2	3	4	5	6	7	8	9	10	11	12
Berylwood Heights Mutual Water Co.	0.4	0.4	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Brandeis Mutual Water Co.	2.4	2.2	2.4	1.8	1.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5
California American Water Co.	876.7	790.8	850.3	659.4	579.7	0.0	0.0	0.0	0.0	0.0	0.0	883.6
California Water Service Co.	374.1	337.4	362.8	281.4	247.4	0.0	0.0	0.0	0.0	0.0	0.0	377.0
Camarillo, City of	264.6	238.6	256.6	199.0	174.9	0.0	0.0	0.0	0.0	0.0	0.0	266.6
Camrosa Water District	241.8	218.1	234.5	181.9	159.9	0.0	0.0	0.0	0.0	0.0	0.0	243.7
Crestview Mutual Water Co.	48.0	43.3	46.6	36.1	31.8	0.0	0.0	0.0	0.0	0.0	0.0	48.4
Golden State Water Company	332.9	300.3	322.9	250.4	220.1	0.0	0.0	0.0	0.0	0.0	0.0	335.5
Triunfo Water & Sanitation	132.8	119.8	128.8	99.9	87.8	0.0	0.0	0.0	0.0	0.0	0.0	133.9
Oxnard, City of	799.0	720.8	775.0	601.0	528.4	0.0	0.0	0.0	0.0	0.0	0.0	805.3
Pleasant Valley Mutual	16.9	15.2	16.4	12.7	11.2	0.0	0.0	0.0	0.0	0.0	0.0	17.0
Simi Valley, City of	1,089.5	982.8	1,056.7	819.5	720.4	0.0	0.0	0.0	0.0	0.0	0.0	1,098.0
Solano Verde Mutual Water Co.	14.6	13.1	14.1	11.0	9.6	0.0	0.0	0.0	0.0	0.0	0.0	14.7
Thousand Oaks, City of	600.4	541.6	582.4	451.6	397.0	0.0	0.0	0.0	0.0	0.0	0.0	605.2
Ventura Co WWD #1	419.3	378.2	406.7	315.4	277.3	0.0	0.0	0.0	0.0	0.0	0.0	422.6
Ventura Co WWD #19	25.6	23.1	24.9	19.3	17.0	0.0	0.0	0.0	0.0	0.0	0.0	25.9
Ventura Co WWD #38	61.2	55.2	59.4	46.0	40.5	0.0	0.0	0.0	0.0	0.0	0.0	61.7
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**5,300.4**	**4,781.1**	**5,140.7**	**3,986.8**	**3,504.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5,341.9**

Allocation by Month (Method 2)

purveyor	1	2	3	4	5	6	7	8	9	10	11	12
Berylwood Heights Mutual Water Co.	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Brandeis Mutual Water Co.	2.2	2.4	2.6	2.8	3.3	0.0	0.0	0.0	0.0	0.0	0.0	2.4
California American Water Co.	890.0	810.1	877.4	778.9	744.9	0.0	0.0	0.0	0.0	0.0	0.0	854.7
California Water Service Co.	368.4	344.5	386.0	358.1	342.9	0.0	0.0	0.0	0.0	0.0	0.0	363.1
Camarillo, City of	266.3	220.2	234.8	139.4	102.0	0.0	0.0	0.0	0.0	0.0	0.0	307.0
Camrosa Water District	234.6	201.2	210.9	163.7	133.6	0.0	0.0	0.0	0.0	0.0	0.0	218.6
Crestview Mutual Water Co.	38.6	37.4	64.9	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0
Golden State Water Company	335.4	305.7	320.2	249.9	222.8	0.0	0.0	0.0	0.0	0.0	0.0	320.0
Triunfo Water & Sanitation	136.9	120.1	133.4	111.7	104.0	0.0	0.0	0.0	0.0	0.0	0.0	124.4
Oxnard, City of	772.3	668.9	689.7	180.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	854.5
Pleasant Valley Mutual	12.0	9.3	17.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.8
Simi Valley, City of	1101.3	1004.4	1098.7	1015.5	953.9	0.0	0.0	0.0	0.0	0.0	0.0	1074.6
Solano Verde Mutual Water Co.	15.0	14.8	13.1	16.6	17.0	0.0	0.0	0.0	0.0	0.0	0.0	14.6
Thousand Oaks, City of	619.2	581.7	602.7	541.6	503.0	0.0	0.0	0.0	0.0	0.0	0.0	588.2
Ventura Co WWD #1	426.4	379.2	405.2	344.0	306.1	0.0	0.0	0.0	0.0	0.0	0.0	460.8
Ventura Co WWD #19	23.5	23.3	19.1	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0
Ventura Co WWD #38	57.3	57.9	64.6	73.8	71.2	0.0	0.0	0.0	0.0	0.0	0.0	62.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**5349.5**	**4821.5**	**5342.2**	**3748.8**	**3504.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5275.5**

3 Month Outage on December 1st

Allocation by Month (Method 1)

purveyor	1	2	3	4	5	6	7	8	9	10	11	12
Berylwood Heights Mutual Water Co.	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Brandeis Mutual Water Co.	2.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
California American Water Co.	951.3	896.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	939.7
California Water Service Co.	393.6	381.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.9
Camarillo, City of	299.4	266.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	354.4
Camrosa Water District	266.6	247.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	267.2
Crestview Mutual Water Co.	41.2	41.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.8
Golden State Water Company	362.8	344.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	359.8
Triunfo Water & Sanitation	146.2	133.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	137.3
Oxnard, City of	874.2	829.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,031.5
Pleasant Valley Mutual	15.8	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.4
Simi Valley, City of	1,176.7	1,109.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,186.4
Solano Verde Mutual Water Co.	16.0	16.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1
Thousand Oaks, City of	659.0	604.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	648.2
Ventura Co WWD #1	460.0	428.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	511.9
Ventura Co WWD #19	27.6	30.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.6
Ventura Co WWD #38	61.2	64.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.7
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**5,755.1**	**5,410.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6,040.8**

Allocation by Month (Method 2)

purveyor	1	2	3	4	5	6	7	8	9	10	11	12
Berylwood Heights Mutual Water Co.	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Brandeis Mutual Water Co.	2.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
California American Water Co.	951.3	895.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	938.0
California Water Service Co.	393.6	381.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	399.5
Camarillo, City of	299.4	266.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	353.2
Camrosa Water District	266.6	247.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	265.8
Crestview Mutual Water Co.	41.2	41.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.7
Golden State Water Company	362.8	344.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	358.3
Triunfo Water & Sanitation	146.2	133.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	136.9
Oxnard, City of	874.2	827.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,028.3
Pleasant Valley Mutual	15.8	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.3
Simi Valley, City of	1,176.7	1,109.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,184.1
Solano Verde Mutual Water Co.	16.0	16.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1
Thousand Oaks, City of	659.0	603.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	644.3
Ventura Co WWD #1	460.0	428.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	509.9
Ventura Co WWD #19	27.6	30.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.3
Ventura Co WWD #38	61.2	64.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.5
Zone Mutual Water Co	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9
TOTAL	**5,755.2**	**5,410.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6,040.9**

3 Month Outage on June 1st

Allocation by Month (Method 1)

purveyor	1	2	3	4	5	6	7	8	9	10	11	12
Berylwood Heights Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brandeis Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	4.9	5.6	4.9	0.0	0.0	0.0	0.0
California American Water Co.	0.0	0.0	0.0	0.0	0.0	927.4	970.9	979.5	0.0	0.0	0.0	0.0
California Water Service Co.	0.0	0.0	0.0	0.0	0.0	444.7	478.7	482.2	0.0	0.0	0.0	0.0
Camarillo, City of	0.0	0.0	0.0	0.0	0.0	280.1	286.8	289.1	0.0	0.0	0.0	0.0
Camrosa Water District	0.0	0.0	0.0	0.0	0.0	343.0	352.8	364.5	0.0	0.0	0.0	0.0
Crestview Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Golden State Water Company	0.0	0.0	0.0	0.0	0.0	338.3	352.3	352.6	0.0	0.0	0.0	0.0
Triunfo Water & Sanitation	0.0	0.0	0.0	0.0	0.0	132.2	140.6	141.7	0.0	0.0	0.0	0.0
Oxnard, City of	0.0	0.0	0.0	0.0	0.0	770.5	699.8	654.9	0.0	0.0	0.0	0.0
Pleasant Valley Mutual	0.0	0.0	0.0	0.0	0.0	32.4	26.5	22.1	0.0	0.0	0.0	0.0
Simi Valley, City of	0.0	0.0	0.0	0.0	0.0	1,262.8	1,331.5	1,323.2	0.0	0.0	0.0	0.0
Solano Verde Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	22.8	25.6	26.5	0.0	0.0	0.0	0.0
Thousand Oaks, City of	0.0	0.0	0.0	0.0	0.0	642.7	672.5	676.5	0.0	0.0	0.0	0.0
Ventura Co WWD #1	0.0	0.0	0.0	0.0	0.0	493.0	517.9	534.8	0.0	0.0	0.0	0.0

Ventura Co WWD #19	0.0	0.0	0.0	0.0	0.0	41.7	58.6	65.1	0.0	0.0	0.0	0.0
Ventura Co WWD #38	0.0	0.0	0.0	0.0	0.0	94.8	105.7	108.4	0.0	0.0	0.0	0.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5,831.4**	**6,025.9**	**6,025.8**	**0.0**	**0.0**	**0.0**	**0.0**

Allocation by Month (Method 1W)

purveyor	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Berylwood Heights Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.5	0.0	0.0	0.0	0.0
Brandeis Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	2.7	2.8	2.8	0.0	0.0	0.0	0.0
California American Water Co.	0.0	0.0	0.0	0.0	0.0	964.5	996.7	996.7	0.0	0.0	0.0	0.0
California Water Service Co.	0.0	0.0	0.0	0.0	0.0	411.6	425.3	425.3	0.0	0.0	0.0	0.0
Camarillo, City of	0.0	0.0	0.0	0.0	0.0	291.1	300.8	300.8	0.0	0.0	0.0	0.0
Camrosa Water District	0.0	0.0	0.0	0.0	0.0	266.0	274.9	274.9	0.0	0.0	0.0	0.0
Crestview Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	52.9	54.6	54.6	0.0	0.0	0.0	0.0
Golden State Water Company	0.0	0.0	0.0	0.0	0.0	366.2	378.5	378.5	0.0	0.0	0.0	0.0
Triunfo Water & Sanitation	0.0	0.0	0.0	0.0	0.0	146.1	151.0	151.0	0.0	0.0	0.0	0.0
Oxnard, City of	0.0	0.0	0.0	0.0	0.0	879.1	908.4	908.4	0.0	0.0	0.0	0.0
Pleasant Valley Mutual	0.0	0.0	0.0	0.0	0.0	18.6	19.2	19.2	0.0	0.0	0.0	0.0
Simi Valley, City of	0.0	0.0	0.0	0.0	0.0	1,198.7	1,238.6	1,238.6	0.0	0.0	0.0	0.0
Solano Verde Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	16.0	16.6	16.6	0.0	0.0	0.0	0.0
Thousand Oaks, City of	0.0	0.0	0.0	0.0	0.0	660.6	682.6	682.6	0.0	0.0	0.0	0.0
Ventura Co WWD #1	0.0	0.0	0.0	0.0	0.0	461.4	476.7	476.7	0.0	0.0	0.0	0.0
Ventura Co WWD #19	0.0	0.0	0.0	0.0	0.0	28.2	29.2	29.2	0.0	0.0	0.0	0.0
Ventura Co WWD #38	0.0	0.0	0.0	0.0	0.0	67.3	69.6	69.6	0.0	0.0	0.0	0.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5,831.5**	**6,025.9**	**6,025.9**	**0.0**	**0.0**	**0.0**	**0.0**

Allocation by Month (Method 2)

purveyor	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Berylwood Heights Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brandeis Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	5.4	6.3	5.4	0.0	0.0	0.0	0.0
California American Water Co.	0.0	0.0	0.0	0.0	0.0	1,017.6	1,079.7	1,090.5	0.0	0.0	0.0	0.0
California Water Service Co.	0.0	0.0	0.0	0.0	0.0	487.9	532.3	535.8	0.0	0.0	0.0	0.0
Camarillo, City of	0.0	0.0	0.0	0.0	0.0	221.6	224.5	225.0	0.0	0.0	0.0	0.0
Camrosa Water District	0.0	0.0	0.0	0.0	0.0	290.2	297.1	306.5	0.0	0.0	0.0	0.0
Crestview Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Golden State Water Company	0.0	0.0	0.0	0.0	0.0	346.5	362.4	364.1	0.0	0.0	0.0	0.0
Triunfo Water & Sanitation	0.0	0.0	0.0	0.0	0.0	145.1	156.3	157.2	0.0	0.0	0.0	0.0
Oxnard, City of	0.0	0.0	0.0	0.0	0.0	551.9	411.4	370.7	0.0	0.0	0.0	0.0
Pleasant Valley Mutual	0.0	0.0	0.0	0.0	0.0	24.4	14.5	6.4	0.0	0.0	0.0	0.0
Simi Valley, City of	0.0	0.0	0.0	0.0	0.0	1,384.8	1,480.1	1,463.1	0.0	0.0	0.0	0.0
Solano Verde Mutual Water Co.	0.0	0.0	0.0	0.0	0.0	25.1	28.5	29.4	0.0	0.0	0.0	0.0
Thousand Oaks, City of	0.0	0.0	0.0	0.0	0.0	705.2	747.8	752.3	0.0	0.0	0.0	0.0
Ventura Co WWD #1	0.0	0.0	0.0	0.0	0.0	494.0	523.6	546.5	0.0	0.0	0.0	0.0
Ventura Co WWD #19	0.0	0.0	0.0	0.0	0.0	27.8	43.9	52.6	0.0	0.0	0.0	0.0
Ventura Co WWD #38	0.0	0.0	0.0	0.0	0.0	104.0	117.5	120.3	0.0	0.0	0.0	0.0
Zone Mutual Water Co	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5,831.5**	**6,025.9**	**6,025.9**	**0.0**	**0.0**	**0.0**	**0.0**

Attachment K-5

Calleguas MWD Ordinance No. 12

ORDINANCE NO. 12

AN ORDINANCE OF CALLEGUAS MUNICIPAL WATER DISTRICT COVERING THE RULES AND REGULATIONS FOR WATER SERVICE TO MEMBER AGENCIES WITHIN CALLEGUAS MUNICIPAL WATER DISTRICT, AS AMENDED

WHEREAS, Calleguas Municipal Water District ("District") is a public agency and special district created in 1953 by a vote of the electorate and organized pursuant to the Municipal Water District Act of 1911, as amended; and

WHEREAS, the District is a member agency of the Metropolitan Water District of Southern California ("Metropolitan" or "Metropolitan Water District"). Metropolitan is a consortium of 26 cities and water districts which cooperatively plan and manage water supply resources for approximately 19 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties; and

WHEREAS, the District's purpose is to provide a supplemental imported water supply to its service area in order to augment local water supplies for municipal, industrial and agricultural users; and

WHEREAS, the District serves approximately 366 square miles within the southeast portion of Ventura County, including the cities of Simi Valley, Moorpark, Thousand Oaks, Camarillo, Oxnard and Port Hueneme as well as the unincorporated areas of Oak Park, Santa Rosa Valley, Bell Canyon, Lake Sherwood, Somis, Las Posas Estates, Camarillo Heights and Naval Base Ventura County through its Member Agencies; and

WHEREAS, the Municipal Water District Act of 1911, as amended, enables the District to establish water rates it charges its Member Agencies, among other things; and

WHEREAS, the Board of Directors of the District (the "Board of Directors") by Ordinance No. 12, adopted July 21, 1971, established the rules, regulations and rates for water sold to its Member Agencies; and

WHEREAS, the Board of Directors has amended Ordinance No. 12 by resolution over the years to establish new rates for water sold to its Member Agencies; and

WHEREAS, most recently, the Board of Directors, by Resolution No. 1379, adopted November 27, 2002, established two tiers of rates for water sold to its Member Agencies; and

WHEREAS, the Board of Directors has determined that certain modifications to the District's rate structure for water service are necessary and desirable, and that certain other modifications to Ordinance No. 12 are necessary; and

WHEREAS, the Board of Directors finds that making these modifications in the form of an Amended Ordinance No. 12 is preferable to further amending the ordinance by resolution because the Amended Ordinance No. 12 will incorporate all modifications to the rules, regulations and rate structures for water sold to its Member Agencies into one identifiable document; and

WHEREAS, the Board of Directors finds that these modifications are for the purpose of meeting operating and construction expenses, and are therefore exempt from requirements of the California Environmental Quality Act;

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE CALLEGUAS MUNICIPAL WATER DISTRICT AS FOLLOWS:

SECTION 1. AUTHORITY. That, subject to all applicable provisions of the Municipal Water District Act of 1911, as amended, the following rules, regulations and rate structures governing the service of water to Member Agencies by the District are hereby adopted and shall become effective on the date adopted by the Board of Directors.

SECTION 2. DEFINITIONS.

(a) "Base Demand" shall mean the greater of the Initial Base Demand or the ten-year rolling average, calculated annually, of all of a Member Agency's water purchases from the District measured on a fiscal year basis during the preceding ten years.

(b) "Board of Directors" or "Board" shall refer to the Board of Directors of the Calleguas Municipal Water District.

(c) "Capacity Charge" is a charge imposed on each Member Agency and designed to recover the cost of providing peaking capacity within the distribution system.

(d) "Capacity Rate" is the rate at which the Capacity Charge is assessed.

(e) "District" shall mean the Calleguas Municipal Water District, duly organized under and by virtue of the Municipal Water District Act of 1911, as amended.

(f) "Domestic and Municipal purposes" shall mean the use of water for all domestic, municipal, commercial, industrial and recreational purposes, commonly, but not exclusively, served by the water supply of the city, town or other similar population group.

(g) "General Manager" shall refer to the General Manager of the Calleguas Municipal Water District.

(h) "High Flow Charge" is a charge for water, applied when a Member Agency's demand for water at a given service connection exceeds the established maximum rated flow capacity of that particular District service connection.

(i) "Initial Base Demand" means the Member Agency's highest annual water purchases including full-service deliveries and Interim Agricultural Water Program deliveries from the District in any fiscal year during the period from fiscal year 2002/03 through fiscal year 2013/14.

(j) "Interim Agricultural Water Program purposes" or "IAWP purposes" shall mean the service of water pursuant to the Interim Agricultural Water Program ("IAWP") as established by Metropolitan Water District. Metropolitan Water District discontinued this program in 2009.

(k) "Low Flow Charge" is a charge for water, applied when a Member Agency's demand for water at a given service connection is more than zero but less than ten percent (10%) of the established rated maximum flow capacity of that particular District service connection.

(l) "Member Agency" shall mean any city, municipal water district, county water district, county waterworks district, mutual water company, public or private utility and other public corporation, the corporate area of which, in whole or in part, is included in the District as a separate unit.

(m) "Minimum Maintenance Charge" is a charge intended to cover costs associated with service connection meter reading and processing for inactive service connections.

(n) "Pumping Charge" is a charge to a Member Agency intended to reimburse the District for electrical service costs incurred for the operation of District pump stations. The charge shall be assessed based on invoices to the District from the electrical service provider or as calculated by the District when the District is the electrical service provider.

(o) "Readiness-to-Serve Charge" is a charge intended to recover the principal and interest payments on Metropolitan Water District's non-tax supported debt service that had been or would be issued to fund capital improvements necessary to meet the continuing reliability and water quality needs associated with current and projected demands.

(p) "Service Connection" shall mean all pipes, valves, meters and other necessary or usual appurtenances required for operation and measurement of water delivered from a District transmission pipeline to a Member Agency.

(q) "Temporary Service Connection" is a service connection for construction or other non-permanent purposes subject to all terms and conditions of a District operating agreement.

(r) "Temporary Water Rate" is the rate for water supplied to an entity other than a Member Agency at a Temporary Service Connection for construction or other short-term purposes clearly defined and approved in advance in writing by the General Manager.

(s) "Tier 1 Annual Maximum" means an amount of water equal to 90% of the Base Demand for Member Agencies.

(t) "Tier 1 Supply Rate" is a water rate for domestic and municipal water, set to recover supply costs, applicable to all water purchases, up to the Tier 1 Annual Maximum.

(u) "Tier 2 Supply Rate" is a water rate for domestic and municipal water, set at the District's cost of developing additional supply, applicable to all water purchases, exceeding the Tier 1 Annual Maximum.

SECTION 3. DOMESTIC AND MUNICIPAL WATER.

(a) Each Member Agency shall be obligated to pay for all water delivered to the Member Agency by the District at the appropriate rate as established annually by the Board of Directors.

(b) Effective January 1, 2013, Tier 1 and Tier 2 Supply Rates shall be applied to the purchases by Member Agencies as follows:

(1) Tier 1 Supply Rate shall apply to all water purchases up to the Tier 1 Annual Maximum, as calculated annually by the District, in a given calendar year.

(2) Tier 2 Supply Rate shall apply to all water purchases in excess of the Tier 1 Annual Maximum, as calculated annually by the District, in a given calendar year.

(c) The Readiness-to-Serve Charge assessed by Metropolitan Water District will be proportionally shared by the Member Agencies based on the current ten (10) fiscal year rolling average of water purchases.

(d) A Capacity Charge shall be paid by each Member Agency annually based on the calculated total average flow rate that occurred during the Member Agency's peak week of water purchases from May 1 through September 30 of the prior calendar year. The components of the Capacity Charge shall include Tier 1 and Tier 2 water purchases. Each week shall begin on Tuesday. The charge shall be determined by multiplying the average flow as calculated in cubic feet per second (cfs) by the Capacity Reservation Charge as established by the Board of Directors. Payment shall be paid in twelve (12) equal monthly installments during the following calendar year.

(e) Pumping charges associated with the delivery of water shall be passed through as a line item on the monthly water bill to the applicable Member Agencies. If a District pump station delivers water to more than one Member Agency, the utility bills will be apportioned accordingly by the percentage of water purchased by the applicable Member Agencies.

(f) The billing rate for water supplied to any entity at a Temporary Service Connection for construction or other short-term purposes clearly defined and approved in advance in writing by the General Manager shall be billed at the Temporary Water Rate as established by the Board of Directors. Temporary customers shall deliver to the District an executed copy of the District's "Application For Temporary Water Service" agreement and the deposit amount noted in the agreement prior to the commencement of temporary service. The entity shall be subject to all terms and conditions as outlined in the agreement including time and materials charges for installation, monthly maintenance and removal of temporary service equipment. The deposit may be waived for contractors currently performing work under a contract with the District.

(g) When a Member Agency's demand for water at a given service connection exceeds the established maximum flow capacity of that particular District service connection, a High Flow Charge calculated at one hundred and fifty percent (150%) of the rated maximum capacity of the service connection will be assessed for each tenth of an hour of operation over the established maximum flow capacity.

(h) When a Member Agency's demand for water at a given service connection is more than zero but less than ten percent (10%) of the established maximum flow capacity of that particular District service connection, a Low Flow Charge calculated at 10% of the rated maximum capacity of the service connection will be assessed for each tenth of an hour of operation between zero and ten percent (10%) of the established maximum flow capacity.

(i) A Minimum Maintenance Charge, as established by the Board of Directors, shall be assessed on a monthly basis, in place of monthly water sales, for each service connection with monthly water sales less than the Minimum Maintenance Charge.

(j) The Board of Directors shall have the absolute and sole authority to change the rates specified in this Ordinance, and to implement new rates or pass through charges imposed on the District. The Board of Directors shall make every reasonable effort to provide sixty (60) days advance notice to all Member Agencies of such rate changes.

SECTION 4. BILLING. Water meters shall be read weekly, on Tuesdays, and on the nearest business day to the last calendar day of each month. As soon after the billing period as practicable, the District will mail or deliver to each Member Agency a statement of its bill for the preceding month. All bills or charges shall be due and payable immediately upon receipt. The following conditions also apply:

(a) Delinquencies/Penalties. Water service bills shall be delinquent if not paid by the last business day of the month of the date of mailing. Delinquent bills are subject to a penalty of one percent (1%) of the outstanding balance which shall be added thereto and charged to and collected from the Member Agency on a monthly basis, including the previous month's penalty. If payment for water service and/or penalty is not received in the District Office within sixty (60) days after such bill has become delinquent, the Board will consider appropriate action including discontinuance of service. Notice of discontinuance of service will be given to the delinquent Member Agency by registered mail at least ten (10) days prior to the date of discontinuance.

(b) Cash Deposit. Whenever any Member Agency fails to pay its water bills, the Board of Directors may require as a condition for further service a cash deposit, at an amount determined by the Board, to guarantee the prompt payment of its account in the future. The Board of Directors shall have full power to determine whether or not such deposit shall be made and the amount thereof, and the time when the requirement for deposit by any Member Agency shall be discontinued.

(c) Application of Deposit. If a Member Agency who has made such deposit fails to pay its delinquent bill or bills, including all added penalties within thirty (30) days after delinquency, its deposit shall be applied on its account and the service discontinued until such time as the deposit is restored by the Member Agency.

SECTION 5. GENERAL TERMS AND CONDITIONS.

(a) Authorized Distribution of District Supplied Water. The right of any Member Agency to water served by the District's facilities shall be restricted to the amount required for uses within the District's boundaries. Except as required by state law, or a wheeling agreement authorized by the District's Board of Directors, no potable water conveyed by the District or produced by a Member Agency shall be delivered or sold for any use outside of the District's boundaries, nor shall water conveyed by the District or produced by a Member Agency be sold or delivered for any use within the District's boundaries in substitution for water used outside the District.

The use of water trucks, or other mobile, temporary, or otherwise non-fixed facilities and equipment to deliver District water shall be limited to short duration uses within the District's boundaries for construction purposes uses or to meet acute, emergency response needs, as requested by designated public health and safety agencies, including the Ventura County Public Health Department, Ventura County Fire Department, and similar federal, state, and local entities.

Distribution system interconnections between Member Agencies are permitted provided that the water delivered remains within the District's boundaries.

(b) Proof of Annexation. Per the conditions outlined in Section 5.a, a Member Agency may not supply any District sourced water to a new service address until it has received a written release from the District confirming that the address lies within the District's boundaries.

(c) Violation of Authorized Distribution. Should the District suspect that a Member Agency is in violation of distributing water outside the limits of this Ordinance, the Board of Directors shall provide the Member Agency no less than fifteen (15) days to present any pertinent factual evidence and mitigating circumstances regarding the matter; the Board of Directors shall then render a decision that shall be final, conclusive and definitive. Should it be determined by the Board of Directors that terms of this Ordinance have been, or are being violated, the Board of Directors may assess fines or fees, request a suspension of service, and impose other actions as deemed appropriate to the Member Agency. Notice of any such determination of the District shall be in writing and mailed to such Member Agency within ten (10) days of such determination. Should suspension of service be imposed, deliveries shall be resumed only when the Member Agency involved proves to the satisfaction of the District that it has fully complied with the above rules and regulations. Determination of billing amounts shall be based on the retail meter totals or, if retail totals are not available, shall be based on the maximum industry standard for the Southern California region, gallons per capita per day, of use for the type of customer being served.

(d) Annual Estimate of Demand. Within (30) thirty days of written request, each Member Agency shall furnish the District with an estimate of its water requirements by water service type and month for the ensuing five-year period.

(e) Development Coordination. Member Agencies shall not sign and approve any plans for development, public, or other projects that affect District facilities unless those plans are already signed by the District. A project is considered to affect District facilities if any District facilities lie within the project site, are referenced in the project plans or are in the public right-of-way in the vicinity of the project site. If a Member Agency signs plans for a project that affects District facilities and is not already signed by the District, then that Member Agency assumes responsibility for any damage caused to the District's facilities by the project. Member Agencies shall not approve plans that do not comply with the more stringent of California Department of Public Health (DPH) requirements, American Water Works Association (AWWA) Standards, or District Standard Drawings to ensure proper protection of the District's pipelines and appurtenances.

SECTION 6. AVAILABILITY OF SUPPLY.

(a) District Responsibility. It is declared that the District was formed primarily to make water available to the people of the District, through distribution systems now established, or which may hereafter be established, as are able to use and distribute water at uniform rates of flow over substantial periods. The District's primary source of supply is from Metropolitan. This water supply may not be adequate or constant. The District assumes no responsibility for quantity, quality, pressure or constancy of supply. The District will not be liable for interruptions or shortages of supply, nor for any loss or damage occasioned thereby. During times of threatened or actual water shortage, the Board of Directors shall apportion the available water supply among Member Agencies in an equitable manner with due regard to public health and safety, and in accordance with the provisions of the Municipal Water District Act of 1911, as amended.

(b) Operating Conditions. All sales and deliveries of water at the rates established by the Board shall be subject to the ability of the District to sell and deliver such water under operating conditions determined by the General Manager.

(c) Peak Hourly Demands. The District's system is not designed to serve peak hourly demands. The District reserves the right to curtail peak hourly deliveries, as necessary, to conform to pipeline capacity and to assure equitable apportionment of available water and of service to all Member Agencies.

(d) Emergency Interruptions. The District shall have the right to interrupt supply of water without prior notice in the event of an emergency.

(e) Supply Shortages. In the event reduced water supplies cause Metropolitan to impose water allocations among its member agencies and surcharges for deliveries exceeding those allocations, the Board of Directors, at its discretion, may similarly allocate available supplies among District member purveyors and levy any surcharges as deemed appropriate, including those imposed on the District by Metropolitan.

Moreover, under shortage conditions, the Board may, by resolution, impose a moratorium on District annexations and/or the installation of new retail service connections by Member Agencies in an effort to extend available supplies among existing water users.

(f) Interruption of Service. Interruption of service will be necessary from time to time to facilitate routine maintenance, internal inspection, rehabilitation, and improvement projects on District facilities. Whenever maintenance of the District's system requires interruption of delivery of water at any point or points, such delivery may be interrupted, without liability on the part of the District, provided that except in cases of emergency, as determined by the General Manager, notice of such interruption of service shall be given to the affected Member Agency in advance of such interruption. The District standard for such interruption may include all services along four (4) consecutive miles of pipeline for a minimum seventy-two (72) hour period.

(g) Required Storage. In order to meet demand fluctuations, emergency interruptions and scheduled interruption of services, Member Agencies within the District shall provide adequate storage or alternate supplies, other than from District facilities, to meet their peak daily and hourly demands.

SECTION 7. SERVICE CONNECTIONS.

(a) Application for Service Connection. A Member Agency wishing to take delivery of water at a particular location shall submit a written application for a turnout and meter station to the District on a form provided by the District. The decision whether to approve the application shall be solely within the discretion of the District. The Member Agency shall be responsible for all costs associated with building the turnout and meter station at the requested location and connecting it to an existing District transmission pipeline. The Member Agency shall provide the necessary right-of-way to the District for construction, operation, and maintenance of the turnout and meter station. The Member Agency shall deposit an amount equal to the estimated cost of design of the facility prior to initiation of project design by the District and shall deposit an amount equal to the estimated cost of construction (including inspection and construction management) prior to the District's advertising the project for construction. Upon completion of construction, the District will prepare a report summarizing its costs associated with construction of the turnout, meter station, and associated pipelines and will provide an accounting to the Member Agency. In the event the actual cost is less than the deposit, the District will provide a refund. In the event the actual cost exceeds the deposit, such Member Agency shall promptly pay to the District the amount by which the costs shall exceed the deposited amounts. Service shall be initiated once full payment has been received.

(b) Ownership of Facilities. All service connections, appurtenances, meters, and transmission pipelines installed hereunder shall be and become the property of the District and shall be maintained, repaired and renewed by the District when rendered unserviceable through normal wear and tear; provided, however, that any replacements, repairs, or adjustments to any meters, or property, required because of the act, negligence or carelessness of the Member Agency, its agents or employees, or persons under its control, shall be charged against and collected from such Member Agency.

(c) Operation of Valves. Shutoff valves at service connections, or in transmission pipelines belonging to the District, shall not be operated by the Member Agency, without authorized District consent. Authorized consent can be granted by the General Manager, the Manager of Operations and Maintenance or a designee of the Manager of Operations and Maintenance.

(d) Tampering. It shall be unlawful for any person to meddle, tamper with or operate any facilities including but not limited to service connections, water meters, service pipe, transmission pipelines or valves without authorized District consent. Authorized consent can be granted by the General Manager, the Manager of Operations and Maintenance or a designee of the Manager of Operations and Maintenance. It shall be unlawful for any person to tap, break or damage any District transmission pipeline, service connections or appurtenances or any other equipment of the District.

(e) Access and Use of District Facilities. Member Agencies shall not enter District distribution facilities including buildings, cabinets, vaults, nor use District facilities to support or house Member Agency equipment without approval from the District.

(f) Communication. Member Agencies shall promptly report any leaks, failures of water supply and equipment, security breaches and other matters requiring timely response of District staff to the District's Control Room. All requests for routine operational assistance may be directed to the District's Control Room or to the appropriate District supervisor. Inquiries about policies and procedures, general information and coordination for project planning should be directed to the Manager of Operations and Maintenance. Requests to initiate new service or modify the rated capacity of existing service connections must be made in writing and filed with the General Manager.

(g) District Equipment as Billing Meter. District equipment shall be used as the primary billing meter to calculate flow rates, accumulate water use and determine the occurrence and duration of High and Low Flow Charge penalty periods. Member Agency metering data shall only be considered when District equipment is inoperable.

(h) Metering Equipment Standards. The District's established standard for metering equipment used for Member Agency billing of potable water deliveries shall be restricted to the combination of a venturi and differential pressure transmitter(s). Transmitters shall be configured as an input to a programmable logic controller or flow totalizer to calculate rate of flow and accumulate water use.

(i) Meter Testing. The District shall calibrate and test all metering components a minimum of once annually to confirm accuracy of plus or minus two percent (±2.0%). A Member Agency may request to have a service connection meter tested by the District whenever the Member Agency suspects inaccuracy. The Member Agency affected shall have the right to witness any such test. In the event that such test shall disclose an error exceeding plus or minus two per cent (±2.0%), an adjustment shall be made in metered charges to the Member Agency affected, covering the known or estimated extent and period of duration of such error up to a six-month period. If such test shall disclose an error exceeding plus or minus two per cent (±2.0%) the expenses of such test shall be borne by the District; otherwise, such expenses shall be borne by the Member Agency requesting such test.

(j) District Provided Controls. The District may install and maintain flow rate signals, pulsed totalizer contacts, valve open and close control inputs, downstream pressure regulation and rate-of-flow controls at service connections upon the issuance of a purchase order or letter of request and authorization from the Member Agency. All District supplied signals and controls are provided as a courtesy to the Member Agency. It is the responsibility of the Member Agency to control their own system demands and maintain operations within the rated capacity of their service connection(s), and any reliance upon District equipment is done so solely at the risk of the Member Agency. The inaccuracy or failure of District provided signals and controls does not constitute cause to avoid payment of High or Low Flow Charges, nor to dispute the receipt of District water or metered totals. All costs for installation and maintenance of requested automation equipment shall be paid by the Member Agency. The District reserves the right to refuse installation and to remove controls if it so desires.

(k) Float Mode. If a Member Agency does not wish to use open and close control signals or if a Member Agency requests to bypass their open and close control signals at a service connection, the District shall configure the service connection to be in "Float Mode," whereby the connection instantaneously responds to changes in downstream pressure at any rate of flow needed to maintain downstream pressure regardless of the service connection's rated flow range. If Float Mode is requested, either verbally or under the execution of a Float Mode Request Form, the Member Agency understands that operation in this mode will result in the accumulation of Low Flow Charge penalty hours and potentially in High Flow Charge penalty hours, and the Member Agency agrees to pay all charges as assessed.

(l) Hydraulic Transients. Member Agencies shall operate their water distribution systems in a manner which does not cause hydraulic transients or pressure changes at service connections that are greater than 125% of the average pressure delivered to the Member Agency and no less than 50% of the average pressure delivered to the Member Agency or 20 psi, whichever is greater.

SECTION 8. LEGAL CHALLENGES. If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining portions of this Ordinance. The Board of Directors hereby declares that it would have passed this Ordinance by section, subsection, sentence, clause or phrase thereof, irrespective of the fact that any one or more other sections, subsections, sentences, clauses, or phrases be declared invalid or unconstitutional.

SECTION 9. ADMINISTRATION. All water service shall be made in accordance with these rules and regulations unless otherwise approved by the Board of Directors. These rules and regulations may be amended, modified, changed or repealed by the Board of Directors by resolution or ordinance.

SECTION 10. NOTICES. All notices and communications from agencies to the District relating to the service of water or the administration of these rules and regulations by the District, shall be addressed to the General Manager of the District, 2100 Olsen Road, Thousand Oaks, California 91360.

SECTION 11. PREVIOUS RESOLUTIONS. All Resolutions passed heretofore with regard to water rate structures and service connection policies are herewith cancelled.

SECTION 12. EFFECTIVE DATE AND SUNSET. This Ordinance shall be given effect at 12:01 a.m. on January 8, 2015. This Ordinance shall not have a sunset date.

ADOPTED, SIGNED AND APPROVED this 07 day of January, 2015.

Scott Quady, President
Board of Directors

On motion by Director Santamaria, and seconded by Director Blois, the foregoing ordinance is adopted upon this seventh day of January 7, 2015, by the following vote:

AYES: Directors Waters, Slosson, Blois, Santamaria, Quady

NAYS: None

ABSENT:

ABSTAIN:

I HEREBY CERTIFY that the foregoing Ordinance was adopted at a regular meeting of the Board of Directors of Calleguas Municipal Water District held on January 7, 2015.

ATTEST:

Andres Santamaria

Andres Santamaria, Secretary
Board of Directors

(SEAL)

Appendix L

QUANTIFYING SELF-RELIANCE AND RELIANCE ON WATER SUPPLIES FROM THE DELTA

Calleguas Municipal Water District
Reduced Delta Reliance Reporting

L.1 Background

Calleguas Municipal Water District (Calleguas) operates as a Member Agency of the Metropolitan Water District of Southern California (Metropolitan). Metropolitan provides Calleguas with imported water supplies, which Calleguas in turn distributes on a wholesale basis to its retail water purveyors. Metropolitan is a contractor on the State Water Project (SWP) and virtually all imported water supplies made available to Calleguas originate from the SWP system. The SWP system runs from Lake Oroville in Northern California to Southern California, crossing the Sacramento-San Joaquin Delta (Delta) along the way.

Calleguas is an urban water supplier that anticipates receiving water from a proposed covered action, such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta. Through this appendix, Calleguas is providing information in its 2015 and 2020 Urban Water Management Plans (UWMPs) that may 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* (WR P1).[1]

Delta Plan Policy WR P1 is one of fourteen regulatory policies in the Delta Plan. The Delta Plan was adopted in 2013 by the Delta Stewardship Council. Delta Plan Policy WR P1 identifies UWMPs as the tool to demonstrate consistency with state policy to reduce reliance on the Delta for a supplier that carries out or takes part in a covered action. WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

(a) Water shall not be exported from, transferred through, or used in the Delta if all of the following apply:

(1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);

(2) That failure has significantly caused the need for the export, transfer, or use; and

(3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.

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;

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[1] Cal. Code Regs., tit. 23, § 5003.

> *(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 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).*

The analysis and documentation provided below include all of the elements described in WR P1(c)(1) and are included in Calleguas' UWMP to support a certification of consistency for a future covered action.

L.2 SUMMARY OF EXPECTED OUTCOMES FOR REDUCED RELIANCE ON THE DELTA

As stated in WR P1(c)(1), the policy requires that, commencing in 2015, UWMPs include expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta.

It is important to note that Metropolitan reports the expected outcomes for reduced reliance on the Delta in its 2020 UWMP on a region-wide scale that includes its Member Agencies. From its 2010 baseline, both long-term Regional Self-Reliance and Reduced Reliance on Supplies from the Delta Watershed are expected to increase over time.

Calleguas will report its own expected outcomes for Regional Self-Reliance. This report uses the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook 2020 (Guidebook Appendix C) issued in December 2020 and revised March 2021.

As discussed in Section L.4, Metropolitan's Member Agencies and their customers indirectly reduce reliance on the Delta through collective efforts as a cooperative. Therefore, Calleguas will report Metropolitan's expected outcomes for Reduced Reliance on Supplies from the Delta Watershed.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for Calleguas' Delta reliance and regional self-reliance. The results show that on a District-wide scale, Calleguas and its purveyors are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

Expected Outcomes for Regional Self-Reliance for Calleguas MWD

- Near-term (2025) – Normal water regional self-reliance is expected to increase by 56 thousand acre-feet (TAF) from the 2010 baseline; this represents an increase of about 28 percent of 2025 normal water year retail demands (Table L-3).
- Long-term (2045) – Normal water regional self-reliance is expected to increase by 70 TAF from the 2010 baseline; this represents an increase of about 33 percent of 2045 normal water year retail demands (Table L-3).

Expected Outcomes for Reduced Reliance on Supplies from the Delta Watershed for Metropolitan

- Near-term (2025) – Normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline, this represents a decrease of 3 percent of 2025 normal water year retail demands (Table L-4).
- Long-term (2045) – Normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline, this represents a decrease of just over 5 percent of 2045 normal water year retail demands (Table L-4).

L.3 Demonstration of Reduced Reliance on the Delta

The methodology used to determine Metropolitan's reduced Delta reliance and Calleguas' improved regional self-reliance is consistent with the approach detailed in DWR's UWMP Guidebook Appendix C, including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions underlying these analyses include:

- A future SWP Interconnection will enable wheeling of SWP water supplies through Metropolitan and Calleguas to the City of Ventura. This program would be online no earlier than 2025, and with a potential long-term average of no more than 5,400 AFY. As this supply would be wheeled through the Calleguas distribution system to satisfy demands outside of the District's service area, this program was excluded from Calleguas' analysis of reduced reliance on the Delta. More description on these water supplies can be found in Section 6.7 – Water Exchanges, Transfers, and Other in the Calleguas 2020 UWMP.
- All data were obtained from the current 2020 UWMP or previously adopted UWMPs and represent average or normal water year conditions.
- The analysis of Regional Self-Reliance was conducted at the Calleguas, District-wide level, and all data reflect the total contributions of its purveyors. The analysis of Reduced Reliance on Supplies from the Delta Watershed was conducted at the Metropolitan service area level, and all data reflect the total contributions of Metropolitan and its members as well as their customers.
- No projects or programs that are described in the UWMPs as "Projects Under Development" were included in the accounting of supplies.

Baseline and Calculation of Water Use Efficiency

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. This analysis uses a normal water year representation of 2010 as the baseline, which is consistent with the approach described in the Guidebook Appendix C.

As shown in Tables L-1 and L-2, Calleguas utilized the optional calculation tool to determine its *Water Use Efficiency Since Baseline*:

Table L-1: Water Use Efficiency Since Baseline

Service Area Water Use Efficiency Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	186,041	179,818	163,667	142,158	142,727	143,445	143,545	144,291
Non-Potable Water Demands	14,015	19,340	17,312	13,406	15,115	15,681	16,249	16,547
Potable Service Area Demands with Water Use Efficiency Accounted For	172,026	160,478	146,355	128,752	127,612	127,764	127,296	127,744

Total Service Area Population	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Population	634,800	659,330	656,804	669,437	679,367	689,762	699,089	708,575

Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Per Capita Water Use (GPCD)	242	217	199	172	168	165	163	161
Change in Per Capita Water Use from Baseline (GPCD)		(25)	(43)	(70)	(74)	(77)	(79)	(81)
Estimated Water Use Efficiency Since Baseline		18,195	31,634	52,660	56,491	59,156	62,152	64,274

Table L-2: Total Service Area Water Demands

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	186,041	179,818	163,667	142,158	142,727	143,445	143,545	144,291
Reported Water Use Efficiency	-	18,195	31,634	52,660	56,491	59,156	62,152	64,274
Service Area Water Demands without Water Use Efficiency Accounted For	186,041	198,013	195,301	194,818	199,218	202,601	205,697	208,565

Data used in these calculations are explained below:

Service Area Demands with Water Use Efficiency Accounted For

The demand data shown in Table L-1 were collected from the following sources and calculated in Table L-2:

- Baseline (2010) value – Calleguas' 2005 UWMP, Table 3-3: CMWD's Total Demand Projections
- 2015 value – Calleguas' 2010 UWMP, Table 3-3: CMWD's Total Demand Projections
- 2020 value – Calleguas' 2015 UWMP, Appendix B – Aggregate Purveyor Supply/Demand Projections, pg. 92 Net Demand Reconciliation – Normal Year, 2020 Total Demand: 163,667 AF
- 2025-2045 values – Calleguas' 2020 UWMP, Appendix D – Calleguas Municipal Water District Normal Year, Total Demands After Conservation

Non-Potable Water Demands

The demand data shown in Table L-1 were collected from the following sources (note: non-potable water demands correlate directly to forecasted non-potable, local supply projections):

- Baseline (2010) value – Calleguas' 2010 UWMP, Table 2-8 CMWD's Local Supply Projections for Average Year Conditions, Recycled Wastewater (6,947 AF) + Non-Potable Groundwater (7,068 AF). Note: Non-potable Water Demand estimates from Calleguas' 2005 UWMP were not used due to data quality concerns.
- 2015 value – Calleguas' 2010 UWMP, Table 2-8 CMWD's Local Supply Projections for Average Year Conditions, Recycled Wastewater (12,009 AF) + Non-Potable Groundwater (7,331 AF)
- 2020 value – Calleguas' 2015 UWMP, Appendix B – Aggregate Purveyor Supply/Demand Projections, pg. 80 Summary of Recycled Supplies – Normal Year, 2020 Total Normal Year Recycled Supply: 9,485 AF, pg. 84 Summary of Non-Potable Groundwater Supplies – Normal Year, 2020 Total Normal Year Non-Potable Groundwater Supply: 7,827 AF
- 2025-2045 values – Calleguas' 2020 UWMP, Appendix D – Calleguas Municipal Water District Normal Year, Local Supplies, Recycling

Total Service Area Population

The population data shown in Table L-1 were collected from the following sources:

- Baseline (2010) value – Calleguas' 2005 UWMP Table 1-3 CMWD Service Area Projections, MWD
- 2015 value – Calleguas' 2010 UWMP, Table 1-3 CMWD Service Area Population Projections, MWD Projections
- 2020 value – Calleguas' 2015 UWMP, Table 3-1 Population – Current and Projected
- 2025-2045 values – Calleguas' 2020 UWMP, Appendix D – Calleguas Municipal Water District Normal Year, Demographics

Water Use Efficiency Since Baseline

As demonstrated in Table L-2, the Calleguas service area has seen a significant increase in water use efficiency since the 2010 baseline. Imported water demands are forecasted to decrease into the future as Calleguas purveyors expand and/or implement new local supply programs.

Total Service Area Water Demands

Following the calculation of "Reported Water Use Efficiency", those demands are added to "Service Area Water Demands with Water Use Efficiency Accounted For" to reflect the total retail water demands for the Calleguas service area (Table L-2).

Water Supplies Contributing to Regional Self-Reliance

For a covered action to demonstrate consistency with the Delta Plan, WR P1(c)(1) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table L-3 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The numbers shown in Table L-3 represent efforts to improve regional self-reliance for the Calleguas service area and include the total contributions of Calleguas and its purveyors.

Supporting narratives and documentation for the all the data shown in Table L-3 are provided below:

Water Use Efficiency

The water use efficiency information shown in Table L-3 is taken directly from Table L-2. It is now reflected as a supply contributing to regional self-reliance.

Water Recycling (Non-potable)

The water recycling values shown in Table L-3 are supplies to meet the projected "Non-potable Water Demands" shown in Table L-1. A description on these water supplies can be found in Section 6.5 – Wastewater and Recycled Water in the District's 2020 UWMP.

Advanced Water Technologies

The advanced water technologies data shown in Table L-3 include total groundwater recovery and groundwater desalination production in Calleguas' service area, and were collected from the following sources:

- Baseline (2010) value – Calleguas' 2010 UWMP Table 2-8 CMWD's Local Supply Projections for Average Year Conditions
- 2015 value – Calleguas' 2010 UWMP Table 2-8 CMWD's Local Supply Projections for Average Year Conditions
- 2020 value – Calleguas' 2015 UWMP, Appendix B – Aggregate Purveyor Supply/Demand Projections, pg. 86 Summary of Recovered Groundwater Supplies – Normal Year, 2020: 12,350 AF
- 2025-2045 values – Calleguas' 2020 UWMP, Appendix D – Calleguas Municipal Water District Normal Year, Local Supplies, Groundwater Recovery

Table L-3: Water Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Use Efficiency	-	18,195	31,634	52,660	56,491	59,156	62,152	64,274
Water Recycling (Non-potable Supplies)	14,015	19,340	17,312	13,406	15,115	15,681	16,249	16,547
Stormwater Capture and Use	-	-	-	-	-	-	-	-
Advanced Water Technologies	800	13,499	12,350	4,840	4,840	4,840	4,840	4,840
Conjunctive Use Projects	-	-	-	-	-	-	-	-
Local and Regional Water Supply and Storage Projects	-	-	-	-	-	-	-	-
Other Programs and Projects that Contribute to Regional Self-Reliance	-	-	-	-	-	-	-	-
Water Supplies Contributing to Regional Self-Reliance	14,815	51,034	61,296	70,906	76,446	79,677	83,241	85,661

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands without Water Use Efficiency Accounted For	186,041	198,013	195,301	194,818	199,218	202,601	205,697	208,565

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies Contributing to Regional Self-Reliance	14,815	51,034	61,296	70,906	76,446	79,677	83,241	85,661
Change in Water Supplies Contributing to Regional Self-Reliance		36,219	46,481	56,091	61,631	64,862	68,426	70,846

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies Contributing to Regional Self-Reliance	8.0%	25.8%	31.4%	36.4%	38.4%	39.3%	40.5%	41.1%
Change in Percent of Water Supplies Contributing to Regional Self-Reliance		17.8%	23.4%	28.4%	30.4%	31.4%	32.5%	33.1%

Summary of Table L-3

The results shown in Table L-3 demonstrate that Calleguas is improving its regional self-reliance. Water supplies contributing to regional self-reliance are projected to increase over time. In the near-term (2025), the expected outcome for normal water year regional self-reliance increases by 56 TAF from the 2010 baseline; this represents an increase of about 28 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year regional self-reliance is expected to increase by more than 70 TAF from the 2010 baseline.

Reliance on Water Supplies from the Delta Watershed

WR P1(c)(1) requires that water suppliers report the expected outcomes for measurable reductions in supplies from the Delta watershed either as an amount or as a percentage. This analysis provides both calculations.

Based on the methodology described in Guidebook Appendix C, and consistent with the approach of this analysis, this accounting does not include any supplies from potential future covered actions. Table L-4 shows the expected outcomes for reliance on supplies from the Delta watershed for the entire Metropolitan service area.

Supporting narratives and documentation for the data shown in Table L-4 are provided below:

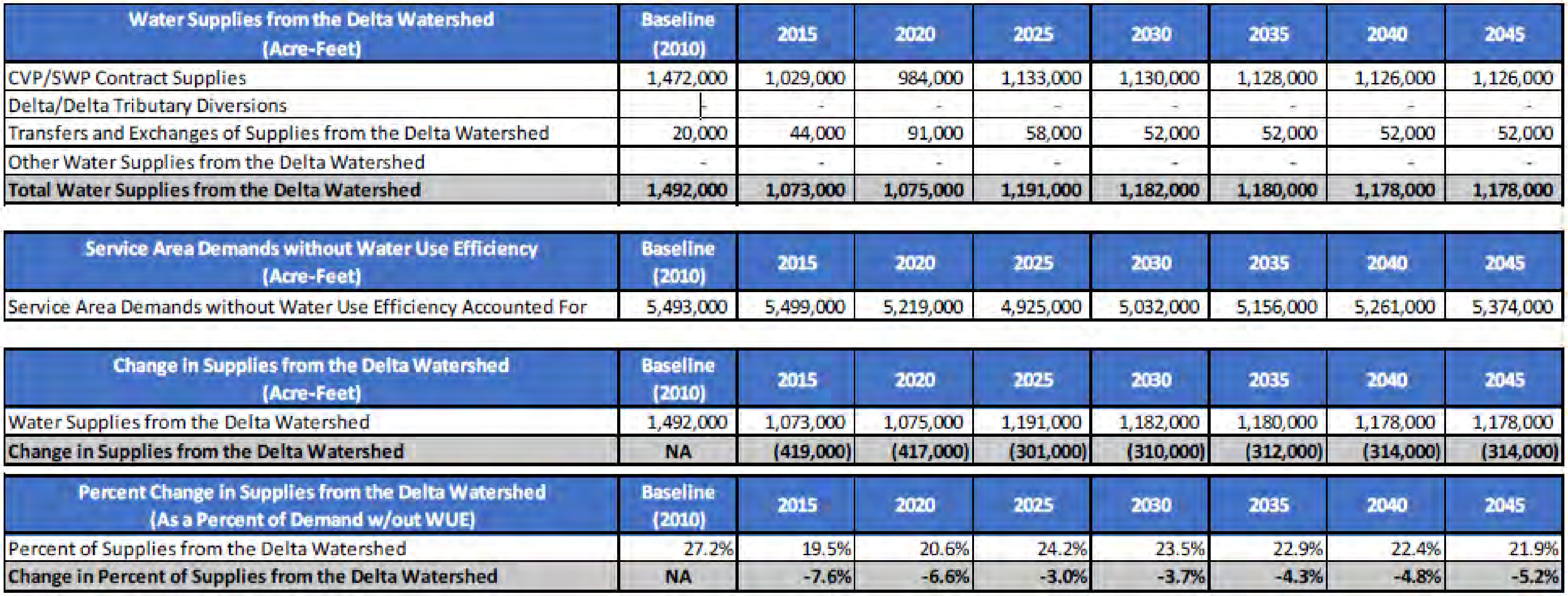
CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in Table L-4 include Metropolitan's SWP Table A and Article 21 supplies. These supplies are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP. Additional information is included in Appendix 11 of Metropolitan's UWMP.

Transfers and Exchanges of Supplies from the Delta Watershed

As a Member Agency of Metropolitan, Calleguas benefits from transfer and exchange agreements made through Metropolitan. The transfers and exchanges of supplies from the Delta watershed shown in Table A.11-3 include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP. Additional information is included in Appendix 11 of Metropolitan's UWMP.

Table L-4: 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	1,472,000	1,029,000	984,000	1,133,000	1,130,000	1,128,000	1,126,000	1,126,000
Delta/Delta Tributary Diversions	-	-	-	-	-	-	-	-
Transfers and Exchanges of Supplies from the Delta Watershed	20,000	44,000	91,000	58,000	52,000	52,000	52,000	52,000
Other Water Supplies from the Delta Watershed	-	-	-	-	-	-	-	-
Total Water Supplies from the Delta Watershed	**1,492,000**	**1,073,000**	**1,075,000**	**1,191,000**	**1,182,000**	**1,180,000**	**1,178,000**	**1,178,000**

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,191,000	1,182,000	1,180,000	1,178,000	1,178,000
Change in Supplies from the Delta Watershed	**NA**	**(419,000)**	**(417,000)**	**(301,000)**	**(310,000)**	**(312,000)**	**(314,000)**	**(314,000)**

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 Supplies from the Delta Watershed	27.2%	19.5%	20.6%	24.2%	23.5%	22.9%	22.4%	21.9%
Change in Percent of Supplies from the Delta Watershed	**NA**	**-7.6%**	**-6.6%**	**-3.0%**	**-3.7%**	**-4.3%**	**-4.8%**	**-5.2%**

Summary of Table L-4

The results shown in Table L-4 demonstrate that Metropolitan, its Member Agencies and their customers are measurably reducing reliance on supplies traveling through the Delta. In the near-term (2025), the expected outcome for normal water year reliance on supplies from the Delta watershed decreased by over 301 TAF from the 2010 baseline; this represents a decrease of 3 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline; this represents a decrease of just over 5 percent of 2045 normal water year retail demands.

L.4 Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan's Member Agencies and their Customers

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

Metropolitan's member agencies, and those agencies' customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. Metropolitan's member agencies do not control the amount of Delta water they receive from Metropolitan. Metropolitan manages a statewide integrated conveyance system consisting of its participation in the State Water Project (SWP), its Colorado River Aqueduct (CRA) including Colorado River water resources, programs and water exchanges, and its regional storage portfolio. Along with the SWP, CRA, storage programs, and Metropolitan's conveyance and distribution facilities, demand management programs increase the future reliability of water resources for the region. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

Metropolitan's costs are funded almost entirely from its service area, with the exception of grants and other assistance from government programs. Most of Metropolitan's revenues are collected directly from its member agencies. Properties within Metropolitan's service area pay a property tax that currently provides approximately 8 percent of the fiscal year 2021 annual budgeted revenues. The rest of Metropolitan's costs are funded through rates and charges paid by Metropolitan's member agencies for the wholesale services it provides to them.[2] Thus, Metropolitan's member agencies fund nearly all operations Metropolitan undertakes to reduce reliance on the Delta, including Colorado River Programs, storage facilities, Local Resources Programs and Conservation Programs within Metropolitan's service area.

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[2] A standby charge is collected from properties within the service areas of 21 of Metropolitan's 26 member agencies, ranging from $5 to $14.20 per acre annually, or per parcel if smaller than an acre. Standby charges go towards those member agencies' obligations to Metropolitan for the Readiness-to-Serve Charge. The total amount collected annually is approximately $43.8 million, approximately 2 percent of Metropolitan's fiscal year 2021 annual budgeted revenues.

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

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

Colorado River Programs

As a regional cooperative of member agencies, Metropolitan invests in programs to ensure the continued reliability and sustainability of Colorado River supplies. Metropolitan was established to obtain an allotment of Colorado River water, and its first mission was to construct and operate the CRA. The CRA consists of five pumping plants, 450 miles of high voltage power lines, one electric substation, four regulating reservoirs, and 242 miles of aqueducts, siphons, canals, conduits and pipelines terminating at Lake Mathews in Riverside County. Metropolitan owns, operates, and manages the CRA. Metropolitan is responsible for operating, maintaining, rehabilitating, and repairing the CRA, and is responsible for obtaining and scheduling energy resources adequate to power pumps at the CRA's five pumping stations.

Colorado River supplies include Metropolitan's basic Colorado River apportionment, along with supplies that result from existing and committed programs, including supplies from the Imperial Irrigation District (IID)-Metropolitan Conservation Program, the implementation of the Quantification Settlement Agreement (QSA) and related agreements, and the exchange agreement with San Diego County Water Authority (SDCWA). The QSA established the baseline water use for each of the agreement parties and facilitates the transfer of water from agricultural agencies to urban uses. Since the QSA, additional programs have been implemented to increase Metropolitan's CRA supplies. These include the PVID Land Management, Crop Rotation, and Water Supply Program, as well as the Lower Colorado River Water Supply Project. The 2007 Interim Guidelines provided for the coordinated operation of Lake Powell and Lake Mead, as well as the Intentionally Created Surplus (ICS) program that allows Metropolitan to store water in Lake Mead.

Storage Investments/Facilities

Surface and groundwater storage are critical elements of Southern California's water resources strategy and help Metropolitan reduce its reliance on the Delta. Because California experiences dramatic swings in weather and hydrology, storage is important to regulate those swings and mitigate possible supply shortages. Surface and groundwater storage provide a means of storing water during normal and wet years for later use during dry years, when imported supplies are limited. The Metropolitan system, for purposes of meeting demands during times of shortage, regulating system flows, and ensuring system reliability in the event of a system outage, provides over 1,000,000 acre-feet of system storage capacity. Diamond Valley Lake provides 810,000 acre-feet of that storage capacity, effectively doubling Southern California's previous surface water storage capacity. Other existing imported water storage available to the region consists of

Metropolitan's raw water reservoirs, a share of the SWP's raw water reservoirs in and near the service area, and the portion of the groundwater basins used for conjunctive-use storage.

Since the early twentieth century, DWR and Metropolitan have constructed surface water reservoirs to meet emergency, drought/seasonal, and regulatory water needs for Southern California. These reservoirs include Pyramid Lake, Castaic Lake, Elderberry Forebay, Silverwood Lake, Lake Perris, Lake Skinner, Lake Mathews, Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, Orange County Reservoir, and Metropolitan's Diamond Valley Lake (DVL). Some reservoirs such as Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, and Orange County Reservoir, which have a total combined capacity of about 3,500 AF, are used solely for regulating purposes. The total gross storage capacity for the larger remaining reservoirs is 1,757,600 AF. However, not all of the gross storage capacity is available to Metropolitan; dead storage and storage allocated to others reduce the amount of storage that is available to Metropolitan to 1,665,200 AF.

Conjunctive use of the aquifers offers another important source of dry year supplies. Unused storage in Southern California groundwater basins can be used to optimize imported water supplies, and the development of groundwater storage projects allows effective management and regulation of the region's major imported supplies from the Colorado River and SWP. Over the years, Metropolitan has implemented conjunctive use through various programs in the service area; Table L-5 lists the groundwater conjunctive use programs that have been developed in the region.

Table L-5: Regional Groundwater Conjunctive Use Programs in the Metropolitan Service Area

Program	Metropolitan Agreement Partners	Program Term	Max Storage AF	Dry-Year Yield AF/Yr
Long Beach Conjunctive Use Storage Project (Central Basin)	Long Beach	June 2002-2027	13,000	4,300
Foothill Area Groundwater Storage Program (Monkhill/ Raymond Basin)	Foothill MWD	February 2003-2028	9,000	3,000
Orange County Groundwater Conjunctive Use Program	MWDOC OCWD	June 2003-2028	66,000+	22,000
Chino Basin Conjunctive Use Programs	IEUA TVMWD Watermaster	June 2003-2028	100,000	33,000
Live Oak Basin Conjunctive Use Project (Six Basins)	TVMWD City of La Verne	October 2002-2027	3,000	1,000
City of Compton Conjunctive Use Project (Central Basin)	Compton	February 2005-2030	2,289	763
Long Beach Conjunctive Use Program Expansion in Lakewood (Central Basin)	Long Beach	July 2005-2030	3,600	1,200
Upper Claremont Basin Groundwater Storage Program (Six Basins)	TVMWD	Sept. 2005- 2030	3,000	1,000
Elsinore Basin Conjunctive Use Storage Program	Western MWD Elsinore Valley MWD	May 2008- 2033	12,000	4,000
TOTAL			**211,889**	**70,263**

Metropolitan Demand Management Programs

Demand management costs are Metropolitan's expenditures for funding local water resource development programs and water conservation programs. These Demand Management Programs incentivize the development of local water supplies and the conservation of water to reduce the need to import water to deliver to Metropolitan's member agencies. These programs are implemented below the delivery points between Metropolitan's and its member agencies' distribution systems and, as such, do not add any water to Metropolitan's supplies. Rather, the effect of these downstream programs is to produce a local supply of water for the local agencies and to reduce demands by member agencies for water imported through Metropolitan's system. The following discussions outline how Metropolitan funds local resources and conservation programs for the benefit of all of its member agencies and the entire Metropolitan service area. Notably, the history of demand management by Metropolitan's member agencies and the local agencies that purchase water from Metropolitan's members has spanned more than four decades. The significant history of the programs is another reason it would be difficult to attempt to assign a portion of such funding to any one individual member agency.

Local Resources Programs

In 1982, Metropolitan began providing financial incentives to its member agencies to develop new local supplies to assist in meeting the region's water needs. Because of Metropolitan's regional distribution system, these programs benefit all member agencies regardless of project location because they help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on Metropolitan's infrastructure, reduce system costs and free up conveyance capacity to the benefit of all the agencies that rely on water from Metropolitan.

For example, the Groundwater Replenishment System (GWRS) operated by the Orange County Water District is the world's largest water purification system for indirect potable reuse. It was funded, in part, by Metropolitan's member agencies through the Local Resources Program. Annually, the GWRS produces approximately 103,000 acre-feet of reliable, locally controlled, drought-proof supply of high-quality water to recharge the Orange County Groundwater Basin and protect it from seawater intrusion. The GWRS is a premier example of a regional project that significantly reduced the need to utilize imported water for groundwater replenishment in Metropolitan's service area, increasing regional and local supply reliability and reducing the region's reliance on imported supplies, including supplies from the State Water Project.

Metropolitan's local resource programs have evolved through the years to better assist Metropolitan's member agencies in increasing local supply production. The following is a description and history of the local supply incentive programs.

Local Projects Program

In 1982, Metropolitan initiated the Local Projects Program (LPP), which provided funding to member agencies to facilitate the development of recycled water projects. Under this approach, Metropolitan contributed a negotiated up-front funding amount to help finance project capital costs. Participating member agencies were obligated to reimburse Metropolitan over time. In 1986, the LPP was revised, changing the up-front funding approach to an incentive-based approach. Metropolitan contributed an amount equal to the avoided State Water Project pumping costs for each acre-foot of recycled water delivered to end-use consumers. This funding incentive was based on the premise that local projects resulted in the reduction of water imported from the Delta and the associated pumping cost. The incentive amount varied from year to year depending on the actual variable power cost paid for State Water Project imports. In 1990, Metropolitan's Board increased the LPP contribution to a fixed rate of $154 per acre-foot, which was calculated based on Metropolitan's avoided capital and operational costs to convey, treat, and distribute water, and included considerations of reliability and service area demands.

Groundwater Recovery Program

The drought of the early 1990s sparked the need to develop additional local water resources, aside from recycled water, to meet regional demand and increase regional water supply reliability. In 1991, Metropolitan conducted the Brackish Groundwater Reclamation Study which determined that large amounts of degraded groundwater in the region were not being utilized. Subsequently, the Groundwater Recovery Program (GRP) was established to assist the recovery of otherwise unusable groundwater degraded by minerals and other contaminants, provide access to the storage assets of the degraded groundwater, and maintain the quality of groundwater resources by reducing the spread of degraded plumes.

Local Resources Program

In 1995, Metropolitan's Board adopted the Local Resources Program (LRP), which combined the LPP and GRP into one program. The Board allowed for existing LPP agreements with a fixed incentive rate to convert to the sliding scale up to $250 per acre-foot, similar to GRP incentive terms. Those agreements that were converted to LRP are known as "LRP Conversions."

Competitive Local Projects Program

In 1998, the Competitive Local Resources Program (Competitive Program) was established. The Competitive Program encouraged the development of recycled water and recovered groundwater through a process that emphasized cost-efficiency to Metropolitan, timing new production according to regional need while minimizing program administration cost. Under the Competitive Program, agencies requested an incentive rate up to $250 per acre-foot of production over 25 years under a Request for Proposals (RFP) for the development of up to 53,000 acre-feet per year of new water recycling and groundwater recovery projects. In 2003, a second RFP was issued for the development of an additional 65,000 acre-feet of new recycled water and recovered groundwater projects through the LRP.

Seawater Desalination Program

Metropolitan established the Seawater Desalination Program (SDP) in 2001 to provide financial incentives to member agencies for the development of seawater desalination projects. In 2014, seawater desalination projects became eligible for funding under the LRP, and the SDP was ended.

2007 Local Resources Program

In 2006, a task force comprised of member agency representatives was formed to identify and recommend program improvements to the LRP. As a result of the task force process, the 2007 LRP was established with a goal of 174,000 acre-feet per year of additional local water resource development. The new program allowed for an open application process and eliminated the previous competitive process. This program offered sliding scale incentives of up to $250 per acre-foot, calculated annually based on a member agency's actual local resource project costs exceeding Metropolitan's prevailing water rate.

2014 Local Resources Program

A series of workgroup meetings with member agencies was held to identify the reasons why there was a lack of new LRP applications coming into the program. The main constraint identified by the member agencies was that the $250 per acre-foot was not providing enough of an incentive for developing new projects due to higher construction costs to meet water quality requirements and to develop the infrastructure to reach end-use consumers located further from treatment plants. As a result, in 2014, the Board authorized an increase in the maximum incentive amount, provided alternative payment structures, included onsite retrofit costs and reimbursable services as part of the LRP, and added eligibility for seawater desalination projects. The current LRP incentive payment options are structured as follows:

Option 1 – Sliding scale incentive up to $340/AF for a 25-year agreement term

Option 2 – Sliding scale incentive up to $475/AF for a 15-year agreement term

Option 3 – Fixed incentive up to $305/AF for a 25-year agreement term

On-site Retrofit Programs

In 2014, Metropolitan's Board also approved the On-site Retrofit Pilot Program which provided financial incentives to public or private entities toward the cost of small-scale improvements to their existing irrigation and industrial systems to allow connection to existing recycled water pipelines. The On-site Retrofit Pilot Program helped reduce recycled water retrofit costs to the end-use consumer which is a key constraint that limited recycled water LRP projects from reaching full production capacity. The program incentive was equal to the actual eligible costs of the on-site retrofit, or $975 per acre-foot of up-front cost, which equates to $195 per acre-foot for an estimated five years of water savings ($195/AF x 5 years) multiplied by the average annual water use in previous three years, whichever is less. The Pilot Program lasted two years and was successful in meeting its goal of accelerating the use of recycled water.

In 2016, Metropolitan's Board authorized the On-site Retrofit Program (ORP), with an additional budget of $10 million. This program encompassed lessons learned from the Pilot Program and feedback from member agencies to make the program more streamlined and improve its efficiency. As of fiscal year 2019/20, the ORP has successfully converted 440 sites, increasing the use of recycled water by 12,691 acre-feet per year.

Stormwater Pilot Programs

In 2019, Metropolitan's Board authorized both the Stormwater for Direct Use Pilot Program and a Stormwater for Recharge Pilot Program to study the feasibility of reusing stormwater to help meet regional demands in Southern California. These pilot programs are intended to encourage the development, monitoring, and study of new and existing stormwater projects by providing financial incentives for their construction/retrofit and monitoring/reporting costs. These pilot programs will help evaluate the potential benefits delivered by stormwater capture projects and provide a basis for potential future funding approaches. Metropolitan's Board authorized a total of $12.5 million for the stormwater pilot programs ($5 million for the District Use Pilot and $7.5 million for the Recharge Pilot).

Current Status and Results of Metropolitan's Local Resource Programs

Today, nearly one-half of the total recycled water and groundwater recovery production in the region has been developed with an incentive from one or more of Metropolitan's local resource programs. During fiscal year 2020, Metropolitan provided about $13 million for production of 71,000 acre-feet of recycled water for non-potable and indirect potable uses. Metropolitan provided about $4 million to support projects that produced about 50,000 acre-feet of recovered groundwater for municipal use. Since 1982, Metropolitan has invested $680 million to fund 85 recycled water projects and 27 groundwater recovery projects that have produced a cumulative total of about 4 million acre-feet.

Conservation Programs

Metropolitan's regional conservation programs and approaches have a long history. Decades ago, Metropolitan recognized that demand management at the consumer level would be an important part of balancing regional supplies and demands. Water conservation efforts were seen as a way to reduce the need for imported supplies and offset the need to transport or store additional water into or within the Metropolitan service area. The actual conservation of water takes place at the retail consumer level. Regional conservation approaches have proven to be effective at reaching retail consumers throughout Metropolitan's service area and successfully implementing water saving devices, programs and practices. Through the pooling of funding by Metropolitan's member agencies, Metropolitan is able to engage in regional campaigns with wide-reaching impact. Regional investments in demand management programs, of which conservation is a key part along with local supply programs, benefit all member agencies regardless of project location. These programs help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on Metropolitan's infrastructure, reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

Incentive-Based Conservation Programs

Conservation Credits Program

In 1988, Metropolitan's Board approved the Water Conservation Credits Program (Credits Program). The Credits Program is similar in concept to the Local Projects Program (LPP). The purpose of the Credits Program is to encourage local water agencies to implement effective water conservation projects through the use of financial incentives. The Credits Program provides financial assistance for water conservation projects that reduce demands on Metropolitan's imported water supplies and require Metropolitan's assistance to be financially feasible.

Initially, the Credits Program provided 50 percent of a member agency's program cost, up to a maximum of $75 per acre-foot of estimated water savings. The $75 Base Conservation Rate was established based Metropolitan's avoided cost of pumping SWP supplies. The Base Conservation Rate has been revisited by Metropolitan's Board and revised twice since 1988, from $75 to $154 per acre-foot in 1990 and from $154 to $195 per acre-foot in 2005.

In fiscal year 2020 Metropolitan processed more than 30,400 rebate applications totaling $18.9 million.

Member Agency Administered Program

Some member agencies also have unique programs within their service areas that provide local rebates that may differ from Metropolitan's regional program. Metropolitan continues to support these local efforts through a member agency administered funding program that adheres to the same funding guidelines as the Credits Program. The Member Agency Administered Program allows member agencies to receive funding for local conservation efforts that supplement, but do not duplicate, the rebates offered through Metropolitan's regional rebate program.

Water Savings Incentive Program

There are numerous commercial entities and industries within Metropolitan's service area that pursue unique savings opportunities that do not fall within the general rebate programs that Metropolitan provides. In 2012, Metropolitan designed the Water Savings Incentive Program (WSIP) to target these unique commercial and industrial projects. In addition to rebates for devices, under this program, Metropolitan provides financial incentives to businesses and industries that created their own custom water efficiency projects. Qualifying custom projects can receive funding for permanent water efficiency changes that result in reduced potable demand.

Non-Incentive Conservation Programs

In addition to its incentive-based conservation programs, Metropolitan also undertakes additional efforts throughout its service area that help achieve water savings without the use of rebates. Metropolitan's non-incentive conservation efforts include:

- residential and professional water efficient landscape training classes
- water audits for large landscapes
- research, development and studies of new water saving technologies

- advertising and outreach campaigns
- community outreach and education programs
- advocacy for legislation, codes, and standards that lead to increased water savings

Current Status and Results of Metropolitan's Conservation Programs

Since 1990, Metropolitan has invested $824 million in conservation rebates that have resulted in a cumulative savings of 3.27 million acre-feet of water. These investments include $450 million in turf removal and other rebates during the last drought which resulted in 175 million square feet of lawn turf removed. During fiscal year 2020, 1.06 million acre-feet of water is estimated to have been conserved. This annual total includes Metropolitan's Conservation Credits Program; code-based conservation achieved through Metropolitan-sponsored legislation; building plumbing codes and ordinances; reduced consumption resulting from changes in water pricing; and pre-1990 device retrofits.

Infeasibility of Accounting Regional Investments in Reduced Reliance Below the Regional Level

The accounting of regional investments that contribute to reduced reliance on supplies from the Delta watershed is straightforward to calculate and report at the regional aggregate level. However, any similar accounting is infeasible for the individual member agencies or their customers. As described above, the region (through Metropolitan) makes significant investments in projects, programs and other resources that reduce reliance on the Delta. In fact, all of Metropolitan's investments in Colorado River supplies, groundwater and surface storage, local resources development and demand management measures that reduce reliance on the Delta are collectively funded by revenues generated from the member agencies through rates and charges.

Metropolitan's revenues cannot be matched to the demands or supply production history of an individual agency, or consistently across the agencies within the service area. Each project or program funded by the region has a different online date, useful life, incentive rate and structure, and production schedule. It is infeasible to account for all these things over the life of each project or program and provide a nexus to each member agency's contributions to Metropolitan's revenue stream over time. Accounting at the regional level allows for the incorporation of the local supplies and water use efficiency programs done by member agencies and their customers through both the regional programs and through their own specific local programs. As shown above, despite the infeasibility of accounting reduced Delta reliance below the regional level, Metropolitan's member agencies and their customers have together made substantial contributions to the region's reduced reliance.

References for Section L.4

http://www.mwdh2o.com/WhoWeAre/Board/Board-Meeting/Board%20Archives/2017/12-Dec/Reports/064863458.pdf

http://www.mwdh2o.com/PDF_About_Your_Water/Annual_Achievement_Report.pdf

http://www.mwdh2o.com/WhoWeAre/Board/Board-Meeting/Board%20Archives/2016/12-Dec/Reports/064845868.pdf

http://www.mwdh2o.com/WhoWeAre/Board/Board-Meeting/Board%20Archives/2012/05%20-%20May/Letters/064774100.pdf

http://www.mwdh2o.com/WhoWeAre/Board/Board-Meeting/Board%20Archives/2020/10%20-%20Oct/Letters/10132020%20BOD%209-3%20B-L.pdf

http://www.mwdh2o.com/WhoWeAre/Board/Board-Meeting/Board%20Archives/2001/10-October/Letters/003909849.pdf

http://www.mwdh2o.com/PDF_About_Your_Water/Draft%20Metropolitan%202020%20Urban%20Water%20Management%20Plan%20April%202021.pdf

L.5 UWMP IMPLEMENTATION

In addition to the analysis and documentation described above, WR P1(c)(1) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1(c)(1)(B) states that:

> *(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[.]*

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, include a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Section 6.8 – Future Water Projects of Calleguas' UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the District's water needs.

L.6 2015 UWMP Appendix L

The information contained in this Appendix L is also intended to be a new Appendix L attached to Calleguas' 2015 UWMP consistent with WR P1 subsection (c)(1)(C) *(*Cal. Code Regs. tit. 23, § 5003). Calleguas provided notice of the availability of the draft 2020 UWMP (including this Appendix L which will also be a new Appendix L to its 2015 UWMP) and 2020 WSCP and the public hearing to consider adoption of both plans in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix L to the 2015 UWMP, and the 2020 WSCP were posted prominently on Calleguas' website, www.calleguas.com, on March 24, 2021, more than 60 days in advance of the public hearing on June 2, 2021. The notice of availability of the documents was sent to Calleguas' purveyor agencies, as well as cities within the Calleguas service area.

In addition, a public notice advertising the public hearing in English was published in the Ventura County Star on April 1, April 15, and May 6, 2021 and in Spanish in the Vida Newspaper on April 1, 2021. Copies of: (1) the notification letter sent to the purveyor agencies, and cities within the Calleguas service area, and (2) the notice published in the newspapers are included in the 2020 UWMP Appendix M. Thus, this Appendix L to Calleguas' 2020 UWMP, which will be adopted with Calleguas' 2020 UWMP, will also be recognized and treated as Appendix L to Calleguas' 2015 UWMP.

Appendix M

PUBLIC HEARING AND 60-DAY PLAN ADOPTION NOTICES, HEARING AGENDAS, AND ADOPTION RESOLUTION

STEVE BLOIS, PRESIDENT
DIVISION 5

RAUL AVILA, SECRETARY
DIVISION 1

ANDY WATERS, DIRECTOR
DIVISION 3

CALLEGUAS
MUNICIPAL WATER DISTRICT

ANDRES SANTAMARIA, VICE PRESIDENT
DIVISION 4

SCOTT H. QUADY, TREASURER
DIVISION 2

ANTHONY GOFF
GENERAL MANAGER

web site: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730

March 24, 2021

Notice of Availability and Public Review of

Calleguas Municipal Water District's Draft 2020 Urban Water Management Plan (UWMP), Draft Appendix L Addendum to the 2015 UWMP, and Draft Water Shortage Contingency Plan (WSCP)

Calleguas Municipal Water District's (Calleguas) Draft 2020 UWMP, Draft Appendix L Addendum to the 2015 UWMP, and Draft WSCP are available for public review and comment. The California Water Code (CWC) Section 10642 requires agencies to make their plans available for public review prior to adoption. The draft review documents can be accessed at the following link: www.calleguas.com/cmwddraft2020uwmp.pdf

The 2020 UWMP was prepared in compliance with the California Water Code (CWC), §10610-10657 and §10608. The 2020 UWMP describes and evaluates projected water demands, water supplies, water resource development programs, and conservation measures in Calleguas' service area.

In response to the severe drought of 2012-2016, CWC §10632 now requires that water suppliers prepare and adopt a WSCP as part of the 2020 UWMP. The Draft WSCP is included as Appendix K to the 2020 UWMP, and will be adopted as a stand-alone plan which will allow for updating independent of the 5-year UWMP planning cycle.

Because Calleguas is an urban water supplier that receives imported water from the Sacramento-San Joaquin Delta (Delta), it is also required to demonstrate consistency with Delta Plan Policy WR P1, *Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (Cal. Code Regs., tit. 23, §5003). Draft Appendix L has been prepared to satisfy the requirement to demonstrate reduced reliance on the Delta. This appendix is included in the Draft 2020 UWMP and will also be included as an addendum to Calleguas' 2015 UWMP.

Following adoption by Calleguas' Board of Directors, the 2020 UWMP and the WSCP will be submitted to the California Department of Water Resources by July 1, 2021.

Public comments on the 2020 UWMP and WSCP must be submitted by **June 2, 2021**. Please address comments to:

Calleguas MWD
Attn: Jennifer Lancaster
2100 Olsen Road
Thousand Oaks, CA 91360
info@calleguas.com

A virtual community informational meeting will be held on April 15 at 6:00 p.m. To participate, please register at https://zoom.us/webinar/register/WN_7PSxCM3jQcGCobjT2-5Lbg or email info@calleguas.com.

A public hearing on the 2020 UWMP and WSCP will be held during Calleguas' regularly scheduled Board of Directors meeting on June 2, 2021 at 5:00 p.m. To participate, visit http://www.calleguas.com/about-calleguas-municipal-water-district/agendas-and-minutes-calleguas.asp

For further information, please call 805-526-9323 or send email to info@calleguas.com.

Notice of Availability and Public Review of Calleguas Municipal Water District's Draft 2020 Urban Water Management Plan

Calleguas Municipal Water District's (Calleguas) Draft 2020 Urban Water Management Plan (Plan) is available for public review and comment. The Plan was prepared in compliance with the Urban Water Management Planning Act (Division 6, Part 2.6 of the California Water Code).

The Plan describes and evaluates projected water demands, water supplies, water resource development programs and conservation measures in Calleguas' service area.

In response to the severe drought of 2012-2016, CWC §10632 requires that water suppliers prepare and adopt a WSCP as part of the 2020 UWMP. The Draft WSCP is included as Appendix K to the 2020 UWMP and will be adopted as a stand-alone plan which will allow for updating independent of the 5-year UWMP planning cycle.

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An electronic copy is available for download on Calleguas' web site at:
www.calleguas.com/cmwddraft2020uwmp.pdf

Public comments on the plan must be submitted to Calleguas MWD, 2100 Olsen Road, Thousand Oaks, CA 91360, Attn: Jennifer Lancaster by June 2, 2021. A public hearing on the Plan will be held during Calleguas' regularly scheduled Board of Directors meeting on June 2, 2021 at 5:00 p.m. To participate, visit http://www.calleguas.com/about-calleguas-municipal-water-district/agendas-and-minutes-calleguas.asp. For further information, please call 805-526-9323 or send email to info@calleguas.com.

CALLEGUAS

MUNICIPAL WATER DISTRICT

Community Informational Meeting

Draft 2020 Urban Water Management Plan

What: UWMPs are prepared by California’s urban water suppliers to support long-term resource planning efforts and ensure adequate supplies are available to meet existing and future water demands. The plan describes and evaluates projected water demands, water supplies, water resource development programs, and water demand measures within the Calleguas MWD service area.

When: April 15, 2021 at 6:00 PM

Where: Virtual meeting—register online here: **https://zoom.us/webinar/register/WN_7PSxCM3jQcGCobjT2-5Lbg**

A copy of the Calleguas Public Review Draft UWMP is available online at:

www.calleguas.com/cmwddraft2020uwmp.pdf

For further information, please call (805) 526-9323 or email info@calleguas.com

In the Superior Court of the State of California

IN AND FOR THE COUNTY OF VENTURA

CERTIFICATE OF PUBLICATION

TYPE OF NOTICE

AVISO DE DISPONIBILIDAD Y REVISIÓN PÚBLICA DEL BORRADOR DEL PLAN DE GESTIÓN DEL AGUA URBANA 2020

STATE OF CALIFORNIA
COUNTY OF VENTURA

I Luis Ayala **hereby certify that Ventura County VIDA Newspaper, is a newspaper of general circulation within the provision of the Government Code of the State of California, printed and published in the County of Ventura, State of California; that I am the Principal Clerk of said newspaper; that the annexed clipping is a true printed copy and published in said newspaper on the following dates, to wit.**

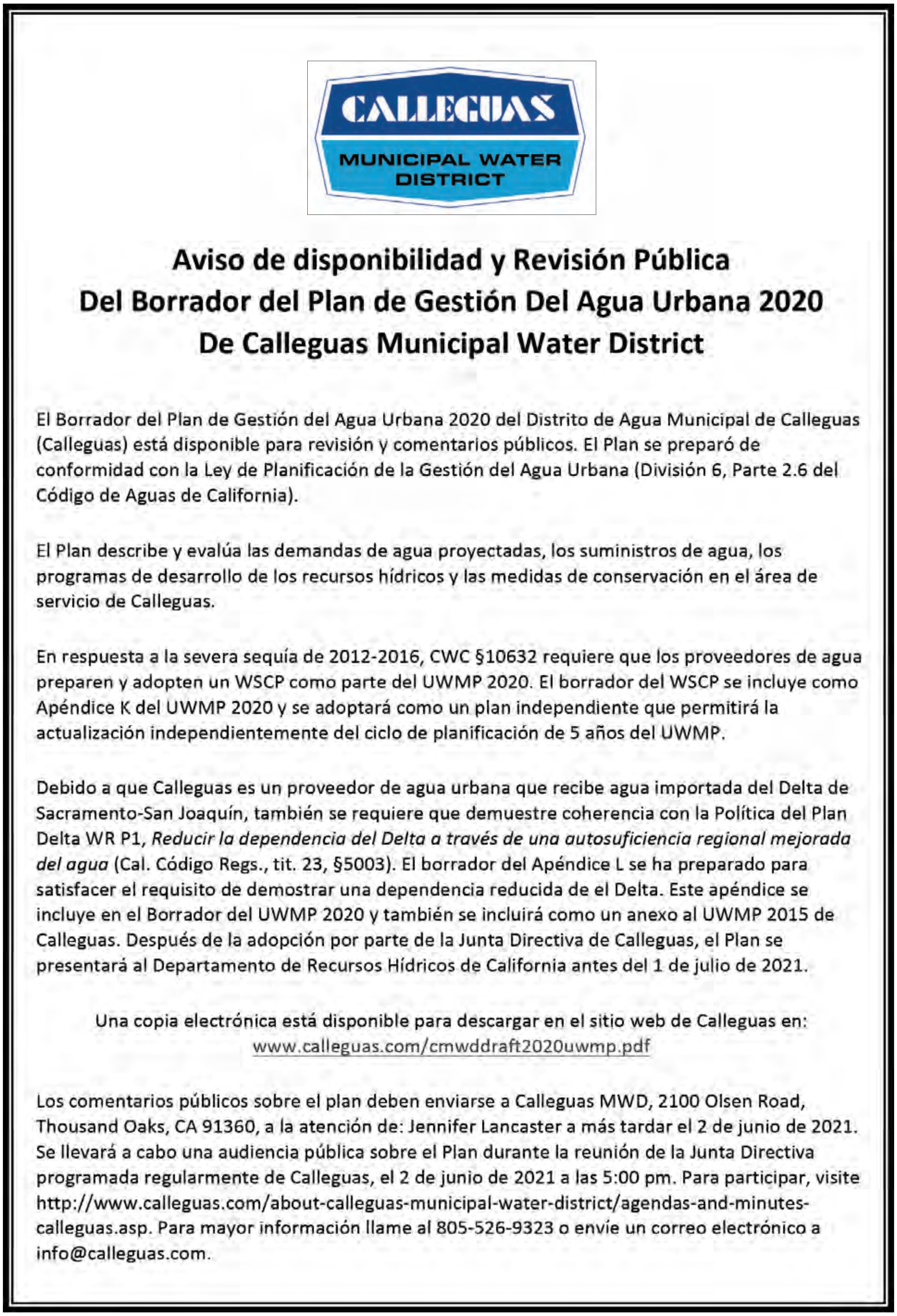
APR. 1, 2021

I certify under penalty of perjury that the foregoing is true and correct, at Oxnard, County of Ventura, State of California, on the

1st **day of** April **2021**

Luis G. Ayala

(Signature)



CALLEGUAS MUNICIPAL WATER DISTRICT

Aviso de disponibilidad y Revisión Pública Del Borrador del Plan de Gestión Del Agua Urbana 2020 De Calleguas Municipal Water District

El Borrador del Plan de Gestión del Agua Urbana 2020 del Distrito de Agua Municipal de Calleguas (Calleguas) está disponible para revisión y comentarios públicos. El Plan se preparó de conformidad con la Ley de Planificación de la Gestión del Agua Urbana (División 6, Parte 2.6 del Código de Aguas de California).

El Plan describe y evalúa las demandas de agua proyectadas, los suministros de agua, los programas de desarrollo de los recursos hídricos y las medidas de conservación en el área de servicio de Calleguas.

En respuesta a la severa sequía de 2012-2016, CWC §10632 requiere que los proveedores de agua preparen y adopten un WSCP como parte del UWMP 2020. El borrador del WSCP se incluye como Apéndice K del UWMP 2020 y se adoptará como un plan independiente que permitirá la actualización independientemente del ciclo de planificación de 5 años del UWMP.

Debido a que Calleguas es un proveedor de agua urbana que recibe agua importada del Delta de Sacramento-San Joaquín, también se requiere que demuestre coherencia con la Política del Plan Delta WR P1, *Reducir la dependencia del Delta a través de una autosuficiencia regional mejorada del agua* (Cal. Código Regs., tit. 23, §5003). El borrador del Apéndice L se ha preparado para satisfacer el requisito de demostrar una dependencia reducida de el Delta. Este apéndice se incluye en el Borrador del UWMP 2020 y también se incluirá como un anexo al UWMP 2015 de Calleguas. Después de la adopción por parte de la Junta Directiva de Calleguas, el Plan se presentará al Departamento de Recursos Hídricos de California antes del 1 de julio de 2021.

Una copia electrónica está disponible para descargar en el sitio web de Calleguas en:
www.calleguas.com/cmwddraft2020uwmp.pdf

Los comentarios públicos sobre el plan deben enviarse a Calleguas MWD, 2100 Olsen Road, Thousand Oaks, CA 91360, a la atención de: Jennifer Lancaster a más tardar el 2 de junio de 2021. Se llevará a cabo una audiencia pública sobre el Plan durante la reunión de la Junta Directiva programada regularmente de Calleguas, el 2 de junio de 2021 a las 5:00 pm. Para participar, visite http://www.calleguas.com/about-calleguas-municipal-water-district/agendas-and-minutes-calleguas.asp. Para mayor información llame al 805-526-9323 o envíe un correo electrónico a info@calleguas.com.

CALLEGUAS
MUNICIPAL WATER DISTRICT

Reunión de Información Comunitaria

Borrador del Plan de Gestión del Agua Urbana 2020

Qué: Los proveedores de agua urbana de California preparan los UWMP para respaldar los esfuerzos de planificación de recursos a largo plazo y garantizar que haya suministros adecuados disponibles para satisfacer las demandas de agua actuales y futuras. El plan describe y evalúa las demandas de agua proyectadas, los suministros de agua, los programas de desarrollo de recursos hídricos y las medidas de demanda de agua dentro del área de servicio de Calleguas MWD.

Cuándo: 15 de abril de 2021 a las 6:00 p.m.

Dónde: Reunión virtual: regístrese en línea aquí: **https://zoom.us/webinar/register/WN_7PSxCM3jQcGCobjT2-5Lbg**

Una copia del Borrador de Revisión Publica de Calleguas UWMP está disponible en línea en:
www.calleguas.com/cmwddraft2020uwmp.pdf

Para más información, llame al (805) 526-9323 o envíe un correo electrónico a info@calleguas.com

BORDERLINE

Sheriff weighs in on report's findings

By Kyle Jorrey
tonewstip@theacorn.com

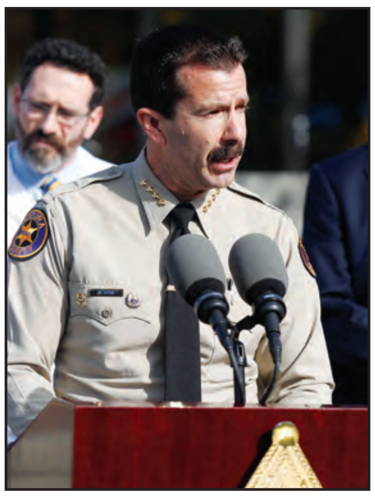
Despite the issues raised in the Borderline After-Action Report, Ventura County Sheriff Bill Ayub told the *Acorn* this week, "we were as well-prepared and equipped as any other civilian law enforcement agency."

"We're not soldiers. We're not in a constant state of being battle-ready," Ayub said.

The 88-page report, released in mid-March, nearly 2.5 years after the mass shooting in Thousand Oaks that left 13 people dead, listed 30 recommendations for improvement, covering topics as diverse as proper equipment, communication and training.

Among its key findings: a lack of decisiveness by responding officers in the minutes after Sgt. Ron Helus and California Highway Patrol Officer Todd Barrett confronted the shooter. Rather than quickly organizing a second team to try to enter the building, the group of 12 personnel, including one sergeant, held the perimeter instead, waiting for SWAT to arrive.

"At least five deputies were on scene and in close proximity to the Borderline building at the time of the gunfight between Sergeant Helus, the CHP officer and the suspect," the report says. "Each of these deputies heard gunfire. . . . Body-worn camera and radio transmissions support that none of the perimeter deputies moved to position themselves in a manner that would support the officers involved in the gun battle."



Acorn file photo

ACCOUNTABILITY—Ventura County Sheriff Bill Ayub said this week that he felt his department was "as well-prepared and equipped as any other civilian law enforcement agency" for the mass shooting Nov. 7, 2018, at Borderline Bar and Grill in T.O. He did acknowledge areas of improvement and said the department was addressing them.

Sheriff's office policy 414 (active shooter and threats to schools) states, in part: "If there is a reasonable belief that acts or threats by a suspect are placing lives in imminent danger, the first responding deputies should consider reasonable options to immediately eliminate the threat."

Ayub, whose first days as sheriff came immediately after the shooting, said he suspects that had the second wave of deputies quickly formed a team to try to save Helus, who lay wounded in the Borderline entryway, they themselves would have come under fire from the shooter. Police did not know he had killed himself at 11:39 p.m., 30 minutes before the next law enforcement officer breached the establishment.

Fortunately for those still hiding inside the bar, the five-minute killing rampage was over after the shootout with Helus and Barrett.

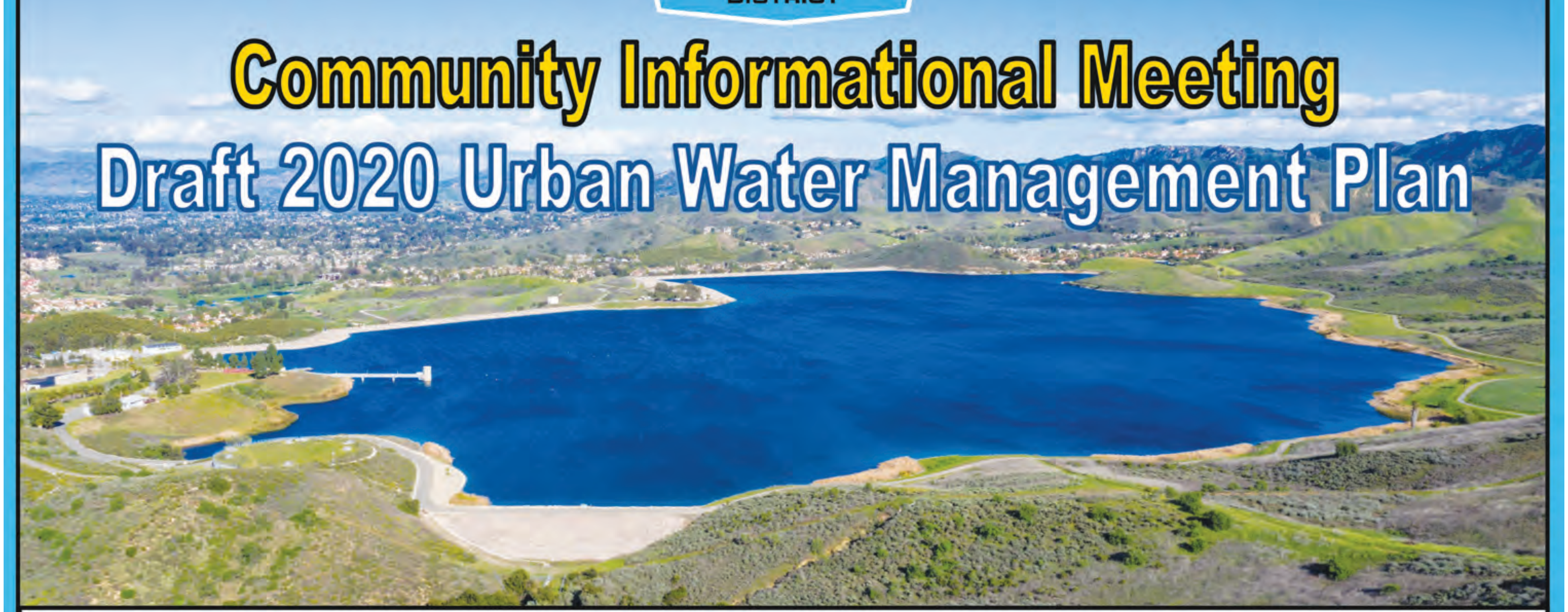
"I'm convinced (the shooter) was waiting in that office watching security cameras because he had a plan to ambush law enforcement," the sheriff said. "And I think that if a team would have been more reactive and assembled sooner and tried to rescue Sgt. Helus, I think we'd have more shot cops."

In the years leading up to the shooting at Borderline, the sheriff's office held multiple active-shooter training exercises at places like The Oaks mall and Westlake High School to prepare its deputies for a worst-case scenario. Going forward, the report recommends, patrol deputies should be trained to understand "that, depending on the immediacy of a threat and the factors known at the time, waiting for SWAT is rarely the preferred option."

Ayub said all the training in the world cannot prepare law enforcement for the chaotic, frightening and unpredictable reality of confronting a mass shooter. He said that's what makes Helus' actions all that much more heroic.

"He was the absolutely the

— Please See **Page 12**



Foy

From **Page 3** —

issues were due to billing errors, employee misunderstandings of the health benefits offered and other causes, the lawsuit said.

The unpaid medical claims grew to $8.7 million before the City of Modesto filed suit against Foy's company.

Riverstone slipped into insolvency and has since been placed in liquidation, according to the Modesto Bee.

Thomas Reeves, a Modesto spokesperson, said healthcare providers have been willing to work with the city to reduce the outstanding liability on claims owed by city employees.

While the employees remain responsible for co-pays and deductibles, in most cases the city was able to negotiate substantial discounts on those fees, Reeves said. To date, officials have resolved more than 10,000 medical claims with more than 600 providers, ranging from small medical offices to large hospital systems.

"Early on, we committed to our employees that we would fight Foy & Associates, who caused so much distress to our employees and their families," Reeves told the *Acorn* in an email. "We're pleased that this issue is now fully resolved and that our city and family of employees have been made whole."

> 'We're pleased that this issue is now fully resolved.'
>
> **— Thomas Reeves**
> *spokesperson, City of Modesto*

Though the settlement was reached in September 2020, the City of Modesto didn't announce it until February of this year because the matter was complex and the city wanted to make sure all issues involving the terms of the deal were resolved, according to the Bee's coverage.

Riverstone redux

In April 2018, Foy's brokerage announced the acquisition of four companies, including Nevada-based health-and-life-insurance broker Clark & Associates.

Five months later, in September 2018, around the same time the City of Modesto was beginning to receive complaints from employees about Riverstone, Clark & Associates was hired to help Nevada's Lyon County School District find a new insurance provider, according to the Reno Gazette-Journal.

Clark & Associates recommended Riverstone.

But before the deal was finalized, the district backed out because it realized the company "didn't meet the district's needs as a self-insured entity in Nevada," the Reno Gazette-Journal reported.

The U.S. Department of Labor filed a civil complaint against Riverstone in February 2019, alleging the company charged low premiums that weren't sustainable in an effort to attract customers while charging exorbitant fees, the Modesto Bee reported.

Riverstone is no longer operating and an independent fiduciary was appointed by the court to resolve the unpaid claims of more than 100 employers, including the City of Modesto, according to the Modesto Bee. The fiduciary estimated there was $36 million in unpaid claims and only about $3.5 million in assets to pay them.

Public housing waitlist opens Tuesday

The Area Housing Authority of the County of Ventura will soon begin accepting applications for the Public Housing Program.

The program is for low-income households: persons who live, work or are hired to work in Simi Valley, Camarillo, Fillmore, Moorpark, Ojai, Thousand Oaks and other parts of Ventura County.

Applications from those living outside the jurisdiction will not be processed.

Forms will be accepted beginning 8 a.m. Tues., April 6 through 4 p.m. Mon., April 19.

Due to limited resources available, applicants may be selected by random lottery drawing and placed on the waiting list from all eligible applications received.

The random lottery will determine the applicant's placement on the waitlist. The date of application submittal will have no bearing on waitlist placement.

Application requirements include:

- A valid email address.
- Name, date of birth and Social Security number of each household member.
- Annual household income amount.

Applications will only be accepted via an online portal at onlineportal.ahacv.org.

For persons with a disability who require an accommodation to complete an application, call the Area Housing Authority office at (805) 480-9991, ext. 670, or send an email to wl_info@ahacv.org.

NEIGHBORS

Volunteer honored for her makeup skills

Her 'disaster victims' give drills an added touch of realism

By Alex Wilson
alex@theacorn.com

RICHARD GILLARD/Acorn Newspapers

TRAINING SUPPORT—Ventura County Fire Department volunteer Sandy Rowe at Station 50 on March 29. Rowe applies makeup to people portraying disaster victims to help make rescue drills more realistic.

A Camarillo woman won honors for her talent as a makeup artist, but her work isn't for film or television. It's to help first responders be better prepared in life-and-death circumstances.

Sandy Rowe, who applies makeup to people portraying victims in disaster and accident drills, received special recognition from the Ventura County Fire Department.

She was named 2020 Volunteer of the Year for her makeup artistry, as well as other tasks, such as teaching parents to install child car seats properly.

Rowe and others were honored during the department's 25th annual awards ceremony, which also recognized lifesavers and outstanding employees. This year's event was held virtually because of the pandemic and can be viewed on YouTube by searching for the Ventura County Fire Department.

The art of simulating injuries and wounds is known as "moulage." Rowe said she's dedicated to providing the most realistic scenarios possible.

"I work to make victims look as bad as I possibly can," she said.

Rowe said she also offers her subjects tips on how to portray a victim in a realistic manner.

"I try to coach them how to act so that they can give the first responder the best training that they can. Because the better the victims are, the better the first responders become. So I see that as very important," she said.

Rowe said she also derives satisfaction from making sure parents know the proper way to install child safety seats in cars.

"That is one of the best things that the department has to offer, I think, because it keeps children safe," she said.

Another honored Camarillo resident was Fire Engineer Kyle Morrell, who worked at Fire Station 35 in Newbury Park in 2020 before a recent transfer to Fire Station 36 in Oak Park.

Morrell was named Firefighter of the Year for Battalion 3, which covers the Conejo Valley.

Morrell said he couldn't recall any specific things he accomplished in 2020 to deserve the honor.

"I was surprised, and obviously very happy, to feel like my hard work is being seen," he said.

Some of the special assignments Morrell handles involve ocean rescues and training wildland firefighters.

Morrell said he gets special satisfaction from training first responders at the start of their careers.

"I like being part of the beginning because that's when most people are anxious to learn, motivated to start with a good foundation, and so I like being a part of that first stage," he said.

Helping people during times of crisis is the most rewarding part of his job, he said.

"When someone is having a really bad day and they call 911, I'm the person who gets to go try to help. So I feel important," Morrell said. "I feel satisfied with my career choice, that each day I get to help people. It's kind of a cool way to make a living."

Two other Camarillo residents were honored for outstanding contributions to the department during 2020.

Ruben Luna was named Fire Prevention Bureau Employee of the Year. The Fire Company of the Year award went to Medic Rescue Engine 31, B Shift, in Thousand Oaks, which included Engineer Greg Peters.

Locals have reading in the bag

BOOK'EM—Moorpark Friends of the Library volunteers, from left, Teri Glazier, Linda Goble, Diana Fowler and Carmen Jerome help run a drive-thru book sale March 30 in front of the Moorpark City Library. Patrons could purchase a bag of gently-used children's books, at right. The Friends sold 23 bags of books during the event, with the proceeds going toward library programs and purchases.

Photos by MICHAEL COONS
Acorn Newspapers

VENTURA COUNTY STAR

PART OF THE USA TODAY NETWORK

CALLEGUAS MUNICIPAL WATER DIST
2100 E OLSEN RD

THOUSAND OAKS, CA 91360-6800

State of California)
))
County of Ventura)

I hereby certify that the Ventura County Star Newspaper has been adjudged a newspaper of general circulation by the Superior Court of California, County of Ventura within the provisions of the Government Code of the State of California, printed in the City of Camarillo, for circulation in the County of Ventura, State of California; that I am a clerk of the printer of said paper; that the annexed clipping is a true printed copy and publishing in said newspaper on the following dates to wit:

04/01/2021, 04/08/2021, 04/15/2021, 05/06/2021

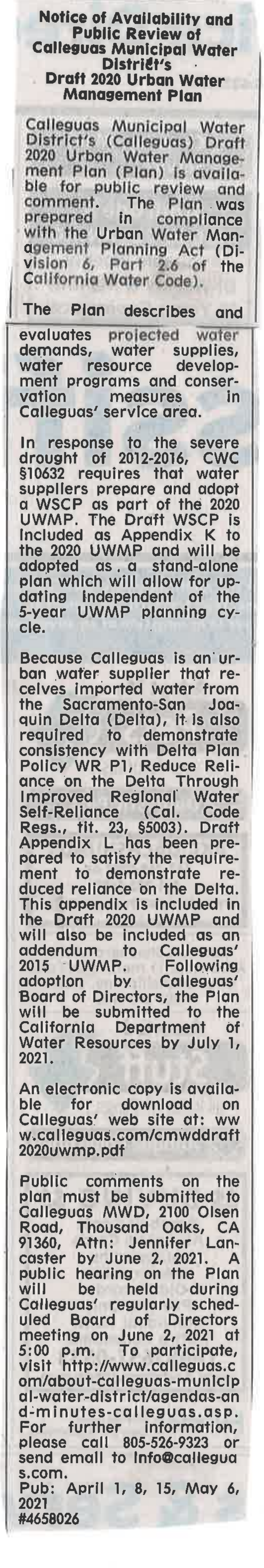
I certify under penalty of perjury, under the laws of the State of California, that the foregoing is true and correct.

Dated this May 6, 2021; in Green Bay, Wisconsin, County of Brown

Sally Hora
Legal Clerk

Publication Cost: $1,333.88
Ad No: 0004658026
Customer No: 305176
PO #:

# of Affidavits 1



Notice of Availability and Public Review of Calleguas Municipal Water District's Draft 2020 Urban Water Management Plan

Calleguas Municipal Water District's (Calleguas) Draft 2020 Urban Water Management Plan (Plan) is available for public review and comment. The Plan was prepared in compliance with the Urban Water Management Planning Act (Division 6, Part 2.6 of the California Water Code).

The Plan describes and evaluates projected water demands, water supplies, water resource development programs and conservation measures in Calleguas' service area.

In response to the severe drought of 2012-2016, CWC §10632 requires that water suppliers prepare and adopt a WSCP as part of the 2020 UWMP. The Draft WSCP is included as Appendix K to the 2020 UWMP and will be adopted as a stand-alone plan which will allow for updating independent of the 5-year UWMP planning cycle.

Because Calleguas is an urban water supplier that receives imported water from the Sacramento-San Joaquin Delta (Delta), it is also required to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs., tit. 23, §5003). Draft Appendix L has been prepared to satisfy the requirement to demonstrate reduced reliance on the Delta. This appendix is included in the Draft 2020 UWMP and will also be included as an addendum to Calleguas' 2015 UWMP. Following adoption by Calleguas' Board of Directors, the Plan will be submitted to the California Department of Water Resources by July 1, 2021.

An electronic copy is available for download on Calleguas' web site at: www.calleguas.com/cmwddraft2020uwmp.pdf

Public comments on the plan must be submitted to Calleguas MWD, 2100 Olsen Road, Thousand Oaks, CA 91360, Attn: Jennifer Lancaster by June 2, 2021. A public hearing on the Plan will be held during Calleguas' regularly scheduled Board of Directors meeting on June 2, 2021 at 5:00 p.m. To participate, visit http://www.calleguas.com/about-calleguas-municipal-water-district/agendas-and-minutes-calleguas.asp. For further information, please call 805-526-9323 or send email to info@calleguas.com.
Pub: April 1, 8, 15, May 6, 2021
#4658026

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Pub: April 1, 8, 15, May 6, 2021

#4658026

CALLEGUAS MUNICIPAL WATER DISTRICT
2100 Olsen Road, Thousand Oaks, California 91360
www.calleguas.com

BOARD OF DIRECTORS MEETING
June 02, 2021, 5:00 p.m.

AGENDA

Written communications from the public must be received by 8:30 am on the Thursday preceding a regular Board meeting in order to be included on the agenda and considered by the Board at that meeting. Government Code Section 54954.2 prohibits the Board from taking action on items not posted on the agenda except as provided in Subsection 54954.2(b).

A. CALL TO ORDER, PLEDGE OF ALLEGIANCE, AND ROLL CALL

BOARD OF DIRECTORS

Steve Blois, President
Andres Santamaria, Vice President
Scott H. Quady, Treasurer
Raul Avila, Secretary
Andy Waters, Director

B. MINUTES

Action: It is recommended that the Board approve the May 19, 2021 minutes.

C. WRITTEN COMMUNICATIONS

1. Coalition Letter Opposing AB 1434 (Friedman) – Indoor Residential Water Use Standards

2. Coalition Letter Opposing AB 377 (R. Rivas) – Water Quality: Impaired Waters

D. PUBLIC FORUM/ORAL COMMUNICATION

This portion of the agenda may be utilized by any member of the public to address the Board of Directors on any matter within the jurisdiction of the Board that does not appear on the agenda. Depending on the subject matter, the Board of Directors may be unable to respond at this time, or until the specific topic is placed on the agenda at a future CMWD Board Meeting, in accordance with the Ralph M. Brown Act. Please limit remarks to three minutes.

To participate:
https://zoom.us/j/94845965842?pwd=cFdTSTByaHZnbnNpdUNnQU1yTnl4UT09
Phone # +1 (669) 900-9128 *326346# (Note San Jose area code)

Meeting ID: 948 4596 5842
Password: 326346

E. GENERAL MANAGER

1. General Manager's Report

2. May 2021 Monthly Status Report

F. ADMINISTRATIVE SERVICES

1. Finance Committee Report

2. April 2021 Financial Statements

3. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by Larry Walker and Associates to implement the Calleguas Creek Watershed TMDLs in an amount not to exceed $1,885,000.
   Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

4. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by the California Conservation Corps to collect trash from the Revolon Slough and Beardsley Wash in an amount not to exceed $77,040.
   Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

5. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by the Ventura Land Trust to provide monitoring, reporting and educational outreach services for the Revolon Slough and Beardsley Wash trash TMDL in an amount not to exceed $45,670.
   Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services

6. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by the Ventura County Watershed Protection District to assist the TMDL stakeholders with the management of the TMDL program in an amount not to exceed $51,840.
   Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

G. OPERATIONS AND MAINTENANCE

H. RESOURCES AND PUBLIC AFFAIRS

1. Public hearing and discussion regarding Draft 2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to 2015 Urban Water Management Plan.

2. Discussion regarding proposed Resolution No. 2018 adopting Final 2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to 2015 Urban Water Management Plan.
   Action: It is recommended that the Board adopt proposed Resolution No. 2018

I. ENGINEERING AND CONSTRUCTION

J. WATER POLICY AND STRATEGY

K. DISTRICT COUNSEL

1. Discussion regarding approval of an increase in the hourly fee paid to Cohen & Burge
   Action: It is recommended that the Board approve an increase in the hourly fee paid to Cohen & Burge.

L. BOARD OF DIRECTORS

1. Oral report on meetings attended by Board members

2. Discussion regarding upcoming meetings to be attended by Board members

3. Metropolitan update

N. OTHER BUSINESS

O. FUTURE AGENDA ITEMS

P. ADJOURNMENT to Special Board Meeting June 09, 2021 at 3:30 p.m.

Note: In accordance with Executive Orders N-25-20, N-29-20, and N-33-20 issued by the Governor of the State of California in response to COVID-19, in-person public participation at Calleguas Municipal Water District meetings is suspended. The District has established alternative methods of participation which permit members of the public to observe and address public meetings telephonically and/or electronically. These methods of participation can be accessed through the internet link provided at the top of this agenda.

In addition to the above referenced methods of participation, members of the public may also participate by submitting comments by email to info@calleguas.com by 5:00 p.m. on the calendar day prior to the public meeting. Email headers should refer to the Board meeting for which comments are offered. Comments received will be placed into the record and distributed appropriately.

Agendas, agenda packets, and additional materials related to an item on this agenda submitted to the Board after distribution of the agenda packet are available on the District website at www.calleguas.com

Pursuant to Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132), and applicable federal rules and regulations, requests for disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting, should be made to the Secretary to the Board in advance of the meeting to ensure the availability of the requested service or accommodation. Notices, agendas, and public documents related to the Board meetings can be made available in appropriate alternative format upon request.

** An asterisk indicates that additional paperwork is provided in the packet or will be sent out later to supplement the packet as noted.*

C. WRITTEN COMMUNICATION

1. Coalition Letter Opposing AB 1434 (Friedman) – Indoor Residential Water Use Standards*

Through this letter, Calleguas reiterates its opposition to AB 1434 which would prematurely change the indoor water use standards established by AB 1668 (Friedman, 2018). This bill is counter to agreements that were made when AB 1668 and SB 606 were passed and signed into law, including the requirement for DWR to submit a report on the result of its indoor water use studies as a basis for future recommendations on water use standards.

2. Coalition Letter Opposing AB 377 (R. Rivas) – Water Quality: Impaired Waters*

Through this letter, Calleguas reiterates its opposition to AB 377 which would overhaul the existing National Pollutant Discharge Elimination System (NPDES) permitting process in California by removing Regional Water Quality Control Board (Regional Board) discretion to make decisions based on local conditions. Permits issued under the various discharge programs are incredibly diverse and complex, and attempting to enact a uniform statewide regulation would have unintended consequences because of the broad scope of the legislation and the variety of permits and permittees affected.

E. GENERAL MANAGER

1. General Manager's Report

2. May 2021 Monthly Status Report*

F. ADMINISTRATIVE SERVICES

1. Finance Committee Report

2. April 2021 Financial Statements*

3. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by Larry Walker and Associates to implement the Calleguas Creek Watershed TMDLs in an amount not to exceed $1,885,000.

Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

The Board acts as Fiscal Agent to secure contract services for the stakeholders implementing TMDLs on the watershed. As Fiscal Agent, Calleguas collects funding for TMDL contract services from the parties and administers the contracts on their behalf. All TMDL funds are accounted for separately from the District's general and construction funds.

The purpose of this requested action is for the Board, acting as Fiscal Agent, to approve the agreement for Larry Walker and Associates to implement the Calleguas Creek Watershed TMDLs for the TMDL stakeholders. All funds necessary to pay for these services will be collected from the parties before payments are made.

4. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by the California Conservation Corps to collect trash from the Revolon Slough and Beardsley Wash in an amount not to exceed $77,040.
   Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

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5. Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by the Ventura Land Trust to provide monitoring, reporting and educational outreach services for the Revolon Slough and Beardsley Wash trash TMDL in an amount not to exceed $45,670.
   Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

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   The purpose of this requested action is for the Board, acting as Fiscal Agent, to approve the agreement for the Ventura Land Trust to provide monitoring, reporting and educational outreach services for the Revlon Slough and Beardsley Wash trash TMDL. The responsible parties have requested this work pursuant to their implementation of the Trash TMDL. All funds necessary to pay for these services will be collected from the parties before payments are made.

6. **Discussion regarding approval by the Board, acting as Fiscal Agent for the TMDL stakeholders, for contract services by the Ventura County Watershed Protection District to assist the TMDL stakeholders with the management of the TMDL program in an amount not to exceed $51,840.**
Action: It is recommended that the Board, acting as TMDL Fiscal Agent, approve the contract services.

   The Board acts as Fiscal Agent to secure contract services for the stakeholders implementing TMDLs on the watershed. As Fiscal Agent, Calleguas collects funding for TMDL contract services from the parties and administers the contracts on their behalf. All TMDL funds are accounted for separately from the District's general and construction funds.

   The purpose of this requested action is for the Board, acting as Fiscal Agent, to approve the agreement for the Ventura County Watershed Protection District to assist the TMDL stakeholders with the management of the TMDL program. The TMDL stakeholders have requested this work pursuant to their implementation of the TMDL program. All funds necessary to pay for these services will be collected from the parties before payments are made.

G. OPERATIONS AND MAINTENANCE

H. RESOURCES AND PUBLIC AFFAIRS

1. **Public hearing and discussion regarding Draft 2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to 2015 Urban Water Management Plan.**

   This public hearing is an opportunity for the public to provide input on the District's 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and Addendum to 2015 UWMP.

   The Draft 2020 UWMP, WSCP, and Addendum to 2015 UWMP are available at: http://www.calleguas.com/cmwddraft2020uwmp.pdf

   The current schedule for the 2020 UWMP is provided below:

Milestones	Calleguas UWMP Schedule
Data Requests to Purveyors – Local Production	October 2020
Notice of Preparation (NOP) *distributed electronically & via mail*	November 2, 2020
Draft 2020 UWMP, WSCP, and Addendum to 2015 UWMP to Purveyors	February 21, 2021
Publish 2020 UWMP to Calleguas Website Notice of Availability (NOA) and Public	March 24, 2021

Hearing *distributed electronically & via mail*	
Legal Advertisements of NOA and Public Hearing	VC Star: April 1, April 15, May 6, 2021 Vida Newspaper: April 1, 2021
Display Advertisements of Community Informational Meeting	Acorn Newspapers: First Two Weeks – April 2021 Vida Newspaper: April 1, 2021
Community Informational Meeting (Zoom Webinar)	April 15, 2021
Calleguas Board Meeting – Public Hearing and Adoption of 2020 UWMP, WSCP, and Addendum to 2015 UWMP	June 2, 2021
Submit Documents to DWR	Prior to July 1, 2021

Based on the schedule above, all required notifications to the District's purveyors, cities, the County, stakeholders, and the public have been satisfied. In addition, Calleguas hosted a Community Informational Meeting on April 15 with 11 members of the public in attendance. The public review period closes on June 2, 2021 at the conclusion of the public hearing. To date, one comment letter has been received.

2. Discussion regarding proposed Resolution No. 2018 adopting Final 2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to 2015 Urban Water Management Plan.*

   Action: It is recommended that the Board adopt proposed Resolution No. 2018

   This action will adopt the Final 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and Addendum to 2015 UWMP.

   Upon adoption, staff will submit the 2020 UWMP, WSCP, and Addendum to 2015 UWMP to the Department of Water Resources (DWR). The deadline for submittal to DWR is July 1. Staff must post the documents on Calleguas' website within 30 days of adoption.

I. ENGINEERING AND CONSTRUCTION

J. WATER POLICY AND STRATEGY

K. DISTRICT COUNSEL

1. Discussion regarding approval of an increase in the hourly fee paid to Cohen & Burge

   Action: It is recommended that the Board approve an increase in the hourly fee paid to Cohen & Burge.

   Bob Cohen has served as District Counsel since June 5, 2013. Since July 1, 2019, Cohen & Burge has been paid at $285 per hour, and staff recommends that starting on July 1, 2021, the hourly rate for Cohen & Burge be increased by $10 to $295, a 3.5% increase. For perspective, the 24-month change in consumer price index, which is used to calculate cost-of-living adjustments applied to the District's salary schedule, was 4.3%.

Bob Cohen and his associates have done excellent work for Calleguas over the past eight years. They continue to provide excellent oversight and continuity with groundwater counsel in the Las Posas Basin adjudication. They are highly responsive, detail oriented, proactive, excellent negotiators, solutions-oriented, and able to capably tackle the diverse issues which staff sends their way.

L. BOARD OF DIRECTORS

1. Oral report on meetings attended by Board members

Pursuant to Government Code Section 53232.3(d), Board members will provide oral reports on meetings attended at the expense of the District.

2. Discussion regarding upcoming meetings to be attended by Board members*

The table of upcoming meetings is provided as a packet insert.

3. Metropolitan update

Director Blois will provide an update on the most recent Metropolitan Board and committee meetings.

RESOLUTION NO. 2018

RESOLUTION OF THE BOARD OF DIRECTORS OF CALLEGUAS MUNICIPAL WATER DISTRICT ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN, WATER SHORTAGE CONTINGENCY PLAN, AND ADDENDUM TO THE 2015 URBAN WATER MANAGEMENT PLAN FOR CALLEGUAS MUNICIPAL WATER DISTRICT

WHEREAS, Calleguas Municipal Water District (Calleguas) has prepared a 2020 Urban Water Management Plan (UWMP) for submission to the California Department of Water Resources (DWR) in accordance with Water Code Sections 10610 through 10656 and 10608 of the Urban Water Management Planning Act (Act); and

WHEREAS, the UWMP, which describes and evaluates reasonable, practical, and efficient water supplies, uses, reclamation, and conservation activities, is to be filed with the DWR every five years in years ending in five or zero; and

WHEREAS, Metropolitan Water District of Southern California and member purveyors of Calleguas have provided water demand and local water supply forecasts and have conferred with Calleguas on the preparation of the UWMP; and

WHEREAS, Calleguas has prepared a Water Shortage Contingency Plan (WSCP) for submission to DWR in accordance with Water Code Section 10632 of the Act; and

WHEREAS, Calleguas has prepared an analysis entitled *Quantifying Self-Reliance and Reliance on Water Supplies from the Delta*, in accordance with the Delta Plan, Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance; and

WHEREAS, the *Quantifying Self-Reliance and Reliance on Water Supplies from the Delta* analysis is included as Appendix L to the 2020 UWMP, in accordance with the Delta Plan, Policy WR P1(c)(1); and

WHEREAS, the *Quantifying Self-Reliance and Reliance on Water Supplies from the Delta* analysis is included as Appendix L to the adopted 2015 UWMP, in accordance with the Delta Plan, Policy WR P1(c)(1)(C); and

WHEREAS, in compliance with the Act's public noticing requirements, Calleguas published a Notice of Availability of the UWMP and WSCP as a legal notice in both the Ventura County Star and the Vida Newspaper, as well as display advertisements in the Acorn Newspaper (Thousand Oaks, Moorpark, Simi Valley, and Camarillo editions); and posted an electronic copy of the UWMP and the WSCP on the Calleguas website. Additionally, a public meeting was held on April 15, 2021 to receive public comments; and

WHEREAS, in compliance with the Acts public noticing requirements, Calleguas provided notice of the June 2, 2021 hearing for adoption of the UWMP and WSCP by newspaper posting pursuant to Government Code Section 6066. Additionally, Calleguas provided notice to cities and Counties within the Calleguas service area that it would be reviewing the UWMP and WSCP, and the time and place of the June 2, 2021 hearing for adoption of the UWMP and WSCP; and

WHEREAS, Calleguas considered all public comments and incorporated revisions to the UWMP and the WSCP, as necessary.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF CALLEGUAS MUNICIPAL WATER DISTRICT RESOLVES AS FOLLOWS:

1. That the 2020 Urban Water Management Plan dated June 2021 is hereby adopted; and

2. That the Water Shortage Contingency Plan dated June 2021 is hereby adopted; and

3. That the *Quantifying Self-Reliance and Reliance on Water Supplies from the Delta* analysis is hereby included as an addendum to the adopted 2015 Urban Water Management Plan; and

4. The 2020 UWMP and the WSCP shall be submitted to DWR, the California State Library, the County of Ventura, cities within the Calleguas service area, and member purveyors and shall be posted on Calleguas' website within 30 days of adoption.

ADOPTED, SIGNED AND APPROVED the second day of June, 2021.

DocuSigned by:
Steve Blois
98C5B4FB956941C...

Steve Blois,
President of the Board of Directors

I HEREBY CERTIFY that the foregoing Resolution was duly adopted at a meeting of the Board of Directors of Calleguas Municipal Water District held on June 2, 2021.

ATTEST:

DocuSigned by:
DFB689F5F4DC4F5...

Raul Avila, Secretary
Board of Directors

(SEAL)

Appendix N

COPIES OF COMMENTS RECEIVED AND RESPONSES

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

A STATE OF CALIFORNIA WATER AGENCY

May 27, 2021

Calleguas Municipal Water District
Attn: Jennifer Lancaster
2100 Olsen Road
Thousand Oaks, CA 91360

SUBJECT: Comments Regarding Calleguas Municipal Water District Draft 2020 Urban Water Management Plan

Dear Ms. Lancaster:

The Fox Canyon Groundwater Management Agency (FCGMA/Agency) appreciates Calleguas Municipal Water District (CMWD) providing the opportunity for Agency staff to review and comment on the draft 2020 Urban Water Management Plan (Plan). Per the Plan, CMWD is fully dependent on the Metropolitan Water District (Metropolitan) for its water supply (pg. 1-3). The Agency understands that should CMWD experience an outage of water supply from Metropolitan, CMWD plans to extract up to 20,000 AF (pgs. 1-2, 7-10, 8-9, and Table 6-9) from its Las Posas Aquifer Storage and Recovery (ASR) Wellfield, located in the East Las Posas Management Area (ELPMA). According to the Plan CMWD, has 20,926 AF (as of December 2020) of direct injected stored water in the Las Posas ASR Wellfield (pg 6-5).

Per the Plan, CMWD does not pump native groundwater (pg. 6-5). It is not clear how this is consistent with Appendix D – *Metropolitan's Draft Overall Supply Capacity Tables and Supply/Demand Projections For Calleguas' Service Area.* According to the tables during the years 2025 through 2045, groundwater production for each of the scenarios will range from 37,305 to 31,120 AF for *Normal Year*, from 37,305 to 31,120 AF *Single Dry Year*, and from 38,235 to 31,124 AF *5-Consecutive Drought Years.* The groundwater source for the supply was not identified.

Additional Comments

Page 6-4, Section 6.2.1, paragraph 3: It is stated that "The four basins have been identified as either high or medium priority basins and are therefore subject to the requirements set forth in SGMA." Three basins (Las Posas Valley Basin, Oxnard Subbasin, and Pleasant Valley Basin) are classified as *High* priority basins. The Arroyo Santa Rosa Valley Basin was reclassified as a *Very Low* priority basin. [See DWR, 2020. *Sustainable Groundwater Management Act 2019 Basin Prioritization Process and Results*: Appendix A, p. A-11, May.]

Page 6-4 Section 6.2.1, last paragraph in section, first sentence: This statement is inaccurate. A more appropriate statement is "FCGMA's goal is to sustainably manage the groundwater basins to avoid undesirable results as identified in the Groundwater Sustainability Plans."

Page 6-4, Section 6.2.1, paragraph 4: It is stated that "Recent ordinances adopted by the FCGMA detail establishing allocation systems for extraction of groundwater supplies." Recent ordinances established new groundwater extraction allocation systems for the Las Posas Valley Basin, Oxnard Subbasin and Pleasant Valley Basin.

Page 6-5, Section 6.2.3, paragraph 1: The following statement is inconsistent with CMWD's reporting to the Agency: "Current direct injected storage in the Las Posas ASR Wellfield totals approximately 20,926 AF (as of December 2020)." Based on groundwater extractions and injections reported to the Agency, the net ASR injection in the ELPMA is 3,107.573 AF (as of the December 2020). Total storage credits in the ELPMA associated with in-lieu water deliveries is 23,955 AF based on documents submitted.

Page 6-5, Table 6-2: It would be helpful to identify volume units as acre-feet.

Page 6-5, Section 6.2.3, paragraph 2: The statement that "Calleguas injected a total of approximately 7,500 AF in 2019" is inconsistent with CMWD's reporting to the Agency. CMWD reported to FCGMA injecting 8,322.49 AF in 2019.

Page 6-6, Section 6.2.3, Figure 6-2: The plot of accumulated groundwater storage credits suggests that the total accumulated storage and injection credits in all basins is on the order of 104,000 AF. Based on documents submitted to FCGMA, the total is on the order of 93,800 AF (as of December 2020).

Page 6-10 Section 6.7 paragraph 3: Provide clarification with regard to Crestview providing water during a six-month outage. We presume that Crestview would provide this water "to Calleguas" by increasing its pumping for Crestview customers in lieu of receiving imported water from CMWD; this should be clarified in the Plan.

Page 6-12 First sentence regarding "facilitating development of an estimated 40,000 AF of new, local water supplies each year": It is not clear how the amount of "40,000 AF of new, local water supplies" was estimated. It appears to include projects that are still in early stages of development which may not be online for a decade or more (e.g., UWCD Brackish Water Desalter).

Page 6-14 Table 6-7 listing 1 and 2: Per the Plan, Crestview and Camarillo's NPV desalter are to provide water in case of CMWD water supply outage. Please clarify if these agreements to provide water "to Calleguas or its member purveyors" are for Crestview and Camarillo to provide water to their respective customers in lieu of receiving CMWD deliveries.

Appendix H: The groundwater storage reports are inconsistent with Agency records including the December 31 total balances, East Las Posas Wellfield allocation, credits listed for "other basins," and well field activity cumulative balance. It is not clear how the East Las Posas In-lieu Program cumulative balance was calculated.

If you have any questions, please call me at (805) 654-2954].

Sincerely,

Kathleen Riedel

Kathleen Riedel, PG, CEG
Groundwater Specialist

Cc: Kim Loeb

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STEVE BLOIS, PRESIDENT
DIVISION 5

RAUL AVILA, SECRETARY
DIVISION 1

ANDY WATERS, DIRECTOR
DIVISION 3

CALLEGUAS
MUNICIPAL WATER
DISTRICT

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DIVISION 2

ANTHONY GOFF
GENERAL MANAGER

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June 2, 2021

Kathleen Riedel
Groundwater Specialist
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93009-1610

RE: Response to comments on Calleguas MWD Draft 2020 Urban Water Management Plan

Dear Ms. Riedel:

Thank you for your comments regarding the Calleguas Municipal Water District (Calleguas or District) draft 2020 Urban Water Management Plan (UWMP or Plan). The following provides a listing of the comments, along with District responses.

1. **Comment:**
   Per the Plan, CMWD does not pump native groundwater (pg. 6-5). It is not clear how this is consistent with Appendix D – *Metropolitan's Draft Overall Supply Capacity Tables and Supply/Demand Projections For Calleguas' Service Area*. According to the tables during the years 2025 through 2045, groundwater production for each of the scenarios will range from 37,305 to 31,120 AF for *Normal Year*, from 37,305 to 31,120 AF *Single Dry Year*, and from 38,235 to 31,124 AF *5-Consecutive Drought Years*. The groundwater source for the supply was not identified.

   Response:
   Appendix D, provided by the Metropolitan Water District, is a projection of future demands within the Calleguas service area through 2045 under a normal water year, single dry year, and droughts lasting five consecutive years. These demand forecasts are representative of Calleguas' service area, not of Calleguas' system operations.

2. **Comment:**
   Page 6-4, Section 6.2.1, paragraph 3: It is stated that "The four basins have been identified as either high or medium priority basins and are therefore subject to the requirements set forth in SGMA." Three basins (Las Posas Valley Basin, Oxnard Subbasin, and Pleasant Valley Basin) are classified as High priority basins. The Arroyo Santa Rosa Valley Basin was reclassified as a Very Low priority basin. [See DWR, 2020. *Sustainable Groundwater Management Act 2019 Basin Prioritization Process and Results*: Appendix A, p. A-11, May.]

Response:
The text in Section 6.2.1, paragraph 3 has been updated.

3. **Comment:**
Page 6-4 Section 6.2.1, last paragraph in section, first sentence: This statement is inaccurate. A more appropriate statement is "FCGMA's goal is to sustainably manage the groundwater basins to avoid undesirable results as identified in the Groundwater Sustainability Plans."

Response:
The text in Section 6.2.1, last paragraph, first sentence has been revised to be consistent with this comment.

4. **Comment:**
Page 6-4, Section 6.2.1, paragraph 4: It is stated that "Recent ordinances adopted by the FCGMA detail establishing allocation systems for extraction of groundwater supplies." Recent ordinances established new groundwater extraction allocation systems for the Las Posas Valley Basin, Oxnard Subbasin and Pleasant Valley Basin.

Response:
The text in Section 6.2.1, paragraph 4 has been updated.

5. **Comment:**
Page 6-5, Section 6.2.3, paragraph 1: The following statement is inconsistent with CMWD's reporting to the Agency: "Current direct injected storage in the Las Posas ASR Wellfield totals approximately 20,926 AF (as December 2020)." Based on groundwater extractions and injections reported to the Agency, the net ASR injection in the ELPMA is 3,107.573 AF (as of the December 2020). Total storage credits in the ELPMA associated with in-lieu water deliveries is 23,955 AF based on documents submitted.

Response:
The discrepancies commented are noted and will be evaluated with more detailed information and coordination with Fox Canyon Groundwater Management Agency (FCGMA) Staff. FCGMA understands that should Calleguas experience an outage of water supply, Calleguas plans to extract up to 20,000 AF via the Las Posas ASR (see FCGMA comment letter, paragraph 1). As of December 2020, Calleguas' total storage in the ELPMA exceeds 20,000 AF. Therefore, this comment does not materially affect the District's reliability assessment outlined in the 2020 UWMP.

6. **Comment:**
Page 6-5, Table 6-2: It would be helpful to identify volume units as acre-feet.

Response:
A note has been added to the table that the volume units reported are acre-feet (AF).

7. **Comment:**
Page 6-5, Section 6.2.3, paragraph 2: The statement that "Calleguas injected a total of approximately 7,500 AF in 2019" is inconsistent with CMWD's reporting to the Agency. CMWD reported to FCGMA injecting 8,322.49 AF in 2019.

Response:
The text in Section 6.2.3, paragraph 2 has been revised and clarified to read: "Calleguas injected approximately 8,300 AF in CY 2019, including nearly 6,000 AF categorized under the Cyclic Storage Program."

8. **Comment:**
Page 6-6, Section 6.2.3, Figure 6-2: The plot of accumulated groundwater storage credits suggests that the total accumulated storage and injection credits in all basins is on the order of 104,000 AF. Based on documents submitted to FCGMA, the total is on the order of 93,800 AF (as of December 2020).

Response:
Figure 6-2 has been updated to show Calleguas' accumulated groundwater storage in the East Las Posas Basin, West Las Posas Basin, Oxnard and Pleasant Valley Basins, and Calleguas' Storage Account through its participation in the Conejo Creek Project. The total storage is approximately 93,800 AF (as of December 2020).

9. **Comment:**
Page 6-10, Section 6.7 paragraph 3: Provide clarification with regard to Crestview providing water during a six-month outage. We presume that Crestview would provide this water "to Calleguas" by increasing its pumping for Crestview customers in lieu of receiving imported water from CMWD; this should be clarified in the Plan.

Response:
The UWMP is correct in how it describes Calleguas' outage supply arrangement with Crestview Mutual Water Company. Section 6-7 describes the Calleguas-Crestview Interconnection, a physical connection between the two water systems, that is independent of the normal service connection provided by Calleguas to Crestview. In the event of a six-month outage, the capability exists for Crestview to deliver water into the Calleguas system for distribution to other Calleguas Purveyors. Please see Table 6-7 for additional information on the *Crestview Well No. 8 and Agreement to Deliver Water During an Outage*.

10. **Comment:**
Page 6-12 First sentence regarding "facilitating development of an estimated 40,000 AF of new, local water supplies each year": It is not clear how the amount of "40,000 AF of new, local water supplies" was estimated. It appears to include projects that are still in early stages of development which may not be online for a decade or more (e.g., UWCD Brackish Water Desalter).

Response:
Comment noted. The estimate 40 TAY of new, local supplies that the SMP will facilitate development was derived during the permitting process with the Los Angeles Regional Water Quality Control Board (Regional Board). It is a conceptual target used for planning purposes and based on full utilization of SMP capacity. For more information on the Calleguas SMP, including a link to the District's 2019 NPDES Permit, visit: http://smp.calleguas.com/.

11. **Comment:**
    Page 6-14 Table 6-7 listing 1 and 2: Per the Plan, Crestview and Camarillo's NPV desalter are to provide water in case of CMWD water supply outage. Please clarify if these agreements to provide water "to Calleguas or its member purveyors" are for Crestview and Camarillo to provide water to their respective customers in lieu of receiving CMWD deliveries.

    Response:
    Table 6-7, listing 1 and 2, describe a similar supply program to be undertaken separately with Crestview and with Camarillo. The supply program entails Calleguas funding the construction of an additional production well for each purveyor. In exchange Calleguas would have an agreement in place for each purveyor that designates a supply of water to be delivered to Calleguas under certain outage conditions.

12. **Comment:**
    Appendix H: The groundwater storage reports are inconsistent with Agency records including the December 31 total balances, East Las Posas Wellfield allocation, credits listed for "other basins," and well field activity cumulative balance. It is not clear how the East Las Posas In-lieu Program cumulative balance was calculated.

    Response:
    The documents in Appendix H are utilized by Calleguas to articulate the District’s accumulated Groundwater Storage. Calleguas prepared the UWMP based on the best available information reflecting District operations. Appendix H and the associated Groundwater Storage Reports are internal documents developed to align with the District’s understanding of its various storage programs. The discrepancies commented are noted and will be evaluated with more detailed information and coordination with Fox Canyon Groundwater Management Agency staff.

If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Dan Drugan
Manager of Resources

cc: Jennifer Lancaster, Principal Resource Specialist

PUBLIC
VENTURA COUNTY
WORKS

WATERSHED PROTECTION

MEMORANDUM

DATE: May 28, 2021

TO: Anthony Ciuffetelli, Planner, Planning Division

FROM: James Maxwell, PG, CEG, Groundwater Specialist, Water Resources Division

SUBJECT: RMA 21-005 – 2020 Urban Water Management Plan Draft for Calleguas Municipal Water District

The Ventura County Public Works Agency, Water Resources Division, Groundwater Resources Section (VCGRS) reviewed the documents submitted by Calleguas Municipal Water District.

DESCRIPTION

Calleguas Municipal Water District's (CMWD) 2020 Urban Water Management Plan Draft (Draft), dated March 2021.

DRAFT QUESTIONS/COMMENTS

It would be informative to list the population that is served by each of CMWD's purveyors and communities (Section 3.1).

The Draft mentions that CMWD circulated a survey to planning departments of cities it serves and to the County to solicit input on current and future land use patterns that may affect water use and overall demands. It is not clear if this data was incorporated into the Draft's project plans forecasted water usage estimates.

Does CMWD have a plan to increase or maintain the quantity of imported replenishment water to the Las Posas Aquifer Storage and Recovery (ASR) Facility in non-surplus years of State Water Project (SWP) imported water? (Section 6.2.3)

The Draft did not detail how the Fox Canyon Groundwater Management Agency's (FCGMA) ordinances and the adopted Groundwater Sustainability Plans (GSPs) for Oxnard/Pleasant Valley/Las Posas Basins will affect CMWD's annual volume of imported water (Section 6.2.1).

It is mentioned that CMWD is investigating cyclic groundwater storage agreements for purveyors. Who are the potential purveyors and what is the amount of storage availability for each? (Section 6.2.3)

Calleguas anticipates that at some future point it will no longer purchase and provide tertiary treated water from the City of Simi Valley (Ventura County Waterworks District No. 8). It provided a future projected increase in received supplies through the year 2045 (Table 6-4). It might be helpful to elaborate on the effects of the cessation of recycled water to and from this facility, especially in light of Calleguas' stated support of the usage of recycled water as an alternative to potable water.

Section 7.3 states that "Metropolitan's imported water demand projections for Calleguas are assumed to be equal to Metropolitan's supply projection for Calleguas." Does Metropolitan evaluate its supply projection against CMWD's forecasted demand?

In Section 8.7.2, clarify if the listed depletion times of Lake Bard and the ASR facility are conservative estimates incorporating the maximum rate of imported water distribution to purveyors.

Do the Demand Management Measures for wholesale agencies require the submittal of projected quantitative data along with the narrative descriptions? (Section 9.0)

Sections 8.9 and the Water Shortage Contingency Plan (Appendix K) outline the Seismic Risk Assessment and Mitigation Plan's evaluation of mitigations to reduce potential seismic impacts to the Santa Susana Tunnel. Given the importance of the Tunnel, there does not appear to be a long-term strategy, or project timetable to implement these.

STEVE BLOIS, PRESIDENT
DIVISION 5

RAUL AVILA, SECRETARY
DIVISION 1

ANDY WATERS, DIRECTOR
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CALLEGUAS
MUNICIPAL WATER DISTRICT

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GENERAL MANAGER

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June 2, 2021

James Maxwell
Groundwater Specialist
Water Resources Division
800 South Victoria Avenue
Ventura, CA 93009-1610

RE: Response to comments on Calleguas MWD Draft 2020 Urban Water Management Plan

Dear Mr. Maxwell:

Thank you for your comments regarding the Calleguas Municipal Water District (Calleguas or District) draft 2020 Urban Water Management Plan (UWMP or Plan). The following provides a listing of the comments, along with District responses.

1. **Comment:**
   It would be informative to list the population that is served by each of CMWD's purveyors and communities (Section 3.1).

   Response:
   Per Water Code Section 10631(a), Calleguas shall "*describe the service area of the* [District]*, including current and projected population, climate, and other social, economic, and demographic factors affecting the* [District's] *water management planning.*" The information contained in the draft UWMP satisfies this requirement. The direct population served by any of Calleguas' purveyors is addressed in each respective purveyor's UWMP, as applicable.

2. **Comment:**
   The Draft mentions that CMWD circulated a survey to planning departments of cities it serves and to the County to solicit input on current and future land use patterns that may affect water use and overall demands. It is not clear if this data was incorporated into the Draft's project plans forecasted water usage estimates.

   Response:
   Section 3.4.3 titled "Land Uses and Development Standards within Service Area" describes a survey sent to local planning jurisdictions. A copy of the survey is included in Appendix B of the UWMP.

Section 3.4.3 describes information collected from the survey and reflects on certain short-term and long-term land use planning assumptions and goals within the District. As stated in Section 3.4.3, paragraph 8:

> "The current and projected water supply, use, and reliability analyses for the Calleguas service area as presented in this 2020 UWMP have been developed to consider these local goals, policies, and standards while also maintaining a conservative estimate to ensure that the reasonable worst-case scenario of water demand is addressed."

3. **Comment:**
Does CMWD have a plan to increase or maintain the quantity of imported replenishment water to the Las Posas Aquifer Storage and Recovery (ASR) Facility in non-surplus years of State Water Project (SWP) imported water? (Section 6.2.3)

Response:
As shown in Figure 6-2, Calleguas accumulated storage over time in all year types (e.g., wet, dry, average years). From 2011 through 2020, Calleguas steadily increased its stored water primarily via direct injection of imported water through the Las Posas ASR in the East Las Posas Basin (ELPB).

Calleguas' storage target is based on the operational capacity of the Las Posas ASR in the event of a catastrophic interruption of water supply (see Section 8.7.2 Calleguas Catastrophe Strategies). As of December 2020, Calleguas' total storage in the ELPB exceeds 20,000 AF as recorded by the Fox Canyon GMA. This provides Calleguas the capability of six months of production at 55 cfs, or just over a year of production at 25 cfs, from the Las Posas ASR in the event of a long-term outage of supply.

4. **Comment:**
The Draft did not detail how the Fox Canyon Groundwater Management Agency's (FCGMA) ordinances and the adopted Groundwater Sustainability Plans (GSPs) for Oxnard/Pleasant Valley/Las Posas Basins will affect CMWD's annual volume of imported water (Section 6.2.1).

Response:
The Calleguas UWMP is consistent with the GSPs adopted for the Oxnard/Pleasant Valley/Las Posas Basins. The implications of the GSPs, over time, may increase demand for imported water. However, statewide water use efficiency regulations – also known as *Make Water Conservation a California Way of Life* – will be implemented and may decrease demand for imported water.

On the aggregate, as stated in Section 1.3.2 titled "Water Supply Reliability":

> "Calleguas is well positioned to mitigate the challenges posed by hydrologic variability, potential climate change, and regulatory risk through the supply capabilities and investments in storage made on the Metropolitan Regional-level and through Calleguas' own reasonable available outage supply stored in Lake Bard (7,500 AF) and the Las Posas Aquifer Storage and Recovery (ASR) Wellfield (20,000 AF)."

5. **Comment:**
   It is mentioned that CMWD is investigating cyclic groundwater storage agreements for purveyors. Who are the potential purveyors and what is the amount of storage availability for each? (Section 6.2.3)

   Response:
   As described in Section 6.2.3, the Metropolitan Cyclic Storage Program suspends the Capacity Charge (May 1 – September 30) during years with a surplus of imported water for water to be stored. This program encourages its member agencies and purveyors to purchase surplus water when available, including a potential discount to the imported water rate. Calleguas purveyors with abundant groundwater supply capabilities would be good candidates for the program, if interested.

   For example, a Cyclic In-Lieu Treated agreement could be investigated with a Calleguas purveyor. The purveyor would decrease normal groundwater pumping during the timeframe Cyclic Deliveries would be available and instead purchase more full-service, treated imported water from Calleguas.

   The amount of surplus imported water available for participation in any Cyclic arrangement is highly variable and uncertain.

6. **Comment:**
   Calleguas anticipates that at some future point it will no longer purchase and provide tertiary treated water from the City of Simi Valley (Ventura County Waterworks District No. 8). It provided a future projected increase in received supplies through the year 2045 (Table 6-4). It might be helpful to elaborate on the effects of the cessation of recycled water to and from this facility, especially in light of Calleguas' stated support of the usage of recycled water as an alternative to potable water.

   Response:
   This comment is correct that Calleguas anticipates that it will no longer provide recycled water to the City of Simi Valley. In the future, it is expected that the City of Simi Valley will take ownership, operation, and maintenance of this small, recycled water system. Because of uncertainty in the timing of the transfer of this system, the UWMP includes recycled water estimates through the year 2045.

   This comment is incorrect in that there is no planned cessation of recycled water to and from this system. Instead, this system could be transferred to VCWWD No. 8 for their own operation. Estimates of recycled water – about 80 AFY – to be produced and distributed from this facility (Table 6-4) were prepared in coordination with VCWWD No. 8.

7. **Comment:**
   Section 7.3 states that "Metropolitan's imported water demand projections for Calleguas are assumed to be equal to Metropolitan's supply projection for Calleguas." Does Metropolitan evaluate its supply projection against CMWD's forecasted demand?

   Response:
   Metropolitan evaluates its supply projections against the forecasted demands for all of its member agencies. Calleguas worked closely with its purveyors and Metropolitan in developing demand forecasts published in the UWMP.

8. **Comment:**
   In Section 8.7.2, clarify if the listed depletion times of Lake Bard and the ASR facility are conservative estimates incorporating the maximum rate of imported water distribution to purveyors.

   Response:
   The text in Section 8.7.2 is correct in how it describes depletion of Lake Bard and water stored in the East Las Posas basin in the event of a catastrophic interruption of supply. The Calleguas Imported Water Outage Protocol (Appendix K) utilized recent modeling to determine levels of conservation needed for a 6-month outage of supply from Metropolitan. Table 8-1, Shortage Level 6, displays some of these estimates:

   > Calleguas:
   > ***Catastrophic Interruption*** (based on 2020 modeling - 6-mo. Outage)
   >
   > <u>Dec. to May</u>: Approx. 15% conservation (1st 4 months), 40% conservation after Lake Bard Water Filtration Plant (LBWFP) potable supply exhausted
   >
   > <u>June to Nov.</u>: Approx. 35% conservation (1st 4 months), 45% conservation after LBWFP potable supply exhausted
   >
   > Note: Call for "<u>No Outdoor Water Use</u>" may bring immediate 40% to 60% reductions in overall demand, which would extend availability of outage supplies.

9. **Comment:**
   Do the Demand Management Measures for wholesale agencies require the submittal of projected quantitative data along with the narrative descriptions? (Section 9.0)

   Response:
   Following the Water Code, wholesale suppliers must provide narrative descriptions of four specific measures (metering, public education and outreach, water conservation program coordination and staffing support), and other applicable DMMs, as well as a narrative of asset management and wholesale supplier assistance programs. The Calleguas UWMP satisfies this requirement.

10. **Comment:**
    Sections 8.9 and the Water Shortage Contingency Plan (Appendix K) outline the Seismic Risk Assessment and Mitigation Plan's evaluation of mitigations to reduce potential seismic impacts to the Santa Susana Tunnel. Given the importance of the Tunnel, there does not appear to be a long-term strategy, or project timetable to implement these.

    Response:
    Appendix K refers to the Study of Seismic Impacts to the Santa Susana Tunnel. Appendix J contains a detailed overview of this study, potential repair scenarios, proposed enhancements, and next steps for this long-term effort. Please review “Next Steps” for an estimated timeline to inspect the Santa Susana Tunnel. Tunnel Inspection is estimated to occur in Winter 2022 or 2023.

If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Dan Drugan
Manager of Resources

cc: Jennifer Lancaster, Principal Resource Specialist