WESTERN MUNICIPAL WATER DISTRICT

2020 Urban Water Management Plan

Revised March 30, 2022

JUNE 2021 | WESTERN MUNICIPAL WATER DISTRICT



WESTERN MUNICIPAL WATER DISTRICT

2020 Urban Water Management Plan

JUNE 16, 2021

REVISED MARCH 30, 2022

Prepared by Water Systems Consulting, Inc.

TABLE OF CONTENTS

Executive Summary

Part 1 – Introduction

1. Introduction 1-1
   - 1.1 Urban Water Management Plan Purpose 1-3
   - 1.2 Plan Organization 1-4
   - 1.3 Relation to Other Efforts 1-5
     - 1.3.1 Western Drought Contingency Plan 1-5
2. Outreach and Engagement 2-1
   - 2.1 Stakeholders 2-2
     - 2.1.1 Drought Task Force 2-2
     - 2.1.2 Western Engineering, Operations and Water Resources (EOWR) Committee 2-4
     - 2.1.3 Western Board of Directors 2-4
     - 2.1.4 General Public 2-4
     - 2.1.5 Other Stakeholder Outreach 2-5
   - 2.2 Plan Adoption, and Submittal 2-6
3. Service Area Description 3-1
   - 3.1 Western Wholesale Service Area 3-1
   - 3.2 Western Retail Service Area 3-4
   - 3.3 Service Area Population and Demographics 3-6
     - 3.3.1 Service Area Population 3-6
     - 3.3.2 Other Social, Economic, and Demographic Factors 3-7
   - 3.4 Land Uses within Service Area 3-8
   - 3.5 Service Area Climate 3-11
     - 3.5.1 Climate Change 3-12
4. Wholesale Water Supply 4-1
   - 4.1 Regional Supplies 4-2
     - 4.1.1 Imported Water 4-2
     - 4.1.2 Groundwater 4-2
     - 4.1.3 Recycled Water 4-4
     - 4.1.4 Surface Water 4-4
     - 4.1.5 Stormwater 4-4
     - 4.1.6 Regional Water Sources Summary 4-5

4.2 Western Wholesale Supply 4-7
4.2.1 Purchased and Imported Water 4-8
4.2.2 Groundwater 4-9
4.2.3 Surface Water 4-11
4.2.4 Wastewater and Recycled Water 4-11
4.2.5 Water Exchanges and Transfers 4-11
4.2.6 Future Water Projects 4-11
4.2.7 Summary of Existing and Planned Sources of Water 4-13
4.2.8 Energy Intensity 4-14
5. Wholesale Water Use Characterization 5-1
5.1 Western Wholesale Customers 5-2
5.2 Past and Current Wholesale Water Use 5-3
5.3 Projected Water Use 5-5
5.3.1 Characteristic Five-Year Water Use 5-7
6. Wholesale Water Service Reliability and Drought Risk Assessment 6-1
6.1 Constraints on Water Sources 6-2
6.1.1 Imported Water Supply Reliability 6-2
6.1.2 Groundwater Supply Reliability 6-5
6.2 Water Service Reliability Assessment 6-6
6.2.1 Year Type Characterization 6-6
6.2.2 Water Service Reliability 6-8
6.2.3 Description of Management Tools and Options 6-11
6.3 Drought Risk Assessment 6-12
6.3.1 Data, Methods, and Basis for Water Shortage Condition 6-12
6.3.2 DRA Water Source Reliability 6-12
7. Wholesale Demand Management Measures 7-1
7.1 Metering 7-2
7.2 Outreach and Public Education 7-2
7.2.1 Public Outreach 7-3
7.2.2 School Education Programs 7-3
7.3 Water Conservation Program Coordination and Staffing 7-5
7.4 Asset Management 7-5
7.5 Wholesale Supplier Assistance Program 7-5
8. Wholesale Water Shortage Contingency Plan 8-1
8.1 Water Shortage Contingency Plan Outline 8-1
8.2 Overview of the Wholesale Requirements of the WSCP 8-2

9. Retail Water Supply 9-1
9.1 Water Supply Overview 9-1
9.2 Retail Water Supply Characterization 9-2
9.2.1 Purchased or Imported Water 9-2
9.2.2 Groundwater 9-3
9.2.3 Surface Water and Stormwater 9-6
9.2.4 Wastewater and Recycled Water 9-6
9.2.5 Desalinated Water Opportunities 9-9
9.2.6 Water Exchanges and Transfers 9-9
9.2.7 Future Water Projects 9-9
9.2.8 Summary of Existing and Planned Sources of Water 9-10
9.3 Energy Intensity 9-0
10. Retail Water Use 10-1
10.1 Non-Potable and Potable Water Use 10-2
10.2 Past, Current, and Projected Water Use by Sector 10-2
10.2.1 Past Water Use 10-3
10.2.2 Current Water Use 10-7
10.2.3 Distribution System Water Losses 10-8
10.2.4 Projected Water Use 10-9
10.2.5 Characteristic Five-Year Water Use 10-13
10.3 Water Use for Lower Income Households 10-14
10.4 SBX7-7 Baseline and Targets 10-15
10.4.1 2020 Compliance Daily Per-Capita Water Use (GPCD) 10-16
11. Retail Water Service Reliability and Drought Risk Assessment 11-1
11.1 Constraints on Water Sources 11-2
11.1.1 Imported Water Supply Reliability 11-2
11.1.2 Groundwater Supply Reliability 11-2
11.1.3 Recycled Water Supply Reliability 11-3
11.2 Water Service Reliability Assessment 11-3
11.2.1 Year Type Characterization 11-3
11.2.2 Water Service Reliability 11-4
11.2.3 Description of Management Tools and Options 11-7
11.3 Drought Risk Assessment 11-8
11.3.1 Data, Methods, and Basis for Water Shortage Condition 11-8
11.3.2 DRA Water Source Reliability 11-8
12. Retail Demand Management Measures 12-1

12.1 Water Waste Prevention Ordinances 12-3
12.1.1 Metering 12-3
12.1.2 Conservation Pricing 12-3
12.2 Public Education and Outreach 12-4
12.2.1 Public Outreach 12-4
12.2.2 School Education Programs 12-4
12.3 Programs to Assess and Manage Distribution System Real Losses 12-5
12.4 Water Conservation Program Coordinating and Staffing 12-5
12.5 Other Demand Management Measures – Rebate Programs 12-5
12.5.1 Past Rebate Programs 12-9
12.5.2 Commercial, Industrial, and Institutional Programs 12-9
12.5.3 Regional Programs 12-10
12.5.4 Large Landscape Conservation Programs and Incentives 12-11
12.6 Implementation over the Past Five Years 12-12
12.7 Implementation to Achieve Water Use Targets 12-13
12.8 Water Use Objectives (Future Requirements) 12-13
13. Retail Water Shortage Contingency Plan 13-1
13.1 Water Shortage Contingency Plan Outline 13-2
13.2 Overview of the Retail Requirements of the WSCP 13-3
14. References 13-3
Appendix A Water Shortage Contingency Plan ..... A
Appendix B Public Hearing Notices ..... B
Appendix C Letters of Notification C
Appendix D Adoption Resolutions ..... D
Appendix E USBR Climate Change Analysis for the Santa Ana River Watershed ..... E
Appendix F Climate Change Vulnerability Assessment Technical Memorandum ..... F
Appendix G Metropolitan Purchase Order ..... G
Appendix H City of Riverside Surplus and Wheeling Agreement ..... H
Appendix I Meeks and Daley/EVMWD Lease Agreement I
Appendix J City of Riverside and Western 2021 Operating Plan ..... J
Appendix K Santa Margarita Watershed Adjudication ..... K
Appendix L Western Judgment L
Appendix M Eastern Perris North Agreement ..... M
Appendix N SBx7-7 Forms ..... N
Appendix O 2018 Water Efficiency Master Plan ..... O
Appendix P AWWA Water Audits ..... P

Appendix Q Reduced Delta Reliance ..... Q
Appendix R DWR Submittal Tables ..... R
Appendix S CEQA Completion ..... S
Appendix T Errata ..... T

LIST OF FIGURES

Figure 1-1. Western Wholesale and Western Retail Service Area Boundaries 1-2
Figure 1-2. UWMP Relation to Other Planning Efforts 1-6
Figure 3-1. Western Wholesale Service Area and Customers 3-3
Figure 3-2. Western Retail Service Areas 3-5
Figure 4-1. Local Groundwater Basins 4-3
Figure 4-2. Percent Regional Water Use by Source 4-6
Figure 4-3. 2016-2020 Regional Water Use by Source, AFY 4-6
Figure 4-4. Past Energy Used at the Arlington Desalter 4-14
Figure 5-1. Projected Wholesale Demand, AFY 5-6
Figure 5-2. Projected Wholesale Demand for the Next Five Years (2021-2025), AFY 5-8
Figure 9-1. Projected Retail Supply, AFY 9-3
Figure 9-2. Estimated Energy Consumed by Pump Station (Hansen Allen & Luce, Inc. for Western Municipal Water District, October 2018) 9-1
Figure 10-1. Riverside Service Area Historical Water Use, AFY 10-3
Figure 10-2. Murrieta Service Area Historical Water Use, AFY 10-4
Figure 10-3. Rainbow Service Area Historical Water Use, AFY 10-4
Figure 10-4. Western Retail Historical and Current Water Use, AFY 10-6
Figure 10-5. Western Retail 2020 Water Use by Customer Category 10-7
Figure 10-6. Projected Retail Water Use by Customer Type, AFY 10-10
Figure 10-7. Projected Retail Demand for the Next Five Years (2021-2025), AFY 10-13
Figure 12-1. Past Rebate Information 12-12

LIST OF TABLES

Table 2-1. Key Stakeholders and Roles 2-2
Table 2-2. Drought Task Force Members 2-3
Table 3-1. Western Retail System Connections 3-4
Table 3-2. Population Projections for Western Wholesale 3-6
Table 3-3. Existing Land Uses within Western's General Service Area 3-11
Table 3-4. Projected Land Uses within Western's General Service Area 3-12
Table 3-5. Historical Climate Data 3-13
Table 4-1. Current Water Sources by Agency 4-5
Table 4-2. DWR 6-1W Groundwater Volume Pumped, AFY 4-9
Table 4-3. Actual Water Supplies 4-13
Table 4-4. Projected Water Supplies, AFY 4-13
Table 5-1. Current and Future Wholesale Customers 5-2
Table 5-2. Western's Wholesale Historical and Current Water Use by Customer, AFY 5-3
Table 5-3. 2020 Wholesale Water Use, AFY 5-4
Table 5-4. Projected Wholesale System Demand, AFY 5-5
Table 5-5. Projected Wholesale System Demand for the Next Five Years (2021-2025), AFY 5-7
Table 6-1. DWR 7-1W Basis of Water Year Data (Reliability Assessment) 6-7
Table 6-2. Normal Year Supply and Demand Comparison, AFY 6-8
Table 6-3. Single Dry Year Supply and Demand Comparison, AFY 6-9
Table 6-4. Multiple Dry Year Supply and Demand Comparison, AFY 6-10
Table 6-5. Wholesale DRA Results, AFY 6-13
Table 9-1. Groundwater Extractions, AFY 9-4
Table 9-2. Adjusted SBBA Rights Due to New Conservation Allocation 9-5
Table 9-3. Future Water Supply Projects 9-9
Table 9-4. 2020 Water Supply, AFY 9-10
Table 9-5. Projected Supply, AFY 9-2
Table 10-1. Western Retail Historic and Current Water Use, AFY 10-5
Table 10-2. Historical Water Losses for Retail Service Areas, AFY and Percent of Consumption 10-8
Table 10-3. Projected Retail Water Demand by Service Area, AFY 10-10
Table 10-4. Total Projected Demands for Water, AFY 10-11
Table 10-5. Non-Potable Demand, AFY 10-12
Table 10-6. Projected Retail System Demand for the Next Five Years (2021-2025), AFY 10-13
Table 10-7. Low Income Demands, AFY 10-14
Table 10-8. SBX7-7 Baseline and Targets Summary 10-15
Table 11-1. DWR 7-1R Basis of Water Year Data (Reliability Assessment) 11-4

Table 11-2. Retail Normal Year Supply and Demand Comparison, AFY 11-5
Table 11-3. Retail Single Dry Year Supply and Demand Comparison, AFY 11-5
Table 11-4. Retail Multiple Dry Year Supply and Demand Comparison, AFY 11-6
Table 11-5. Retail DRA Results, AFY 11-8

ACRONYMS & ABBREVIATIONS

°F	Degrees Fahrenheit
AF	Acre Foot
AFY	Acre Feet per Year
AMR	Automatic Meter Reader
APA	Administrative Procedures Act
AWWA	American Water Works Association
BMP	Best Management Practice
CALWARN	California Water/Wastewater Agency Response Network
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CUWCC	California Urban Water Conservation Council
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ERNIE	Emergency Response Network of the Inland Empire
ET	Evapotranspiration
ETo	Reference Evapotranspiration
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
LAFCO	Local Agency Formation Commission
MAF	Million Acre-Feet

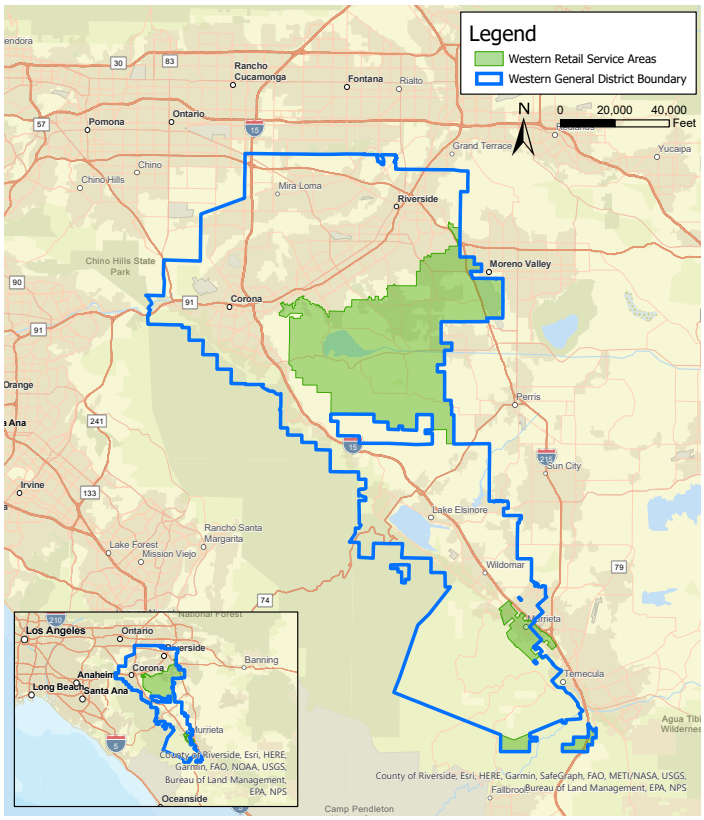
MCL	Maximum Contaminant Level
MF	Multi-family
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
QWEZ	Qualified Water Efficient Landscaper
RIX	Rapid Infiltration and Extraction
RPA	Reasonable and Prudent Alternative
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SBX7-7	Senate Bill 7 of Special Extended Session 7
SF	Single Family
SOC	Synthetic Organic Chemicals
SOI	Sphere of Influence
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TCE	Trichloroethylene
ULFT	Ultra-Low Flush Toilet
UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
WBIC	Weather Based Irrigation Controller
WSCP	Water Shortage Contingency Plan
WFF	Water Filtration Facility
WSS	Water Sense Specification
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Providing Water Security to Western Riverside County for over 60 years

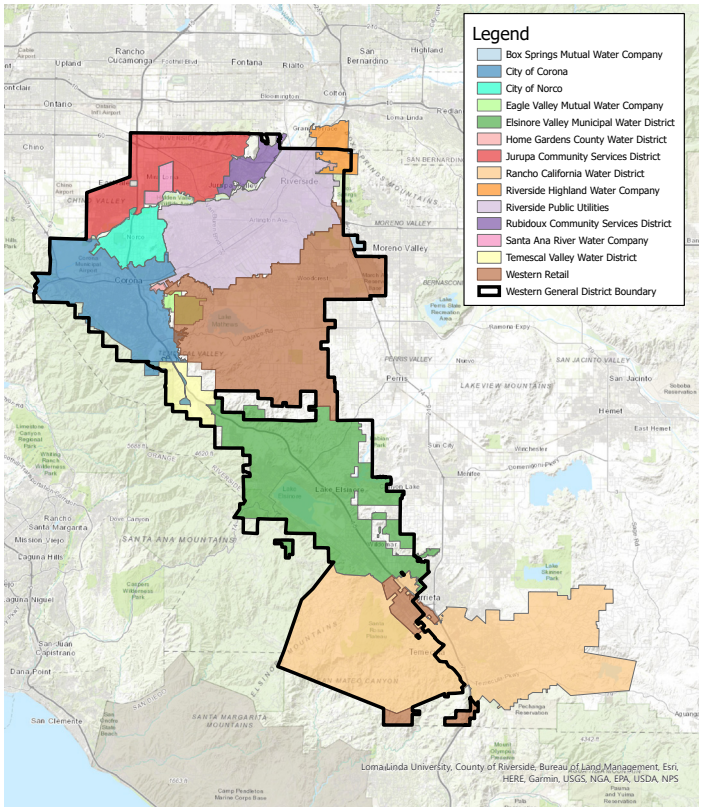
Western is a regional leader for safe, reliable, and affordable water supply.

The Western Municipal Water District (Western) was formed in 1954 to bring supplemental water to the growing western Riverside county. Today, Western provides water supply, wastewater treatment and disposal, and water resource management to nearly one million people in a service area covering roughly 527-square miles in western Riverside County.

Western serves approximately 25,000 retail and fourteen (14) wholesale customers with water from the Colorado River, State Water Project, recycled water and local groundwater.



Western Retail serves retail customers directly in Orangecrest, Mission Grove, El Sobrante, Eagle Valley, Temescal Canyon, Woodcrest, Lake Mathews, portions of Mead Valley and Perris, and March Air Reserve Base.



As a member agency of the Metropolitan Water District of Southern California (Metropolitan), Western Wholesale provides supplemental water to the cities of Corona, Norco, and Riverside and the water agencies serving Box Springs, Eagle Valley, Elsinore Valley, Temescal Valley, and Temecula.

Western's 2020 Urban Water Management Plan

Contents of Western's
2020 URBAN WATER MANAGEMENT PLAN

PART 1: INTRODUCTION

Chapter 1 – Introduction

Chapter 2 – Outreach and Engagement

Chapter 3 – Service Area Description

PART 2: WESTERN WHOLESALE

Chapter 4 – Wholesale Water Supply

Chapter 5 – Wholesale Water Use

Chapter 6 – Wholesale Water Service Reliability and Drought Risk Assessment

Chapter 7 – Wholesale Demand Management Measures

Chapter 8 – Wholesale Water Shortage Contingency Plan

PART 3: WESTERN RETAIL

Chapter 9 – Retail Water Supply

Chapter 10 – Retail Water Use

Chapter 11 – Retail Water Service Reliability and Drought Risk Assessment

Chapter 12 – Retail Demand Management Measures

Chapter 13 – Retail Water Shortage Contingency Plan

PART 4: SUPPORTING INFORMATION

References

Appendices

One document that describes Western's water vision.

Water agencies in California that serve more than 3,000 customers or 3,000 acre-feet (AF) annually are required by California law to prepare an Urban Water Management Plan (UWMP or Plan) every five years. The Plan supports Western's long-term resource planning to ensure that adequate water supplies are available to meet existing and future water needs. The Plan integrates local and regional land use planning, regional water supply, infrastructure, and demand management projects, as well as statewide issues of concern like climate change and regulatory requirements.

The Plan includes sections for Western Wholesale and Western Retail, and focuses on the following topics:

Supply and Demand – A detailed analysis of current and future water use and sources of supply over a 25-year planning horizon

Water Supply Reliability – A detailed assessment of water supply reliability

Drought Risk Assessment – An analysis of drought risk assuming a five consecutive year drought

Water Use Efficiency and Conservation – A summary of water use efficiency and conservation programs

Water Shortage Contingency Plan – A summary of planned responses in the event of a water shortage

Outreach and Engagement – A summary of the outreach, communication and engagement that was conducted in support of the Plan

Western is both a water wholesaler (Western Wholesale) and retailer (Western Retail), and the 2020 UWMP covers both roles separately.

The 2020 UWMP is an Important Part of Water Planning in the Region

The UWMP integrates with many other regional and local planning efforts for planning consistency.

This UWMP is just one of many interrelated local and regional planning efforts Western is either leading or coordinating with to secure water supplies for customers within its service area. For more information on the specific scope and content of each of the plans shown below, refer to Figure 1-2 in the UWMP. The 2020 UWMP was prepared in parallel with a Drought Contingency Plan (DCP) that is being developed for the entire Western Wholesale service area.

REGIONAL PLANS	WESTERN'S PLANS	LOCAL PLANS
Metropolitan Integrated Resources Plan and 2020 UWMP	Western Retail Facilities Master Plans	Retail Agency UWMPs
One Water One Watershed (OWOW) Plan	**Western's 2020 UWMP**	Local Hazard Mitigation Plan
2020 Upper Santa Ana Watershed Integrated Regional UWMP	Risk and Resilience Assessment & Emergency Response Plan	
Arlington Basin Groundwater Sustainability Plan	2019 Water Use Efficiency Master Plan	
Western 2020 Drought Contingency Plan		



Connecting with Stakeholders and the Public

Western is committed to informing and engaging stakeholders and the general public.

Western is committed to engaging its customers and stakeholders in a proactive and collaborative way to assist in its water planning efforts. The various groups involved with the UWMP and their role are summarized in the graphics below. Western implemented a tiered engagement plan that included local, regional, state and national participation, including the general public and Western's own Board of Directors.

DROUGHT TASK FORCE MEMBER ORGANIZATIONS

ENVIRONMENTAL AND CONSERVATION GROUPS

- Inland Empire Resource Conservation District
- Inland Empire Waterkeeper
- Riverside-Corona Resource Conservation District
- Santa Ana Watershed Project Authority

ENVIRONMENT AND SOCIAL JUSTICE

- Center for Community Action and Environmental Justice

REGIONAL GOVERNMENT (6%)

- Riverside County Flood Control and Water Conservation District
- Western Riverside Council of Governments

RESEARCH

- University of California, Riverside
- Water Resources Institute

LOCAL GOVERNMENT

- City of Murrieta

TRIBAL REPRESENTATIVES

- Pechanga Tribal Government

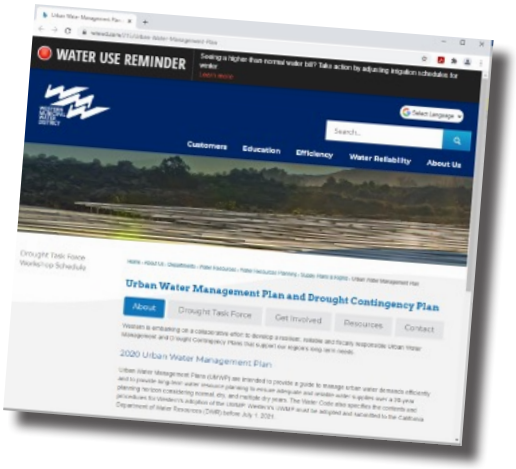
RETAIL: CUSTOMER STAKEHOLDER

- Altman Plants
- March Air Reserve Base
- Vons/Kroger
- Woodcrest MAC
- Woodcrest MAC/Riverside County

WATER AGENCY: REGIONAL

- Eastern Municipal Water District
- Metropolitan Water District of Southern California
- San Bernardino Valley Municipal Water District
- Box Springs Mutual Water Company
- City of Corona
- City of Norco
- Elsinore Valley Municipal Water District
- Jurupa Community Services District
- Rancho California Water District
- Riverside Highland Water Company
- Riverside Public Utilities
- Rubidoux Community Services District
- Temescal Valley Water District

Western formed a Drought Task Force that includes diverse perspectives to inform development of the UWMP and the DCP that will be completed in 2022.



Western created a webpage to provide another opportunity for interested individuals or organizations to learn more about the UWMP, view the Drought Task Force participants and workshop schedules, subscribe to project updates, review and comment on the Plan and access related resources.

Where Western's Water Comes From

The region relies on a diverse water supply portfolio.

Retail water agencies in Western's service area rely on a variety of sources to meet demands, including imported water, local groundwater and recycled water. Many of the supply sources within the region are shared by multiple retail water agencies, including Western Retail.

SUPPLIES AND INFRASTRUCTURE

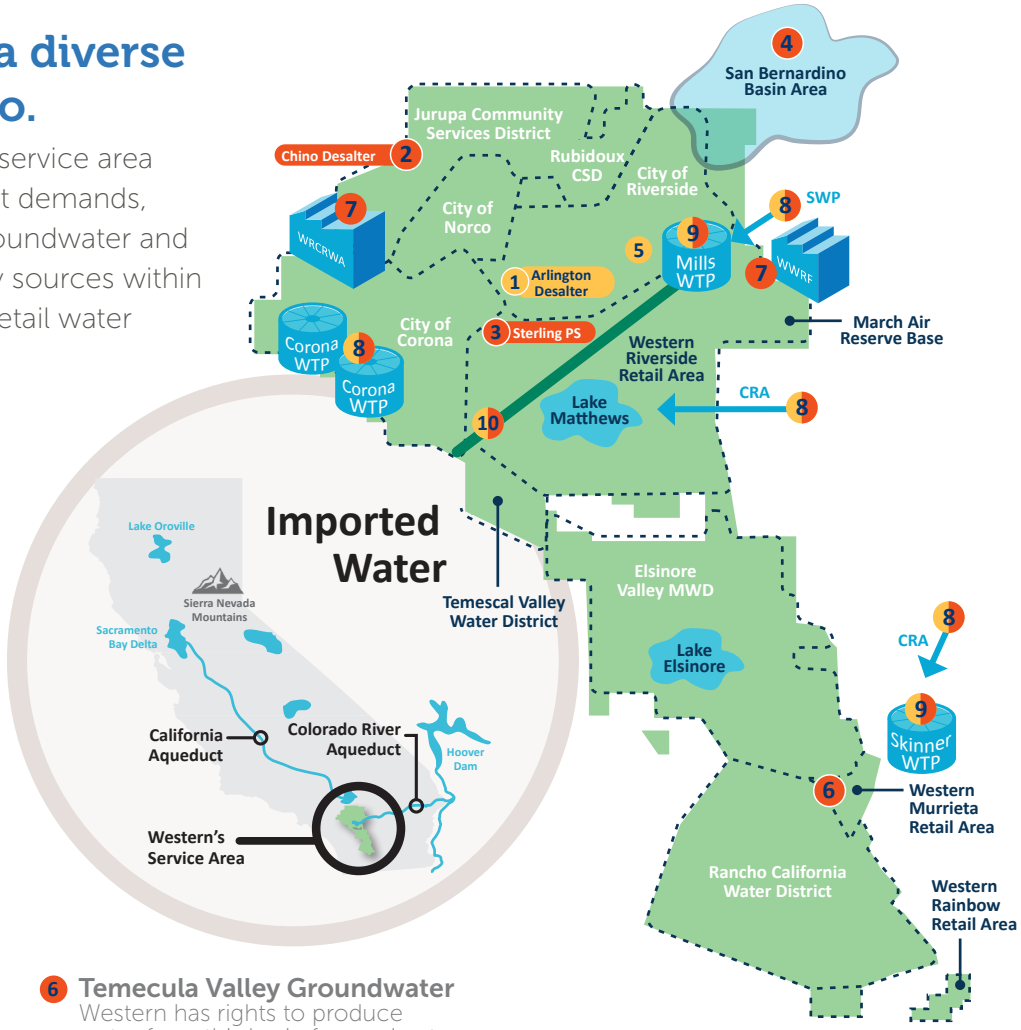
1 Arlington Desalter and Victoria Recharge Basin
Produces drinking water by treating local non-potable groundwater using reverse osmosis to remove salt and other matter. This process also helps clean up the groundwater basin and improve the quality over time. The new Victoria Recharge Basin captures stormwater from precipitation and runoff and percolates into the groundwater basin where it is later used by the Arlington Desalter, increasing local supply reliability.

2 Chino Desalter
Western partners with several other water agencies to treat local non-potable groundwater using reverse osmosis to create a new high quality drinking water supply.

3 Sterling Pump Station and La Sierra Pipeline
The recently completed Sterling pump Station and La Sierra Pipeline connect the Chino and Arlington Desalters to and allow Western to deliver both water sources to many different locations, increasing regional reliability.

4 San Bernardino Basin (SBBA)
Western owns rights to pump local potable groundwater from the SBBA and has a long term lease with Meeks & Daley Water Company to use additional water from the SBBA.

5 City of Riverside
Western has an agreement with Riverside to purchase their surplus local groundwater. Riverside also pumps and delivers Western's water from the SBBA to Western Retail at interconnections using their existing facilities.



6 Temecula Valley Groundwater
Western has rights to produce water from this basin for service to Western's Murrieta Retail system.

7 Recycled Water a Local Drought Proof Supply
Western provides recycled water and non-potable groundwater to meet non-potable irrigation water needs, preserving the potable supplies for domestic use.

8 Imported Water
Western Wholesale obtains potable and nonpotable imported water supply from the SWP and CRA through Metropolitan at various locations and delivers it to Western Retail and other wholesale customers in their service area. Some Western Wholesale customers receive raw imported water directly from Metropolitan pipelines and use the water for groundwater recharge or treat it at their own treatment plants for potable use.

9 Mills and Skinner Water Treatment Plants (WTP)
Metropolitan treats imported water at their Mills and Skinner WTPs and provides potable imported water to Western to distribute to Western Retail and other wholesale customers.

10 Mills Gravity Line
Deliver treated imported water from the Mills WTP to Western Retail and several Western Wholesale customers.

Wholesale
Retail
Wholesale & Retail

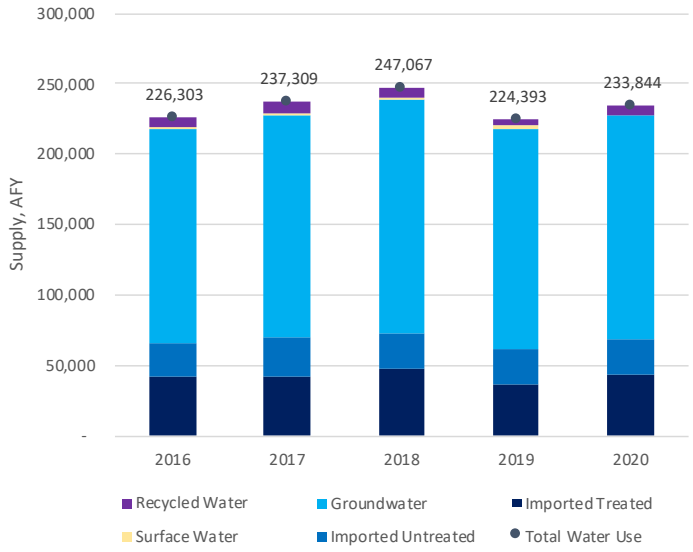
CRA - Colorado River Aqueduct
SWP - State Water Project

Total Water Use within Western's Service Area

Western's retail agencies rely on a mix of supplies, and not all supply comes from Western.

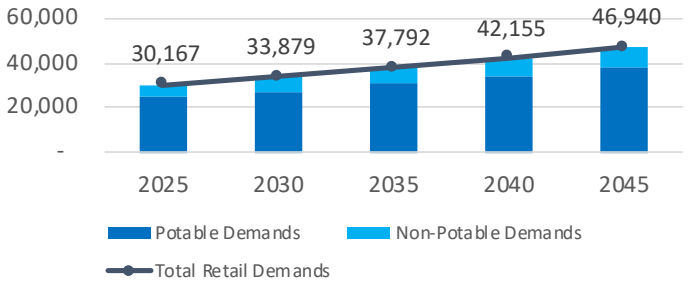
Total water use within Western's service area has ranged from approximately 220,000 AF to more than 245,000 AF in the last five years, including Western Retail. In 2020, approximately 31% of the total water used within Western's service area was provided by Western Wholesale. In addition to wholesale water purchased from Western, most of the water purveyors within Western's service area also deliver local surface and groundwater and/or recycled water within their respective service areas and some rely solely on local water supplies.

TOTAL WATER USE IN WESTERN'S SERVICE AREA FROM 2016 THROUGH 2020.

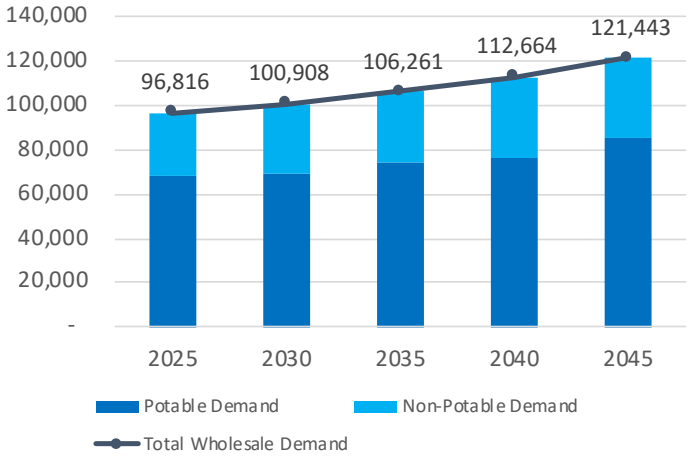


Western Wholesale delivers potable and non-potable supplies to its wholesale customers. Western Wholesale's total demand is expected to increase from 74,927 AF in 2020 to over 121,000 AF in 2045.

PROJECTED RETAIL DEMAND, AFY.



PROJECTED WHOLESALE DEMAND, AFY, INCLUDING WESTERN RETAIL DEMANDS.



Using Water Wisely

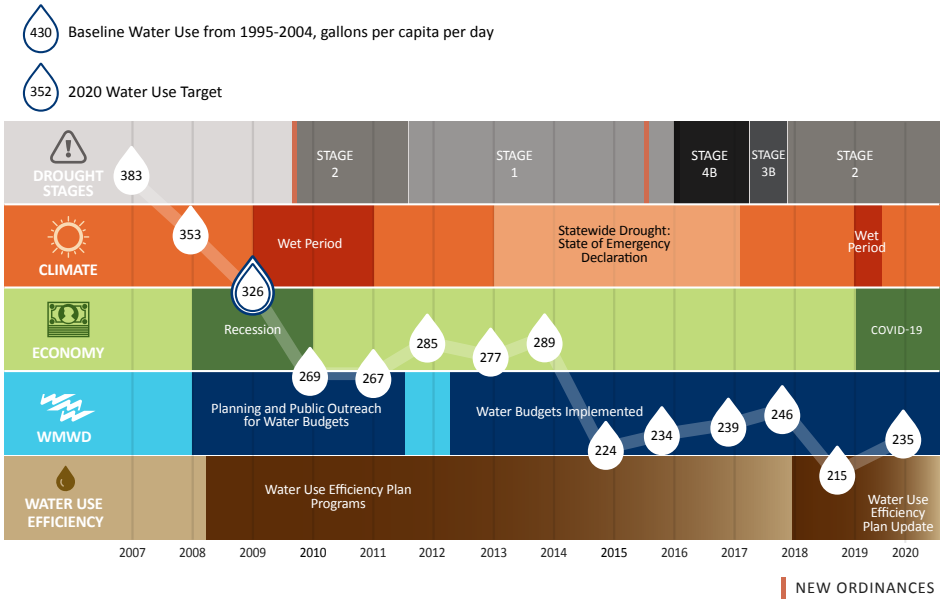
Western is an active and visible advocate and resource for wise water use in the region.

Western has been a leader in water use efficiency for many years and actively collaborates with local and regional agencies and the communities it serves to implement innovative programs and drive reductions in water usage. Western staff also serves in a leadership role for the California Water Efficiency Partnership (CalWEP) whose mission is to maximize urban water efficiency and conservation throughout California by supporting and integrating innovative technologies and practices; encouraging effective public policies; advancing research, training, and public education; and building collaborative approaches and partnerships.

20% BY 2020

By 2009, Western Retail had met their target to reduce per capita water consumption by 20% by 2020 and went on to achieve a reduction of more than 45% by 2020.

Activities that have affected retail water usage in Western Municipal Water District.



Water use efficiency is a core business component in Western's customer partnership with both wholesale and retail customers.

Revised 3/30/2022



Western's Supplies are Reliable, Even in Drought

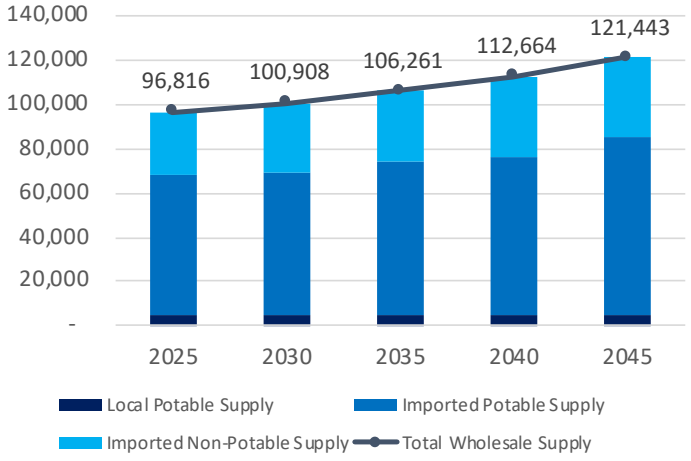
Western's diverse supplies and continued investments provide reliable water for the region.

Western evaluates the reliability of its supplies considering short and long-term variations in weather and climate patterns, including the impacts of climate change. Additionally, Western's supply sources may be impacted by water quality and legal restrictions, environmental and/or ecological constraints, as well as potential for interruption of supply driven by catastrophic events.

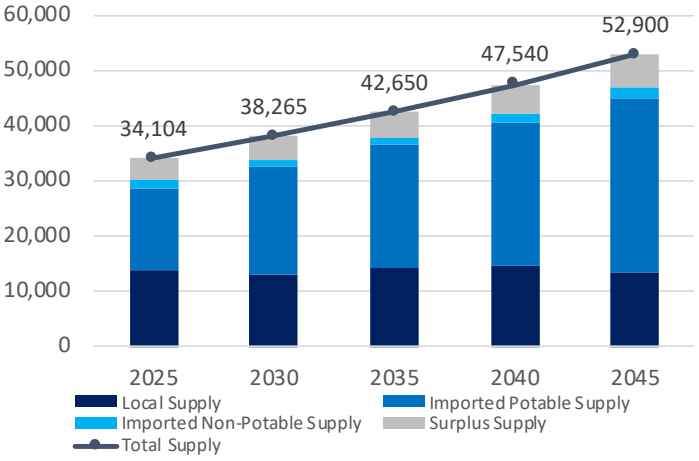
To address these risks, Western and Metropolitan invest in a variety of projects and programs to enhance water supply reliability. These include investing in water conservation and development of local supplies, as well as storage, transfer and exchange programs, and improvements in regional infrastructure. Metropolitan is also pursuing solutions in enhance reliability of SWP supplies through long-term investments in the Sacramento-San Joaquin Delta (Bay-Delta). The net effect is a very robust and reliable supply, even under extended drought conditions.

Western evaluated supply reliability during a single dry year, multiple dry years, and a multiple year drought that could potentially occur within the next five years (2021-2025). In all cases, Western's supplies were sufficient to meet demand without any supply shortages.

PROJECTED WESTERN WHOLESALE SUPPLIES IN A SINGLE DRY YEAR, AFY



PROJECTED WESTERN RETAIL SUPPLIES IN A SINGLE DRY YEAR, AFY



What Happens if Supplies are Interrupted?

Western's Water Shortage Contingency Plan (WSCP) describes how Western is preparing for and may respond to potential water shortage.

A water shortage occurs when water supply available is insufficient to meet the normally expected customer water use at a given point in time. A shortage may occur due to several reasons, such as water supply quality changes, climate change, drought, regional power outage, and catastrophic events (e.g., earthquake). Additionally, the State may declare a statewide drought emergency and mandate that water suppliers reduce demands, as occurred in 2014. The WSCP serves as the operating manual that Western will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The Western WSCP provides a process for an annual water supply and demand assessment and structured steps designed to respond to actual conditions. Although Western does not foresee implementing water shortage levels for Western Wholesale or Western Retail unless determined by Metropolitan, this level of detailed planning and preparation provide accountability and predictability and help Western maintain reliable supplies and reduce the impacts of any supply shortages and/or interruptions.

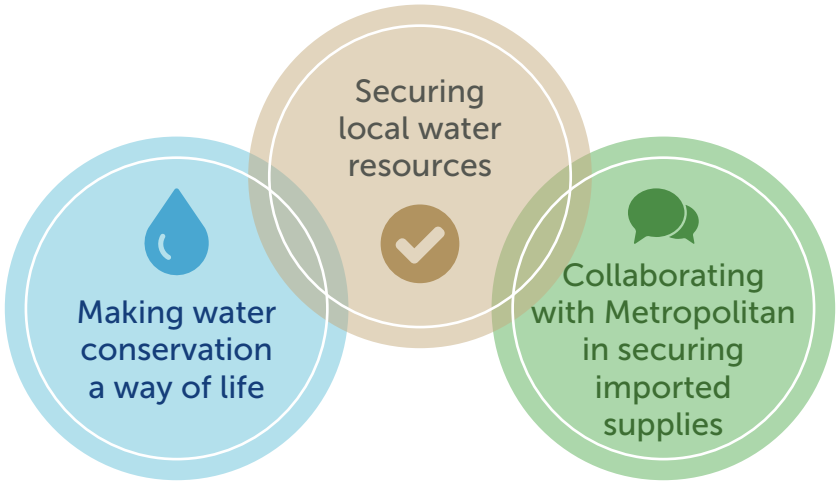


Looking to the Future – Delivering Long-term Water Security



Western is poised for continued leadership to support the region's long-term water security.

Western has ongoing programs to continue its mission of providing safe, reliable, environmentally sensitive, and financially responsible water resources for its customers.



Additionally, Western is currently partnering with the Drought Task Force to prepare a Drought Contingency Plan (DCP) that takes a deeper dive into drought planning and preparedness across Western's entire service area, including an in-depth evaluation of the potential range of impacts of climate change on Western's long-term supplies.

STAY INFORMED AND INVOLVED

Tap into education, advocacy and awareness by staying involved with Western.

@WesternMWD @WesternMWD

@WesternMWD ww.WMWD.com

To stay informed and involved in Western's ongoing programs and efforts, check out our website at www.wmwd.com, or follow us on Facebook, Twitter and Instagram.

Part 1

Introduction

WESTERN MUNICIPAL WATER DISTRICT

1 Introduction

This chapter provides a brief overview of Western Municipal Water District (Western) and the purpose of this Urban Water Management Plan (UWMP). It also describes how the UWMP is organized and how it relates to other local and regional planning efforts that Western is involved in.

This document presents the 2020 UWMP for Western. Western supplies water on both a wholesale (Western Wholesale) and a retail (Western Retail) basis and this document addresses the UWMP requirements for each in separate sections. The Western Wholesale system also includes Western Retail as a customer.

Western is a public agency headquartered in Riverside, California. Western was formed in 1954 to provide water to the growing western Riverside County through local and imported sources.

IN THIS SECTION

- About Western
- Purpose of the Plan
- Plan Organization
- Relation to Other Documents

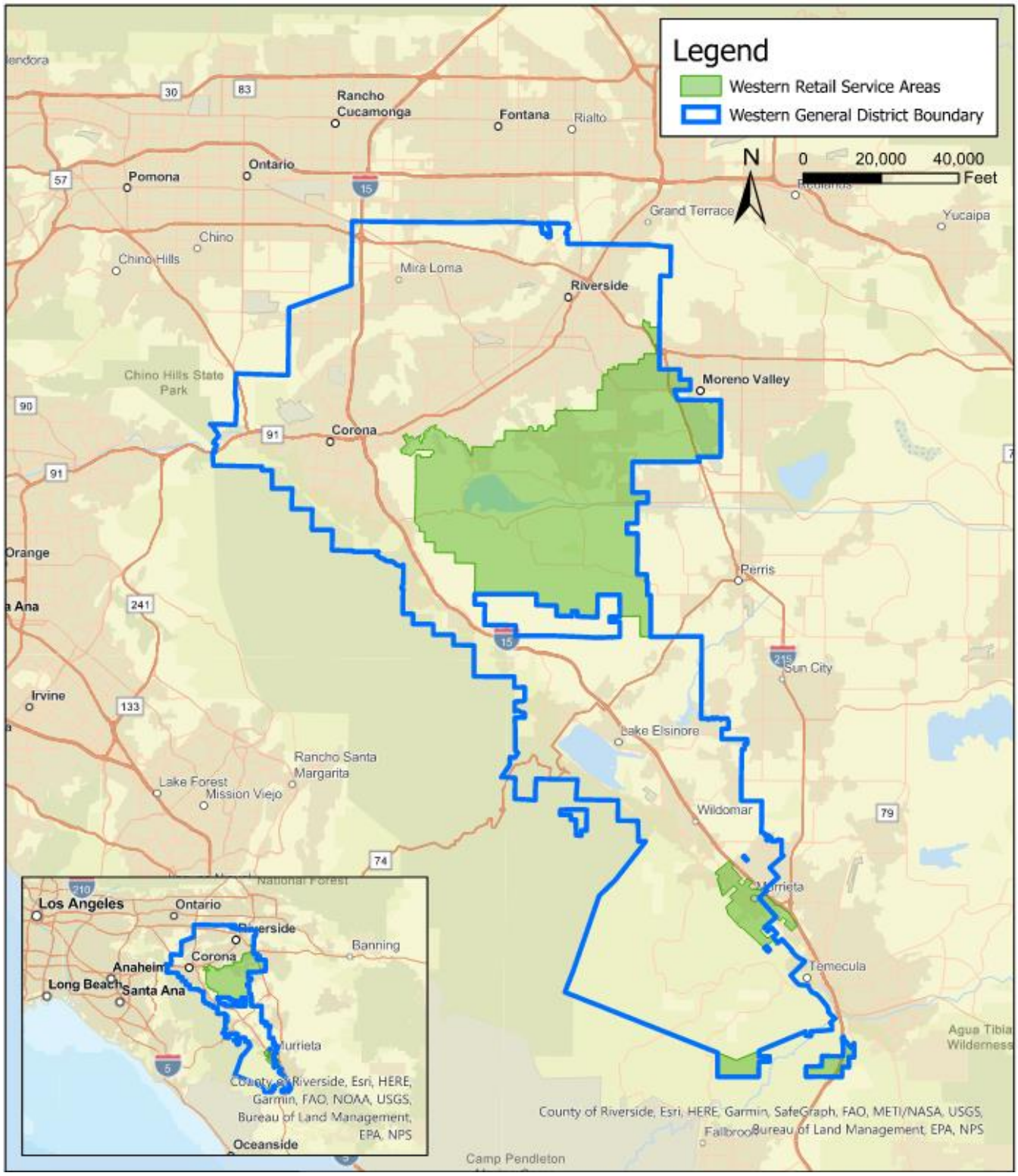
Today, Western provides water supply, wastewater treatment and disposal, and water resource management to nearly one million people in a service area covering roughly 527-square miles, shown in **Figure 1-1**. In total, Western sells approximately 80,000 acre-feet (AF) of water each year and operates two wastewater treatment plants and a groundwater desalination plant.

As a member agency of the Metropolitan Water District of Southern California (Metropolitan), Western Wholesale provides wholesale water to the region within its service area, which includes the cities of Corona, Norco and Riverside and the water agencies serving Box Springs, Eagle Valley, Elsinore Valley, Temescal Valley, and Temecula.

Western Retail also directly serves water to approximately 25,000 retail customers in the unincorporated areas of El Sobrante, Eagle Valley Temescal Creek, Woodcrest, Lake Mathews, March Air Reserve Base and Rainbow, as well as portions of the cities of Riverside and Murrieta.

Western is one of the five member agencies of the Santa Ana Watershed Project Authority (SAWPA), a joint powers authority that conducts regional water resources planning and project implementation within the Santa Ana River Watershed.

Figure 1-1. Western Wholesale and Western Retail Service Area Boundaries



1.1 Urban Water Management Plan Purpose

In 1983, the State of California Legislature (Legislature) enacted the Urban Water Management Planning Act (UWMP Act). The law required an urban water supplier, providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 AF annually, to adopt an Urban Water Management Plan every five years demonstrating water supply reliability under normal as well as drought conditions. The UWMP Act applies to wholesale and retail suppliers. In 2020, Western Wholesale provided nearly 75,000 AF of water to its wholesale customers (including Western Retail). In 2020, Western Retail delivered over 25,000 AF of water to nearly 25,000 service connections throughout its retail service areas. Therefore, Western Wholesale and Western Retail are required to prepare an UWMP so Western's UWMP must meet the requirements for both.

Since the original UWMP Act was passed, it has undergone significant expansion to address a broad range of issues that impact the water supply reliability of each water supplier, including prolonged droughts, groundwater overdraft and changing climatic conditions. The current UWMP Act requirements are found in Sections 10610-10657 and 10608 of the California Water Code.

DWR provides guidance on preparing an UWMP to meet and understand the requirements in the California Water Code by developing an UWMP Guidebook, conducting workshops, developing tools, and providing program staff to help water suppliers prepare comprehensive and useful water management plans, and implement water conservation programs. Suppliers prepare their own UWMPs in accordance with the requirements and submit them to DWR. DWR then reviews the plans to make sure they have addressed the requirements identified in the California Water Code for completeness and submits a report to the Legislature summarizing the status of the plans for each five-year cycle.

The purpose of this UWMP is for water suppliers to evaluate their long-term resource planning and establish management measures to ensure adequate water supplies are available to meet existing and future demands. The UWMP provides a framework to help water suppliers maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions or other water supply interruptions.

The UWMP is a valuable planning tool used for multiple purposes including:

- Provides a standardized methodology for water utilities to assess their water resource needs and availability.
- Serves as a resource to the community and other interested parties regarding water supply and demand, conservation and other water related information.
- Provides a key source of information for cities and counties when considering approval of proposed new developments and preparing regional long-range planning documents such as city and county General Plans.
- Informs other regional water planning efforts.

California Water Code Section 10632 also includes updated requirements for suppliers to prepare a Water Shortage Contingency Plan (WSCP). The WSCP documents a supplier's plans to manage and mitigate an actual water shortage condition, should one occur because of drought or other impacts on water supplies. In the 2015 UWMP cycle, the WSCP was part of the UWMP. For the 2020 update, the WSCP is required to be a standalone document so that it can be updated independently of the UWMP but must be referenced in and attached to the 2020 UWMP. An overview of the WSCP requirements are described in the body of this UWMP and the standalone WSCP is attached as **Appendix A**.

1.2 Plan Organization

This document was prepared in compliance with the California Water Code and the 2020 guidelines established by DWR and constitutes Western's 2020 UWMP for both Western Wholesale and Western Retail.

The 2020 UWMP is organized in four parts:

PART 1: INTRODUCTION

Chapter 1 – Introduction

Chapter 2 – Outreach and Engagement

Chapter 3 – Service Area Description

PART 2: WESTERN WHOLESALE

Chapter 4 – Wholesale Water Supply

Chapter 5 – Wholesale Water Use

Chapter 6 – Wholesale Water Service Reliability and Drought Risk Assessment

Chapter 7 – Wholesale Demand Management Measures

Chapter 8 – Wholesale Water Shortage Contingency Plan

PART 3: WESTERN RETAIL

Chapter 9 – Retail Water Supply

Chapter 10 – Retail Water Use

Chapter 11 – Retail Water Service Reliability and Drought Risk Assessment

Chapter 12 – Retail Demand Management Measures

Chapter 13 – Retail Water Shortage Contingency Plan

PART 4: SUPPORTING INFORMATION

References

Appendices

Throughout this report, water volume is represented in units of acre-feet (AF). Data is presented on a calendar year basis.

1.3 Relation to Other Efforts

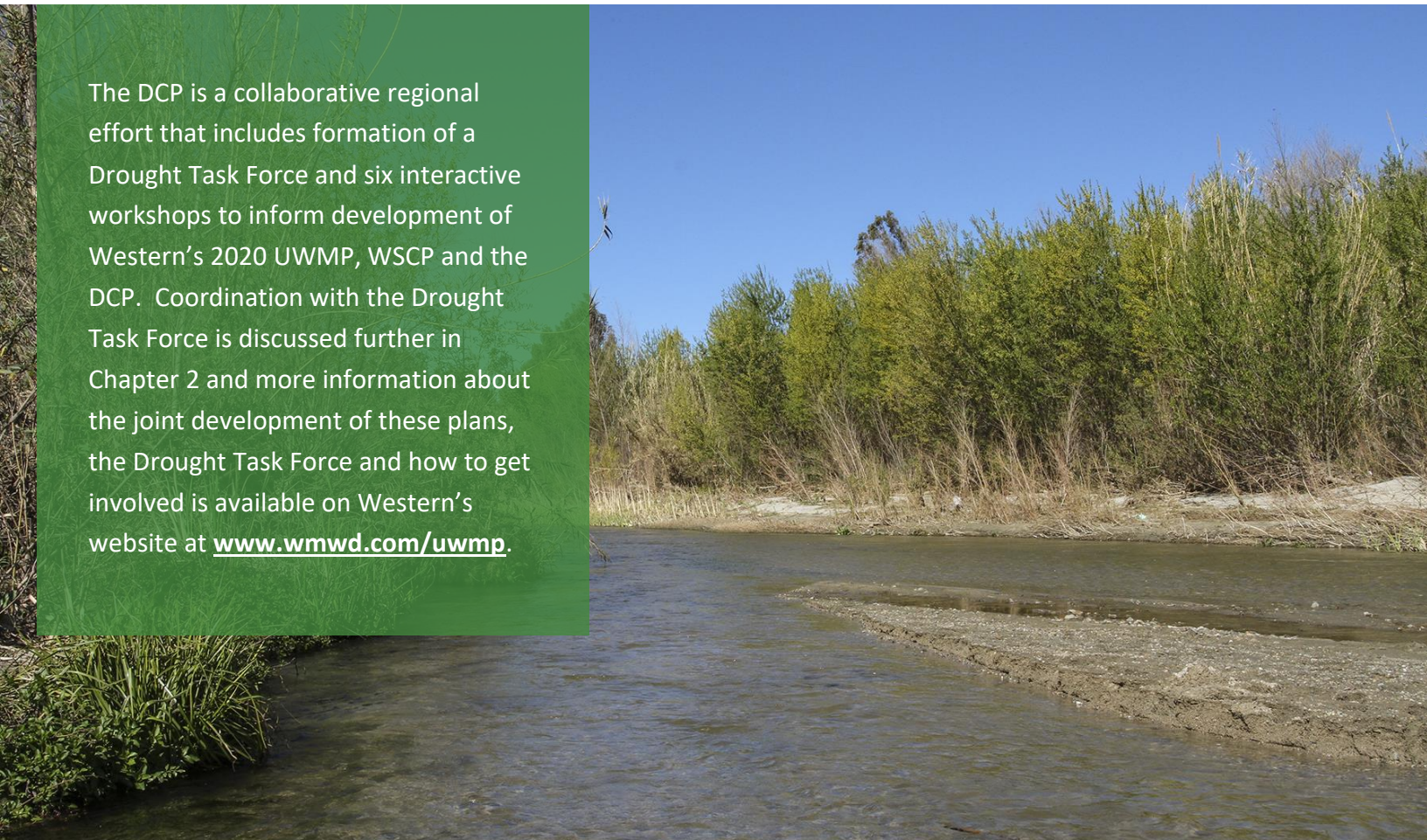
In addition to the 2020 UWMP, Western is involved in several other internal and external planning efforts and collaborates with a variety of stakeholders to achieve coordination and consistency between the various planning documents, especially those prepared by Western.

Figure 1-2 provides an overview of the many related planning efforts and how they integrate with the various elements of Western's 2020 UWMP. Elements of other plans that directly inform the development of this UWMP are shaded in gray.

1.3.1 Western Drought Contingency Plan

Western received a grant from the United States Bureau of Reclamation (Reclamation) to prepare a Drought Contingency Plan (DCP) consistent with Reclamation's Drought Response Program Framework. The Drought Response Framework provides assistance to water users and managers to conduct drought contingency planning, including consideration of risks and uncertainties related to changing hydrologic conditions, and to take actions that will build long-term resiliency to drought.

The DCP has many elements in common with elements of the UWMP and WSCP, such as supply and demand analysis, climate change vulnerability and water shortage response actions. Therefore, the two plans are being prepared in parallel as a joint project with a coordinated schedule and approach. This allows Western to capture efficiencies in simultaneous development of the documents and to fully align the analysis and recommendations of both plans. The DCP will be prepared over a two-year timeframe and will be completed by the end of 2022, but some elements that inform the 2020 UWMP were escalated in the DCP schedule to meet the earlier UWMP submittal deadline of July 1, 2021.



The DCP is a collaborative regional effort that includes formation of a Drought Task Force and six interactive workshops to inform development of Western's 2020 UWMP, WSCP and the DCP. Coordination with the Drought Task Force is discussed further in Chapter 2 and more information about the joint development of these plans, the Drought Task Force and how to get involved is available on Western's website at **www.wmwd.com/uwmp**.

Figure 1-2. UWMP Relation to Other Planning Efforts

Plan elements with a direct link to this UWMP

PLANNING DOCUMENT	PREPARED BY	DOCUMENT PROGRESS STATUS	PLAN AREA FOCUS: WESTERN WHOLESALE	PLAN AREA FOCUS: WESTERN RETAIL	PLAN AREA FOCUS: REGIONAL OR STATE	PLAN TOPICS: SUPPLIES / RELIABILITY	PLAN TOPICS: DEMANDS / WATER USE EFFICIENCY	PLAN TOPICS: INFRASTRUCTURE	PLAN TOPICS: CLIMATE CHANGE	PLAN TOPICS: RISK AND MITIGATION	PLAN TOPICS: WATER SHORTAGE & EMERGENCY RESPONSE
WESTERN 2020 UWMP	Western	■■■■■ This UWMP	✓	✓		✓	✓		✓	✓	✓
WATER SHORTAGE CONTINGENCY PLAN	Western	■■■■■ Developed as part of 2020 UWMP	✓	✓		✓	✓		✓	✓	✓
WESTERN DROUGHT CONTINGENCY PLAN	Western in collaboration with Drought Task Force	■■■□□ Under Development as part of 2020 UWMP	✓	✓	✓	✓	✓	✓	✓	✓	✓
WESTERN RETAIL FACILITIES MASTER PLANS	Western	■■■□□ Under development		✓			✓	✓			
RIVERSIDE RETAIL SERVICE AREA BUILD-OUT DEMAND ANALYSIS	Western	■■■■■ Completed in 2019		✓			✓				
MURRIETA SERVICE AREA BUILD-OUT DEMAND ANALYSIS	Western	■■■■■ Completed in 2018		✓			✓				
ARLINGTON BASIN GROUNDWATER SUSTAINABILITY PLAN (GSP)	Western in collaboration with the Arlington Groundwater Sustainability Agency (GSA)	■■■□□ Under development	✓	✓	✓	✓			✓	✓	
AWIA RISK AND RESILIENCE ASSESSMENT AND EMERGENCY RESPONSE PLAN	Western	■■■■■ Completed	✓	✓		✓		✓		✓	
LOCAL HAZARD MITIGATION PLAN	Western	■■■■■ Completed in 2017	✓	✓		✓		✓		✓	
METROPOLITAN INTEGRATED RESOURCES PLAN (IRP) AND 2020 UWMP	MWD in collaboration with Western and other member agencies	■■■□□ Under development	✓	✓	✓	✓	✓		✓	✓	✓
2019 WATER USE EFFICIENCY (WUE) MASTER PLAN	Western	■■■■■ Completed in 2019		✓			✓				
LOCAL RETAIL AGENCY 2020 UWMPS	Local retail water suppliers	■■■□□ Under development			✓	✓	✓		✓	✓	✓
2020 UPPER SANTA ANA WATERSHED INTEGRATED REGIONAL URBAN WATER MANAGEMENT PLAN	San Bernardino Valley Municipal Water District in collaboration with Western and other agencies	■■■□□ Under development			✓	✓	✓		✓	✓	✓
ONE WATER ONE WATERSHED PLAN	SAWPA in collaboration with Western and others	■■■■■ Completed in 2019			✓	✓	✓		✓	✓	✓

2 WESTERN MUNICIPAL WATER DISTRICT
Outreach and Engagement

This chapter describes the outreach and engagement activities conducted by Western during preparation of the 2020 UWMP, the various stakeholders involved in preparation of this UWMP along with the public review and adoption process.

Throughout preparation of this UWMP, Western actively engaged with stakeholders, including cities, counties, water agencies, and the public to inform them of Western's efforts and activities, gather the best available data for use in developing this UWMP, and coordinate planning activities with other related regional plans and initiatives.

Western employed a combination of outreach efforts, which were designed to educate decision-makers and customers about key plan decisions and engagement activities, which are designed to influence the development of the UWMP by curating the perspective of select stakeholders at key plan milestones.

Details regarding the key outreach and engagement efforts conducted by Western as part of the UWMP development are presented in this chapter.

IN THIS SECTION

- Outreach and Engagement Overview
- Stakeholders
- Plan Review, Adoption, and Submittal

2.1 Stakeholders

Western actively engaged with diverse stakeholder groups throughout the development of the UMWP. The various stakeholder groups involved with the UWMP and their role is summarized below in **Table 2-1**. Each stakeholder group and the methods of outreach and engagement are described in the following sections.

Table 2-1. Key Stakeholders and Roles

	ROLE FOR UWMP			
STAKEHOLDER GROUP	**INFORM / EDUCATE**	**GATHER PERCEPTIONS / OPINIONS**	**ADVISE**	**DECIDE**
Drought Task Force	X	X	X	
Engineering, Operations, Water Resources (EOWR) Committee	X	X	X	
Western Board of Directors				X
General Public	X	X		

OUTREACH
One-way communication to educate, inform

ENGAGEMENT
Multi-directional communication to inform plan decisions

2.1.1 Drought Task Force

As described in **Chapter 1**, the UWMP was developed in parallel with a Drought Contingency Plan. As part of this combined effort, Western recruited, convened and engaged a Drought Task Force comprised of 29 organizations represented by knowledgeable community leaders who can offer diverse, informed perspectives to support effective drought contingency planning as well as inform Western's UWMP and WSCP. The members of the Drought Task Force organized by stakeholder segment group are presented in **Table 2-2**. All of the retail water agencies in Western's service area are represented on the Drought Task Force.

During the UWMP preparation, the Task Force members participated in two interactive workshops to share their perspectives to inform development of elements of the UWMP, WSCP and DCP, and will continue to participate in approximately four more workshops to complete the development of the DCP by the end of 2022.

Table 2-2. Drought Task Force Members

SEGMENT	PERCENT REPRESENTATION	ORGANIZATION
Environmental and Conservation Groups	14%	Inland Empire Resource Conservation District
		Inland Empire Waterkeeper
		Riverside-Corona Resource Conservation District
		Santa Ana Watershed Project Authority
Environment and Social Justice	3%	Center for Community Action and Environmental Justice
Regional Government	7%	Riverside County Flood Control and Water Conservation District
		Western Riverside Council of Governments
Research	7%	University of California, Riverside
		Water Resources Institute
Local Government	3%	City of Murrieta
Retail: Customer Stakeholder	17%	Altman Plants
		March Air Reserve Base
		Vons/Kroger
		Woodcrest MAC
		Woodcrest MAC/Riverside County
Tribal representatives	4%	Pechanga Tribal Government
Water Agency: Regional	10%	Eastern Municipal Water District
		Metropolitan Water District of Southern California
		San Bernardino Valley Municipal Water District
Water Agency: Retail Agencies in Western service area	34%	Box Springs Mutual Water Company
		City of Corona
		City of Norco
		Elsinore Valley Municipal Water District
		Jurupa Community Services District
		Rancho California Water District
		Riverside Highland Water Company
		Riverside Public Utilities
		Rubidoux Community Services District
		Temescal Valley Water District

2.1.2 Western Engineering, Operations and Water Resources (EOWR) Committee

Western's EOWR Committee serves as an advisor to UWMP development. To keep the Committee informed and provide opportunity for input on key plan milestones, Western staff provided project updates at EOWR public meetings spanning the UWMP development. The EOWR Committee was provided the opportunity to review and provide comment on the draft UWMP.

2.1.3 Western Board of Directors

Western's Board of Directors (Board) is the formal decision-making body that adopts the UWMP and recommends it for submittal to DWR. To keep the Board informed, Western staff provided periodic updates at public Board meetings, spanning the UWMP development.

2.1.4 General Public

To reach all customers within Western's service area, Western created a specific web page for the UWMP and DCP, available at **https://wmwd.com/UWMP**. This webpage provides another opportunity for interested individuals to learn about the UWMP and DCP planning efforts, view the Drought Task Force participants and workshop schedules, subscribe to project updates, review and comment on both plans, and links to past resources or plans.

In addition to the project website, Western staff distributed timely informational notices to the public to raise awareness about the project and encourage participation in public comment periods through email bulletins, social media posts and newspaper publications.

The Draft UWMP was made available for public review in mid-May, 2021.

The Western Board conducted a public hearing on June 16, 2021 to receive public comments and consider adoption of the Draft UWMP and Draft WSCP. The public comment period and public hearing was noticed twice in local English and Spanish newspapers:

English language: Press Enterprise notices published on April 15 and April 22, 2021

Spanish language: La Prenza notices published on April 16 and April 23, 2021

The hearing notices are attached as **Appendix B**.

2.1.5 Other Stakeholder Outreach

60-Day Notices

To fulfill the requirements of Water Code Section 10621(c), Western sent letters of notification of preparation of the 2020 UWMP to all cities and counties within Western's service area 60 days prior to the public hearing. All organizations that were provided the 60-day notification letter were notified a second time about the availability of the draft 2020 UWMP and public hearing scheduled for June 16, 2021. Copies of the 60-day notification letters are attached as **Appendix C**.

The following agencies were notified:

- Box Springs Mutual Water Company
- City of Corona
- City of Corona, Department of Water and Power
- City of Eastvale
- City of Jurupa Valley
- City of Lake Elsinore
- City of Murrieta
- City of Norco
- City of Riverside
- City of Temecula
- County of Riverside
- Eagle Valley Mutual Water Company
- Elsinore Valley Municipal Water District
- Home Gardens County Water District
- Home Gardens Sanitary District
- Jurupa Community Services District
- Metropolitan Water District of Southern California
- Rancho California Water District
- Riverside Highland Water Company
- Riverside Public Utilities
- Rubidoux Community Services District
- Temescal Valley Water District

Metropolitan and Retail Agency Coordination

Western coordinated with Metropolitan to provide information on projected supplies and demands within Western's wholesale service area. Metropolitan prepared estimates of Western Wholesale's demand for imported water and provided its estimates to Western.

Western also coordinated with each of the retail water agencies in its service area to obtain updated supply and demand projections for inclusion in the Western Wholesale supply reliability analysis.

2.2 Plan Adoption, and Submittal

Western made the draft 2020 UWMP available on-line at **https://wmwd.com/UWMP** and at Western's headquarters for public review on in mid-May 2021.

The final 2020 UWMP was formally adopted by Western on June 16, 2021. A copy of the Adoption Resolution is included in **Appendix D**. The WSCP was also adopted on June 16, 2021, as described in the WSCP, attached in **Appendix A**.

Copies of the final 2020 UWMP and 2020 WSCP were sent to the California State Library, DWR (electronically using the WUEdata reporting tool), and all cities and counties within Western's service area within 30 days of adoption.

Western made copies of the final UWMP and WSCP available on its website and at its office within 30 days after the adoption.



WESTERN MUNICIPAL WATER DISTRICT

3 Service Area Description

This chapter describes Western's wholesale and retail service areas, customers, and land uses, as well as population, demographics, and climate features.

IN THIS SECTION

- Western Service Areas
- Population and Demographics
- Climate

3.1 Western Wholesale Service Area

The Western Wholesale service area encompasses 527 square miles that spans from the northern Riverside County boundary to the southern Riverside County boundary. Western's wholesale service area is also bounded by the Riverside County line to the west and by Eastern Municipal Water District to the east. As a member agency of Metropolitan, Western provides wholesale supplemental water to the region within its service area. In total, there are fourteen (14) retail water agencies, shown on the following page, within Western Wholesale's service area, including Western Retail, that currently receive or can receive water from Western. **Figure 3-1** illustrates its respective service areas within the Western Wholesale boundary.

Retail Water Agencies in Western Wholesale Service Area

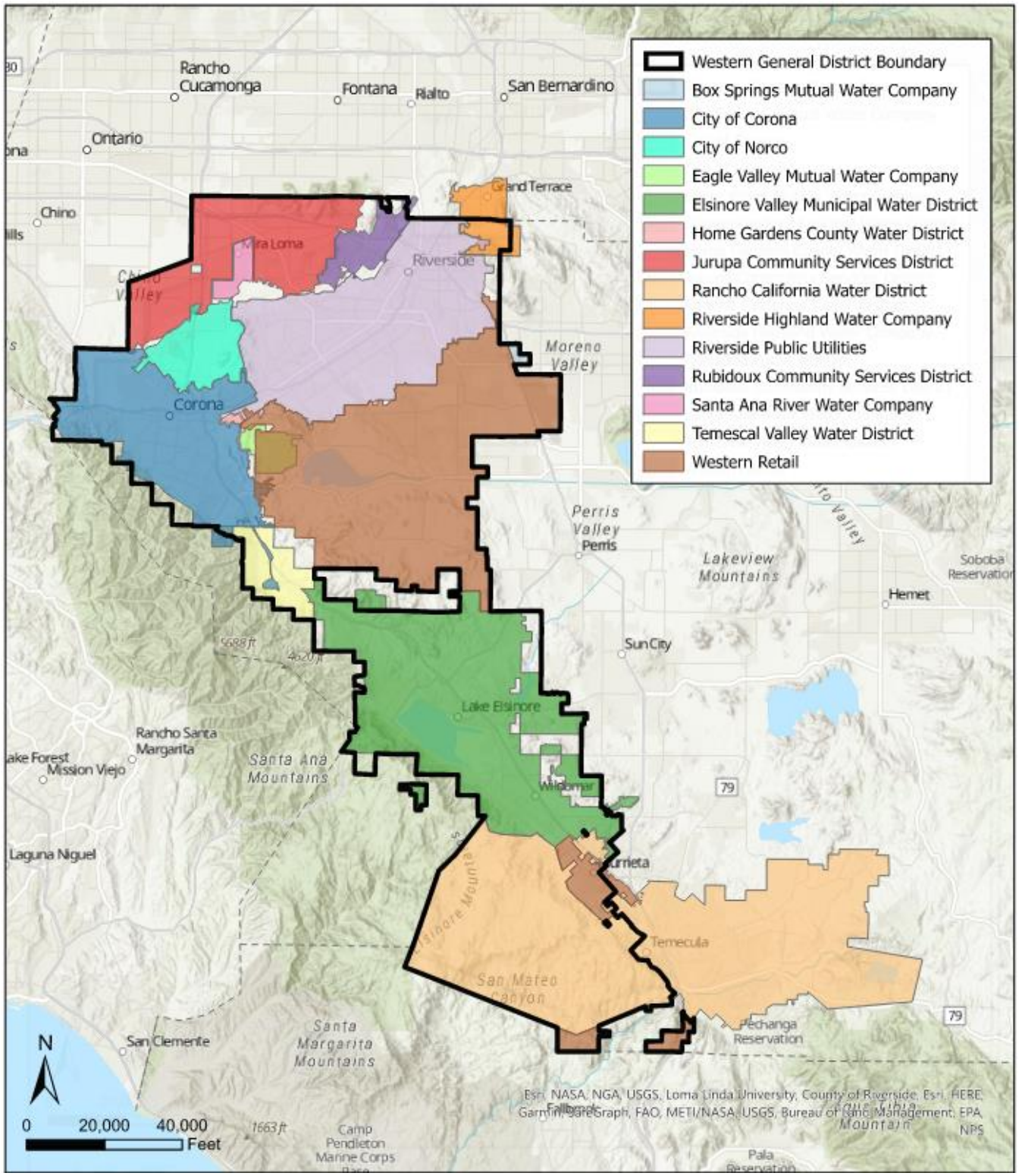
Box Springs Mutual Water District
City of Corona
City of Norco
Eagle Valley Mutual Water Company
Elsinore Valley Municipal Water District
Home Gardens County Water District
Jurupa Community Services District
Rancho California Water District
Riverside Highlands Water Company
Riverside Public Utilities
Rubidoux Community Services District
Santa Ana River Water Company
Temescal Valley Water District
Western Retail

Of the retail water agencies in the Western Wholesale service area, eight received wholesale water from Western Wholesale in 2020. These agencies are referred to as wholesale customers in this Plan. Western considers Western Retail a wholesale customer and is therefore included in wholesale system descriptions throughout this Plan. In addition to purchasing both wholesale treated and untreated water from Western Wholesale, most of these retail agencies also deliver local surface and groundwater and/or recycled water within their respective service areas.

The remaining six retail agencies currently utilize solely local supplies. It is anticipated that some of these six may utilize Western wholesale supplies in the future as the region grows (refer to **Chapter 4,** Wholesale Water Supply).



Figure 3-1. Western Wholesale Service Area and Customers



3.2 Western Retail Service Area

Western provides water to nearly 25,000 customer connections, such as single-family residences or commercial businesses, within its retail service area, including the Riverside Retail System, Murrieta Retail System, and Rainbow Retail System, as shown in **Table 3-1**. These three service areas are collectively referred to as Western Retail and cover a total of 104 square miles and serve water to an estimated population of nearly 100,000.

Table 3-1. Western Retail System Connections

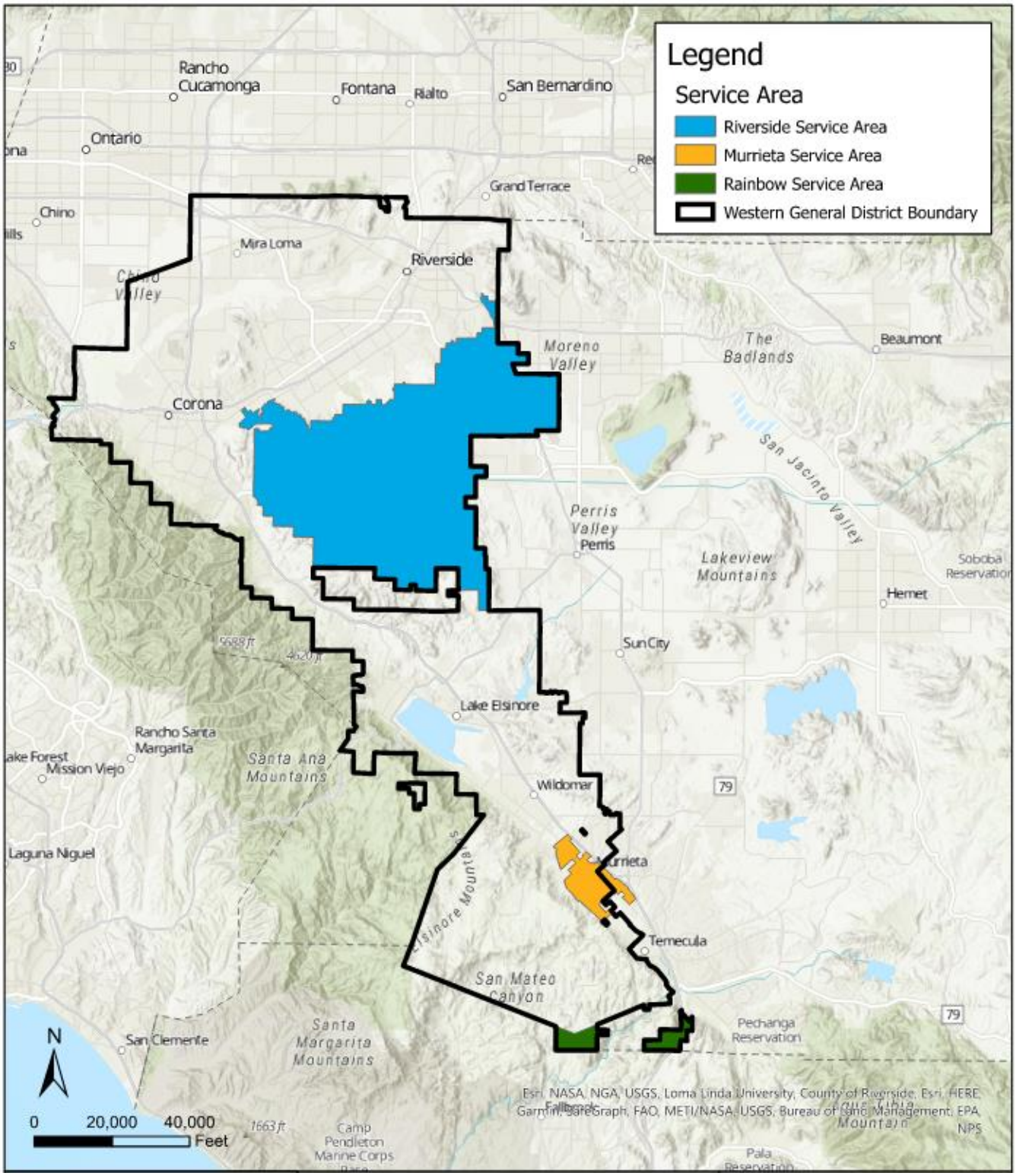
WESTERN RETAIL SYSTEM	NUMBER OF RETAIL CONNECTIONS IN 2020
Riverside Retail System	21,657
Murrieta Retail System	2,946
Rainbow Retail System	42
TOTAL	**24,645**

The Riverside Service Area includes a portion of the City of Riverside and unincorporated areas of Riverside County, including the communities of El Sobrante, Eagle Valley, Temescal Creek, Woodcrest, Lake Matthews, and March Air Reserve Base.

In 2005, Western took ownership of the Murrieta County Water District as a separate retail service area, now called the Murrieta Service Area. The entire area lies within the city of Murrieta.

Western Retail also serves a very small area, called the Rainbow Service Area, in an area just south of the City of Temecula in the unincorporated portion of Riverside County.

Figure 3-2. Western Retail Service Areas



3.3 Service Area Population and Demographics

Western provides service to nearly one million people in both a wholesale and retail capacity. A summary of population by service area is provided in the following section.

3.3.1 Service Area Population

Population estimates for Western's wholesale service area was developed using demographic projections from the Southern California Association of Governments (SCAG) Connect SoCal: The 2020-2045 Regional Transportation Plan/Sustainable Community Strategy (September 2020). SCAG routinely forecasts population, housing, and employment estimates as well as develops transportation plans to support growing population and housing needs throughout the region.

SCAG provided updated population, housing, and employment estimates for 2020, 2035, and 2045. This data is organized by Transportation Analysis Zones (TAZ). Because TAZ do not align with Western's service area, a geographical analysis in ArcGIS was used to determine the growth that is projected to occur within Western's service area. For intermediate years, the average annual rate of growth was determined and applied to find the population for 2025, 2030, and 2040. Estimates for 2020 and future year population are provided in **Table 3-2**. The population estimates for Western Wholesale include Western Retail.

Population within Western retail was estimated using a 2.2% increased and is based on growth rates established in recent master planning efforts. Modifications to Western retail population were made to better represent recent trends in growth that are anticipated to continue. SCAG growth estimates for Western's retail service areas did not appear to accurately represent near term future growth when compared to project development and permitting records.

Western's retail service area does not experience substantial seasonal changes in population. Some slight changes are observable in the area adjacent to the University of California Riverside campus in the northern portion of the Riverside Service Area.

Table 3-2. Population Projections for Western Wholesale

	2020	2025	2030	2035	2040	2045
WESTERN WHOLESALE[1]	**979,634**	**1,025,334**	**1,077,603**	**1,131,288**	**1,177,721**	**1,225,915**
WESTERN RETAIL	**94,898**	**105,865**	**118,100**	**131,749**	**146,976**	**163,958**
Riverside	79,044	87,652	97,260	107,981	120,293	134,013
Murrieta	15,676	18,011	20,610	23,506	26,389	29,621
Rainbow	178	202	231	262	294	324

[1] Western Wholesale includes Western Retail population and represents the total population within Western's general district boundary.

3.3.2 Other Social, Economic, and Demographic Factors

Based on 2015-2019 data, the United States Census Bureau (Census) estimates that households within Riverside County are composed of 3.28 people per household and approximately 74% of households are single-family residences. Approximately 54% of households are composed of married-couples with families. The median age of a resident within Riverside County is approximately 35 years old. Based on 2015-2019 Census data, approximately 82% of people 25 years or older had at least graduated from high school and 22% obtained a bachelor's degree or higher. It was estimated that 18% of people did not complete high school.

Throughout Riverside County, approximately 55% of the working population (people ages 16 and over) were employed. Approximately 78% held a private wage or salary position, and 15% were employed by the federal, state, or local government. Educational services, health care and social assistance (21%) is the most common industry that Riverside County Residents work in, followed by a retail trade (13%). The median household income was approximately $67,005, while the median earnings for a full-time, year-round worker was $46,825 (United States Census Bureau, n.d.).

It was estimated that 14% of people within Riverside County were in poverty. Nearly 9.3% of households participated in government programs, such as the Supplemental Nutrition Assistance Program (SNAP). Of the households that received SNAP, 67% had children under the age of 18 and 31% had one or more people over the age of 60 within the household. (United States Census Bureau, n.d.).

Riverside County is a relatively diverse area. Census data reported that of the people identifying as one race alone, 60% were White. Approximately 4.4% identified as two or more races. Of the total population, an estimated 35.3% identified as White non-Hispanic and 48.9% as Hispanic. It was estimated that 41% of people at least 5 years or older spoke a language other than English at home. In addition to English, Spanish was the most common language and was spoken by 34% of people 5 years or older. 15% of people stated that they did not speak English "very well" (United States Census Bureau, n.d.).

According to research from UC Riverside School of Business Center for Economic Forecasting and Development, before the COVID-19 pandemic, employment in the Inland Empire was expanding at a steady pace, based on data from California's Employment Development Department. From October 2018 to October 2019, the region added 30,900 nonfarm jobs, a 2.0% increase. This surpassed the 1.8% gains in the state and the 1.4% gains in the nation. Although pre-pandemic the employment growth for the Inland Empire remained steady, growth has slowed compared with recent years; total nonfarm employment grew 3.0% from October 2017 to October 2018 and 3.8% from October 2016 to October 2017 (University of California, Riverside School of Business, 2020).

The Inland Empire's labor market has continued to recover from the COVID-19 pandemic, adding 93,100 jobs since lows in April 2020. Despite ongoing employment recovery, year-over-year employment fell 7.1%. However, it is estimated that employment growth throughout the Inland Empire is outpacing that of the entire state (University of California, Riverside School of Business, 2020).

3.4 Land Uses within Service Area

SCAG prepares demographic forecasts based on land use data through an extensive process that emphasizes input from local planners in coordination with local or regional land use authorities, incorporating essential information to reflect anticipated future populations and land uses. SCAG's projections undergo extensive local review, incorporate zoning information from city and county general plans, and are supported by Environmental Impact Reports. Using SCAG's regional land use dataset, the existing land use within Western's wholesale service area is shown in Table 3-3 and the projected land use (based general plan land use designations) is shown in Table 3-4.

Table 3-3. Existing Land Uses within Western's General Service Area

LAND USE	ACREAGE	PERCENTAGE OF TOTAL SERVICE AREA
Single Family Residential	61,055	18%
Multi-Family Residential	3,330	1%
Mixed Residential	180	0%
Rural Residential	11,575	3%
Commercial and Services	4,993	2%
General Office	1,553	0%
Facilities	2,447	1%
Education	4,631	1%
Industrial	13,039	4%
Transportation, Communications, and Utilities	7,401	2%
Mixed Commercial and Industrial	121	0%
Mixed Residential and Commercial	9	0%
Open Space and Recreation	28,140	8%
Agriculture	25,564	8%
Water	7,235	2%
Specific Plan	226	0%
Mobile Homes and Trailer Parks	3,403	1%
Military Installations	6,797	2%
Under Construction	3,244	1%
Vacant	116,618	35%
Undevelopable or Protected Land	930	0%
Unknown	41	0%
Other	29,425	9%
TOTAL	**331,955**	**100%**

Table 3-4. Projected Land Uses within Western's General Service Area

LAND USE	ACREAGE	PERCENTAGE OF TOTAL SERVICE AREA
Single Family Residential	156,332	47%
Multi-Family Residential	4,039	1%
Mixed Residential	2,298	1%
Rural Residential	11,305	3%
Commercial and Services	6,773	2%
General Office	483	0%
Facilities	11,132	3%
Education	569	0%
Industrial	14,985	5%
Transportation, Communications, and Utilities	470	0%
Mixed Commercial and Industrial	7,202	2%
Mixed Residential and Commercial	1,985	1%
Open Space and Recreation	56,535	17%
Agriculture	900	0%
Water	6,920	2%
Specific Plan	14,004	4%
Other	36,020	11%
TOTAL	**331,955**	**100%**

3.5 Service Area Climate

Western's climate is characterized by typical hot, dry summers, and mild winters. **Table 3-5** presents average climate data for the service area, including temperature, rainfall, and reference evapotranspiration (ETo). As shown in **Table 3-5**, the warmest month of the year is August with an average temperature of 85.0 degrees Fahrenheit (°F), while the coldest month of the year is December with an average temperature of 59.8°F.

The annual average precipitation within Western's boundary is about 8.8 inches. As shown in **Table 3-5**, the majority of rainfall occurs in the months of December through March. December is typically the wettest month with an average rainfall of approximately 2.3 inches.

Table 3-5. Historical Climate Data

	AVERAGE TEMPERATURE (°F) [1]	AVERAGE PRECIPITATION (IN.) [1]	AVERAGE STANDARD ETO (IN.) [1]
January	61.2	1.84	2.84
February	61.5	1.48	3.39
March	65.2	1.19	5.08
April	68.8	0.67	6.36
May	71.3	0.27	6.98
June	78.0	0.01	7.80
July	83.7	0.20	8.30
August	85.0	0.21	8.09
September	82.4	0.26	6.37
October	75.0	0.39	4.62
November	66.3	0.83	3.21
December	59.8	2.34	2.53

[1]CIMIS weather station 44 at UC Riverside; https://cimis.water.ca.gov/. Data from 2010 through 2020.

3.5.1 Climate Change

As part of this UWMP, Western considered the impacts of climate change on future water supplies and demands and water supply reliability. There are several studies that evaluate the potential impacts of climate change within the Western Wholesale and Retail areas.

Santa Ana Watershed Basin Study

SAWPA and the United States Bureau of Reclamation (USBR) completed the Santa Ana Watershed Basin Study (Basin Study) in 2013 as a complementary study to SAWPA's Integrated Regional Water Management planning process for the Santa Ana Watershed. As part of the Basin Study, USBR prepared a Climate Change Analysis for the Santa Ana River Watershed, included as **Appendix E**. The analysis evaluated frequently asked questions reading impacts to climate change on the Santa Ana River Watershed. The key findings most relevant to Western's water supply reliability are (U.S Department of the Interior Bureau of Reclmanation, August 2013):

- Annual surface water is likely to decrease over future periods;
- Precipitation shows somewhat long-term decreasing trends;
- Temperature will increase, which is likely to cause increased water demand and reservoir evaporation;
- More precipitation will fall as rain instead of snow;
- Projected decreases in precipitation and increases in temperature will decrease natural recharge throughout the basin;
- Management actions such as reducing municipal and industrial water demands or increasing recharge will be required to maintain current groundwater levels.

Metropolitan 2020 UWMP

In its Draft 2020 UWMP, Metropolitan addresses the uncertainties of climate change on water supply planning, identifying several areas of concern:

- Reduction in Sierra Nevada snowpack;
- Increased intensity and frequency of extreme weather events;
- Prolonged drought periods;
- Water quality issues associated with increase in wildfires;
- Changes in runoff pattern and amount; and
- Rising sea levels resulting in:
    - Impacts to coastal groundwater basins due to seawater intrusion;
    - Increased risk of damage from storms, high-tide events, and the erosion of levees; and
    - Potential pumping cutbacks on the SWP

Hydrologic variability, potential climate change, and regulatory risk are embedded in Metropolitan's modeling efforts. Metropolitan's modeling utilizes historical hydrologic conditions from 1992 to 2017 to simulate expected demands on Metropolitan supplies, as well as capacities and constraints of its storage facilities and supply program. The Water Reliability Assessment and the Drought Risk Assessment in Metropolitan's Draft 2020 UWMP demonstrates that Metropolitan is able to mitigate the challenges posed by hydrologic variability, potential climate change, and regulatory risk on its imported supply sources through the significant storage capabilities it has developed over the last two decades, both dry-year and emergency storage (Metropolitan Water District of Southern California, 2021).

Metropolitan's 2020 IRP, which is currently under development, is further addressing ways to account for and mitigate the uncertainties associated with climate change.

Western Drought Contingency Plan – Climate Change Vulnerability Assessment

As part of the DCP that is currently being developed, a Climate Change Vulnerability Assessment (CCVA) for the Western service area was prepared to improve the understanding of climate change impacts on future water demand and local water supplies within Western's wholesale service area during normal and drought periods (GEI Consultants, April 2021). The CCVA technical memorandum provides details on the climate model data sources, climate analysis approach, calculation of the various supply and demand change factors. The complete CCVA is provided in **Appendix F**.

DWR has developed statewide climate change datasets to for use in the water resource planning that depict climate conditions in California under historical and future climate conditions. The DWR climate data used in the CCVA was assembled from 20 global climate models, to best represent anticipated climate conditions in California. The CCVA analysis was based on the median projected change from the majority of the selected climate models. DWR's California specific data is broken down into grid cells that are approximately 1/16th degree (approximately 3.75 miles) for the entire state. Each grid cell contains monthly time series based on 1915 to 2011 used to forecast future precipitation and evapotranspiration (ET) under 2030 and 2070 climate conditions.

Based on the timeseries data, climate change factors pertaining to supply and demand for normal, single dry, and 5-year dry periods were determined. The change factors represent the ratio of a simulated future value to the corresponding simulated historical value. The time series for precipitation and corresponding change factor can be used to estimate changes in supply while the time series for evapotranspiration and corresponding change factor can be used to estimate changes in demand. The results of the CCVA show:

- Decreases in water supplies from the Santa Ana and Santa Margarita River basins under normal and drought conditions
- Decreases in precipitation and increases in surface water evaporation resulting from increased temperatures
- Smaller decreases in precipitation and natural groundwater recharge under normal and multi-year drought conditions. Results for a single-dry year anticipate slightly wetter future conditions compared to the 2020 baseline
- Precipitation will occur during shorter rainy seasons at a higher intensity
- Increases in outdoor water use under normal and drought conditions resulting from increased temperatures and higher ET rates

Western is proactively planning to adapt to and mitigate the effects of climate change. Western is involved in various efforts to recharge local groundwater basins, which will help mitigate the effects of expected declines in natural groundwater recharge. Western also has an industry leading conservation program to promote water use efficiency across its wholesale and retail service areas. Western will continue to prioritize actions to adapt to and mitigate climate change to minimize impacts to supply reliability therefore, the climate change factors developed in the CCVA were not applied directly to the supply and demand projections in this UWMP.

As part of the ongoing DCP development, Western plans to analyze the extreme climate scenarios developed by DWR to characterize the range of potential impacts of climate change for the purposes of developing drought response and mitigation measures for the DCP, which will be completed in 2022.

Climate change can also impact water resources indirectly. For example, wildfire hazards are projected to increase in southern California with climate change. Wildfires can impact water resources by increasing water requirements for firefighting, changing surface vegetation and runoff patterns in burn areas, causing debris flows, and increasing siltation of reservoirs and hydraulic structures.

Part 2

Western Wholesale

4 WESTERN MUNICIPAL WATER DISTRICT
Wholesale Water Supply

This chapter describes the water supplies Western Wholesale uses to meet wholesale demands, which include desalinated local groundwater and imported water from Metropolitan. In addition, a summary of the total water use and various water sources within the region is provided.

The retail water agencies within Western's general service area boundary use a variety of local groundwater, surface water, and recycled water sources to meet customer demands. In addition, Western Wholesale provides desalinated groundwater and imported water as supplemental supplies to its wholesale customers.

IN THIS SECTION

- Regional Water Sources
- Water Supply Characterization
- Energy Intensity



In 2020, Western provided approximately 31% of the total water supply to the region.

4.1 Regional Supplies

This section summarizes all of the water supplies available to the region within the Western Wholesale boundary, including local and imported water supplies.

4.1.1 Imported Water

Western purchases imported water from Metropolitan and sells to wholesale customers within Western's service area, including Western Retail. Metropolitan imports water from the State Water Project (SWP), which conveys water from the Bay-Delta to Southern California via the California Aqueduct, and from the Colorado River through the Colorado River Aqueduct (CRA). The supply mix varies depending on the availability of SWP supplies, which varies every year, much more significantly than the Colorado River supply. During the recent drought, water allocations from SWP were significantly reduced, leading to a greater proportion of Colorado River supplies in Metropolitan's supply mix.

Additional wholesalers within the region include Eastern Municipal Water District (Eastern), who also provides imported water to the portion of Rancho California Water District (RCWD) that falls within Eastern' s wholesale service area and to Western's Murrieta Retail System.

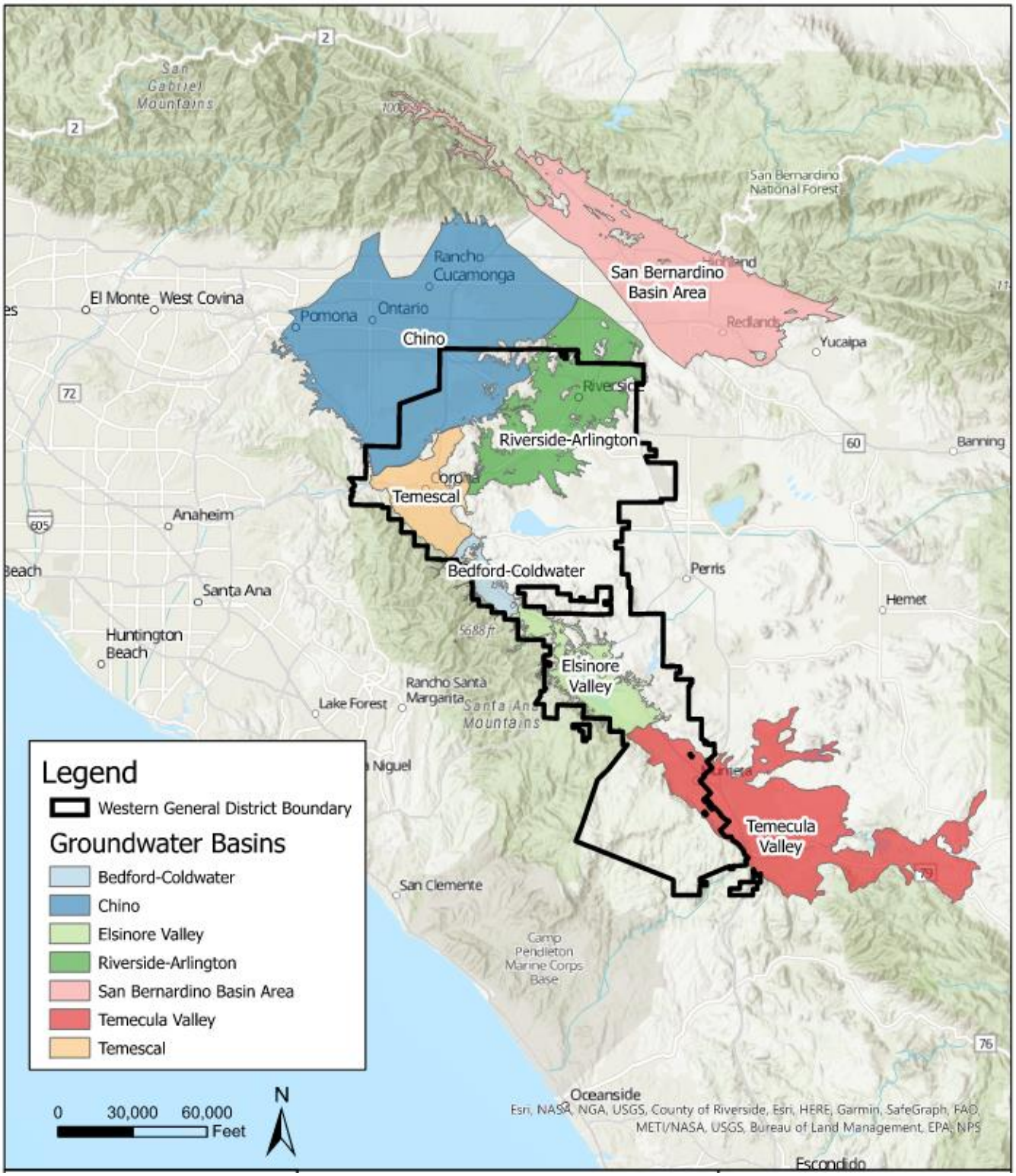
4.1.2 Groundwater

The region also uses local groundwater from seven different groundwater basins, San Bernardino Basin Area (SBBA), Chino Basin, Riverside-Arlington Basin, Temescal Basin, Bedford-Coldwater Basin, Elsinore Valley Basin, and Temecula Valley Basin. The locations of these basins are shown in **Figure 4-1**. Each of these basins is either adjudicated and managed by a Watermaster or managed by a Groundwater Sustainability Agency to ensure long term reliably supply, even in dry years.

Western Wholesale uses supply from the Riverside-Arlington Basin, which is described in detail in Section 4.2.2.

Western Retail uses supply from the SBBA, Chino Basin and Temecula Valley Basin, which are described in more detail in Section 9.2.2.

Figure 4-1. Local Groundwater Basins



4.1.3 Recycled Water

Several retail water agencies in the region, including Western Retail, also use recycled water to meet non-potable demands. Recycled water sources in the region include:

- Western Water Recycling Facility (WWRF)
- Western Riverside County Regional Wastewater Treatment Plant (WRCRWTP), operated by Western and owned by Western Riverside County Regional Wastewater Authority (WRCRWA), a joint powers authority (JPA) composed of the cities of Norco and Corona, Jurupa Community Services District, Home Gardens Sanitary District, and Western
- City of Corona water reclamation facilities WRF1, WRF2 and WRF3
- EVMWD Regional Water Recycling Facility
- EVMWD Railroad Canyon Water Recycling Facility
- EVMWD Horsethief Canyon Water Recycling Facility
- Santa Rosa Water Recycling Facility, overseen by Western, EVMWD, and RCWD through a JPA
- City of Riverside Water Quality Control Plant
- Temecula Valley Water Reclamation facility, owned and operated by Temescal Valley Water District

Western Retail has access to recycled water supply from the WWRF and WRCRWA plants, which are described in detail in Section 9.2.4.

4.1.4 Surface Water

EVMWD uses surface water from Canyon Lake, also referred to as Railroad Canyon Reservoir. Recently, Canyon Lake has experienced water quality issues and is currently not an active supply source for EVMWD. EVMWD is working to install a treatment system to recover the supply and anticipates resuming use by 2025.

4.1.5 Stormwater

Capturing stormwater for supplemental groundwater recharge is a key strategy in the region to increase local supplies, enhance long term sustainability of local groundwater basins and help mitigate the effects of climate change on local supplies.

There are various stormwater capture facilities throughout the region and additional projects are currently under development, including the Riverside North Aquifer Storage and Recovery (ASR) Project. The Riverside North ASR project is a partnership between Western, San Bernardino Valley Municipal Water District (Valley District) and RPU. The project consists of proposed in-channel and off-channel recharge along the Santa Ana River. The proposed off-channel recharge facility location is along the west side of the Santa Ana River and proposes the construction of up to eight individual recharge basins encompassing approximately 25 acres. The in-channel recharge basin proposes construction of an inflatable dam across the Santa Ana River channel, which can be raised and lowered depending on the amount of water flowing in the river. This project is estimated to recharge an average of approximately 6,000 acre-feet of water per year. The in-channel and off-channel water captured will be recharged into the Riverside North sub basin of the Riverside-Arlington Basin and a portion of the retained water will be diverted to the Riverside Canal pipeline for direct use. The project is currently in the environmental and permitting phase and is anticipated to be constructed by 2025.

4.1.6 Regional Water Sources Summary

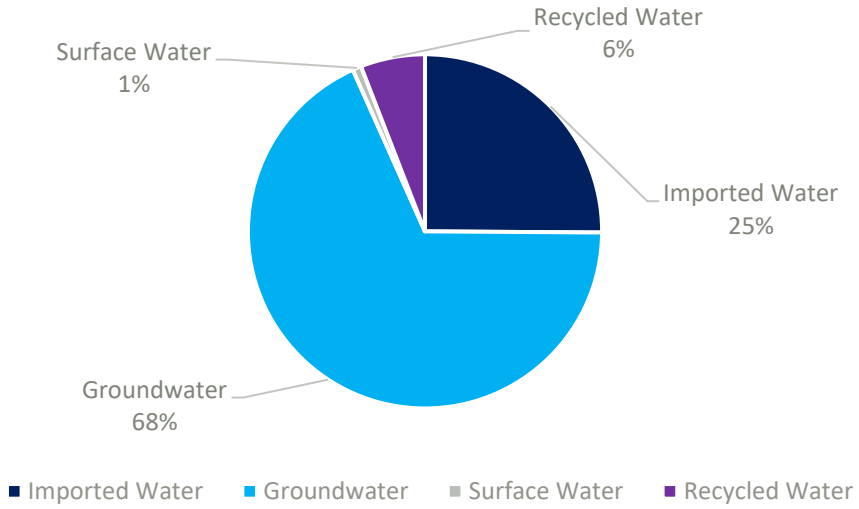
Each water agency in the region uses a unique mix of supplies and not all supply comes from Western Wholesale. An overview of the water sources used by each agency within Western's service area is shown in Table 4-1. Based on the historical water use for each of Western's retail agencies from 2017-2019, almost half of Western's retail agencies rely on imported water as a major supply source, but local groundwater is the largest source of supply for the region, as shown in Figure 4-2.

Table 4-1. Current Water Sources by Agency

Agency	Imported Water	Groundwater	Surface Water	Recycled Water[1]
Western Wholesale	X	X		
Western Retail	X	X		X
Box Springs Mutual Water District	X	X		
City of Corona	X	X		X
City of Norco	X	X		X
Eagle Valley Mutual Water Company	X	X		
Elsinore Valley Municipal Water District	X	X	X	X
Home Gardens County Water District		X		X
Jurupa Community Services District		X		X
Rancho California Water District	X	X		X
Riverside Highlands Water Company		X		
Riverside Public Utilities	X	X		X
Rubidoux Community Services District	X	X		
Santa Ana River Water Company		X		
Temescal Valley Water District	X	X		X

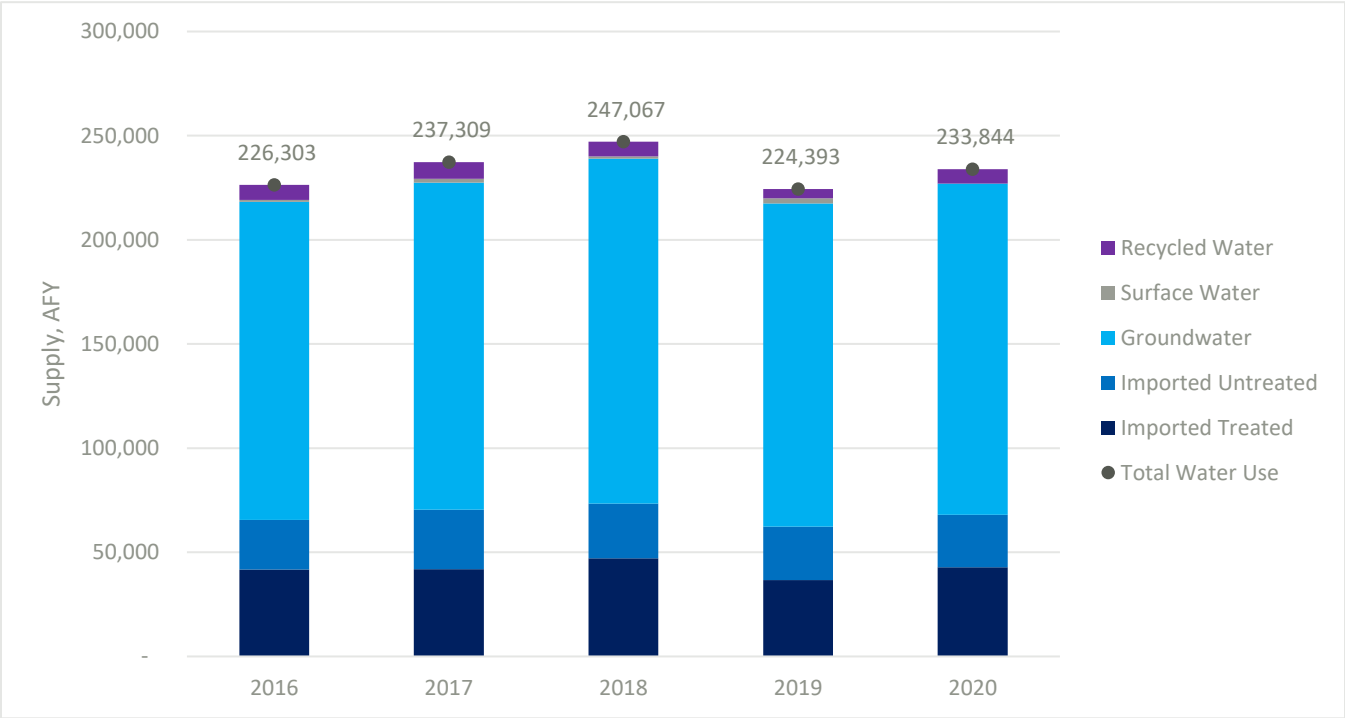
[1] Includes recycled water sources that are not currently used but may be in the future.

Figure 4-2. Percent Regional Water Use by Source



Total water use within Western's service area has ranged from approximately 220,000 AF to nearly 250,000 AF in the last five years, including Western Retail. In 2020, approximately 31% of the total water used within Western's service area was provided by Western Wholesale.

Figure 4-3. 2016-2020 Regional Water Use by Source, AFY



4.2 Western Wholesale Supply

To meet the supplemental supply needs of its wholesale customers, Western Wholesale uses desalinated local groundwater and imported water from Metropolitan.

On overview of the sources of supply and key infrastructure for both Western Wholesale and Western Retail is shown on the following page.

Where Western's Water Comes From

Western has a diverse supply portfolio used to meet wholesale and retail demands, including imported water, local groundwater and recycled water. Western has made significant investments in local water supplies to reduce reliance on imported water, increase reliability and reduce costs. A robust network of infrastructure provides flexibility to route supplies to various locations, providing additional reliability to Western's wholesale and retail customers.

Supplies and Infrastructure

1 Arlington Desalter and Victoria Recharge Basin
Produces drinking water by treating local non-potable groundwater using reverse osmosis to remove salt and other matter. This process also helps clean up the groundwater basin and improve the quality over time. The new Victoria Recharge Basin captures stormwater from precipitation and runoff and percolates into the groundwater basin where it is later used by the Arlington Desalter, increasing local supply reliability.

2 Chino Desalter
Western partners with several other water agencies to treat local non-potable groundwater using reverse osmosis to create a new high quality drinking water supply.

3 Sterling Pump Station and La Sierra Pipeline
The recently completed Sterling pump Station and La Sierra Pipeline connect the Chino and Arlington Desalters to and allow Western to deliver both water sources to many different locations, increasing regional reliability.

4 San Bernardino Basin (SBBA)
Western owns rights to pump local potable groundwater from the SBBA and has a long term lease with Meeks & Daley Water Company to use additional water from the SBBA.

5 City of Riverside
Western has an agreement with Riverside to purchase their surplus local groundwater. Riverside also pumps and delivers Western's water from the SBBA to Western Retail at interconnections using their existing facilities.

6 Temecula Valley Groundwater
Western has rights to produce water from this basin for service to Western's Murrieta Retail system.

7 Recycled Water a Local Drought Proof Supply
Western provides recycled water and non-potable groundwater to meet non-potable irrigation water needs, preserving the potable supplies for domestic use.

8 Imported Water
Western Wholesale obtains potable and nonpotable imported water supply from the SWP and CRA through Metropolitan at various locations and delivers it to Western Retail and other wholesale customers in their service area. Some Western Wholesale customers receive raw imported water directly from Metropolitan pipelines and use the water for groundwater recharge or treat it at their own treatment plants for potable use.

9 Mills and Skinner Water Treatment Plants (WTP)
Metropolitan treats imported water at their Mills and Skinner WTPs and provides potable imported water to Western to distribute to Western Retail and other wholesale customers.

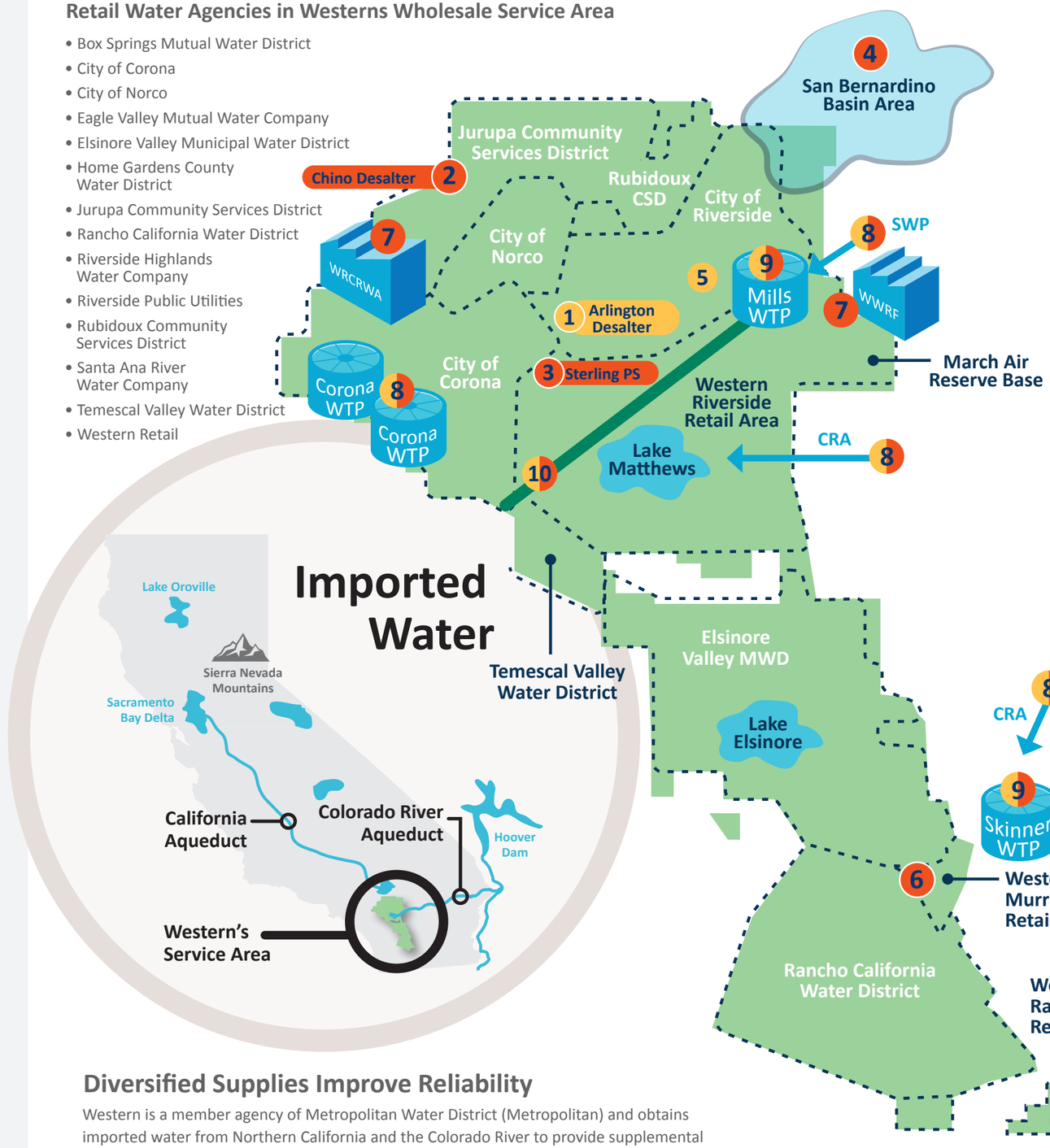
10 Mills Gravity Line
Deliver treated imported water from the Mills WTP to Western Retail and several Western Wholesale customers.

Wholesale · Retail · Wholesale & Retail

CRA - Colorado River Aqueduct · SWP - State Water Project

Retail Water Agencies in Westerns Wholesale Service Area

- Box Springs Mutual Water District
- City of Corona
- City of Norco
- Eagle Valley Mutual Water Company
- Elsinore Valley Municipal Water District
- Home Gardens County Water District
- Jurupa Community Services District
- Rancho California Water District
- Riverside Highlands Water Company
- Riverside Public Utilities
- Rubidoux Community Services District
- Santa Ana River Water Company
- Temescal Valley Water District
- Western Retail



Diversified Supplies Improve Reliability

Western is a member agency of Metropolitan Water District (Metropolitan) and obtains imported water from Northern California and the Colorado River to provide supplemental supplies within its service area. Imported water is an important part of Western's supply portfolio but is more costly and more prone to interruptions than local supplies due to the long distance it must travel to reach the region and other factors. Western has focused on diversifying its water supply to reduce reliance on imported water by developing local supplies.

4.2.1 Purchased and Imported Water

Western Wholesale's primary supply is imported water from Metropolitan. Approximately 75 percent of the wholesale supply was obtained from Metropolitan in 2020.

Metropolitan was formed in 1928 to develop, store, and distribute water for domestic and municipal purposes to the residents of Southern California. Today, the Metropolitan service area stretches across the Southern California coastal plain, serves 26 member agencies, and includes portions of Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.

Metropolitan is a wholesale water provider and has no retail customers. It provides treated and untreated water directly to its member agencies. Over the last ten years, Metropolitan has provided between 50 % and 60 % of the municipal, industrial, and agricultural water used in its nearly 5,200-square mile service area. The remaining water is provided through local resources and other sources of imported water.

Western is one of the 26 member agencies that make up Metropolitan, which include 14 cities, 10 other municipal water districts and one county water authority. Western, like other member agencies, receives deliveries at different points in the system and pays for the service through a rate structure made up of multiple components. Each year, member agencies advise Metropolitan of how much water they anticipate they will need during the next five years. Metropolitan then works with member agencies to develop forecasts of long-term future water supply.

Metropolitan delivers supply to member agencies from two sources, the Colorado River Aqueduct (CRA), which it owns and operates, and the State Water Project (SWP), owned and operated by DWR. The supply mix varies depending on the availability of SWP supplies, which varies every year, much more significantly than the Colorado River supply. During the recent drought, water allocations from SWP were significantly reduced, leading to a greater proportion of Colorado River supplies in Metropolitan's supply mix. Additional information about Metropolitan is provided in Metropolitan' 2020 UWMP.

Western Wholesale receives treated imported water from Metropolitan's Mills Water Treatment Plant (WTP) and Skinner WTP, in addition to raw water which is delivered directly to wholesale customers from various connections to Metropolitan's system. Western Wholesale also owns and operates the Mills Gravity Line, which distributes treated water from the Mills WTP to the Western Retail Riverside system and several other wholesale customers.

Western has a ten-year purchase agreement with Metropolitan for a Tier 1 annual maximum of 105,783 AFY with a minimum Purchase Order Commitment for 70,522 AFY, effective January 1, 2015 to December 31, 2024. Western can purchase additional water beyond the purchase agreement maximum at Metropolitan's higher Tier 2 rate. A copy of the Purchase Order Commitment is provided in **Appendix G**. Western plans to renew the purchase order agreement in the future and the annual maximum and minimum will be revised as needed to meet anticipated use at that time.

Metropolitan does not provide supply projections for each member agency. Instead, Metropolitan uses a regional approach to developing projections. Metropolitan calculates the demand for the entire region, as discussed in its UWMP. Using information about existing and proposed local projects, Metropolitan then determines the amount of imported water supply and demand. Throughout the preparation of the 2020 UWMP, Western has provided information about local supply and projects and population projections to Metropolitan. Based on this information and information provided by other member agencies, Metropolitan has determined it is able to meet the demands of all member agencies through 2045, with significant surplus supplies.

4.2.2 Groundwater

Western extracts groundwater from the Riverside-Arlington basin and operates the Arlington Desalter, a reverse-osmosis groundwater treatment facility. The estimated supply available from the Arlington Desalter is approximately 5,000 AFY. The Arlington Desalter provides a local source of potable water for Western wholesale customers.

4.2.2.1 Riverside-Arlington Basin

The Riverside-Arlington Basin (classified as subbasin in DWR's Bulletin 118: DWR 8-02.03) underlies part of the Santa Ana River Valley in northwest Riverside County and southwest San Bernardino County, and stores water in alluvial deposits. The subbasin is part of the Upper Santa Ana Valley Groundwater Basin (DWR 8-02). It is bordered by the Box Springs Mountains on the southeast, Arlington Mountain on the south, La Sierra Heights and Mount Rubidoux on the northwest, and the Jurupa Mountains on the north. It is also bordered by the Rialto-Colton fault to the northeast, and a groundwater divide beneath the community of Bloomington along a portion of its northern boundary. The Riverside-Arlington Basin is replenished by infiltration from Santa Ana River flow (in the northern portion of the subbasin), underflow past the Rialto-Colton fault, intermittent underflow from the Chino subbasin, return irrigation flow, and deep percolation of precipitation.

Within the Riverside-Arlington Basin lies a subbasin called the Arlington Groundwater Basin, which is a shallow, alluvial-filled valley. Groundwater quality in the Arlington Subbasin has historically been degraded by elevated concentrations of TDS, nitrate, and other contaminants from industrial sources. To utilize Arlington Basin groundwater, Western operates the Arlington Desalter, a reverse-osmosis groundwater treatment facility that began operation in 1990. The Arlington Desalter is located at the western (down-gradient) end of the Arlington Basin, along with five nearby production wells. The Arlington Desalter serves two purposes, providing a local source of potable water and decreasing subsurface outflow of low-quality groundwater to the Temescal Basin. The capacity was recently expanded to provide additional potable supply.

The Arlington Basin is not adjudicated. Western has adopted the Arlington Basin Groundwater Management Plan (Western, 2012), which includes actions to mitigate overdraft and replenish groundwater levels, as well as protect and improve groundwater quality. The Riverside-Arlington Subbasin is classified as a low priority basin, but proactive management will continue to ensure its reliability into the future. The Riverside-Arlington Subbasin Groundwater Sustainability Agency (GSA) is currently developing a Groundwater Sustainability Plan (GSP) to achieve this goal. The GSP will develop water budgets, assess groundwater storage, develop sustainable management criteria, undesirable results, and minimum thresholds to protect the basin for future supply. The GSP also considers how the Riverside-Arlington subbasin interacts with adjacent basins in the area. The ongoing GSP will result in a plan and identify projects needed to ensure future sustainability of supplies from this basin.

The historic production from Arlington Desalter from 2016 to 2020 is shown in **Table 4-2**.

Table 4-2. DWR 6-1W Groundwater Volume Pumped, AFY

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Riverside-Arlington	4,880	4,754	5,433	4,449	4,814
	TOTAL:	**4,880**	**4,754**	**5,433**	**4,449**	**4,814**

The City of Norco is the primary user of Arlington Desalter as a supply source, but water can also be delivered to the City of Corona or Jurupa Community Services District. The City of Corona has purchased water from the Arlington Desalter in the past and may do so again in the future.

Victoria Recharge Basin

In 2019, Western completed construction of the Victoria Recharge Basin near the intersection of Victoria Avenue and Jackson Street in Riverside (Victoria site). This site will be used to replenish the Riverside-Arlington groundwater basin with up to 1,800 acre-feet of water per year. The project benefits include:

- The Victoria Recharge Basin increases groundwater storage through the capture and recharge of stormwater that would otherwise be lost.
- The project improves groundwater quality and water management of the Arlington Basin, increasing the groundwater supply enabling the Arlington Desalter to operate at capacity.
- The project will provide a local water source to help decrease the region's reliance on imported water from Northern California.
- Locally-sourced water provides system reliability in the event of imported water disruption.

At this time, there are no other recharge sites planned; however, Western continues to explore additional recharge sites to continue to increase local supply reliability.

Victoria Recharge Basin



4.2.3 Surface Water

Western does not utilize any local surface water sources for its wholesale system. However, Western is a partner in developing stormwater recharge projects to supplement local supplies as described in **Section 4.1.5**.

4.2.4 Wastewater and Recycled Water

Western's recycled water sources are discussed in **Section 4.1.3**. Western Retail uses the recycled water produced at the Western WRF and is entitled to its portion of the recycled water produced at WRCWRA but does not have infrastructure in place to use the recycled water. Recycled water supplies for Western Retail are discussed in **Chapter 9**.

Recycled Water Coordination

Western Wholesale does not currently use recycled water to meet wholesale customer demands but is coordinating with other regional agencies to evaluate opportunities for future use of recycled water from WRCWRA.

4.2.5 Water Exchanges and Transfers

Western Wholesale does not currently have any exchanges or transfers with other water agencies.

Emergency Interties

Western has interties with Eastern Municipal Water District (Eastern) and EVMWD for mutual aid and as an emergency supply source. Western also has interconnections with the cities of Riverside and Corona.

4.2.6 Future Water Projects

4.2.6.1 Santa Ana River Conservation and Conjunctive Use Program (SARCCUP)

The five regional water agencies in the Santa Ana River Watershed have identified a watershed scale project, the Santa Ana River Conservation and Conjunctive Use Program (SARCCUP), a cooperative program between Metropolitan, Western and other agencies in the Santa Ana Watershed to store imported water during wet years for use during dry years.

The group includes representatives from the following regional water agencies:

- Western Municipal Water District
- Eastern Municipal Water District
- Inland Empire Utilities Agency (IEUA)
- Orange County Water District
- San Bernardino Valley Municipal Water District

The program goals of SARCCUP include:

- Providing watershed-wide benefits based upon regional collaboration
- Creating significant new dry-year yield

- Increasing the resiliency and reliability of the water supply

The SARCCUP includes multiple separate groundwater banks located in different groundwater basins within the Santa Ana Watershed, including the Chino, Elsinore, Orange County, Riverside-Arlington, San Bernardino and San Jacinto groundwater basins. The total storage proposed for SARCCUP is about 137,000 acre-feet (AF). The combined extraction capacity is 45,667 AFY. Because the participants are sharing the benefits equally, each agency receives 25% (1/4) of the total capacity (IEUA does not currently have any storage capacity), resulting in each of the SARCCUP agencies receiving 11,417 AFY of new dry-year yield. This may require transfers, in lieu, or exchanges between the agencies in both wet and dry years.

Western's SARCCUP facilities include the Sterling Pump Station and La Sierra Pipeline, Cannon Campbell Pump Station, Riverside-Arlington Well and Transmission Main and Elsinore Wells.

In early 2016, SAWPA was formally notified that it had been awarded $64,268,000 by DWR for its Proposition 84 2015 IRWM grant proposal, which included the SARCCUP. From the grant, SAWPA governance designated $55 million for SARCCUP implementation. The SARCCUP Proposition 84 grant award includes the development of a Decision Support Model which was used to help refine the proposed facilities and that identified additional facilities that could be included in future phases of the program. The total cost of Phase 1 of the SARCCUP program is approximately $150 million.

Construction of the SARCCUP facilities is ongoing and is estimated to be complete by 2023. The SARCCUP agencies will continue work to finalize all of the individual agreements needed for operations of the facilities and water purchases. This includes an agreement between the SARCCUP agencies and Metropolitan to allow the purchase of water made available under the program and special conditions associated with use of the water during droughts and emergencies.

4.2.7 Summary of Existing and Planned Sources of Water

Western plans to continue to provide water from the Arlington Desalter and imported water from Metropolitan to meet the demands of its wholesale customers. Western continues to evaluate additional local projects to decrease dependence on imported water and increase regional reliability. The total volume of water supplied from various sources in 2020 is summarized in **Table 4-3**.

Table 4-3. Actual Water Supplies

SUPPLY SOURCE	2020 VOLUME, AFY
POTABLE	**47,631**
Metropolitan Imported Treated Water	42,817
Arlington Desalter	4,814
NON-POTABLE	**25,151**
Metropolitan Untreated Water	25,151
TOTAL	**72,782**

Western plans to continue prioritizing use of the local groundwater supply from the Arlington Desalter.

According to the information provided in Metropolitan's 2020 UWMP, Metropolitan has determined that they can meet all demands in normal, dry, and multiple dry years with existing supplies and storage. Metropolitan's UWMP also shows significant excess supply available under all conditions so additional water is available if needed. More detail can be found in Metropolitan's 2020 UWMP.

Western will only purchase imported supplies as needed to meet demands. Therefore, projected imported water supplies are equal to projected imported water demands, less the supply from the Arlington Desalter. Additional imported water is available from Metropolitan if needed. Western Wholesale projected supplies are shown in **Table 4-4**.

Table 4-4. Projected Water Supplies, AFY

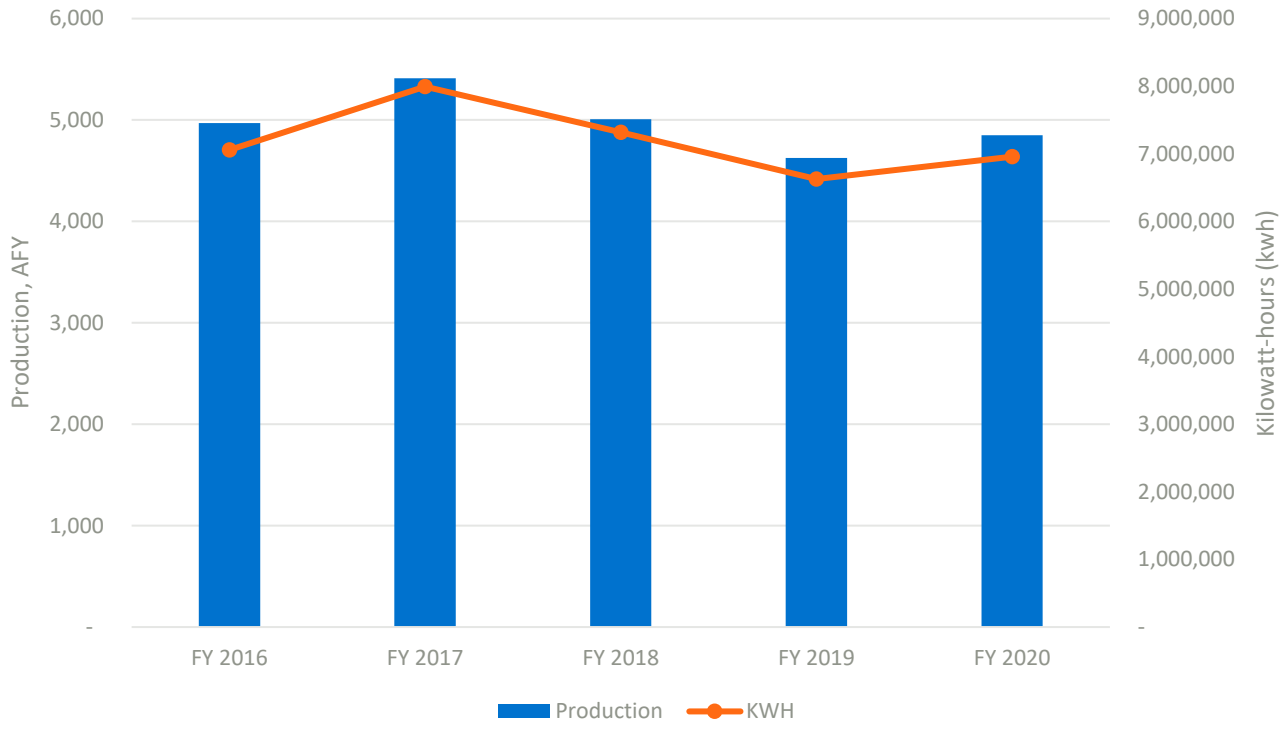
SUPPLY SOURCE	2025	2030	2035	2040	2045
Metropolitan Imported Water[1]	91,816	95,908	101,261	107,664	116,443
Arlington Desalter	5,000	5,000	5,000	5,000	5,000
TOTAL	**96,816**	**100,908**	**106,261**	**112,664**	**121,443**

[1]Metropolitan imported water may serve both potable and non-potable demands.

4.2.8 Energy Intensity

Western monitors energy usage at the Arlington Desalter. On average, Western uses 1,445 kilowatt-hours (kwh) for every AF of water produced (1,445 kwh/AF) from the Arlington Desalter. Energy usage includes pumping from the various Arlington Desalter wells and desalter treatment. A summary of energy used for production in 2016 through 2020 is provided in **Figure 4-4**.

Figure 4-4. Past Energy Used at the Arlington Desalter



WESTERN MUNICIPAL WATER DISTRICT

5 Wholesale Water Use Characterization

This chapter describes Western's historical, current, and projected wholesale water uses. Wholesale water use projections were developed by Western's wholesale customers and provided to Western for inclusion in the 2020 UWMP.

Western provides both potable and non-potable wholesale water to the region within its service area. Western's wholesale supplies are described in **Chapter 4**.

IN THIS SECTION

- Wholesale Customers
- Past, Current, and Projected Water Use



Colorado River Aqueduct

5.1 Western Wholesale Customers

In total, there are fourteen (14) retail water agencies within Western's wholesale service area, including Western Retail, that currently receive or can receive water from Western. Eight of the agencies received either local or imported wholesale water from Western in 2020 and an additional three are planning for future wholesale water supplies from Western, if needed. In addition to wholesale water purchased from Western, most of the water purveyors also deliver local surface and groundwater and/or recycled water within their respective service areas and some rely solely on local water supplies. Regional supplies are briefly discussed in **Chapter 4**.

Table 5-1 shows which retail agencies are current Western Wholesale customers and which are planning to obtain wholesale water from Western in the future.

Table 5-1. Current and Future Wholesale Customers

RETAIL AGENCY	CURRENT WESTERN WHOLESALE CUSTOMER	POTENTIAL FUTURE WESTERN WHOLESALE CUSTOMER
Box Springs Mutual Water Company (BSMWC)	✓	
City of Corona	✓	
City of Norco	✓	
Eagle Valley Mutual Water Company (Eagle Valley MWC)	✓	
Elsinore Valley Municipal Water District (EVMWD)	✓	
Home Gardens County Water District (HGCWD)		
Jurupa Community Services District (JCSD)		✓
Rancho California Water District (RCWD)	✓	
Riverside Highland Water Company (RHWC)		✓
Riverside Public Utilities		✓
Rubidoux Community Services District (RCSD)		✓
Santa Ana River Water Company (SARWC)		
Temescal Valley Water District (TVWD)	✓	
Western Retail	✓	

5.2 Past and Current Wholesale Water Use

A summary of past deliveries to Western Wholesale customers is provided in **Table 5-2**. Total deliveries varied from 2016 to 2019, which was likely driven primarily by local weather conditions. In 2019, the region received above average rainfall, which reduced outdoor water use.

Table 5-2. Western's Wholesale Historical and Current Water Use by Customer, AFY

WHOLESALE CUSTOMER	2016	2017	2018	2019	2020
Box Springs Mutual Water Company	80	84	120	121	149
City of Corona	15,616	18,693	17,606	15,280	17,866
City of Norco	4,578	4,096	4,933	4,449	4,814
Eagle Valley Mutual Water Company	75	71	90	108	132
Elsinore Valley Municipal Water District	15,945	16,337	19,671	14,531	15,115
Rancho California Water District	18,550	21,603	18,431	16,923	17,449
Temescal Valley Water District	3,019	3,205	3,205	3,083	3,435
Western Retail	12,392	12,956	14,669	12,554	13,823
TOTAL	**70,255**	**77,045**	**78,724**	**67,049**	**72,782**

For 2020, the potable and non-potable uses by customer are summarized in **Table 5-3**.

Table 5-3. 2020 Wholesale Water Use, AFY

WHOLESALE CUSTOMER	2020 USE
POTABLE	
Box Springs Mutual Water Company	149
City of Corona	1,229
City of Norco	4,814
Elsinore Valley Municipal Water District	15,115
Rancho California Water District	10,886
Temescal Valley Water District	3,435
Western Retail	12,004
TOTAL POTABLE	**47,631**
NON-POTABLE	
City of Corona	16,637
Eagle Valley Mutual Water Company	132
Rancho California Water District	6,563
Western Retail	1,819
TOTAL NON-POTABLE	**25,151**
TOTAL DEMAND	**72,782**

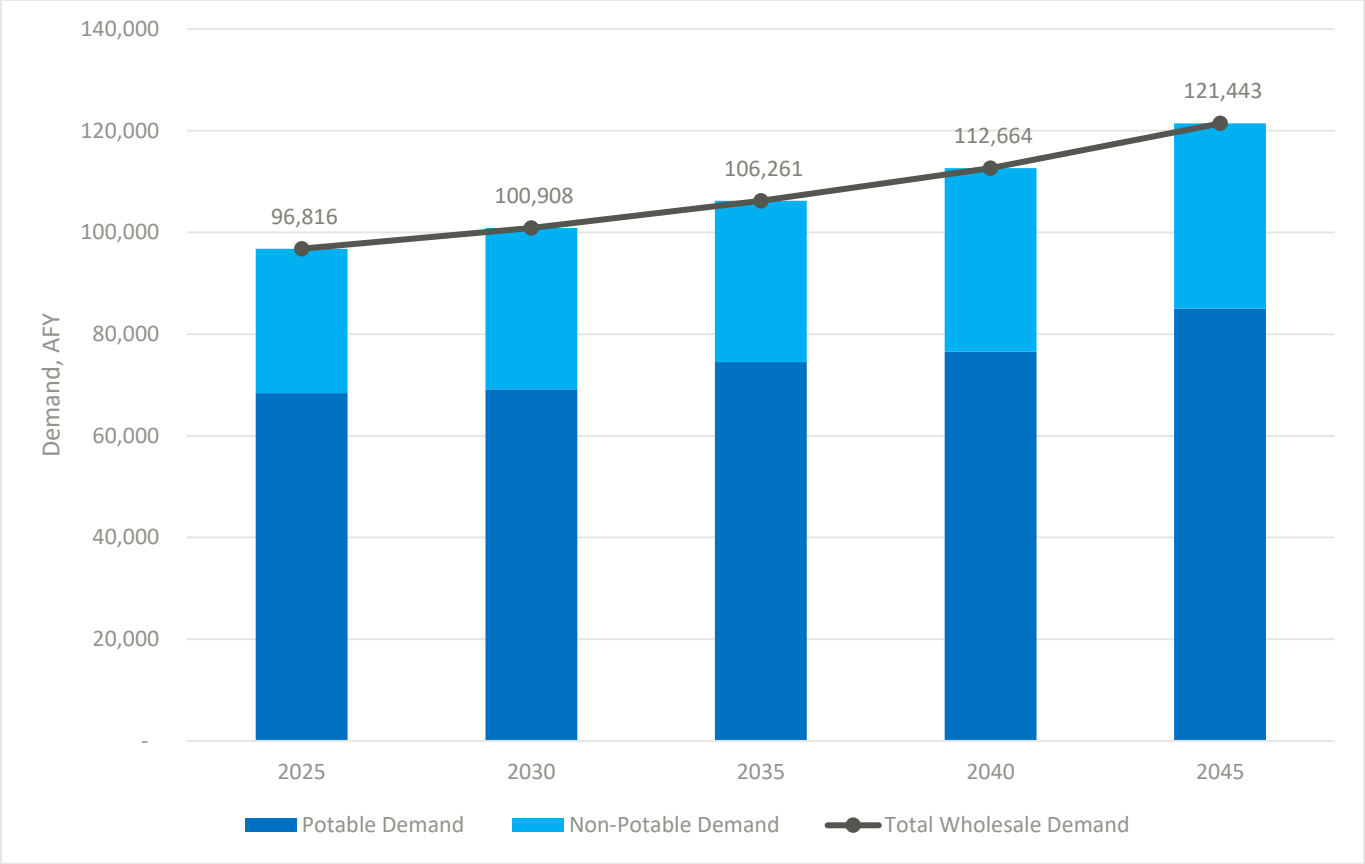
5.3 Projected Water Use

In preparation of this UWMP, Western coordinated with its wholesale customers to obtain the most recent planning projections and maintain consistency with the projections that will be shown in retail agency 2020 UWMPs. Based on input from the retail agencies, the expected water use for Western Wholesale for the next 25 years is summarized below in **Table 5-4** and **Figure 5-1**.

Table 5-4. Projected Wholesale System Demand, AFY

WHOLESALE CUSTOMER	2025	2030	2035	2040	2045
POTABLE					
Box Springs Mutual Water Company	145	150	175	175	175
City of Corona	1,838	1,838	1,838	1,838	1,838
City of Norco	250	250	250	250	250
Elsinore Valley Municipal Water District	18,000	16,605	18,338	20,073	21,925
Jurupa Community Services District	10,000	10,000	10,000	10,000	10,000
Rancho California Water District	16,593	12,240	12,848	9,289	10,088
Riverside Public Utilities	2,000	3,000	3,000	3,000	3,000
Rubidoux Community Services District	1,200	2,000	2,000	2,000	2,000
Temescal Valley Water District	3,720	3,800	3,800	3,800	3,800
Western Retail	14,680	19,306	22,293	26,181	31,928
TOTAL POTABLE	**68,426**	**69,189**	**74,542**	**76,606**	**85,004**
NON-POTABLE					
City of Corona	13,323	13,323	13,323	13,323	13,323
Eagle Valley Mutual Water Company	110	110	110	110	110
Elsinore Valley Municipal Water District	0	3,700	3,700	3,700	3,700
Rancho California Water District	13,286	13,286	13,286	17,625	17,625
Western Retail	1,671	1,300	1,300	1,300	1,681
TOTAL NON-POTABLE	**28,390**	**31,719**	**31,719**	**36,058**	**36,439**
TOTAL DEMAND	**96,816**	**100,908**	**106,261**	**112,664**	**121,443**

Figure 5-1. Projected Wholesale Demand, AFY



5.3.1 Characteristic Five-Year Water Use

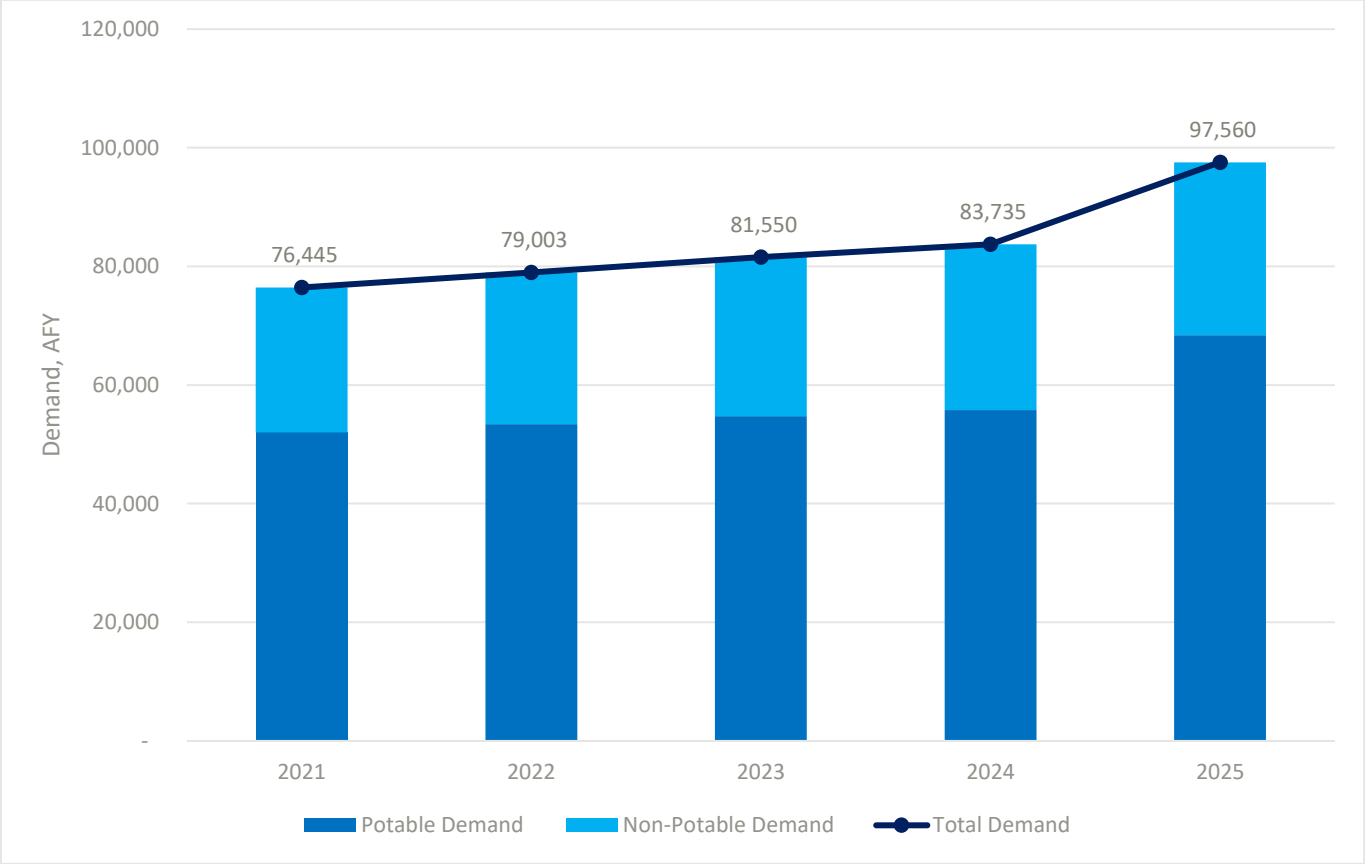
In addition to past and projected uses, the UWMP more closely analyzes anticipated conditions for the next five years (2021 – 2025). Demands for the next five years are provided in **Table 5-5** and **Figure 5-2**. The demand projections established in this chapter assume typical, unconstrained demand, free from other influential factors like conservation mandates.

Details on analysis for the next five years are discussed in **Chapter 6**.

Table 5-5. Projected Wholesale System Demand for the Next Five Years (2021-2025), AFY

WHOLESALE CUSTOMER	2021	2022	2023	2024	2025
POTABLE					
Box Springs Mutual Water Company	125	130	135	140	145
City of Corona	1,838	1,838	1,838	1,838	1,838
City of Norco	250	250	250	250	250
Elsinore Valley Municipal Water District	16,776	17,952	18,733	19,149	18,000
Jurupa Community Services District	0	0	0	0	10,000
Rancho California Water District	15,453	15,453	15,833	16,213	16,593
Riverside Public Utilities	0	0	0	0	2,000
Rubidoux Community Services District	0	0	0	0	1,200
Temescal Valley Water District	3,320	3,420	3,520	3,620	3,720
Western Retail	14,253	14,359	14,465	14,472	14,680
TOTAL POTABLE	**52,015**	**53,401**	**54,774**	**55,782**	**68,426**
NON-POTABLE					
City of Corona	13,323	13,323	13,323	13,323	13,323
Eagle Valley Mutual Water Company	110	110	110	110	110
Rancho California Water District	9,105	10,150	11,195	12,241	13,286
Western Retail	1,893	2,018	2,147	2,280	2,415
TOTAL NON-POTABLE	**24,431**	**25,601**	**26,775**	**27,954**	**29,134**
TOTAL DEMAND	**76,445**	**79,003**	**81,550**	**83,735**	**97,560**

Figure 5-2. Projected Wholesale Demand for the Next Five Years (2021-2025), AFY



WESTERN MUNICIPAL WATER DISTRICT

6 Wholesale Water Service Reliability and Drought Risk Assessment

This section describes the reliability of Western's wholesale water supplies, which reflects Western's ability to meet the water needs of its customers with water supplies under varying conditions. The essential findings are that Western can reliably meet its wholesale demands with existing and future supply sources based on demand and supply projections.

Every urban water supplier is required to assess the reliability of its water service to its retail agencies under normal, dry, and multiple-dry years for at least the next 20 years, and specifically assesses the drought risk over the next five years. There are various factors that may impact reliability of supplies such as legal, environmental, water quality, and climatic, which are discussed below. These factors can result in immediate (facility failures), near-term (SWP limitations), or long-term (climate change) impacts to reliability and must therefore be considered in future planning.

The impacts of these factors on reliability increase under single-dry and multiple-dry year hydrologic patterns. Western's work to expand and further diversify its supply portfolio is an important step toward improving the reliability of supplies. Western has also prepared a comprehensive Water Shortage Contingency Plan to provide reliability in the event of a water shortage, presented in **Appendix A**. Expected water supply reliability for normal, single dry year, and multiple-dry years through 2045 is discussed in this chapter followed a drought risk assessment for 2021 to 2025.

IN THIS SECTION

- Supply Constraints
- Water Service Reliability Assessment
- Drought Risk Assessment

6.1 Constraints on Water Sources

Western's sources of wholesale supply are imported water purchased from Metropolitan and local groundwater treated at the Arlington Desalter. These two supply sources may be impacted by climatic and hydrologic conditions, water quality, and legal restrictions, as well as potential for interruption of supply driven by catastrophic events.

6.1.1 Imported Water Supply Reliability

The majority of Western's supplies are imported water purchased from Metropolitan, and as described below, Western's supply reliability analysis follows the analysis and data developed by Metropolitan as presented in Metropolitan's 2020 UWMP. Metropolitan described several challenges in providing adequate, reliable, and high-quality supplemental water supplies along with potential management measures in the Metropolitan 2020 UWMP.

Potential constraints to Metropolitan supplies and associated supply reliability include:

Drought

The water conditions that the region faced leading up to 2020 were characterized by alternating scarcity and abundance. While investments in storage and flexible operations have prepared Metropolitan to capitalize on available supplies in wet years and manage through drought years, drought challenges remain. The Colorado River Basin has historically experienced large swings in annual hydrologic conditions and has exhibited a drying trend over the last 21 years. Changes in this period have been mitigated by actions taken by Metropolitan in cooperation with the Bureau of Reclamation and the other Basin States to maintain system storage, avoiding a shortage declaration. At the close of 2020, however, system storage was at or near its lowest since 2000, so there is less water available to buffer future dry conditions. The Sacramento-San Joaquin Delta (Bay-Delta) has suffered reduced flows and rising temperatures and SWP supplies have been significantly reduced at times, with a record low allocation of 5 percent in 2014.

Environmental/Ecological Needs (Operational Constraints)

Sensitive species in the Bay-Delta system require base flows for survival; these flows are threatened by drought and other factors, reducing the volume of water available for pumping to the SWP. As species become further stressed, environmental demands on Bay-Delta water may increase. Operational constraints will likely continue until a long-term solution to the problems in the Bay-Delta is identified and implemented.

Climate Change

Climate change is anticipated to increase the frequency and intensity of droughts and flooding, reduce Sierra Nevada snowpack, change runoff pattern and amount, raise average temperatures, and raise sea levels. These effects may reduce the availability of supplies in the Bay-Delta and Colorado River systems. Sea level rise poses a significant challenge to the salt balance in the Bay-Delta and could result in pumping restrictions. Sea level rise also increases the vulnerability of the Bay-Delta supply to seismic events.

Threats to Infrastructure

Metropolitan's imported supplies must travel across large distances to reach turnouts where local agencies are able to access the water. California is a seismically active state and prone to wildfires, which could damage imported water infrastructure anywhere along the SWP or Colorado River Aqueduct in such a manner as to disrupt supply availability. California is also a large state with a large economy, housing some major industries and defense installations. This makes it a potential target for acts of terrorism, including potential threats to its water supplies and infrastructure.

Water Quality

Water quality challenges, such as salinity, algae toxins, disinfection byproduct precursors, nutrients, and the identification of constituents of emerging concern, have the potential to impact imported water supplies. To date, Metropolitan has not identified any water quality risks that cannot be mitigated. Salinity, particularly Colorado River supplies, is a significant issue, but Metropolitan anticipates the only constraint will be the need to blend Colorado River water with SWP supplies to meet salinity needs.

Metropolitan's 2020 UWMP describes a variety of past and ongoing actions to address these water supply challenges to maintain water reliability within its service area.

Metropolitan's proactive measures include:

Continuing Water Conservation

Metropolitan supports financial incentives, education, outreach programs and appliance/plumbing standards at both the regional and local level. Metropolitan also works with member and local agencies, including Western, to help identify opportunities and procure grant funding for conservation programs.

Increasing Local Resources

Since 1982, Metropolitan has assisted local agencies in the development of water recycling and groundwater recovery under the Local Resources Program (LRP). The LRP program has been expanded to provide incentives for on-site recycled water retrofit costs and development of other water resources including seawater desalination and stormwater.

Augmenting Water Supplies

Augmenting water supplies through water transfers and exchanges is an element of Metropolitan's Integrated Resources Plan (IRP) to mitigate water shortages during dry periods.

Increasing Storage Programs

Metropolitan has a number of storage programs with water agencies along the California Aqueduct that would allow it to store SWP supplies during surplus conditions and to have stored water returned when needed. Metropolitan has invested in infrastructure to allow more effective use of stored water when needed and has also developed additional storage programs.

Modifying Metropolitan's Distribution System

Driven by the historic low SWP allocation in 2014, Metropolitan and several member agencies have made operational and system modifications to enhance operational flexibility and efficient delivery of Colorado River, SWP, and in-region supplies within Metropolitan's service area. Within Western's service area, the Inland Feeder-Lakeview Pipeline Intertie, which was completed in 2016 and allows for delivery of water from Diamond Valley Lake to Mills WTP, increases Western's imported water supply reliability. This intertie enables the Mills WTP to withstand an extended interruption of supplies from the California Aqueduct East Branch. The intertie also provides delivery flexibility to handle any required repairs by DWR to the Santa Ana Valley Pipeline north segment.

Implementing Shortage Response Actions (when needed)

Metropolitan developed a Water Shortage Contingency Plan (WSCP) to be consistent with elements of the existing Metropolitan Water Surplus and Drought Management Plan (WSDM) and Water Supply Allocation Plan (WSAP). If needed, Metropolitan will implement shortage response actions to distribute limited imported supplies and preserve storage reserves.

Pursuing Long-term Solutions in the Bay-Delta

Metropolitan adopted a Delta action plan in June 2007 that includes a long-term Delta Plan. The long-term action plan recognizes three basic elements that must be addressed: Delta ecosystem restoration, water supply conveyance, and flood control protection and storage development.

Maintaining Water Quality

Metropolitan responds to water quality concerns by protecting the quality of the source water, developing water management programs that maintain and enhance water quality, and changing water treatment protocols or blending.

Planning for Climate Change

In addition to many other activities related to climate change, Metropolitan is currently developing an updated 2020 Integrated Resources Plan (IRP), which recognizes risks and uncertainties from climate change and other sources. Metropolitan has established an intensive, comprehensive technical process to identify key vulnerabilities to regional reliability, including climate change. This Robust Decision Making (RDM) approach was used with both the 2015 and 2010 IRP Updates. This methodology can show how vulnerable the region's reliability is to longer-term risks such as climate change and can also establish "signposts" that can be monitored to see when critical changes may be happening.

To maintain a reliable source of imported water supply for its member agencies, Metropolitan has and will continue to contend with these considerable challenges. After learning from the droughts of 1977-78 and 1989-92, Metropolitan, in conjunction with its member agencies, instituted a resource planning process that is based on diversification of the region's water supply portfolio and continued efficient water use. This integrated resource planning process has recognized that only through a mix of imported and member agency local supplies, along with aggressive implementation of water conservation, can the Metropolitan service area attain overall reliability of water supply.

This integrated planning effort has resulted in the following documents:

1996, 2004, 2010, 2015, and 2020 Integrated Resources Plans (IRP)

Metropolitan's IRP process assessed potential future regional demand projections based upon anticipated population and economic growth as well as conservation potential. The IRP also includes regional supply strategies and implementation plans to better manage resources, meet anticipated demand, increase overall system reliability, and adapt to the effects of climate change. Metropolitan is currently preparing the 2020 IRP.

1999 Water Surplus and Drought Management Plan

The Water Surplus and Drought Management Plan provides the policy guidance to manage the region's water supplies by integrating the operating activities of supply surplus and shortage to achieve the reliability goals of the IRP.

Water Supply Allocation Plan

The Water Supply Allocation Plan, last updated in 2014, includes the specific formula for calculating member agency supply allocations and the key implementation elements needed for administering the allocation. The need for the Water Supply Allocation Plan arose after the 2008 Bay- Delta biological opinions and rulings that limited SWP supplies to its contractors including Metropolitan. The Water Supply Allocation Plan formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level for shortages of Metropolitan supplies up to 50 percent.

All these planning documents recognize that the reliability of the Metropolitan service area is dependent on improving the reliability of imported supplies from the Colorado River and State Water Project as well as the successful implementation of future local supplies and conservation. This dependence on an integrated approach to water reliability and diversification of supplies has been the foundation of DWR's State Water Plan, through its last several updates and is the cornerstone of Governor Newsom's California Water Resilience Portfolio. Some of the most significant factors affecting reliability for imported water supplies include legal, environmental, water quality and climatic changes. Successful implementation of Metropolitan's UWMP is dependent on the continued successful implementation of local supply projects by local agencies, including Western and its wholesale customers.

6.1.2 Groundwater Supply Reliability

The reliability of Western's groundwater supply will be proactively managed by Western and its local partners through the Riverside-Arlington Subbasin Groundwater Sustainability Agency. Development of the GSP is ongoing and expected to be completed in 2021. The GSP will determine the sustainable water budget for the basin, accounting for the effects of climate change, develop sustainable management criteria, undesirable results, and minimum thresholds to evaluate groundwater conditions, and implement a monitoring network and identify supplemental projects to ensure the basin is reliable and can support demands throughout the future.

6.2 Water Service Reliability Assessment

This section presents Western's expected water supply reliability for a normal year, single dry year, and five consecutive dry years, including projections for 2025, 2030, 2035, 2040, and 2045.

The primary constraint on the available of water supplies has been in extreme drought conditions. As described above, Metropolitan has made substantial investments to increase imported water supply reliability during periods of extended drought. As a result, Metropolitan's 2020 UWMP projects the ability to meet all imported water demands under normal, single dry year, and multiple dry year conditions, with excess supplies.

Through implementation of the Arlington GSP, Western expects the Riverside-Arlington water supply to be stable and does not anticipate any reduction to supplies in dry years.

The basis of the reliability assessment is presented in this section.

6.2.1 Year Type Characterization

The water service reliability and Drought Risk Assessment analyze supply over several water years: normal, single dry, and multiple dry years. DWR defines these years as:

Normal Year

The normal year represents the water supplies a supplier considers available during normal conditions. Metropolitan uses an average from 1922 to 2017 to establish normal year supply availability. To remain consistent, Western utilizes the same period for analyzing imported water availability since majority of the wholesale system is supplied by imported Metropolitan water.

Single Dry Year

The single dry year is recommended to be the year that represents the lowest water supply available. Metropolitan has identified 1977 as the single driest year.

Five-consecutive Dry Year

The driest five-year historical sequence for the Supplier, which may be the lowest average water supply available for five years in a row. Metropolitan has identified 1988 through 1992 as the greatest 5-year drought period.

Table 6-1. DWR 7-1W Basis of Water Year Data (Reliability Assessment)

		AVAILABLE SUPPLY IF YEAR TYPE REPEATS
YEAR TYPE	BASE YEAR	PERCENT OF AVERAGE SUPPLY
Average Year	1922-2017	
Single-Dry Year	1977	99%
Consecutive Dry Years 1st Year	1988	100%
Consecutive Dry Years 2nd Year	1989	100%
Consecutive Dry Years 3rd Year	1990	100%
Consecutive Dry Years 4th Year	1991	100%
Consecutive Dry Years 5th Year	1992	100%

6.2.2 Water Service Reliability

Normal year supply and demand projections for the wholesale system were developed in **Chapter 4** and **Chapter 5** and form the basis of this reliability analysis. Western wholesale customers provided their own assumptions for demand changes during single and multiple dry years, which are incorporated into this analysis.

Western obtains both Potable and Non-Potable imported water from Metropolitan. For this analysis, it was assumed that non-potable supplies were equal to non-potable demands and potable supplies were equal to potable demands. However, it is important to note that Western is not limited to a particular volume of imported water and that Metropolitan's 2020 UWMP shows a substantial surplus of supplies under all conditions. Metropolitan has made substantial investments in storage projects to ensure reliability in dry years. Therefore, Western expects to have access to additional imported water supplies, if needed.

Results of the reliability analysis for normal, single dry, and 5-consecutive dry years are shown in the following sections. This analysis applies only to Western Wholesale supplies. Other regional supplies that are used by Western's wholesale customers agencies are discussed in **Chapter 4**.

Water Service Reliability – Normal Year

Table 6-2. Normal Year Supply and Demand Comparison, AFY

	2025	2030	2035	2040	2045
POTABLE					
Supply	68,426	69,189	74,542	76,606	85,004
Demand	68,426	69,189	74,542	76,606	85,004
DIFFERENCE	**0**	**0**	**0**	**0**	**0**
NON-POTABLE					
Supply	28,390	31,719	31,719	36,058	36,439
Demand	28,390	31,719	31,719	36,058	36,439
DIFFERENCE	**0**	**0**	**0**	**0**	**0**

Water Service Reliability – Single Dry Year

Table 6-3. Single Dry Year Supply and Demand Comparison, AFY

	2025	2030	2035	2040	2045
POTABLE					
Supply	68,426	69,189	74,542	76,606	85,004
Demand	68,426	69,189	74,542	76,606	85,004
DIFFERENCE	**0**	**0**	**0**	**0**	**0**
NON-POTABLE					
Supply	28,390	31,719	31,719	36,058	36,439
Demand	28,390	31,719	31,719	36,058	36,439
DIFFERENCE	**0**	**0**	**0**	**0**	**0**

Water Service Reliability – Five Consecutive Dry Year

Table 6-4. Multiple Dry Year Supply and Demand Comparison, AFY

		2025	2030	2035	2040	2045
FIRST YEAR	POTABLE					
	Supply	68,426	69,189	74,542	76,606	85,004
	Demand	68,426	69,189	74,542	76,606	85,004
	DIFFERENCE	0	0	0	0	0
	NON-POTABLE					
	Supply	28,390	31,719	31,719	36,058	36,439
	Demand	28,390	31,719	31,719	36,058	36,439
	DIFFERENCE	0	0	0	0	0
SECOND YEAR	POTABLE					
	Supply	68,426	69,189	74,542	76,606	85,004
	Demand	68,426	69,189	74,542	76,606	85,004
	DIFFERENCE	0	0	0	0	0
	NON-POTABLE					
	Supply	28,390	31,719	31,719	36,058	36,439
	Demand	28,390	31,719	31,719	36,058	36,439
	DIFFERENCE	0	0	0	0	0
THIRD YEAR	POTABLE					
	Supply	68,426	69,189	74,542	76,606	85,004
	Demand	68,426	69,189	74,542	76,606	85,004
	DIFFERENCE	0	0	0	0	0
	NON-POTABLE					
	Supply	28,390	31,719	31,719	36,058	36,439
	Demand	28,390	31,719	31,719	36,058	36,439
	DIFFERENCE	0	0	0	0	0

*Continued on next page.

FOURTH YEAR	**POTABLE**					
	Supply	68,426	69,189	74,542	76,606	85,004
	Demand	68,426	69,189	74,542	76,606	85,004
	DIFFERENCE	**0**	**0**	**0**	**0**	**0**
	NON-POTABLE					
	Supply	28,390	31,719	31,719	36,058	36,439
	Demand	28,390	31,719	31,719	36,058	36,439
	DIFFERENCE	**0**	**0**	**0**	**0**	**0**
FIFTH YEAR	**POTABLE**					
	Supply	68,426	69,189	74,542	76,606	85,004
	Demand	68,426	69,189	74,542	76,606	85,004
	DIFFERENCE	**0**	**0**	**0**	**0**	**0**
	NON-POTABLE					
	Supply	28,390	31,719	31,719	36,058	36,439
	Demand	28,390	31,719	31,719	36,058	36,439
	DIFFERENCE	**0**	**0**	**0**	**0**	**0**

6.2.3 Description of Management Tools and Options

Most of the water supplied by Western's wholesale system is imported water from Metropolitan. As a member agency of Metropolitan, Western coordinates with Metropolitan through planning processes such as the 2020 IRP to ensure a consistent and reliable supply is available. In addition, Western continues to explore local projects to increase supply to the wholesale system and continues to promote conservation and educational programs to increase drought awareness and conservation actions throughout the region.

6.3 Drought Risk Assessment

The Drought Risk Assessment (DRA) is a new requirement to the UWMP that focuses analysis on the next five years (2021 - 2025). To estimate demands for 2021 through 2025, a straight-line interpolation was applied from the 2020 actual demand to the 2025 projected demand.

6.3.1 Data, Methods, and Basis for Water Shortage Condition

The data, methods, and basis for a water shortage condition were identified using typical normal year supply and demand, as developed in **Chapter 4** and **Chapter 5**.

The DRA provides a snapshot of the anticipated surplus or deficit if a drought were to occur in the next five years. If Western estimates a greater demand than supply available, estimated shortage response actions savings from the WSCP may be entered into the DRA. WSCP savings can fall under supply augmentation or demand reduction estimates that Western would expect to achieve during a water shortage.

The demands for the DRA's five-consecutive dry years were based on the normal demand. Normal year demands represent "unconstrained demand". Unconstrained demand is water demand absent any water supply restrictions. This exercise allows an agency to get an indication of the potential amount of conservation that may be required to reduce demands.

6.3.2 DRA Water Source Reliability

As described in Metropolitan's 2020 UWMP and DRA, Metropolitan's near-term assessment reveals that its supply capabilities are expected to exceed its projected water use for years 2022, 2024, and 2025. However, estimates of projected water supply and use reveals that there could be a possible shortfall of core supplies in 2021 and 2023. This shortfall is largely triggered by the assumed repeat of the historical 1988 and 1990 low supply conditions from the SWP to predict supply availability for 2021 and 2023. Actual supply conditions for 2021 and 2023 may prove different from historic supply conditions (Metropolitan Water District of Southern California, 2021).

Metropolitan's DRA illustrates its potential shortage response actions if such shortfall were to happen. As detailed in Metropolitan's 2020 UWMP (**Section 2.5** and **Appendix 4**), Metropolitan has in place a robust WSCP and comprehensive shortage response plan that includes demand reduction measures and supply augmentation actions. In Metropolitan's DRA, years 2021 and 2023 are estimated to have shortage levels within 10% of water use, corresponding to its WSCP Level 1 Shortage. Metropolitan has a range of response actions that it can take in a Level 1 Shortage, including take from Storage, execute Flexible Supplies, implement Voluntary Demand Reduction, and implement its Water Supply Allocation Plan. Metropolitan's DRA anticipates taking from its storage during these shortfall years to augment its supply and meet its demand. As of January 1, 2021, Metropolitan has 3.2 million AF in storage that may be used for dry-year needs within multiple reservoirs to mitigate any potential shortage in 2021 and 2023. In addition, Metropolitan may also take from its water banking programs in the Central Valley, draw from in-region conjunctive use programs, pursue additional supplies through SWP transfers, or exercise any combination of supply augmentation actions.

With a potential surplus estimated for years 2022, 2024, and 2025, no water service reliability concern is anticipated, and no shortfall mitigation measures are expected to be exercised. Metropolitan will periodically revisit its representation of both individual supply sources and of the gross water use estimated for each year and will revise its DRA if needed.

This DRA assumes that Western will be able to purchase sufficient supplies to meet demands based on the results of Metropolitan's DRA. As shown in **Table 6-5**, Western's supplies are anticipated to be reliable, and no supply shortfalls are expected from 2021 to 2025 when assuming the next five years are similar to the driest five years. Western does not anticipate the need to implement shortage response actions in its wholesale WSCP in the next five years, unless Metropolitan implements a WSAP, which is not expected based on Metropolitan's DRA analysis.

Table 6-5. Wholesale DRA Results, AFY

	2021	2022	2023	2024	2025
POTABLE					
Gross Water Use	52,015	53,401	54,774	55,782	68,426
Total Supply	52,015	53,401	54,774	55,782	68,426
DIFFERENCE	**0**	**0**	**0**	**0**	**0**
NON-POTABLE					
Gross Water Use	24,431	25,601	26,775	27,954	29,134
Total Supply	24,431	25,601	26,775	27,954	29,134
DIFFERENCE	**0**	**0**	**0**	**0**	**0**

7 WESTERN MUNICIPAL WATER DISTRICT
Wholesale Demand Management Measures

This chapter describes Western's implementation of wholesale demand management measures (DMMs) intended to promote water use efficiency in partnership with retail agencies to support sustainable management of regional water supplies.

Western has been a leader in water use efficiency for many years and actively collaborates with local and regional agencies and the communities it serves to implement innovative programs and drive reductions in water usage. Western staff also serves in a leadership role for the California Water Efficiency Partnership (CalWEP) whose mission is to maximize urban water efficiency and conservation throughout California by supporting and integrating innovative technologies and practices; encouraging effective public policies; advancing research, training, and public education; and building collaborative approaches and partnerships. Western leverages these partnerships, tools, and resources within its service area.

Details on Western's wholesale DMMs are provided in the following sections. DMMs implemented for Western Retail are described in **Chapter 12**.

IN THIS SECTION

- Metering
- Outreach and Public Education
- Water Conservation Program Coordination and Staffing
- Asset Management

7.1 Metering

All of Western's wholesale customers are fully metered and billed volumetrically each month.

Western has 14 wholesale agencies in its service area (see **Chapter 3**, System Description), eight of which received raw and treated water supplies from Western in 2020, served through 20 meters. Metropolitan owns and maintains all but three of these meters. Western's operations staff performs annual meter calibrations on all wholesale meters.

7.2 Outreach and Public Education

As a wholesaler, Western implements Public Education and Outreach programs within its general service area, described in more detail below.



7.2.1 Public Outreach

Western's Strategic Communications department provides extensive public outreach to the communities it serves, with at least quarterly contact. Water-use efficiency is promoted through press releases and events, paid advertising, bill inserts, customer newsletter, landscape water conservation media campaigns, website program brochures, speaker's bureau, and cooperative partnerships with other retail agencies and other area partners.

Western's outreach programs deliver the following key messages:

- Imported water supplies are unreliable at times;
- Demand for quality water has increased over time;
- Conservation efforts and efficient use are highly effective means to stretch and extend water resources; and
- Western has incentive programs and support mechanisms that will increase water efficiency and benefit customers.

In addition, Western has converted its office landscaping to drought-tolerant plants to encourage public acceptance, desire for, and use of water-efficient landscapes. The local chapter of the Master Gardeners of Riverside County also helps facilitate regular workshops to promote environmentally responsible and sustainable horticultural practices. Details on the Master Gardeners of Riverside County are provided in **Chapter 12**, Retail Demand Management Measures.

7.2.2 School Education Programs

Western sponsors a regional school education program in its general service area. Western has been a leader in the field of water education since 1982. Western partners with its retail water agencies to implement programs for schools throughout Western's general service area. Western's School Program is designed to encourage and assist educators as they teach students about water supply, distribution, reclamation, conservation, and the future of water supplies. The material and services offered meet the requirements of the California Science Framework Addendum and are provided at no charge to participating teachers, schools, and students, public and private. Western conducts class presentations and teacher workshops, and offers materials including student workbooks, water cycle bracelets, earth balls, water story rocks, assembly-related material, teachers' guides, videos, speakers, and field trips. Complete class water education units are also distributed. A total of



157 public schools are eligible to participate in Western's education program; 143 of these schools are located within Western's wholesale service area (exclusive of those schools in Western's retail service area).

Western has also established free, virtual tools to support teachers and engage students in response to the COVID-19 pandemic. The "Lighten Your Load" program provides water education support for teachers. Teachers can sign up for a one-on-one planning session with Western's water education experts and will receive individualized advice and access to resources for use within a virtual classroom environment while meeting the California State and Next Generation Standards. Western has also developed a new video game to help students learn about California's water system and Western's distribution system. The game's beta version debuted at the 2020 Science and Technology Education Partnership (STEP) Conference. This interactive game will help students learn about where their water comes from (Western Municipal Water District, 2020).

Since 1995, Western has offered programs to fund creative classroom projects that further a better understanding of water and the vital role it plays in the community. Western also offers grants for educators under the Lois B. Krieger Water Project Grants for Educators fund. Teachers within Western's general service area can apply to receive up to $1,000 in classroom funding for water education projects (both virtual and in-classroom). In 2020, 21 teachers received grant awards totaling more than $14,000 for projects pertaining to water quality testing, hydroponic gardening, and sensory water exploration. All teachers in Western's District, in both private and public schools in grades K–12, are eligible to apply for these grants.

Western also offers limited scholarships for students residing in its service area who are studying fields related to water (water policy, public administration and management, environmental geology, water management, water conservation) at local universities, including California State University San Bernardino, University of California Riverside, Riverside City College, and Norco College.

7.3 Water Conservation Program Coordination and Staffing

Western has maintained a full-time water conservation coordinator position since 1990. The water conservation coordinator implements wholesale and retail area programs.

7.4 Asset Management

Western maintains and implements upgrades to its distribution system, including facilities, equipment, and infrastructure, through regular operation and maintenance activities. Western's Operations Department implements maintenance and repairs of Western's system.

7.5 Wholesale Supplier Assistance Program

Western provides financial and technical assistance and helps build partnerships with its retail agencies to promote conservation. Western participates in Metropolitan's Member Agency Administered (MAA) funding for projects that are not included in Metropolitan's regular rebate program. Western receives $748,000 in every two-year Metropolitan budget cycle for conservation projects.

In the past, Western and its wholesale customers have used the MAA funding for the following projects:

- High-efficiency toilet installations
- High-efficiency sprinkler nozzle distributions
- Weather-based irrigation controller distributions
- Hot Water Recirculating Pump distributions
- Swimming pool cover rebates
- Utility-side Leak Detection equipment purchases
- Customer-side leak detection and flow monitoring rebates
- Analysis of customer-side leak detection devices
- Drinking water education programs
- Water-use-efficiency customer workshops
- Educational video game development
- Smart Irrigation equipment installation
- Multi-family toilet sensor installations
- Study of color-retention in warm season turf grasses with University of California Riverside
- Partnership with SoCalGas to install water saving devices

Western continues to promote conservation throughout its entire service area and supports its wholesale customers' conservation programs.

8

WESTERN MUNICIPAL WATER DISTRICT

Wholesale Water Shortage Contingency Plan

The WSCP is a strategic plan that Western uses to prepare for and respond to foreseeable and unforeseeable water shortages. This chapter provides an overview of the portions of Western's Water Shortage Contingency Plan that are applicable to Western Wholesale. The standalone Water Shortage Contingency Plan is included in Appendix A.

The California Water Code Section 10632 requires that every urban water supplier that serves more than 3,000 acre-feet per year or has more than 3,000 connections to prepare and adopt a standalone Water Shortage Contingency Plan (WSCP) as part of its UWMP. Western Wholesale and Western Retail are subject to the WSCP requirements and a single WSCP has been developed to meet the requirements for both systems. This chapter provides an overview of the portions of the WSCP that are applicable to Western Wholesale. **Chapter 13** provides an overview of the portions of the WSCP that are applicable to Western Retail. Western's WSCP is included as **Appendix A** and will be separately submitted to DWR by July 1, 2021. The WSCP is developed separately from Western's 2020 UWMP and can be amended, as needed, without amending the UWMP.

IN THIS SECTION

- WSCP Outline
- Wholesale WSCP Requirements Overview

The WSCP is a strategic plan that Western uses to prepare for and respond to foreseeable and unforeseeable water shortages. A water shortage occurs when water supply available is insufficient to meet the normally expected customer water use at a given point in time. A shortage may occur due to a number of reasons, such as water supply quality changes, climate change, drought, regional power outage, and catastrophic events (e.g., earthquake). Additionally, the State may declare a statewide drought emergency and mandate that water suppliers reduce demands, as occurred in 2014. The WSCP serves as the operating manual that Western will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The Western WSCP provides a process for an annual water supply and demand assessment for the wholesale system and structured steps designed to respond to actual conditions. This level of detailed planning and preparation provide accountability and predictability and will help Western maintain reliable supplies and reduce the impacts of any supply shortages and/or interruptions.

The WSCP must be updated based on new requirements every five years and will be adopted as a current update for submission to the California Department of Water Resources by July 1, 2021.

8.1 Water Shortage Contingency Plan Outline

Western's WSCP is organized into six sections:

- **Section 1** - Overview of the WCSP
- **Section 2** - Western Wholesale Water Shortage Contingency Plan
- **Section 3** - Western Retail Water Shortage Contingency Plan
- **Section 4** - Emergency Response, Seismic Risk Assessment and Mitigation
- **Section 5** - WSCP Refinement Procedures
- **Section 6** - Plan Adoption, Submittal and Availability

All sections are applicable to Western Wholesale except Section 3, which is applicable to Western Retail only.

8.2 Overview of the Wholesale Requirements of the WSCP

The Water Code establishes several prescriptive elements which must be included in a wholesale water supplier's WSCP. Each element and its location within the WSCP is described below.

Water Supply Reliability Analysis: Summarizes Western Wholesale's water supply reliability and identifies any key issues that may trigger a shortage condition. This requirement is addressed in Section 2 of the WSCP.

Annual Water Supply and Demand Assessment Procedures: Describes the key data inputs, evaluation criteria, and methodology for assessing the Western Wholesale system's reliability for the coming year and the steps to formally declare any water shortage levels and response actions. This requirement is addressed in Section 2 of the WSCP.

Shortage Stages: Establishes water shortage levels to clearly identify and prepare for shortages. This requirement is addressed in Section 2 of the WSCP.

Shortage Response Actions: Describes the response actions that may be implemented or considered for each stage to reduce gaps between supply and demand. This requirement is addressed in Section 2 of the WSCP.

Communication Protocols: Describes communication protocols under each stage to ensure customers, the public, and government agencies are informed of shortage conditions and requirements. This requirement is addressed in Section 2 of the WSCP.

Legal Authority: Lists the legal documents that grant Western the authority to declare a water shortage and implement and enforce response actions. This requirement is addressed in Section 2 of the WSCP.

Financial Consequences of WSCP Implementation: Describes the anticipated financial impact of implementing water shortage stages and identifies mitigation strategies to offset financial burdens. This requirement is addressed in Section 2 of the WSCP.

WSCP Refinement Procedures: Describes the factors that may trigger updates to the WSCP and outlines how to complete an update. This requirement is addressed in Section 5 of the WSCP.

Plan Adoption, Submittal, and Availability: Describes the process for the WSCP adoption, submittal, and availability after each revision. This requirement is addressed in Section 6 of the WSCP.

Part 3

Western Retail

9

WESTERN MUNICIPAL WATER DISTRICT

Retail Water Supply

Western retail utilizes a variety of supply sources, including imported water and local groundwater from various basins. Potential future water supply sources focus on local projects to increase regional reliability and reduce dependence on imported water.

IN THIS SECTION

- Water Supply Overview
- Water Supply Characterization
- Energy Intensity

9.1 Water Supply Overview

Western has invested in local supply sources to reduce dependence on imported water and maintain reasonable costs for its customers. Western's supply sources are expected to meet projected demands and are sustainably managed to be drought resilient. However, to protect local sources and offset financial impacts from imported water, Western will continue to promote conservation and enhance local reliability.

The Riverside service area uses local groundwater from potable and non-potable sources, potable and non-potable imported water and recycled water.

The Murrieta service area uses local groundwater. In recent years, imported water from Eastern has also been used.

The Rainbow service area uses only imported water.

9.2 Retail Water Supply Characterization

As mentioned, Western's retail system uses a variety of supply sources and are detailed below.

9.2.1 Purchased or Imported Water

Imported Water from Metropolitan

In 2020, Western retail obtained approximately 60 percent of its total supply as imported water from Metropolitan. The Riverside service area receives treated imported water from the Mills WTP, delivered through the Mills Gravity Line. Western may also purchase untreated water from Metropolitan to serve non-potable uses.

The Murrieta system uses imported water, delivered by Eastern through the Los Alamos interconnection, to supplement local groundwater supplies.

The Rainbow system relies solely on treated imported water from Metropolitan.

Western uses imported water to meet the balance of demands not met by local sources. Western strives to utilize local sources prior to Metropolitan water to minimize costs.

City of Riverside

In 2017, the City of Riverside and Western executed a Cooperative Agreement for Long-Term Wheeling and Surplus Water Sales (2017 Agreement), attached in **Appendix H**. The 2017 Agreement provides Western up to 2,000 AFY of City of Riverside surplus water until 2027 (which may continue after 2027 with both party's approval). The 2017 Agreement also provides the wheeling of up to 4,600 AFY of Meeks and Daley Water Company water to Western (described below). Currently, Western takes delivery of this water at two locations; the Mockingbird and Whitegates interconnections. Western is currently in design for two additional connections with the City of Riverside to add redundancy, flexibility, and potentially additional deliveries in the future.

Western also purchases non-potable water from the Riverside-Arlington basin from the City of Riverside, which is delivered through the Riverside Canal. Through coordination with Riverside, non-potable supplies from the RPU are expected to continue to be available to Western in the future.

Meeks and Daley Water Company

Western and EVMWD have a contractual agreement for Western to use EVMWD's Meeks and Daley Water Company (Meeks and Daley) rights within the SBBA. These rights are owned by EVMWD and leased to Western in exchange for capacity in the Mills Gravity Line that EVMWD uses for imported Metropolitan water. The purchase agreement between Western and EVMWD is provided in **Appendix I**. Western obtains 4,680 AFY for its retail system through this agreement. Western also owns shares in Meeks and Daley that entitle them to 226.52 AFY from the SBBA, which is shown in **Section 13.2.2**.

Since Western does not own or operate infrastructure that can directly extract water from the SBBA basin, the City of Riverside pumps and delivers this water to Western through system interconnections under the 2017 Agreement as the "long-term wheeling" portion of the agreement. Each year, Western and Riverside develop an operating plan to establish the expected delivery schedule for that year for the Riverside surplus water and Western's total Meeks & Daley water supply. A copy of the 2021 Operating Plan is provided in **Appendix J**. Western has the ability to move up to 7,208 AFY to its Retail system under this agreement.

EVMWD

Western also purchases non-potable water from the Riverside-Arlington basin from EVMWD's Palm Well, which is delivered through the Riverside Canal. Through coordination with EVMWD, non-potable supplies from the Palm Well area expected to continue to be available to Western in the future.

Riverside Highland Water Company

In the past, Western has also entered into 1-year lease agreements with RHWC to acquire up to 1,500 AFY from RHWC's adjusted groundwater rights from the SBBA. Western may enter into such agreements again in the future; however, since no current agreement is in place, leased RHWC shares are not included in Western's supply estimates for this UWMP.

Chino Desalter

The Chino Sub basin is an adjudicated basin managed by the Chino Basin Watermaster. The Chino Sub basin lies in the southwest corner of San Bernardino County and is bordered to the east by the Rialto-Colton fault. In the other three directions, the Chino Sub basin is ringed by impermeable mountain rock, the San Gabriel Mountains to the north, the Jurupa Mountains and Puente Hills to the south and southwest.

On January 2, 1975, several Chino Basin producers filed suit in California State Superior Court for San Bernardino County (the "Court") to settle the problem of allocating water rights in the Chino Basin. On January 27, 1978, the Court entered a judgment in Chino Basin Municipal Water District v. City of Chino et al. adjudicating water rights in the Chino Basin and establishing the Chino Basin Watermaster. The Judgment adjudicated all groundwater rights in Chino Basin and contains a physical solution to meet the requirements of water users having rights in or dependent upon the Chino Basin. The Judgment also appointed the Watermaster to account for and implement the management of the Chino Basin. The Judgment declared that the initial operating safe yield of the Chino Basin is 145,000 AFY. The Basin is managed through implementation of the Chino Optimum Basin Management Plan.

Portions of the Chino Basin have been degraded by elevated concentrations of TDS and nitrate. Similar to the Arlington Desalter, Chino Desalter facilities have been constructed to provide a local source of potable water and decreasing subsurface outflow of low-quality groundwater to the Santa Ana River.

The Chino Basin Desalter Authority (CDA) oversees operation of the Chino Desalter facilities. The Chino Desalter is comprised of two facilities: Chino I and Chino II. These facilities remove salts from brackish groundwater extracted from the Chino Basin. Chino I is located in Chino and began operation in 2000, with an initial capacity of 9,000 AFY. It is operated and maintained by Inland Empire Utilities Agency (IEUA) and treats brackish groundwater through reverse osmosis (RO) and ion exchange technologies (IX).

JCSD operates and maintains the Chino II facility in Jurupa Valley. Chino II began operation in 2006 and initially treated up to 11,820 AFY. In 2016, the Chino II facility was expanded to treat up to 21,000 AFY (2). The Chino II Desalter also utilizes RO and IX to treat the brackish groundwater.

Western Retail owns 3,534 AFY of capacity in the Chino II Desalter. However, Western Retail does not currently use this source and as a result leases it to Jurupa Community Services District.

9.2.2 Groundwater

As discussed previously, Western owns shares in Meeks and Daley that entitle them to produce 226.52 AFY from the SBBA, which is conveyed by the City of Riverside and used in the Riverside retail system.

Western directly extracts groundwater for its retail customers in the Murrieta service area from the Temecula Valley Basin.

Total groundwater extractions from 2016 through 2020 are provided in **Table 9-1**. Descriptions of these basins are provided in **Chapter 4**.

Table 9-1. Groundwater Extractions, AFY

BASIN	2016	2017	2018	2019	2020
Temecula Valley	398	423	398	370	399
San Bernardino Basin Area[1]	226.52	226.52	226.52	226.52	226.52
TOTAL	**624**	**650**	**624**	**596**	**626**

[1]The City of Riverside pumps this groundwater on Western's behalf. Western owns 226.52 AFY of Meeks and Daley water rights within the San Bernardino Basin Area.

Temecula Valley Basin

The Temecula Valley Basin (DWR designated Basin 9.005) lies under several valleys within the southwest portion of Riverside County and parts of northern San Diego County. The Temecula Valley Basin is bound by nonwater-bearing crystalline rocks of the Peninsular Ranges. The overlying valleys are drained by Wilson, Temecula, Murrieta, Warm Springs, and Pechanga Creeks to the Santa Margarita River, which flows west out of the Temecula Valley. The Pechanga Indian Reservation also overlies portions of the southwestern part of the basin. The Temecula Valley Basin typically receives 7 to 15 inches of rainfall each year (California Department of Water Resources).

The Temecula-Murrieta subbasin is an alluvial basin within the Temecula Valley Basin. Within the Temecula-Murrieta Basin lie two aquifers: the Pauba aquifer and the Temecula aquifer, the latter of which underlies the former. The Pauba aquifer covers approximately 18 square miles and the Temecula aquifer extends over an area of approximately 100 square miles.

As part of the Santa Margarita River system, surface water and groundwater supporting surface water (defined as being in the older and younger alluvium) within the Temecula-Murrieta Basin have been under some form of court jurisdiction since 1928. Rights to utilize surface water and groundwater determined to be contributing to the Santa Margarita River are governed by the Modified Final Judgment and Decree entered on April 6, 1966 by the U.S. District Court in United States v. Fallbrook Public Utility District, et al. (Civil No. 1247-SD-T) (provided in **Appendix K**). A Watermaster was appointed in March 1989 to administer and enforce the provisions of the judgment and subsequent orders of the Court. A Steering Committee, currently comprising representatives from the United States, Eastern Municipal Water District (Eastern), Western, Fallbrook Public Utility District (Fallbrook PUD), Metropolitan, the Pechanga Tribe, and RCWD, was also appointed. The purpose of the Steering Committee is to assist the Court and the Watermaster in administering the water rights (Santa Margarita River Watershed Watermaster Report, 2013). The following presents a summary of the groundwater management agencies in the Temecula-Murrieta Basin:

- **Santa Margarita River Watershed Watermaster** – Court approved Watermaster for oversight and administration of water rights
- **Santa Margarita River Watershed Steering Committee** – Assist the Court and the Watermaster in administering the water rights
- **Rancho California Water District** – Prepares Groundwater Audit and Recommended Groundwater Production Report for operation of District groundwater wells and recharge facilities

The Groundwater Audit and Recommended Groundwater Production Report (RGPR) sets limits for producers in the Temecula-Murrieta Basin. The amount of groundwater that can be produced varies due to such factors as rainfall, recharge area, and amount and location of well pumping capacity.

San Bernardino Basin Area

The San Bernardino Basin Area (SBBA) was defined and adjudicated in gross by the Western-San Bernardino Judgment (Western Judgment) in 1969. The SBBA has a surface area of approximately 141 square miles and lies between the San Andreas and San Jacinto faults. The basin is bordered on the northwest by the San Gabriel Mountains and Cucamonga fault zone; on the northeast by the San Bernardino Mountains and San Andreas fault zone; on the east by the Banning fault and Crafton Hills; and on the south by a low, east-facing escarpment of the San Jacinto fault and the San Timoteo Badlands. Alluvial fans extend from the base of the mountains and hills that surround the valley and coalesce to form a broad, sloping alluvial plain in the central part of the valley. The SBBA encompasses the Bunker Hill sub basin (DWR designated Basin 8.02-06) also includes a small portion of the Yucaipa Basin (DWR designated Basin 8-02.07) and Rialto-Colton Basin (DWR designated Basin 8-02.04).

It was determined in the Western Judgment that the Plaintiffs (Riverside County agencies) have a 64,862 AFY share of the safe yield, which equates to 27.95% of the safe yield. The Plaintiffs include the City of Riverside (the successor to the Riverside Water Company and the Gage Canal Company), Riverside Highland Water Company, Meeks & Daley Water Company, and Regents of the University of California. Non-plaintiffs are agencies in San Bernardino County represented by San Bernardino Valley Municipal Water District and are entitled to 72.05% of the safe yield, or 167,238 AF. The Riverside County agencies may not exceed their allocation unless they participate in "New Conservation" (explained below).

The Western Judgment contemplates that the parties will undertake "new conservation" which is defined as any increase in replenishment from natural precipitation which results from operation of works and facilities not in existence as of 1969, other than works installed to offset losses from flood control channelization. The Western Judgment specifies that the parties to the Judgment have the right to participate in any new conservation projects, provided they pay the appropriate share of the cost. The net effect of new conservation is an increase in pumping rights by the Plaintiffs and "credits" for the non-Plaintiffs.

In 2013, both the Plaintiffs and Non-Plaintiffs agreed to participate in the cost to capture water that historically flowed to the ocean. This New Conservation was due to the construction and operation of the Seven Oaks Dam. The 2015 Annual Report for the Western-San Bernardino Annual Report increases the rights for both Parties, as shown in Table 9-2.

Table 9-2. Adjusted SBBA Rights Due to New Conservation Allocation

PARTIES	PERCENTAGE	SAFE YIELD ALLOCATION (AF)	NEW CONSERVATION ALLOCATION (AF)	ADJUSTED RIGHT (AF)
NON-PLAINTIFFS (SAN BERNARDINO COUNTY AGENCIES)	**72.05%**	**167,238**	**5,507**	**172,745**
PLAINTIFFS (RIVERSIDE COUNTY AGENCIES)	**27.95%**	**64,862**	**2,136**	**66,998**
City of Riverside		52,199	1,719	53,918
Riverside Highland Water Company		4,294	141	4,435
Agua Mansa and Meeks and Daley Water Company		7,833	258	8,091
Regents of the University of California		536	18	554
TOTAL SUM OF EXTRACTIONS	**100%**	**232,100**	**7,643**	**239,743**

Riverside-Arlington Basin

Western is planning to construct a new non-potable well in the Riverside Arlington Basin to supplement non-potable supplies available from the Riverside Canal from RPU and the EVMWD Palm Well.

The Riverside-Arlington Basin is described in Section 4.2.2.1.

9.2.3 Surface Water and Stormwater

Western does not directly utilize any surface water or stormwater sources for its retail system. However, Western represents the Riverside County agencies as the Watermaster for the SBBA and participates in regional projects to capture stormwater to enhance the long-term sustainability of the SBBA and help mitigate the effects of climate change on local supplies. As a shareholder of Meeks and Daley Water Company, Western Retail benefits.

9.2.4 Wastewater and Recycled Water

As described in **Section 4.1.3**, There are two wastewater treatment plants that provide recycled water to Western Retail: the Western WRF and the WRCRWA Treatment Plant. Recycled water is used in the Riverside Service Area only. Western leverages the recycled water program to increase supply reliability and reduce the amount of imported water.

Recycled Water Coordination

Western adopted its "Western Strategic Plan" in 2012 to respond to on-going water resource issues in Southern California. Of the five goals developed in the plan, the first, Source Water Reliability, is to develop a water supply reliability portfolio while determining the financial feasibility of projects. In December 2009, Western prepared a Recycled Water Master Plan (RWMP), which was updated in June 2014 (Albert A. Webb Associates for Western Municipal Water District, June 2014). Western coordinated with multiple agencies to provide input during development of the original, including Riverside Public Utilities, Gage Canal Company, and Riverside Unified School District to determine potential recycled water demands.

Wastewater Collection, Treatment, and Disposal

The Western WRF and WRCRWA provide wastewater collection and treatment services for Western's Riverside Retail Service Area. Western operates the WRCRWA Treatment Plant, which is a regional wastewater treatment facility owned by WRCRWA, a joint powers authority composed of the cities of Norco and Corona, Jurupa Community Services District, Home Gardens Sanitary District, and Western.

Western also owns and operates the Western WRF, formerly the March Wastewater Treatment Plant. The WWRF was expanded in 2011 to a capacity of 3 MGD tertiary treatment. Recycled water is then distributed to customers including the Riverside National Cemetery, General Archie Old Golf Course, schools, parks, groves, and nurseries.

Wastewater treatment in Western's other retail areas is provided by EMWD at the Temecula Valley Regional Water Reclamation Facility and Rancho California Water District at the Santa Rosa Water Reclamation Facility. Both EMWD and Rancho California Water District already utilize flows from their wastewater plants to create recycled water. Because these facilities already produce recycled water, flows to these two plants do not have the potential to provide additional recycled water to Western.

WRCRWA Treatment Plant

The WRCRWA Treatment Plant is a 14 MGD tertiary facility that currently discharges all flows to the Santa Ana River. A recent Change of Use Petition has been granted to enable future re-use of recycled water from the WRCWRA Treatment Plan. There are no existing recycled water facilities to deliver the WRCWRA water to Western's service area so Western is exploring other opportunities to make beneficial use of its share of the recycled water.

From 2017 to 2019, the average WRCWRA flow generated by Western retail customers was 0.73 MGD (about 820 AFY) and is expected to increase to 1.6 MGD (about 1,800 AFY) at buildout.

Western Water Recycling Facility

Western operates the WWRF, which treats domestic wastewater from March Air Reserve Base and the north-central portion of the Riverside Service Area. The plant was upgraded in 2014 to produce 2,200 AFY of tertiary treated wastewater, which is discharged to an impoundment and then pumped to supply the recycled water system. The recycled water is provided to the Riverside National Cemetery, General Old Golf Course, and various landscaping, agricultural and commercial use sites. When supply exceeds demand, such as during wet winter months, excess recycled water is stored in the on-site impoundment until needed. If recycled water demands exceed supply, March Air Force Base's Expanded Groundwater Extractions and Treatment System (EGETS) may operate and send groundwater flows to blend with recycled water in Western's on-site storage ponds at the WWRF. If there is a large discrepancy between recycled water demand and recycled water supply, excess recycled water from the WWRF can be placed in Western's existing sewer collection system for conveyance and treatment to WRCRWA, where it is eventually discharged to the Santa Ana River.

The volume of influent to the WWRF, and new demand for recycled water is dependent on new development in the Riverside Service Area. Increasing the available supply of recycled water will allow customers who currently use non-potable water from the CRA to switch to a more drought- proof local supply for their non-potable water needs.



Recycled Water System Description

As mentioned, Western utilizes recycled water in the Riverside Service Area only. The recycled water system consists of nearly 56 miles of pipeline ranging from 4 to 42 inches in diameter; eight pump stations with 25 pumps and a combined rating of 5,175 horsepower; and a storage capacity of 1.3 MG in five tanks and one open reservoir. Western has an additional two open reservoirs, but they are not currently used in normal operation and not included in the storage totals outlined in the RWMP (Albert A. Webb Associates for Western Municipal Water District, June 2014).

Recycled water from the WWRF is provided to the Riverside National Cemetery and General Archie Old Golf Course as well as various parks, schools, groves, and nurseries. Recycled water is a drought-proof supply as it stems from wastewater by customers within Western's service area.

Potential, Current, and Projected Recycled Water Uses

Recycled water provided by Western is used by a limited number of customers, primarily those with large outdoor irrigation needs. Western anticipates future recycled water use to expand to additional customers, who will be able to reduce their outdoor use of potable water. Western is currently updating its Riverside Facilities Master Plan for the non-potable system and is investigating opportunities to expand recycled water service to existing and future customers.

Current Use

In 2020, Western delivered 1,758 AFY tertiary treated recycled water to its retail customers. This exceeds the volume anticipated in the 2015 UWMP.

Potential Users

Western has been working with commercial, residential, and institutional developments in the retail area to ensure that recycled water can be used to the fullest extent possible. Potential users within Western's service area include all industrial, commercial, and agricultural users that currently utilize potable and non-potable supply from the Riverside Canal and the CRA. Specific areas identified in the RWMP for potential expansion include the Orangecrest and Mission Grove areas and the Meridian Business Park. Western is flexible and open to additional developments and interest in recycled water use. Three Riverside Unified School District (RUSD) and one Val Verde Unified School District schools have been plumbed or retrofitted for recycled water. All new residential projects will be conditioned to install recycled water systems for parks and common areas. Additional recycled water users are identified in the RWMP. Total existing and future demand is anticipated to be approximately 8,000 AFY (Albert A. Webb Associates for Western Municipal Water District, June 2014).

Actions to Encourage and Optimize Future Recycled Water Use

The primary means by which Western encourages recycled water use is through its water rate structure. Non-potable and recycled water customer rates are substantially lower than potable water. In addition, recycled water use is mandated by Ordinance 377 in those areas where recycled water is available and can be used properly. Industrial and commercial developers near non-potable distribution pipelines are required to plan for future use of recycled water, including installing proper piping and facilities to minimize economic impacts when recycled water becomes available at the use site. This is implemented through the plan check process, where plans are not approved until the required recycled water facilities are designed.

As mentioned, Western is in the process of updating its Riverside Facilities Master Plan. This effort will continue to analyze future recycled water use and assess infrastructure needs to promote additional recycled water use and offset potable demand.

9.2.5 Desalinated Water Opportunities

As described above, Western is already pursuing the use of desalinated groundwater as part of its long-term water supply. Western is a member agency of the Chino Basin Desalter Authority and owns 3,534 AFY of capacity. The Chino Basin Desalter treats brackish groundwater to potable quality and may be expanded in the future. Currently, Western's shares are sold to the City of Norco.

Western's service area is located on the other side of the Santa Ana Mountains from the Pacific Ocean. Seawater desalination, as a source of supply for Western, would require development of a coastal desalination facility and either construction of a conveyance pipeline and associated appurtenances from the coast inland and over the mountains to Western's service area, or development of an exchange agreement with another agency to trade desalted water for Metropolitan supplies.

The development of (or participation in) a new water supply using a seawater desalination technique, while costly, is being investigated by other wholesale and retail water agencies in Southern California. Because Western is an inland area, desalination would only work if Western joined with other water purveyors in the development of a coastal desalination facility, and then received water from the SWP supplies of other participants via an exchange. It is not cost effective nor environmentally sound for Western to receive direct delivery of desalted ocean water due to the distance and the topography between Western and the Pacific Ocean.

9.2.6 Water Exchanges and Transfers

Western does not currently have any exchange or transfer agreements aside from agreements already discussed that pertain to local groundwater and purchases.

Emergency Interties

Western has interties with Eastern and EVMWD for use as an emergency supply source. Western also has interconnections with the cities of Riverside and Corona.

9.2.7 Future Water Projects

Eastern, a neighboring agency of Western, has developed the North Perris Groundwater Basin Program to remediate contamination within the North Perris Groundwater Basins, protect non-contaminated areas of the basin, develop a local source of supply, including a secondary, secure potable supply for MARB, as well as provide long-term remediation of rising groundwater levels within MARB. Because of potential issues with serving MARB, Western and Eastern have entered into an interagency agreement for the Perris North Project, headed by Eastern. The interagency agreement, attached in **Appendix M** allows Western to purchase Perris North Project water in accordance with the Maximum Allocation Schedule if and when MARB demands increase in the future. The project is expected to produce approximately 6,750 AFY of total supply, with Western initially purchasing 500 AFY following completion of the project then increasing up to 1,500 AFY by 2040.

Table 9-3. Future Water Supply Projects

FUTURE SUPPLY PROJECT	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	PLANNED FOR USE IN YEAR TYPE	EXPECTED INCREASE IN SUPPLY
Perris North Project	Joint Project with Eastern Municipal Water District	2025	All Year Types	500 – 1,500 AFY

9.2.8 Summary of Existing and Planned Sources of Water

As described throughout this chapter, Western has worked to develop a variety of local and imported water supplies to meet its customer demands. Western will continue to work to secure local supplies and increase reliability, while promoting conservation and/or recycled water use. **Table 9-4** summaries the various supplies used in 2020 and **Table 9-5** and **Figure 9-1** summarize projected supply through 2045.

Table 9-4. 2020 Water Supply, AFY

SUPPLY SOURCE	SUPPLY, AFY
POTABLE	**21,834**
Metropolitan	12,004
Groundwater (San Bernardino Basin, Western Meeks and Daley)	226.52
Groundwater (San Bernardino Basin, Leased Meeks and Daley)	4,208
Groundwater (RPU Surplus)	3,163
Groundwater (Temecula Valley Basin)	399
Eastern (Murrieta)	1,834
NON-POTABLE	**4,909**
Metropolitan	1,819
EVMWD (Riverside-Arlington Groundwater)	944
RPU (Riverside-Arlington Groundwater)	388
WWRF	1,758
TOTAL SUPPLY	**26,743**

Table 9-5. Projected Supply, AFY

SUPPLY SOURCE	2025	2030	2035	2040	2045
POTABLE	**27,073**	**30,199**	**33,686**	**37,574**	**41,821**
Metropolitan[1]	14,680	19,306	22,293	26,181	31,928
Chino Desalter[2]	3,534	3,534	3,534	3,534	3,534
Temecula Valley Basin Groundwater [3]	1,452	1,452	1,452	1,452	1,452
Leased Meeks and Daley[4]	4,680	4,680	4,680	4,680	4,680
Western Owned Meeks and Daley[5]	226.52	226.52	226.52	226.52	226.52
City of Riverside Surplus[6]	2,000				
Eastern North Perris Agreement[7]	500	1,000	1,500	1,500	
NON-POTABLE	**7,031**	**8,066**	**8,964**	**9,966**	**11,079**
Metropolitan[8]	1,671	1,300	1,300	1,300	1,681
Riverside-Arlington Basin Groundwater[9]	2,500	3,131	3,104	3,465	4,100
WWRF[10]	1,940	2,598	3,481	4,032	4,032
WRCWRA[11]	920	997	1,079	1,169	1,266
TOTAL SUPPLY	**34,104**	**38,265**	**42,650**	**47,540**	**52,900**

[1]Available supply from Metropolitan determined as the remaining demand not met by local supply sources with a 10% buffer.

[2]Western's shares of the Chino Desalter, currently leased to Jurupa Community Services District.

[3]Planned groundwater extractions to serve the Murrieta service area.

[4]Agreement with EVMWD to lease Meeks and Daley groundwater rights.

[5]Western-owned Meeks and Daley groundwater rights.

[6]Based on the 2017 Agreement, surplus water sales. Additional surplus supply may be available in the future but is not guaranteed.

[7]Eastern Perris North Project.

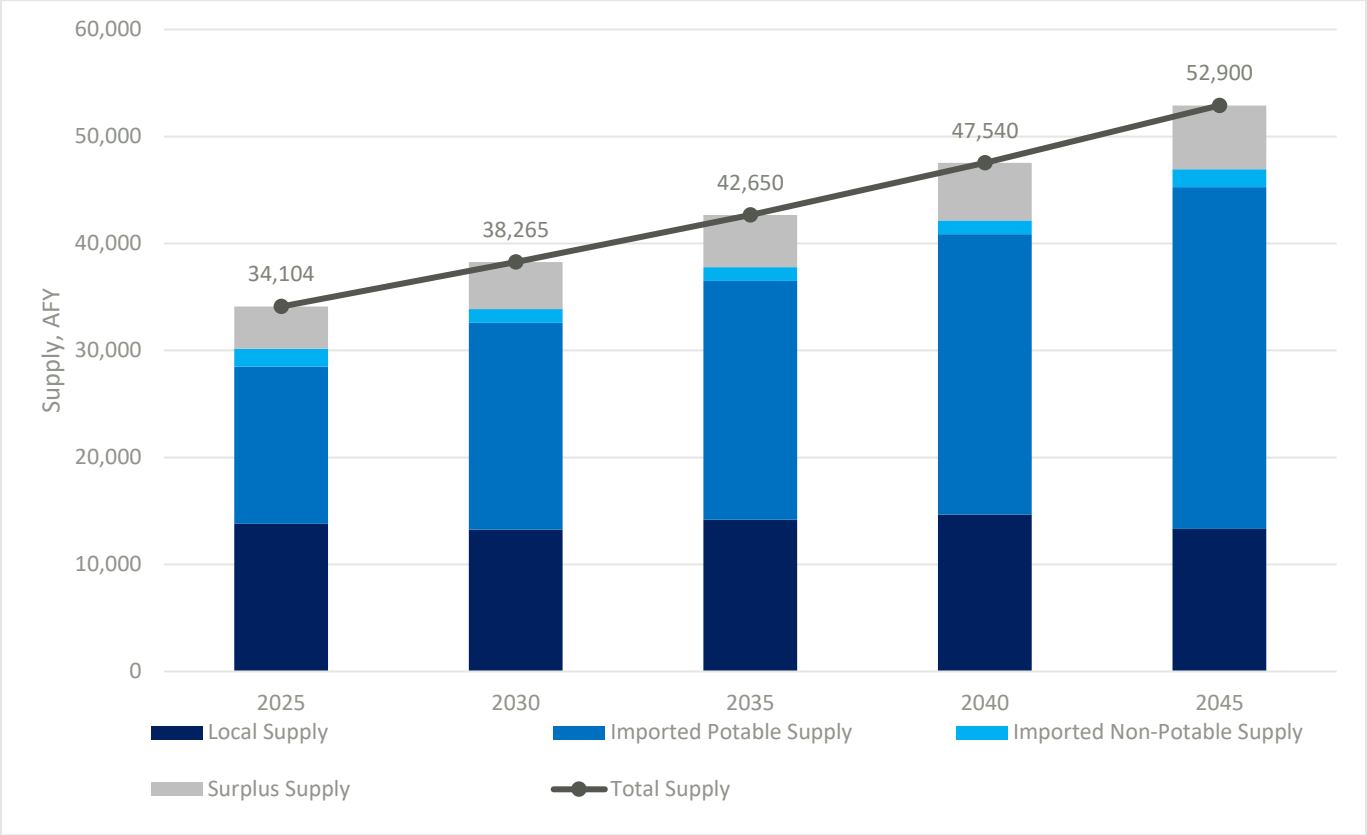
[8] Non-potable supply from Metropolitan is assumed to meet the remaining demand not met by local supply sources.

[9]Expected supply used from local non-potable groundwater and delivered through the Riverside Canal, including Western's planned non-potable well and purchases from RPU and EVMWD's Palm Well.

[10]Projected 2030 WWRF effluent determined in the Riverside Non-Potable Facilities Master Plan. The rate of growth was calculated between 2030 and average 2017-2019 data (2018 used to determine rate of growth) and applied for years 2025 and 2030-2045. Based on this growth rate, the WWRF is expected to reach buildout between 2035 and 2040.

[11]WRCWRA supply is not currently available to Western Retail customers as no infrastructure currently exists to convey recycled water from the plant to Western Retail. This supply is currently considered surplus supply but Western is evaluating opportunities to make use of it.

Figure 9-1. Projected Retail Supply, AFY



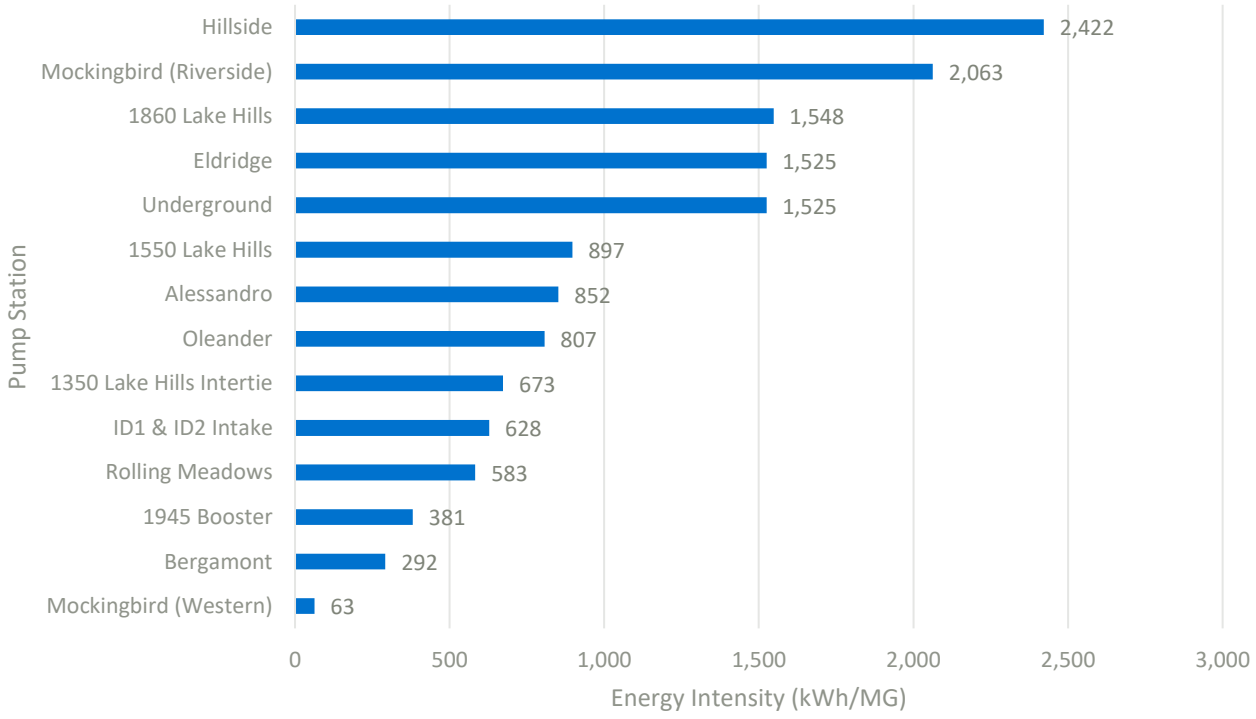
9.3 Energy Intensity

Western contracted with Hansen Allen & Luce, Inc. (HAL) to complete a Water System Optimization Study (Optimization Study) in 2018 and identify how Western could best align hydraulic performance, water quality, and energy efficiency for its Riverside service area. The Optimization Study more specifically analyzed overall hydraulic performance, storage utilization, pump station operation, energy efficiency, and water quality. Western's existing hydraulic model and energy usage for 2014 through 2017 was used as the basis for the optimization analysis.

In addition to electricity, Western uses natural gas to operate its system. The Holcomb Pump Station is powered by natural gas from the Shell Energy Company. Other areas of the Riverside service area are powered from natural gas provided by the Southern California Gas Company (SoCal Gas). Both electricity and natural gas exhibit similar usage patterns, with peaks during the summer months that mimic water demand trends.

The Optimization Study estimated the expected energy intensity for each pump station, as shown in **Figure 9-2** (Hansen Allen & Luce, Inc. for Western Municipal Water District, October 2018). Overall, the study estimated that the average energy intensity for the Riverside service area is approximately 3,700 kWh/MG (kilo-watt-hours per million gallons). This value does not include the energy intensity from imported water or water purchased from other agencies.

Figure 9-2. Estimated Energy Consumed by Pump Station (Hansen Allen & Luce, Inc. for Western Municipal Water District, October 2018)



10 WESTERN MUNICIPAL WATER DISTRICT Retail Water Use

This chapter describes historical, current, and projected water uses for Western's retail service areas.

Western provides potable water to customers within the Riverside, Murrieta, and Rainbow service areas. In addition, Western provides non-potable water to customers in the Riverside service area.

Between 2016 – 2020, Western retail customers used an average of 23,000 AFY of water.

IN THIS SECTION

- Non-Potable and Potable Water Use
- Past, Current, and Projected Water Use
- SBX7-7 Baselines, Targets, and Compliance

10.1 Non-Potable and Potable Water Use

Western's Riverside retail service area uses water for both potable and non-potable uses. Potable uses include agriculture, commercial, single-family residential, multi-family residential, landscape, industrial, military, temporary, and Fireline uses. Temporary connections include meters issued for construction water use.

Non-potable water is also used for agriculture and landscape and is tracked separately. The non-potable system uses a blend of recycled water, non-potable groundwater, and non-potable imported water.

The Murrieta and Rainbow retail service areas use potable water for a variety of uses, including single-family, multi-family, commercial, landscape, and others. These systems do not currently use non-potable water.

10.2 Past, Current, and Projected Water Use by Sector

Past, current, and projected water uses for Western's retail system is discussed in the following sections. In 2020, the largest customer category was single-family customers that used approximately 60% of the total water consumed.



10.2.1 Past Water Use

Water use in Western's retail systems has varied from 2013 to 2020. There was a notable decline in 2015 following the State's 2014 declaration of a drought emergency and implementation of statewide mandatory demand reductions. After the statewide restrictions ended in 2016, demands rebounded slightly but have not returned to 2013 levels, despite adding nearly 1,600 new customer connections from 2013 to 2020. Western also implemented water budget rates for indoor and outdoor uses which has helped to limit total consumption and conserve water. This is an indication that Western's aggressive conservation program has been effective at achieving some permanent demand reductions. Note that for non-potable customers, Western's billing data does not differentiate recycled water use from other non-potable use so recycled water use is included. A summary of the water use for each retail service area is provided in **Figure 10-1**, **Figure 10-2**, and **Figure 10-3**. Total Western retail use is summarized in **Figure 10-4** and **Table 10-1**.

Figure 10-1. Riverside Service Area Historical Water Use, AFY

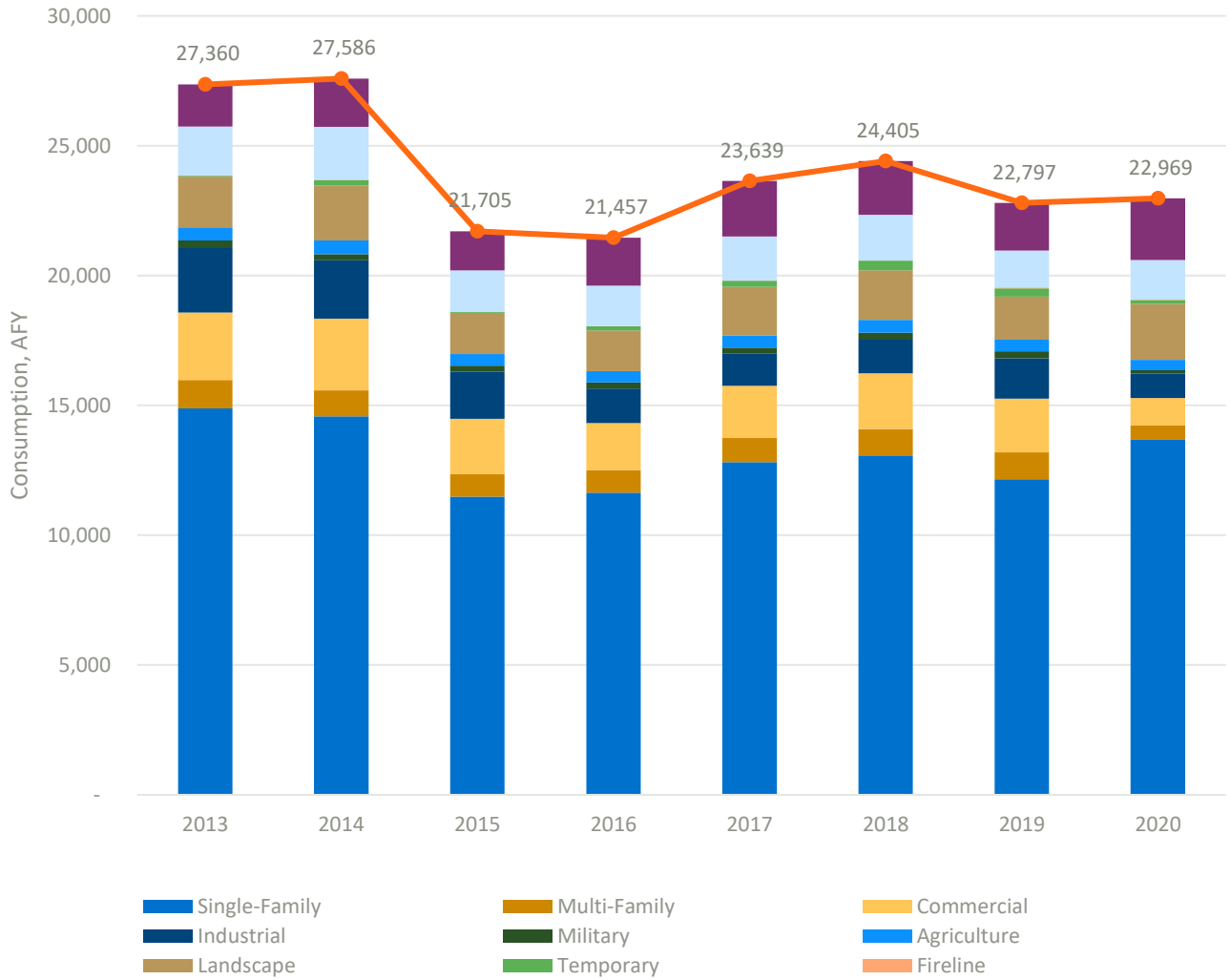


Figure 10-2. Murrieta Service Area Historical Water Use, AFY

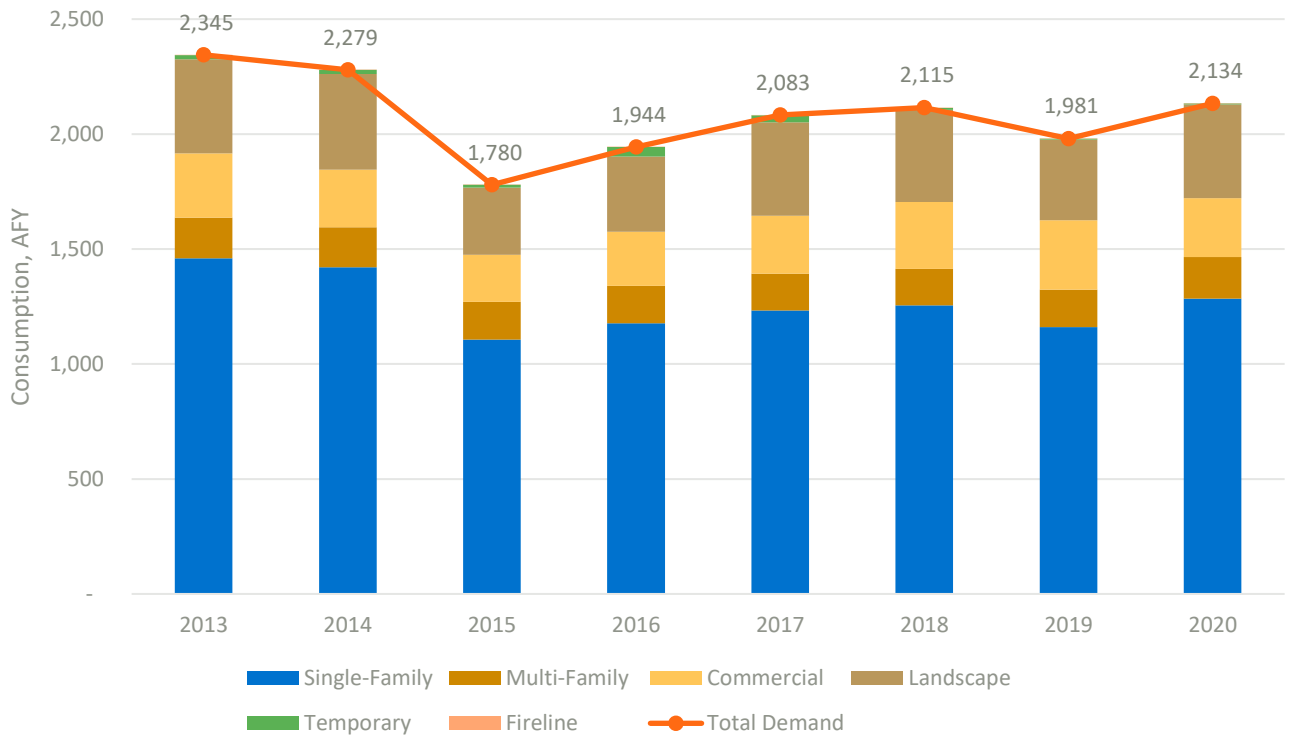


Figure 10-3. Rainbow Service Area Historical Water Use, AFY

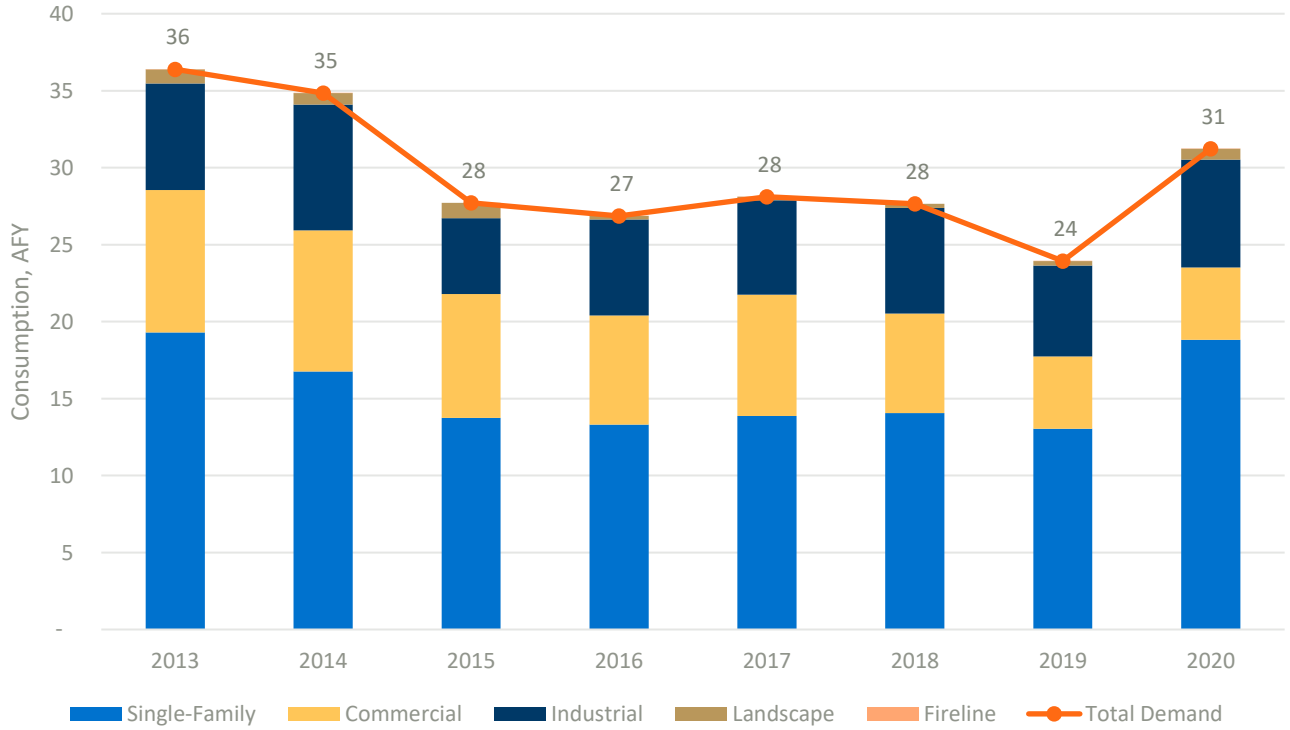
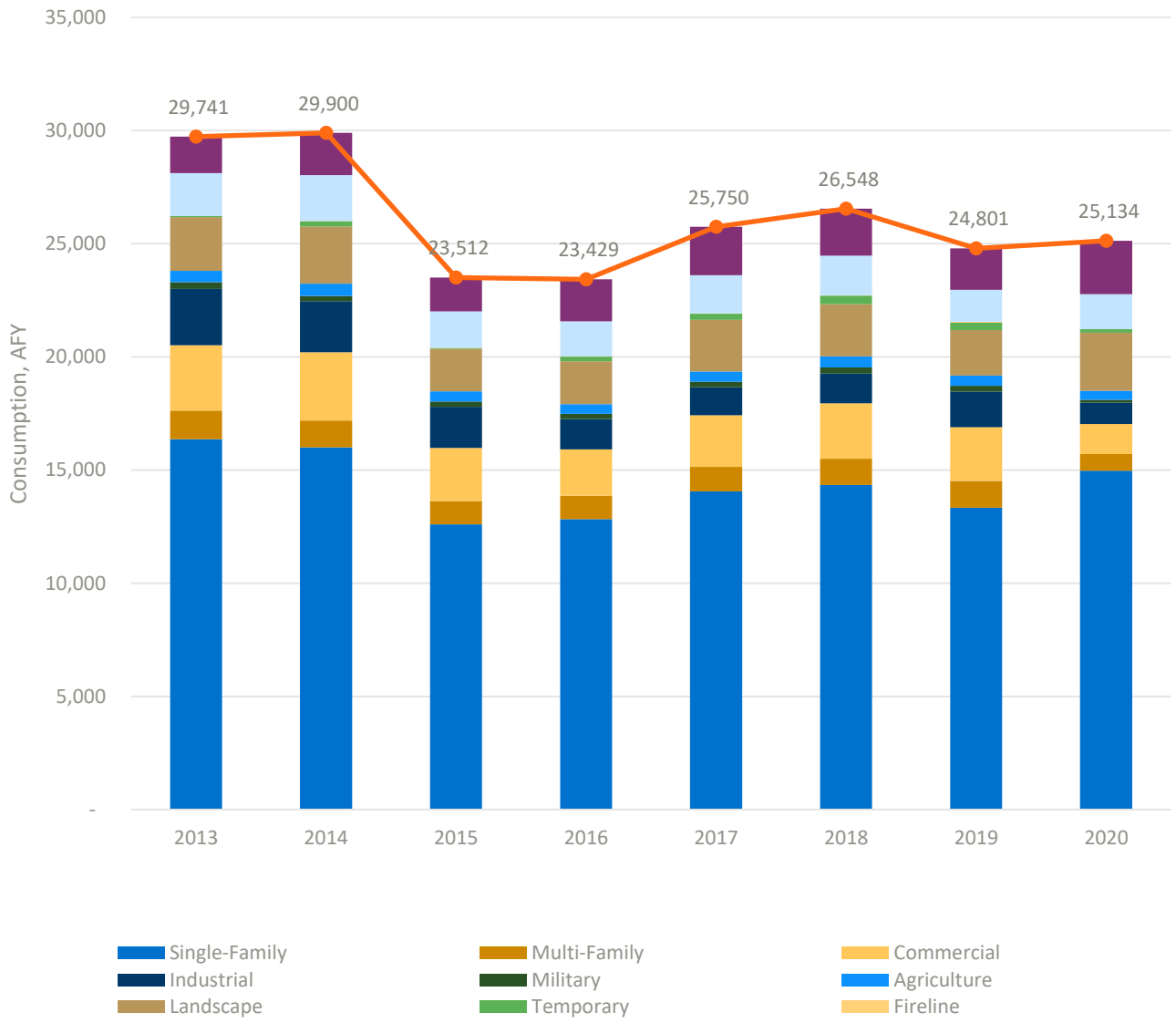


Table 10-1. Western Retail Historic and Current Water Use, AFY

WESTERN RETAIL TOTAL	2013	2014	2015	2016	2017	2018	2019	2020
POTABLE								
Agriculture	510	532	449	432	453	487	454	397
Commercial	2,897	3,019	2,345	2,050	2,273	2,450	2,371	1,328
Single-Family	16,362	16,010	12,600	12,830	14,058	14,344	13,332	14,973
Landscape	2,360	2,538	1,883	1,898	2,285	2,313	2,011	2,563
Industrial	2,487	2,258	1,814	1,338	1,245	1,305	1,565	940
Military	290	234	237	234	237	274	266	132
Multi-Family	1,265	1,179	1,036	1,033	1,089	1,162	1,193	731
Temporary	53	223	41	204	274	378	315	159
Fireline	2	11	2	7	6	7	37	6
TOTAL POTABLE	**26,226**	**26,003**	**20,406**	**20,025**	**21,919**	**22,720**	**21,545**	**21,230**
NON-POTABLE								
Agriculture – Non-Potable	1,896	2,036	1,603	1,553	1,696	1,758	1,421	1,538
Landscape – Non-Potable	1,619	1,862	1,502	1,850	2,135	2,070	1,835	2,366
TOTAL NON-POTABLE	**3,515**	**3,898**	**3,106**	**3,403**	**3,831**	**3,828**	**3,256**	**3,904**
TOTAL DEMAND	**29,741**	**29,900**	**23,512**	**23,429**	**25,750**	**26,548**	**24,801**	**25,134**

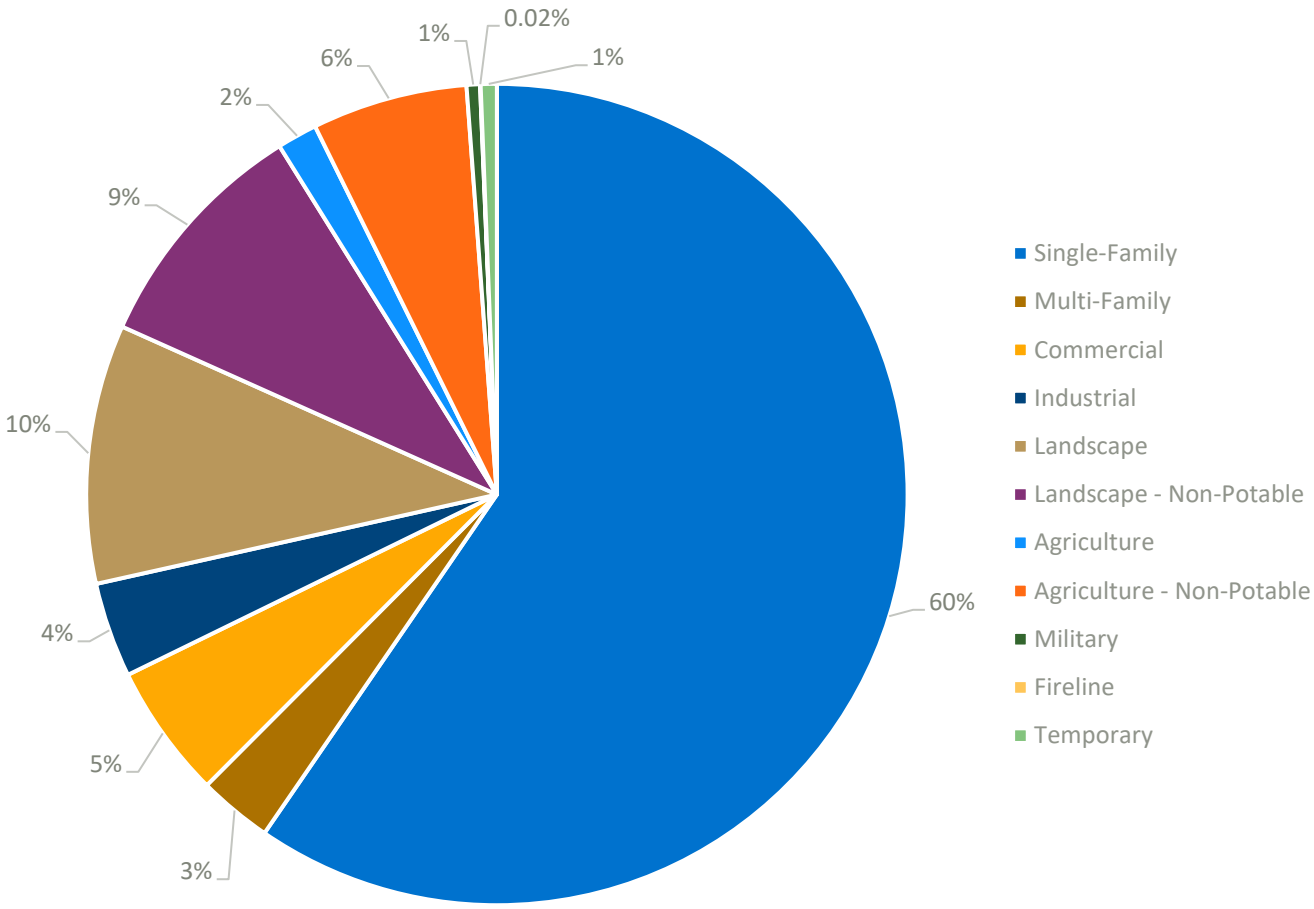
Figure 10-4. Western Retail Historical and Current Water Use, AFY



10.2.2 Current Water Use

In 2020, Western Retail (Riverside, Murrieta, and Rainbow service areas combined) used 25,134 AF of water. Single family residences consumed 60% of the total water used. The second largest customer category was landscape, using 10% of the total water demand. The breakdown of water use by customer category is illustrated in **Figure 10-5**.

Figure 10-5. Western Retail 2020 Water Use by Customer Category



10.2.3 Distribution System Water Losses

There are two types of water losses considered in the water loss audit, apparent losses, and real losses. Apparent losses are losses attributed to meter inaccuracies or data management (e.g., losses due to how water is accounted for or measured), while real losses are physical losses of water. Sources of distribution system water loss include:

- Leaks from water lines - Leakage from water pipes is a common occurrence in water systems. A significant number of leaks remain undetected over long periods of time as they are very small; however, these small leaks contribute to the overall water loss. Aging pipes typically have more leaks.
- Water used for flushing and fire hydrant operations
- Unauthorized uses or theft of water
- Meter Inaccuracies - meters can under-represent actual consumption in the water system.
- Unrecorded water uses when reservoirs overflow

Western has completed annual water loss audits for the Riverside retail system since 2015 following the procedures outlined by AWWA to identify and quantify system losses. These reports are submitted to the State each year by October 1. Western also prepares a water loss calculation for the Murrieta and Rainbow systems on an annual basis for internal use in managing water losses.

Historical water loss for each system is summarized in **Table 10-2**. The 2020 AWWA Water loss audit for Riverside system will not be available until October 1 per State requirements so an estimated water loss is shown based on the difference between total water supplied to the system and total water billed to the customers.

Table 10-2. Historical Water Losses for Retail Service Areas, AFY and Percent of Consumption

	2016	2017	2018	2019	2020
Riverside	3,236 (20%)	1,378 (8%)	1,262 (7%)	1,226 (7%)	1,495 (6%)
Murrieta	3 (<1%)	245 (11%)	27 (1%)	21 (1%)	99 (4.4%)
Rainbow	12 (33%)	9 (26%)	11 (30%)	7 (25%)	16 (34%)

Water losses for the Riverside service area have been trending down, likely due to recent replacement of water meters throughout the system; however, meters along the Mills Gravity Line may exhibit meter inaccuracies during low flow periods. The Murrieta system maintains consistently low water loss. The Rainbow service area exhibits high water losses due to all water being delivered through a single Metropolitan turnout (meter WR-13) and a handful of customers with relatively low use. Meter inaccuracies, especially during low flow periods, are expected to be the primary driver for the relatively high water loss in the Rainbow system.

The State Water Board is currently preparing performance standards for distribution system water loss. These standards are still being reviewed and finalized with stakeholder input. Western is committed to managing system water losses to reduce water waste and will endeavor to meet the future water loss performance standard once adopted by the State Water Board. A discussion of current and planned programs to manage water loss are included in **Chapter 15**, Retail Demand Management Measures.

For the purposes of projecting future demands, the Riverside system is assumed to maintain a 4% loss, the Murrieta system is assumed to maintain a 3% loss and the Rainbow system is assumed to maintain a 25% loss.

10.2.4 Projected Water Use

To estimate future potable water use, Western explored several demand projection methodologies based on SCAG and Department of Finance (DOF) projections, recent buildout studies, and ongoing master planning efforts. The growth rates projected by SCAG and DOF for the Riverside and Murrieta retail service areas indicated relatively low annual growth rates, which is not representative of the growth Western expects based on knowledge of planned developments. While these projections were not used as the sole basis for Western's population and demand projections, they were used as baseline comparisons.

Western also analyzed previous buildout studies for the Murrieta and Riverside service areas that were prepared in 2018 and 2019, respectively. These buildout studies included a parcel land-use based approach to determine the future buildout demand. The buildout studies informed demands for the ongoing Murrieta Water Facilities Master Plan and the ongoing Riverside Water Facilities Master Plan. Both master plans have more closely analyzed development that is expected to occur within the next 10 years, between 2020 and 2030. A comparison of 2020 actual demands and the 2030 projected demands in the Water Facilities Master plans yields an annual average growth rate of approximately 2.2%. Western anticipates that a similar trend may continue through 2045. To be consistent with the land use and development-based analysis prepared for the Water Facilities Master plans, Western elected to utilize a uniform 2.2% growth rate for the Riverside and Murrieta service areas.

Western's Rainbow service area has remained relatively constant in terms of growth and water use and minimal future growth is expected, which is consistent with the SCAG projections for this service area. To forecast demands for the Rainbow service area, the SCAG growth rate was applied to existing demand. Based on this analysis, demands within the Rainbow service area are estimated to increase by 6 AFY in 2045, compared to 2020 actual demand.

To project potable demands for each system, a linear interpolation for each service area was applied using the various growth rates described above. To estimate future water, use for each customer category, the percentage of total 2020 use was applied to total future demand. The estimated water loss percent was then applied for each system to determine the total projected water use.

To project Riverside retail non-potable demands, a similar approach was used. A comparison of 2020 actual non-potable demands and the 2030 projected non-potable demands in the Water Facilities Master plan yields an annual average growth rate of approximately 3%. After 2030, Western anticipates that non-potable use will continue to grow but at a slower rate. Non-potable demands after 2030 are anticipated to grow at 2.2%, the same rate as the potable system. Estimated water losses within the non-potable system were assumed to be 23%, the average non-potable water loss from 2016 through 2020. Over the last five years, water losses within the non-potable system have ranged from 20 to 26%. Within the non-potable system, water is typically loss at the Jefferson Pump station. The Jefferson Pump station diverts water from the Riverside Canal, but due to operational constraints, some non-potable water flows to the River.

Table 10-3 summarizes the demand by service area while **Figure 10-6** and **Table 10-4** summarize the total projected Western Retail demand by customer class, in AFY.

Table 10-3. Projected Retail Water Demand by Service Area, AFY

SERVICE AREA	2025	2030	2035	2040	2045
Riverside	27,674	31,101	34,695	38,705	43,178
Riverside Potable	22,119	24,675	27,527	30,709	34,258
Riverside Non-Potable*	5,555	6,426	7,168	7,997	8,921
Murrieta	2,452	2,735	3,051	3,404	3,715
Rainbow	41	44	46	46	47
WESTERN RETAIL TOTAL	**30,167**	**33,879**	**37,792**	**42,155**	**46,940**

*Non-potable demands include demand met by recycled water. Western cannot distinguish between recycled water and non-potable deliveries as its system is combined.

Figure 10-6. Projected Retail Water Use by Customer Type, AFY

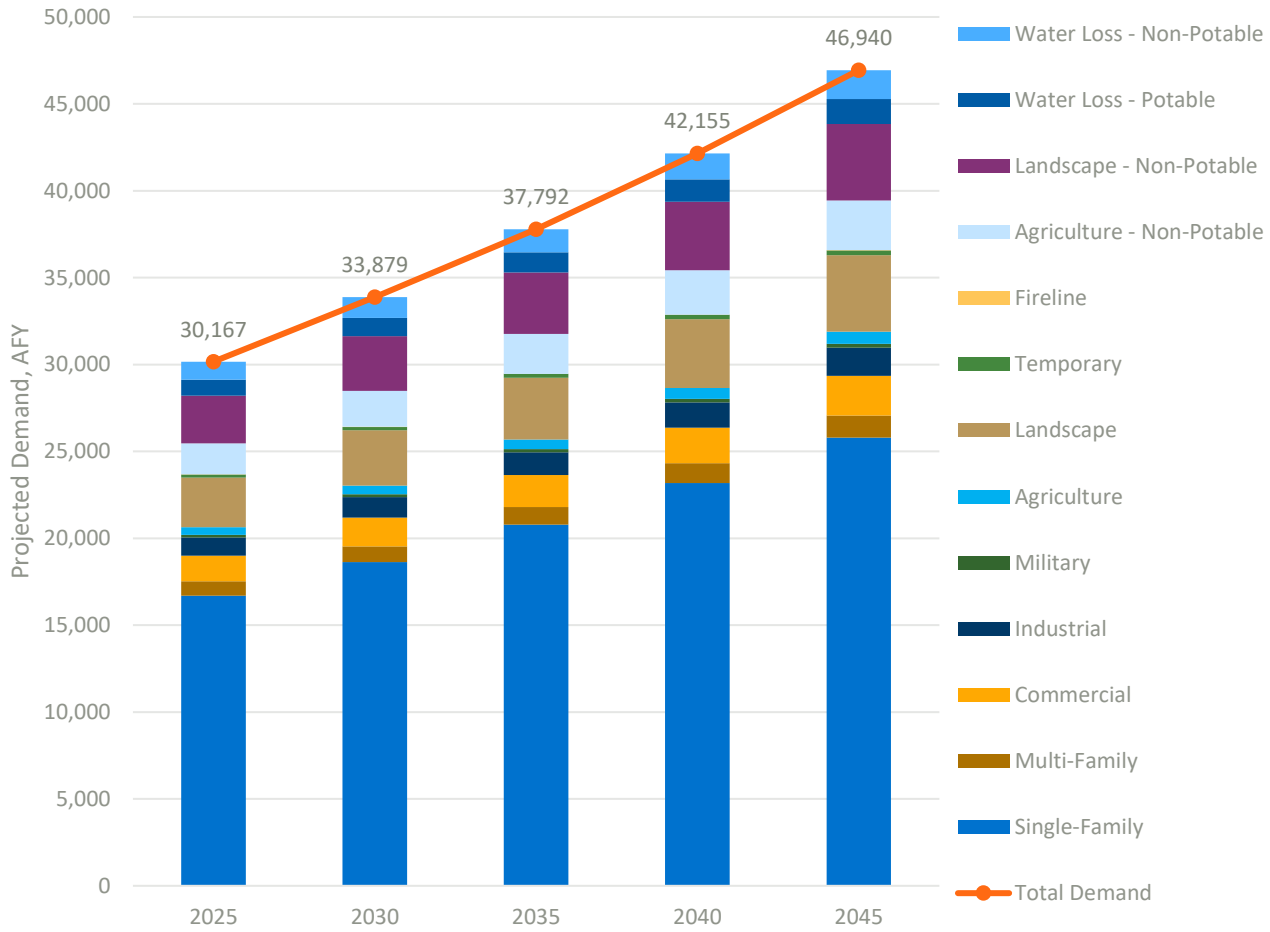


Table 10-4. Total Projected Demands for Water, AFY

PROJECTED WATER USE	2025	2030	2035	2040	2045
POTABLE					
Agriculture	443	494	551	615	685
Commercial	1,481	1,652	1,843	2,056	2,288
Single-Family	16,703	18,632	20,783	23,182	25,803
Landscape	2,859	3,189	3,557	3,968	4,417
Industrial	1,049	1,170	1,305	1,456	1,620
Military	148	165	184	205	228
Multi-Family	815	909	1,015	1,132	1,260
Temporary	177	198	220	246	274
Fireline	6	7	8	9	10
Losses - Potable	930	1,037	1,157	1,289	1,435
TOTAL POTABLE	**24,612**	**27,454**	**30,624**	**34,158**	**38,019**
NON-POTABLE*					
Agriculture – Non-potable	1,779	2,058	2,296	2,561	2,857
Landscape – Non-potable	2,737	3,166	3,532	3,940	4,396
Losses – Non-potable	1,039	1,202	1,340	1,495	1,668
TOTAL NON-POTABLE	**5,555**	**6,426**	**7,168**	**7,997**	**8,921**
TOTAL DEMAND	**30,167**	**33,879**	**37,792**	**42,155**	**46,940**

*Non-potable demands include demand met by recycled water. Western cannot distinguish between recycled water and non-potable deliveries as its system is combined.

Although Western's non-potable system includes recycled water, for the purposes of demand projection and future recycled water reporting, the estimated percentage of total non-potable demands met by recycled water was determined based on the 2020 supply ratio between recycled water and non-potable sources. In 2020, WWRF produced approximately 36% of the total non-potable supply that was used. As a result, it was assumed that 36% of non-potable demands were met by recycled water. To forecast future demands, it was assumed that recycled water supply from the WWRF would be used prior to local or imported non-potable water. Future non-potable demands are summarized in **Table 10-5** below.

Table 10-5. Non-Potable Demand, AFY

	2025	2030	2035	2040	2045
NON-POTABLE					
Agriculture	809	759	555	545	841
Landscape	1,767	1,867	1,792	1,924	2,380
NON-POTABLE DEMAND	**2,576**	**2,626**	**2,347**	**2,469**	**3,221**
RECYCLED WATER					
Agriculture	970	1,299	1,740	2,016	2,016
Landscape	970	1,299	1,740	2,016	2,016
RECYCLED WATER DEMAND	**1,940**	**2,598**	**3,481**	**4,032**	**4,032**
Losses - Non-Potable	1,039	1,202	1,340	1,495	1,668
TOTAL NON-POTABLE SYSTEM DEMAND	**5,555**	**6,426**	**7,168**	**7,997**	**8,921**

Estimating Future Water Savings

In 2018, the legislature enacted SB 606 and AB 1668, which provide for implementation of a water budget-based approach to establishing new urban water use objectives for water suppliers. The series of water use efficiency standards that will inform calculation of Western's new water use objective are still under development and will take effect in 2023. Once the new standards have been established, Western will reevaluate customer demands and identify approaches to comply with the new standard, which will be incorporated into the next UWMP prepared in 2025. Western is committed to promoting water use efficiency and will continue to implement a comprehensive set of programs intended to reduce customer demands and support sustainable use of regional water supplies.

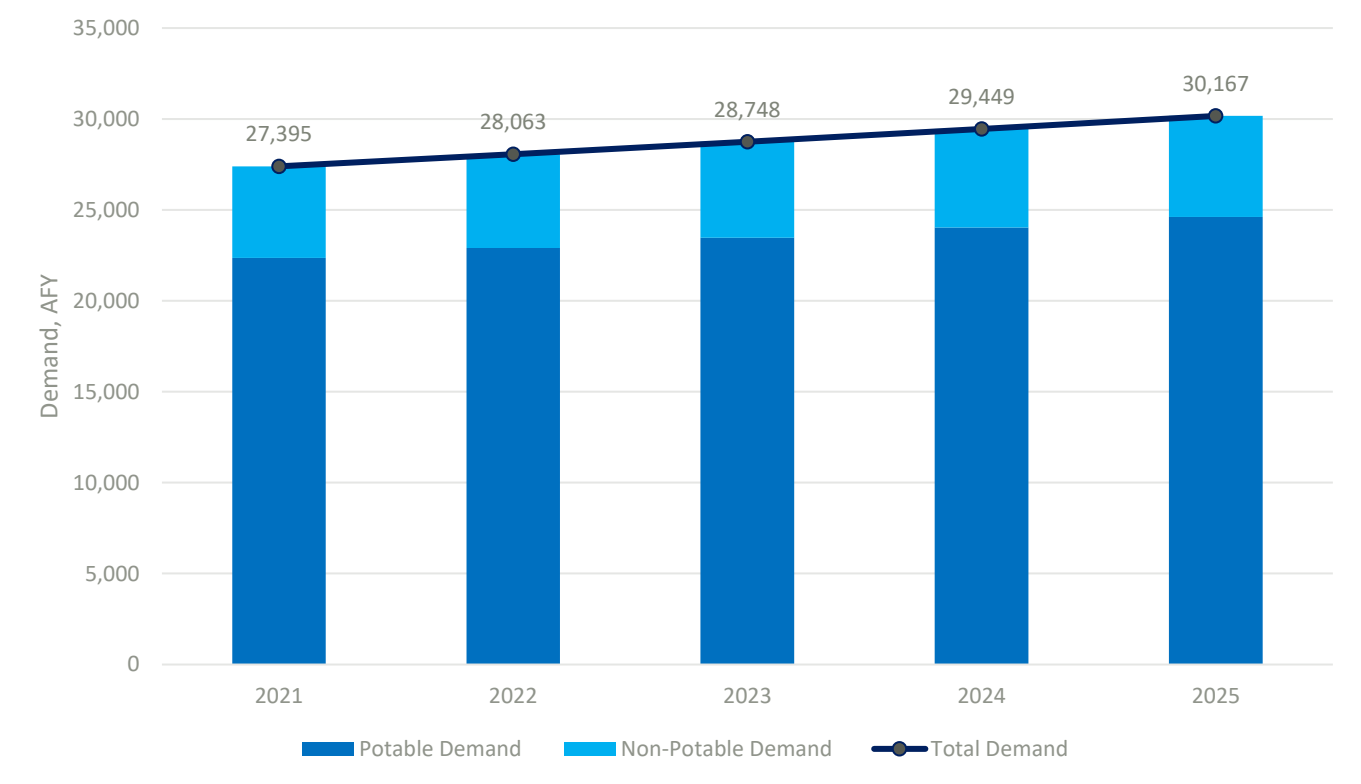
10.2.5 Characteristic Five-Year Water Use

In addition to past and projected uses, the UWMP more closely analyzes anticipated conditions for the next five years (2021 – 2025). Demands for the next five years are provided in **Table 10-6** and **Figure 10-7**. The demand projections established in this chapter assume typical, unconstrained demand, free from other influential factors like conservation savings. Based on the projections established above, Western anticipates that retail demands may increase by approximately 12% from actual 2020 use to projected use in 2025. Projected use in 2025 was determined using growth rates developed as part of master planning efforts. Details on an analysis for the next five years is discussed in **Chapter 13**.

Table 10-6. Projected Retail System Demand for the Next Five Years (2021-2025), AFY

	2021	2022	2023	2024	2025
Potable	22,364	22,906	23,461	24,030	24,612
Non-Potable	5,032	5,158	5,287	5,419	5,555
TOTAL DEMAND	**27,395**	**28,063**	**28,748**	**29,449**	**30,167**

Figure 10-7. Projected Retail Demand for the Next Five Years (2021-2025), AFY



10.3 Water Use for Lower Income Households

California Water Code 10631.1 requires that water use projections of an UWMP include the projected water use for low-income households as identified in the housing element of any city, county, or city and county in the service area of the supplier. Western retail areas fall within the city of Riverside, unincorporated Riverside County, and the city of Murrieta. Mapping showed that none of the low-income areas of the city of Riverside falls within Western's retail service areas.

The County of Riverside's 2014 Housing Element of its General Plan estimates that approximately 37.9 percent of all households in the western portion of Riverside County are "very low" or "low" income. The city of Murrieta's 2013 Housing Element of its General Plan estimates that 25 percent of all households in the city are "extremely low", "very low", or "low-income".

The GIS analysis completed as preparation for Western's 2015 UWMP showed that the portion of low-income households within Western's retail service areas are lower than county- or city-wide (RMC for Western Municipal Water District, June 2016). There are no low-income communities identified in the Rainbow Service Area, and small populations in both the Murrieta and Riverside Service Areas. The GIS analysis found that only 18 percent of the Riverside Service Area, and only 12 percent of the Murrieta Service Area qualifies as DAC using 2010-2014 American Community Survey (ACS) data.

The low-income household demands were calculated using Western's projections for single-family and multi-family water use and the percentage of the total retail service area that met the criteria for DACs based on the 2010-2015 ACS data, as shown in **Table 10-7**.

Table 10-7. Low Income Demands, AFY

	2025	2030	2035	2040	2045
Low Income Demand, AFY	3,068	3,091	3,117	3,145	3,170

10.4 SBX7-7 Baseline and Targets

Senate Bill x 7-7 (SB7) was incorporated into the Urban Water Management Planning Act (UWMP Act) in 2009 and requires that all water suppliers increase water use efficiency with the overall goal to decrease per-capita water consumption within the state by 20 percent by the year 2020. SB7 required the California Department of Water Resources (DWR) to develop certain criteria, methods, and standard reporting forms through a public process that could be used by water suppliers to establish their baseline water use and determine their water conservation targets. SB7 and the Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (SB7 Guidebook) (California Department of Water Resources, February 2016) specify methodologies for determining the baseline water demand, 2015 interim urban water use target and the 2020 urban water use target for Western. Western utilized a 10-year baseline period from 1995 to 2004 and a five-year baseline period from 2003 to 2007 to determine the 2020 water use target. Western's baseline and 2020 target was calculated in the 2015 UWMP and has not changed for this plan. More details on the development of the baselines and target can be found in the 2015 UWMP and **Appendix N**. Western's final 2020 target water use was calculated as 352 GPCD.

Table 10-8. SBX7-7 Baseline and Targets Summary

BASELINE PERIOD	START YEAR	END YEAR	AVERAGE BASELINE GPCD*	CONFIRMED 2020 TARGET *
10-15 Year	1995	2004	430	352
5 Year	2003	2007	370	352

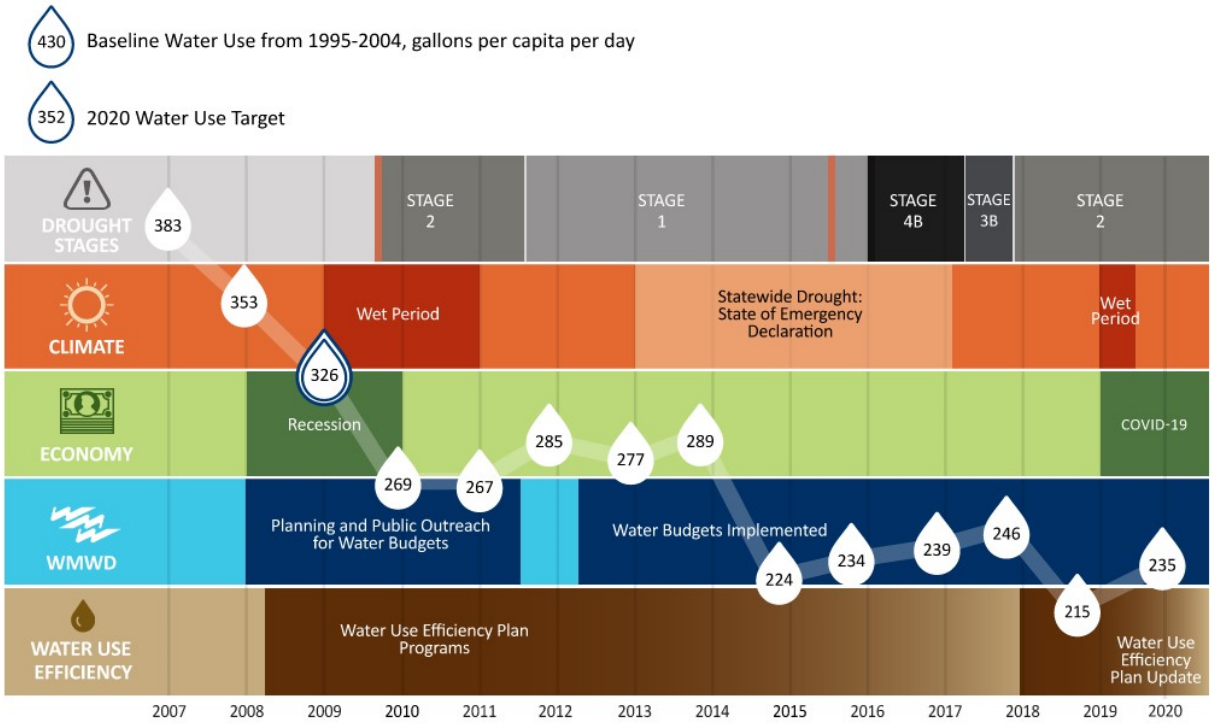
*All values are in Gallons per Capita per Day (GPCD)

10.4.1 2020 Compliance Daily Per-Capita Water Use (GPCD)

The calculated gpcd for 2020 is 235 gpcd, which meets Western's target of 352 gpcd by 2020. This is based on 2020 total potable and non-potable retail water use of 24,986 AFY and a 2020 population estimate of 94,898 based on DWR's Population Tool.

By 2009, Western Retail had met its target to reduce per capita water consumption by 20% by 2020 and went on to achieve a reduction of more than 45% by 2020.

Activities that have affected retail water usage in Western Municipal Water District.



11 Retail Water Service Reliability and Drought Risk Assessment

WESTERN MUNICIPAL WATER DISTRICT

This chapter describes the reliability of Western's retail water supplies, which reflects Western's ability to meet the water needs of its retail customers with water supplies under varying conditions. The essential findings are that Western can reliably meet its retail demands with existing and future supply sources based on demand and supply projections.

Similar to **Chapter 6**, which focused on Western wholesale, this chapter describes the expected Western retail water supply reliability for normal, single dry year, and multiple-dry years through 2045 followed by a drought risk assessment for 2021 to 2025.

Western's work to expand and further diversify its retail supply portfolio is an important step toward improving the reliability of retail supplies. Western has also prepared a comprehensive Water Shortage Contingency Plan to provide reliability in the event of a water shortage, presented in **Appendix A**.

IN THIS SECTION

- Supply Constraints
- Water Service Reliability Assessment
- Drought Risk Assessment

11.1 Constraints on Water Sources

As described in **Chapter 10**, Western has various water supply sources available (groundwater, imported water, and recycled water) to meet retail demands during normal, single-dry, and multiple-dry years. These supply sources may be impacted by climatic and hydrologic conditions, water quality, and legal restrictions, as well as potential for interruption of supply driven by catastrophic events.

11.1.1 Imported Water Supply Reliability

Western retail obtains imported water supplies from Western wholesale. Imported water supply constraints are discussed in **Chapter 6,** Wholesale Water Service Reliability and Drought Risk Assessment.

11.1.2 Groundwater Supply Reliability

Western retail obtains groundwater supplies from several local groundwater basins. Each of the groundwater sources are adjudicated and closely managed by Watermasters and/or Groundwater Sustainability Agencies. Western plays a key role in the management of the groundwater basins it relies on to meet retail demands and participates in ongoing water conservation measures and regional recharge projects to enhance and protect the reliability of local groundwater.

Potential constraints to groundwater supply reliability include:

Drought

The effects of a local drought are not immediately recognized since the local groundwater basins have substantial storage capacity to support continued use during dry periods. However, groundwater supply availability does become threatened when long term recharge and inflow decreases.

Overdraft

Under extended supply pressures, groundwater basins can enter overdraft conditions, which can have a series of consequences including subsidence. Overdraft can also exacerbate or create water quality issues by reducing the assimilative capacity of the basin or requiring wells to tap into lower quality water that may be present in other parts of the basin.

Climate Change

Climate change could increase the potential for overdraft by increasing demand, reducing other sources of supply, and reducing natural recharge and inflows from surface water and precipitation.

Regional Growth

Population growth could increase demands on groundwater supplies, potentially creating risk of overdraft. Regional growth could also increase the amount of contaminants entering groundwater basins, either as a result of increased urban runoff or industrial or other activities. Growth can also impact recharge areas by expanding impervious surfaces into areas that would otherwise represent entry points for surface water recharging local aquifers.

Water Quality

Some water quality issues are naturally occurring, while others are a result of human actions. Decreased quality of groundwater poses threats to supplies that can be mitigated but require additional costs to treat. Based on current conditions, water quality is not expected to affect Western retail's supply reliability.

Due to the availability of groundwater storage and the sustainable management of local groundwater sources, Western's groundwater supplies are generally considered reliable, even in the face of the constraints identified here.

11.1.3 Recycled Water Supply Reliability

Western's recycled water supply is not expected to be affected by climatic factors because source wastewater flows coming from indoor use are generally not impacted by temperature and precipitation. Recycled water supplies will increase with growth; however, reduced urban water use standards currently under development could result in reduced recycled water supplies.

11.2 Water Service Reliability Assessment

This section presents Western's expected retail water supply reliability for a normal year, single dry year, and five consecutive dry years, including projections for 2025, 2030, 2035, 2040, and 2045.

11.2.1 Year Type Characterization

The water service reliability and Drought Risk Assessment analyze supply over several water years: normal, single dry, and multiple dry years. Local groundwater and recycled water supplies are not expected to change under the various year types, so Western has elected to use the same years identified by Metropolitan for normal, single-dry, and multiple-dry years for both imported and local supplies in this retail supply reliability analysis. DWR defines these years as:

Normal Year

This represents the water supplies a supplier considers available during normal conditions. This could be a single year or averaged range of years that most closely represents the average water supply available. Metropolitan uses an average from 1922 to 2017 to establish normal year supply availability.

Single Dry Year

The single dry year is recommended to be the year that represents the lowest water supply available. Metropolitan has identified 1977 as the single driest year.

Five-consecutive Dry Year

This represents the driest five-year historical sequence for the Supplier, which may be the lowest average water supply available for five years in a row. Metropolitan has identified 1988 through 1992 as the greatest 5-year drought period.

Due to Western's aggressive and highly successful conservation program, demands are assumed to be nominal in single and multiple dry years. As discussed in **Chapter 10**, Western retail can purchase additional imported water from Western wholesale if needed.

Table 11-1. DWR 7-1R Basis of Water Year Data (Reliability Assessment)

		AVAILABLE SUPPLY IF YEAR TYPE REPEATS
YEAR TYPE	BASE[1] YEAR	PERCENT OF AVERAGE SUPPLY
Average Year	1922-2017	
Single-Dry Year	1977	100%
Consecutive Dry Years 1st Year	1988	100%
Consecutive Dry Years 2nd Year	1989	100%
Consecutive Dry Years 3rd Year	1990	100%
Consecutive Dry Years 4th Year	1991	100%
Consecutive Dry Years 5th Year	1992	100%

[1]Applies to both imported and local supplies

11.2.2 Water Service Reliability

Normal supply and demand projections were developed in **Chapter 9** and **Chapter 10** and form the basis of this reliability analysis.

As described in this UWMP, Western prioritizes the use of local supply sources and uses imported water to meet the remaining retail water demands that are not met by local supplies. Retail potable demands exceed local supplies so imported water is used to meet the balance of retail demands. Western retail also does not currently use water from the Chino Desalter, as that water is currently leased to Jurupa Community Services District and is therefore shown as retail surplus within this chapter. It is anticipated that Western retail's shares of the Chino Desalter will continue to be leased to Jurupa Community Services District over the planning period.

For the retail non-potable system, Western's local non-potable supplies are projected to exceed the projected non-potable demand in 2030 through 2040. In 2025 and 2045, non-potable demands are projected to exceed local non-potable supplies so imported water will be used the meet the difference. Western retail may theoretically obtain water from WRCWRA; however, no existing infrastructure exists to convey recycled water from WRCWRA to retail service areas and WRCWRA supply is included in the surplus non-potable supply amounts. In the future, Western anticipates leasing WRCWRA recycled water to other interested agencies.

Local groundwater and recycled water supplies are not expected to be reduced in dry years. As discussed in **Chapter 4**, Metropolitan's 2020 UWMP projects the ability to meet projected imported water demands under normal, single dry year, and multiple dry year conditions and Western wholesale projects a surplus of imported water supplies that are available to Western retail if needed. **Table 11-2**, **Table 11-3** and **Table 11-4** demonstrate that Western anticipates adequate supplies for years 2025 to 2045 to meet retail demand under normal, single dry and multiple-dry year conditions.

Water Service Reliability – Normal Year

Table 11-2. Retail Normal Year Supply and Demand Comparison, AFY

	2025	2030	2035	2040	2045
POTABLE					
Supply	27,073	30,199	33,686	37,574	41,821
Demand	24,612	27,454	30,624	34,158	38,019
DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
NON-POTABLE					
Supply	7,031	8,066	8,964	9,966	11,079
Demand	5,555	6,426	7,168	7,997	8,921
DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**

Water Service Reliability – Single Dry Year

Table 11-3. Retail Single Dry Year Supply and Demand Comparison, AFY

	2025	2030	2035	2040	2045
POTABLE					
Supply	27,073	30,199	33,686	37,574	41,821
Demand	24,612	27,454	30,624	34,158	38,019
DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
NON-POTABLE					
Supply	7,031	8,066	8,964	9,966	11,079
Demand	5,555	6,426	7,168	7,997	8,921
DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**

Water Service Reliability – Five Consecutive Dry Year

Table 11-4. Retail Multiple Dry Year Supply and Demand Comparison, AFY

		2025	2030	2035	2040	2045
FIRST YEAR	**POTABLE**					
	Supply	27,073	30,199	33,686	37,574	41,821
	Demand	24,612	27,454	30,624	34,158	38,019
	DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
	NON-POTABLE					
	Supply	7,031	8,066	8,964	9,966	11,079
	Demand	5,555	6,426	7,168	7,997	8,921
	DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**
SECOND YEAR	**POTABLE**					
	Supply	27,073	30,199	33,686	37,574	41,821
	Demand	24,612	27,454	30,624	34,158	38,019
	DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
	NON-POTABLE					
	Supply	7,031	8,066	8,964	9,966	11,079
	Demand	5,555	6,426	7,168	7,997	8,921
	DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**
THIRD YEAR	**POTABLE**					
	Supply	27,073	30,199	33,686	37,574	41,821
	Demand	24,612	27,454	30,624	34,158	38,019
	DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
	NON-POTABLE					
	Supply	7,031	8,066	8,964	9,966	11,079
	Demand	5,555	6,426	7,168	7,997	8,921
	DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**

*Table continues on the next page.

		2025	2030	2035	2040	2045
FOURTH YEAR	**POTABLE**					
	Supply	27,073	30,199	33,686	37,574	41,821
	Demand	24,612	27,454	30,624	34,158	38,019
	DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
	NON-POTABLE					
	Supply	7,031	8,066	8,964	9,966	11,079
	Demand	5,555	6,426	7,168	7,997	8,921
	DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**
FIFTH YEAR	**POTABLE**					
	Supply	27,073	30,199	33,686	37,574	41,821
	Demand	24,612	27,454	30,624	34,158	38,019
	DIFFERENCE	**2,461**	**2,745**	**3,062**	**3,416**	**3,802**
	NON-POTABLE					
	Supply	7,031	8,066	8,964	9,966	11,079
	Demand	5,555	6,426	7,168	7,997	8,921
	DIFFERENCE	**1,476**	**1,640**	**1,796**	**1,969**	**2,158**

11.2.3 Description of Management Tools and Options

Western has made significant investments in local supply sources to reduce reliance on imported water, improve reliability and reduce costs associated with imported water. Western will remain committed to increasing retail water reliability through investments in local supplies and implementation of a comprehensive conservation program.

11.3 Drought Risk Assessment

The retail Drought Risk Assessment (DRA) focuses on a drought scenario that could potentially occur within the next five years (2021-2025).

11.3.1 Data, Methods, and Basis for Water Shortage Condition

The data, methods, and basis for a water shortage condition were identified using typical normal year supply and demand, as developed in **Chapter 9** and **Chapter 10**. To estimate demands for 2021 through 2025, a straight-line interpolation was applied from the 2020 demand to the 2025 projected demand. The demands for the DRA's five-consecutive dry years were based on the normal demand and assume that demands will not increase in dry years due to Western's aggressive and highly successful conservation program.

The DRA provides a snapshot of the anticipated surplus or deficit if a drought were to occur in the next five years.

11.3.2 DRA Water Source Reliability

As mentioned in this chapter, local resources are not expected to reduce in dry years and will continue to meet the majority of Western's retail demand. Imported water will be used to meet the balance of demands. As described in **Chapter 6**, Metropolitan anticipates a potential shortage in 2021 and 2023 and will implement response actions, including drawing water from storage, to meet anticipated demands. With a potential surplus estimated for years 2022, 2024, and 2025, no water service reliability concern is anticipated, and no shortfall mitigation measures are expected to be exercised by Metropolitan. Based on the results of Metropolitan's DRA, this DRA assumes that Western retail will be able to purchase sufficient supplies to meet retail demands in excess of local supplies. Western does not anticipate the need to implement shortage response actions in its retail WSCP in the next five years, unless Metropolitan implements a WSAP, which is not expected based on Metropolitan's DRA analysis.

Table 11-5. Retail DRA Results, AFY

	2021	2022	2023	2024	2025
POTABLE					
Gross Water Use	22,361	22,904	23,460	24,029	24,612
Total Supply	26,193	26,299	26,406	26,513	27,121
DIFFERENCE	**3,832**	**3,395**	**2,946**	**2,484**	**2,509**
NON-POTABLE					
Gross Water Use	5,033	5,158	5,287	5,420	5,555
Total Supply	7,253	7,378	7,507	7,640	7,775
DIFFERENCE	**2,220**	**2,220**	**2,220**	**2,220**	**2,220**

12 WESTERN MUNICIPAL WATER DISTRICT Retail Demand Management Measures

This chapter describes Western's implementation of retail demand management measures (DMMs) intended to promote water-use efficiency and partner with local communities to support sustainable use of regional water supplies.

Western has actively implemented a conservation program since 2009 and is a regional leader for advancing water efficiency. Western actively collaborates with local and regional agencies and the communities it serves to implement innovative programs and drive change. Western staff also serves in a leadership role for the California Water Efficiency Partnership (CalWEP) whose mission is to maximize urban water efficiency and conservation throughout California by supporting and integrating innovative technologies and practices; encouraging effective public policies; advancing research, training, and public education; and building collaborative approaches and partnerships. Western leverages these partnerships, tools, and resources within its service area.

In order to meet the future demand for water in Western's service area, implementation of new supply projects must be coupled with an expectation of greater water use efficiency by all retail customers. Water use efficiency has become a core business component in Western's customer partnership, with the understanding that water efficiency enables continued economic development and maintenance of the local living environment.

IN THIS SECTION

- Water Waste Prevention Ordinance
- Public Education and Outreach
- Rebates
- Implementation over the Last Five Years

In response to growing concerns regarding the reliability of imported water supplies and the need for increased water-use efficiency, Western first developed and implemented a Water Use Efficiency Master Plan (WUEMP) in 2008 and revised it in 2018. The 2018 WUEMP is included in **Appendix O**. The plan outlines potential programs, partnerships, and messaging research to raise customer awareness about water-use efficiency. It assists customers within Western's retail service area in becoming water efficient and embeds water-use efficiency into Western's policies and customer behavior.

The majority of Western's urban water use is for landscape and outdoor irrigation; therefore, Western has focused its water conservation activities on this sector for the largest and most cost-effective savings.

Western implements a comprehensive set of retail DMMs intended to reduce customer demands and help Western maintain supply reliability. The DMMs also help Western achieve its water use efficiency targets. Details on Western's retail DMMs are provided in the following sections. DMMs implemented for Western's wholesale system is described in **Chapter 7**.

2020 Landscape Contest Winner



12.1 Water Waste Prevention Ordinances

In February 2015, Western's Board of Director's adopted Ordinance No. 384, which updated the Water Supply Shortage Contingency Program. The update established permanent water use prohibitions to be in effect at all times under Stage 1 – Water Supply Watch, unless otherwise declared by the Board. Under a Stage 1 condition, customers are encouraged to use water efficiently and all uses of water must be reasonable and beneficial. It also prohibits waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water. These prohibitions remain in effect under all levels of water shortage contingency declaration in addition to the specific requirements of each level. Each level of the Water Supply Shortage Contingency Program increases in stringency, providing for increasing water conservation during time of water supply shortage. Western's Water Shortage Contingency Plan includes a detailed description of all water waste prohibitions established in Ordinance No. 384. The WSCP is attached as **Appendix A** and summarized in **Chapter 13**.

12.1.1 Metering

All of Western's connections are metered and billed monthly with a water budget rate structure. Western adopted a water budget rate structure in 2011. Water budgets are designed for each customer and include an indoor daily gallons per capita component, as well as an outdoor volume based on landscaped area and parameters established in the State Landscape Model Ordinance.

Western also has a meter testing and replacement policy consisting of the following three parts:

Western uses the customer billing system to track all installed meters by size, type, date installed, customer account type, and warranty information.

Western has a yearly testing program of all meters for the wholesale division and all large meters over 3-inch. These meters are tested annually, and all necessary repairs are performed to maintain AWWA accuracy, based on meter calibration results.

Western periodically samples its residential meter stock to ensure accuracy. As a result of the most recent sampling, it was determined that meters over 15 years old should be replaced. Starting in 2020, Western replaced over half of its residential meters with AMI enabled meters and will have replaced nearly all residential meters by the end of 2021. Western has also implemented a project to install a Meter Data Management System to aid in meter data analysis and a customer portal to help customers track their use.

12.1.2 Conservation Pricing

Western charges water budget rates for all its connections. When customers regularly remain under their water budget, they are billed at the lowest rates available. Customers who use water in excess of their water budgets are billed at higher rate tiers. Western works closely with customers who exceed their water budgets to reduce their water use and associated costs.

12.2 Public Education and Outreach

Western implements a comprehensive Public Education and Outreach program within its retail service area.

12.2.1 Public Outreach

Western's Strategic Communications department provides informational materials to customers through its website, media events, landscape conservation campaigns, and other educational programs. Western also communicates with its customers through newspaper articles, paid advertising, bill inserts, its website (**http://www.wmwd.com/**) and public service announcements. Conservation messages are also included on customer water bills.

As part of the Water-Use Efficiency Master Plan, Western has developed several high-quality outreach pieces to help customers. The first is the SoCal Yard Transformation book, a comprehensive guide to everything you need to know to replace your lawn with drought-tolerant plants. As a companion piece, Western developed the Landscape Style Guide, a coffee table book of designs to help customers choose the style of their yard. Western also developed a Customer Welcome Packet that goes out to all new or move-in customers. The packet welcomes customers to Western and provides everything they need to know about their rates, bills, and water sources.

12.2.2 School Education Programs

Western implements school education programs for its retail area in conjunction with its wholesale area programs, as described in **Chapter 7**. Programs include presentations, field trips and assemblies for grades K-12. Any materials distributed comply with state standards. The materials distributed to students in grades K-6 include a water cycle bracelet, an earth ball, water story rock, and assembly-related material. Students in grades 7-12 receive scout badges, sponsorships, and assembly program-related material. Within Western's retail service are 14 public schools which are eligible to participate in the education programs offered. Western partners with the Discovery Science Center (**http://www.discoverycube.org/**) for its Water Education Assembly Programs for fourth and fifth graders. Western also funds water-related class field trips (virtual and in person) to the Chino Wetlands and the Santa Ana River.

12.3 Programs to Assess and Manage Distribution System Real Losses

Western repairs all reported leaks and breaks to the extent cost effective. In FY 2010, Western started calibrating all large commercial customers with meters 3" and above. In FY 2014, Western started a formal system audit, leak detection and repair program within its retail service area.

Western has completed annual water loss audits since 2015, in accordance with the AWWA guidelines. A copy of past water audits is provided in **Appendix P**.

Western's Finance department carefully tracks water losses each year. This data is used in the annual water loss audits and is also used to determine whether additional water loss interventions are warranted and whether a component analysis is needed.

12.4 Water Conservation Program Coordinating and Staffing

Western has maintained a full-time water conservation coordinator position since 1990. The water conservation coordinator implements retail area programs.

12.5 Other Demand Management Measures – Rebate Programs

Western offers various programs to its residential customers to help them reduce and manage their water use. Western offers rebates to its residential customers through Metropolitan's SoCal WaterSmart program. Additional information on the residential rebates provided by the SoCal WaterSmart Program can be found at **https://socalwatersmart.com/en/residential/** or through Western's website at **https://www.wmwd.com/411/Rebates**. Western also publishes an Annual Rebate Report for each fiscal year that summarizes the number of rebates and cost to implement as well as the expected annual and lifetime savings resulting from each rebate.

Landscape Evaluations (Norris Evaluations)

Shortly following the adoption of the District's WUEMP in 2008, Western began offering retail water customers a free landscape evaluation through a contract with Tim Norris Consulting. Mr. Norris, who holds a degree in irrigation science from Cal Poly Pomona, is highly knowledgeable in the science of proper irrigation system design and very adept at the art of communicating with customers at a level that is easily understood.

The evaluation program has become the foundation of Western's programmatic offering and serves to funnel water users to the other opportunities for increased water use efficiency, such as turf replacement or the regional rebate programs administered by Metropolitan.

The evaluation program has become an extension of both the customer service and the efficiency teams. Customers concerned with a high-water bill or simply seeking to ensure they remain within their water budget can request a free evaluation by contacting Customer Service. Staff provide customer contact information and historic water use data to Norris Consulting. The contractor then schedules an appointment at a time when the customer can be present at their home. During the scheduled appointment, the contractor reviews the irrigation system looking for errors in irrigation scheduling and watering issues. The most common issues observed and reported to customers have been incorrect irrigation scheduling and irrigation problems such as a damaged sprinkler heads and broken irrigation lines. Recommendations provided in the written report for these issues include adjusting the irrigation schedule according to season or current weather conditions and performing

monthly system checks to minimize the time an issue remains uncorrected. The public relations value of this program is immeasurable.

Norris evaluations comprise of two components: Irrigated landscape area measurement and an irrigation and landscape audit. Under the irrigated landscape area measurement, the consultant, Norris, confirms meter number on meter lid and GPS meter location, uses a measure wheel to measure irrigated landscape, photographs the site and visually estimates percent of turf, trees, shrubs, and hardscape, obtains customer related information like persons per household (PPH) and slopes, and provides the customer a Water Budget adjustment form, if applicable.

The irrigation and landscape audit is a more detailed evaluation based on procedures published using the Irrigation Training and Research Center and the Irrigation Association. Norris confirms meter number on meter lid and GPS meter location, documents controller type, station, and schedule, and turns on valves from controllers, identify and document system issues: leaks, broken, misaligned, mismatched heads, pressure problems, spray deflection, sunken heads, plugged equipment, dry spots, wrong sized heads or emitters. In addition, Norris takes photos, identify microclimate, plant material, soil type, and slopes. Norris logs the irrigated areas, measures the square footage by vegetation type, estimates distribution uniformity, and measures pressure at head using a pitot tube. The end result is a generated seasonal irrigation schedule and a list of system issues.

For July 1, 2019 – December 31, 2019, 12 customers participated in a landscape evaluation, with an estimated cost to WMWD of $1,575 and estimated average acre-feet (AF) of water saved over a 5-year lifetime of 4 AF. Due to COVID-19, January 1, 2020 – June 30, 2020 had less participation in physical evaluations. Virtual audits were offered, but the water savings attributed to a virtual audit is unknown and has been excluded from this analysis. Participation numbers for January 1, 2020 – June 30, 2020 were not available at the time of this report.



Toilets (HET)

A premium high-efficiency toilet is a toilet that uses less water than what used to be considered a water-saving toilet. These toilets flush at a rate of 1.1 gallons per flush (gpf) or less. Eligible toilets must replace existing toilets using 1.6 gallons per flush or more. Premium high-efficiency toilets use almost 20% less water than the WaterSense standard and flush the same amount of waste just as, if not more effectively.

Water savings from high-efficiency toilets can save over $800 on a customer's water bill over the lifetime of the product. When combined with SoCal Water$mart rebates, premium high-efficiency toilet upgrades can pay for themselves. The qualifying premium high-efficiency models available for a rebate have been performance tested and certified through MaP testing, an independent testing program.

For FY 2019 – 2020, 4 high efficiency toilet rebates were paid, with an estimated cost of $360 and estimated average acre-feet (AF) of water saved over a 10-year lifetime of 5 AF. Two of the high efficiency toilet rebates were obtained by customers in the Murrieta Service Area.

High Efficiency Clothes Washer (HECW)

As a Metropolitan Water District of Southern California's Member Agency, customers in Western Municipal Water District (WMWD) service area can receive high-efficiency clothes washer rebate for their residential homes. Rebates are limited to a single rebate per installation address.

SoCal Water$mart manages the rebate program, and they state that a high-efficiency clothes washer uses 55% less water than standard clothes washers, reducing water use by over 11,000 gallons a year. Other benefits are that these washers last longer and are energy efficient.

For FY 2019 – 2020, 88 high efficiency clothes washer rebates were paid, with an estimated cost to Metropolitan of $7,480 and estimated average acre-feet (AF) of water saved over a 10-year lifetime of 73 AF. 18 of the high efficiency clothes washer rebates were obtained by customers in the Murrieta Service Area.

Weather Based Irrigation Controllers (WBIC)

Weather-based irrigation controllers (WBICs), also known as "smart sprinkler controllers," allow for more accurate, customized irrigation by automatically adjusting a customer's landscape irrigation schedule and water use in response to changing conditions. State-of-the-art WBIC technology allows customers to tailor their irrigation schedule to meet a landscape's specific design, soil conditions and plant types, while also responding to local changing weather conditions.

For FY 2019 – 2020, 117 weather-based controller rebates were paid, with an estimated cost to MWD of $11,062 and estimated average acre-feet (AF) of water saved over a 10-year lifetime of 77 AF. Twenty-six of the weather-based controller rebates were obtained by customers in the Murrieta Service Area.

Turf Replacement

Starting in 2009, Western Municipal Water District offered its retail customers an opportunity to participate in a Turf Replacement Program. The Turf Replacement Program was designed to help customers offset the costs associated with converting turfgrass to a climate appropriate landscape.

The program took part in three phases, where from 2009 to 2014, the rebate offered ranged from $0.40-$1.00/square foot (sqft), and from 2014 to 2015, the rebate offered was $2.00/sqft. The rebate amount available in 2019 was $3.00/sqft.

To have qualified for the program, customers needed to be the property owner and in good standing with Western for at least twelve (12) months. Landscape that qualified for the conversion needed to have living turfgrass lawn before the removal.

To receive their incentive payment, all sites needed to be inspected and approved prior to the landscape conversion and after the conversion was complete. The program also did not apply retroactively.

The program provided guidelines for what would count as a climate appropriate landscape. At a minimum, thirty-five percent (35%-50%) of the site must be landscaped and/or mulched with at least a two (2) inch layer of organic or inorganic mulch. The remaining portion must be covered with permeable materials.

Participants were also provided with a list of pre-approved climate appropriate plants. Participants were required to convert irrigation systems to drip, microspray, and/or bubblers.

In addition, the rebate could only be used for documented material costs, such as those expenses for the purchase of plant materials, mulch, and irrigation components which are documented with detailed store receipts. All other expenses such as design services, labor, transportation, etc. were ineligible.

The Turf Replacement Program currently is offered at $2/sqft from MET and an additional $1/sqft from Western for FY 2019 – 2020. 30 turf rebates were paid out, $46,559 from Western and $93,946 from MET for a total of $140,505. Approximately 46,973 square feet of turf was removed.

12.5.1 Past Rebate Programs

Large Landscape Program

The Large Landscape Program, a direct installation program, was designed to utilize a Western contractor for direct installation of smart controllers and high efficiency nozzles at residential sites with irrigated landscapes greater than 1 acre.

This component was designed to target Western's highest residential water use customers through use of GIS mapping to identify parcels. Program staff was to compare parcel size with usage information to pinpoint the sites with the highest potential for savings.

The contractor was responsible for marketing the program to targeted customers, auditing the irrigated landscape, and installing the product. A follow-up site visit by the contractor or Western was to be conducted. The purpose of the site visit was to verify the installation, therefore ensuring that water savings are maximized, and customer issues reduced.

Smart Yard

In 2010, Western began implementing Smart Yard™, a community water conservation program designed to achieve more sustainable water use throughout Western's retail customer base.

Western's overall goals of the program was to reduce the water consumption of the Smart Yard™ participants and overall save more than one billion gallons of water over a 10-year period. To accomplish this, Western partnered with HydroPoint Data Systems, Inc., provider of the WeatherTRAK® Smart Water Management solution, to manage the innovative water conservation program.

The program provided homeowners with a landscape water audit and installation of a customized WeatherTRAK smart controller. Research in 23 agency studies found that this controller was proven to conserve water. Western rebated 50 percent of product and installation costs, ranging from $599 to $1,139 per home, depending on the smart controller model required for the landscape. Participating homeowners had to pay the balance with zero-interest financing from Western, which placed a fixed fee starting at $9.99 on their monthly water bills for 5 years. Western's Smart Yard program was designed to save customers significantly more money in water costs than they pay in the monthly fee.

The primary targets were residential homeowners with between 0.25 and 0.99 acre lots, high water use accounts, both commercial and residential, within the direct retail service area.

12.5.2 Commercial, Industrial, and Institutional Programs

Western offers a variety of programs to its Commercial, Industrial, and Institutional customers to help manage and reduce their demands. Many of these programs overlap with residential programs or provide the same or similar services.

Commercial, industrial, and institutional rebate programs include:

- Premium high-efficiency toilets
- Ultra-low and zero water urinals
- Plumbing flow control valves
- Weather-based irrigation controllers (WBICs)
- Rotating nozzles for pop-up spray heads
- Large rotary nozzles
- In-stem flow regulators
- Soil moisture sensor systems
- Turf replacement



12.5.3 Regional Programs

In addition to the programs offered specifically to individual customers, Western supports several regional programs.

Master Gardeners of Riverside County

Master Gardener volunteers are trained by the University of California Cooperative Extension to provide the gardeners of Riverside County with research-based information to promote environmentally responsible and sustainable horticultural practices. The Master Gardeners hold free monthly workshops fall through spring at Western.

Green Plumbers

Green Plumbers is an innovative, national training and accreditation program that assists plumbers in understanding their role in the environment and public health. The organization's goal is to train and deploy a green army of thousands of plumbers to promote the benefits of water conservation and the reduction of GHG emissions. The focus is on changing consumer and plumbing behavior through the use of energy efficient and water saving technologies.

Qualified Water Efficient Landscaper Program - QWEL

The Qualified Water Efficient Landscaper Program (QWEL) trains landscapers in water-wise landscape practices. QWEL provides approximately 20 hours of education focused on water efficient principles including irrigation system and landscape design with proper plat selection for the region's climate. Details are available at **https://www.qwel.net/**.

12.5.4 Large Landscape Conservation Programs and Incentives

In the fall of 2011, Western adopted a budget-based water rate structure which includes a component for outdoor water use based on landscaped area and parameters established in the State Landscape Model Ordinance.

In 2009, Western, in partnership with the Riverside County Water Task Force, developed the Riverside County Landscape Water Use Efficiency Ordinance. As of January 2010, this ordinance had been adopted by the County of Riverside and the Cities of Corona, Canyon Lake, Lake Elsinore, Menifee, Moreno Valley, Murrieta, Perris, Riverside, and Temecula. This ordinance was updated in 2015 and Western will continue to encourage its adoption. The ordinance:

- Establishes a structure for planning, designing, installing, maintaining, and managing water-efficient landscapes in new construction and rehabilitated projects;
- Requires that landscapes not exceed a maximum water demand of fifty percent of its reference evapotranspiration (ETo) or any lower percentage as may be required by water purveyor policy or state legislation;
- Requires setting a Maximum Applied Water Allowance for new construction and existing landscapes, based on reference evapotranspiration.
- The water-efficient landscape requirements contained in this Ordinance shall be applicable to all rehabilitated landscapes associated with residential uses (including single family and multi-family units/projects) with a total landscape area equal to or greater than 2,500 square feet which require a discretionary permit and/or approval; all new landscapes associated with residential uses (including single family and multi-family projects) which require a discretionary permit and/or approval; and all new and rehabilitated landscapes associated with commercial or industrial uses which require a discretionary permit and/or approval.

Dedicated irrigation meters have had water budgets since October 2011 and have been charged using an allocation-based water pricing structure since implementation. Western continues to:

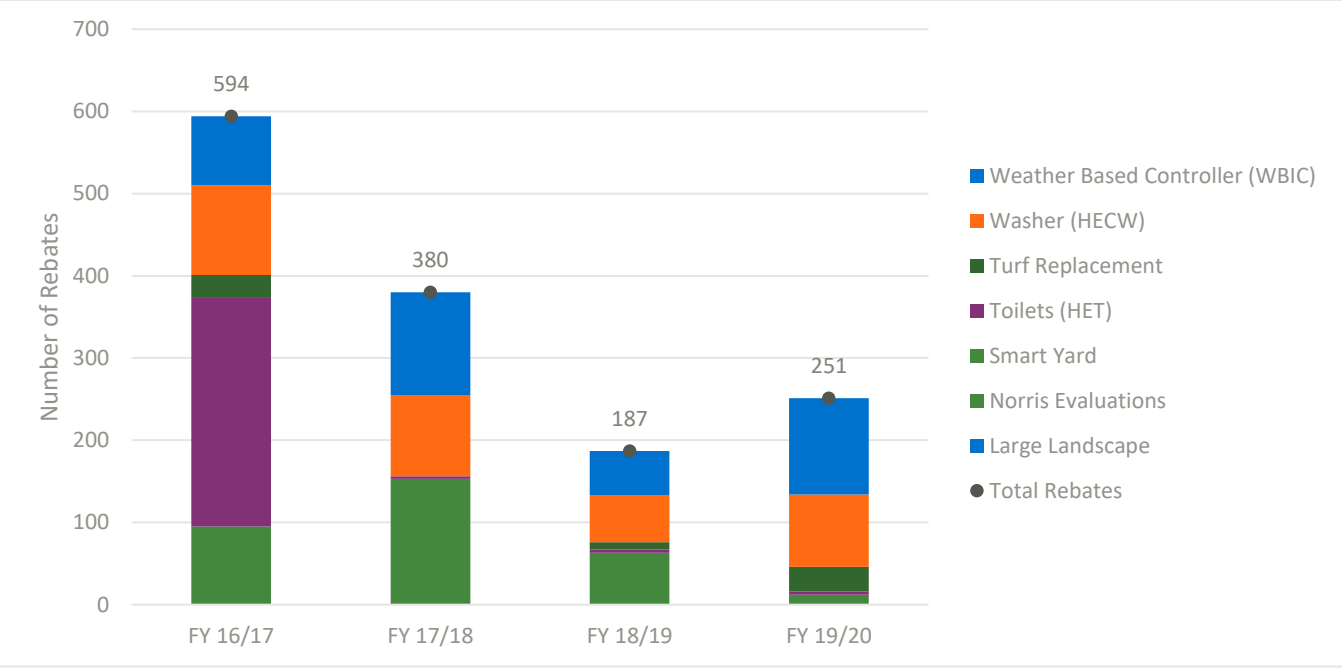
- Target non-dedicated irrigation meter accounts;
- Establish water budgets for those accounts with dedicated irrigation meters;
- Establish an allocation-based conservation water pricing structure.

12.6 Implementation over the Past Five Years

To date, there have been over 7,363 rebates paid to Western's retail customers and over $3.4 million invested in rebates.

In FY 2019/2020, Western achieved water savings of approximately 33 AFY from rebate programs. Western estimates that this equates to a lifetime savings of 249 AF, bringing the cumulative lifetime water savings total to 9,091 AF for all water efficiency rebate activities Western has implemented since 2009 (Western Municipal Water District, 2020). The number of rebate programs utilized in the past five years is summarized in **Figure 12-1**.

Figure 12-1. Past Rebate Information



12.7 Implementation to Achieve Water Use Targets

For decades, Western has valued and promoted conservation and will continue to do so. As a result, Western's customers continue to decrease their water use. Western will continue to pave the way for regional conservation and continue to implement existing conservation programs and explore additional programs to avoid substantial increases in demands.

12.8 Water Use Objectives (Future Requirements)

Western will continue to help its customers become water efficient and reduce their gallons per capita per day (gpcd) consumption. Western will evaluate additional measures if needed once future water use efficiency standards are established.

13 WESTERN MUNICIPAL WATER DISTRICT Retail Water Shortage Contingency Plan

The WSCP is a strategic plan that Western uses to prepare for and respond to foreseeable and unforeseeable water shortages. This chapter provides an overview of the portions of Western's Water Shortage Contingency Plan that are applicable to Western Retail. The standalone Water Shortage Contingency Plan is included in Appendix A.

The California Water Code Section 10632 requires that every urban water supplier that serves more than 3,000 acre-feet per year or has more than 3,000 connections to prepare and adopt a standalone Water Shortage Contingency Plan (WSCP) as part of its UWMP. Western Wholesale and Western Retail are subject to the WSCP requirements and a single WSCP has been developed to meet the requirements for both systems.

IN THIS SECTION

- WSCP Outline
- Retail WSCP Requirements Overview

This chapter provides an overview of the portions of the WSCP that are applicable to Western Retail. Chapter 10 provides an overview of the portions of the WSCP that are applicable to Western Wholesale. Western's WSCP is included as **Appendix A** and will be separately submitted to DWR by July 1, 2021. The WSCP is developed separately from Western's 2020 UWMP and can be amended, as needed, without amending the UWMP.

The WSCP is a strategic plan that Western uses to prepare for and respond to foreseeable and unforeseeable water shortages. A water shortage occurs when water supply available is insufficient to meet the normally expected customer water use at a given point in time. A shortage may occur due to a number of reasons, such as water supply quality changes, climate change, drought, regional power outage, and catastrophic events (e.g., earthquake). Additionally, the State may declare a statewide drought emergency and mandate that water suppliers reduce demands, as occurred in 2014. The WSCP serves as the operating manual that Western will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages.

The Western WSCP provides a process for an annual water supply and demand assessment for the retail system and structured steps designed to respond to actual conditions. This level of detailed planning and preparation provide accountability and predictability and will help Western maintain reliable supplies and reduce the impacts of any supply shortages and/or interruptions.

The WSCP must be updated based on new requirements every five years and will be adopted as a current update for submission to the California Department of Water Resources by July 1, 2021.

13.1 Water Shortage Contingency Plan Outline

Western's WSCP is organized into six sections:

Section 1 - Overview of the WCSP

Section 2 - Western Wholesale Water Shortage Contingency Plan

Section 3 - Western Retail Water Shortage Contingency Plan

Section 4 - Emergency Response, Seismic Risk Assessment and Mitigation

Section 5 - WSCP Refinement Procedures

Section 6 - Plan Adoption, Submittal and Availability

All sections are applicable to Western Retail except Section 2, which is applicable to Western Wholesale only.

13.2 Overview of the Retail Requirements of the WSCP

The Water Code establishes several prescriptive elements which must be included in a retail water supplier's WSCP. Each element and its location within the WSCP is described below.

Water Supply Reliability Analysis: Summarizes Western Retail's water supply reliability and identifies any key issues that may trigger a shortage condition. This requirement is addressed in Section 3 of the WSCP.

Annual Water Supply and Demand Assessment Procedures: Describes the key data inputs, evaluation criteria, and methodology for assessing the Western Retail system's reliability for the coming year and the steps to formally declare any water shortage levels and response actions. This requirement is addressed in Section 3 of the WSCP.

Shortage Stages: Establishes water shortage levels to clearly identify and prepare for shortages. This requirement is addressed in Section 3 of the WSCP.

Shortage Response Actions: Describes the response actions that may be implemented or considered for each stage to reduce gaps between supply and demand. This requirement is addressed in Section 3 of the WSCP.

Communication Protocols: Describes communication protocols under each stage to ensure customers, the public, and government agencies are informed of shortage conditions and requirements. This requirement is addressed in Section 3 of the WSCP.

Compliance and Enforcement: Defines compliance and enforcement actions available to administer demand reductions. This requirement is addressed in Section 3 of the WSCP.

Legal Authority: Lists the legal documents that grant Western the authority to declare a water shortage and implement and enforce response actions. This requirement is addressed in Section 3 of the WSCP.

Financial Consequences of WSCP Implementation: Describes the anticipated financial impact of implementing water shortage stages and identifies mitigation strategies to offset financial burdens. This requirement is addressed in Section 3 of the WSCP.

Monitoring and Reporting: Summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation. Results are used to determine if additional shortage response actions should be activated or if efforts are successful and response actions should be reduced. This requirement is addressed in Section 3 of the WSCP.

WSCP Refinement Procedures: Describes the factors that may trigger updates to the WSCP and outlines how to complete an update. This requirement is addressed in Section 5 of the WSCP.

Plan Adoption, Submittal, and Availability: Describes the process for the WSCP adoption, submittal, and availability after each revision. This requirement is addressed in Section 6 of the WSCP.

Part 4

Supporting Information

References

Albert A. Webb Associates for Western Municipal Water District. (June 2014). *Recycled Water Master Plan.* Riverside: Western Municipal Water District.

California Department of Water Resources. (n.d.). *California's Groundwater (Bulletin 118).* Retrieved from https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118

California Department of Water Resources. (February 2016). *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use.*

GEI Consultants. (April 2021). *Western Municipal Water District - Draft Climate Change Vulnerability Assessment.* Western Municipal Water District.

Hansen Allen & Luce, Inc. for Western Municipal Water District. (October 2018). *Water System Optimization Study, Phase I.* Western Municipal Water District.

Metropolitan Water District of Southern California. (2021). *2020 Urban Water Management Plan Draft.* Metropolitan Water District of Southern California.

RMC for Western Municipal Water District. (June 2016). *2015 Urban Water Management Plan.* Western Municipal Water District.

U.S Department of the Interior Bureau of Reclmanation. (August 2013). *Climate Change Analysis for the Santa Ana River Watersed Technical Memorandum No. 1.* U.S Department of the Interior Bureau of Reclmanation.

United States Census Bureau. (n.d.). *American Community Survey Narrative Profiles. Riverside County, California.* (U.S. Department of Commerce) Retrieved from United States Census Bureau: https://www.census.gov/acs/www/data/data-tables-and-tools/narrative-profiles/2019/report.php?geotype=county&state=06&county=065

University of California, Riverside School of Business. (2020). *Inland Empire Regional Intelligence Report Winter 2020/21.* Riverside.

Western Municipal Water District. (2020). *Annual Water Use Efficiency Rebate Program Report FY 2019/2020.* Western Municipal Water District.

Western Municipal Water District. (2020, November 3). *Civic Alerts*. Retrieved from Western Municipal Water District: https://www.wmwd.com/CivicAlerts.aspx?AID=322

A

Appendix A Water Shortage Contingency Plan

WESTERN MUNICIPAL WATER DISTRICT

Water Shortage Contingency Plan

JUNE 2021

WESTERN MUNICIPAL WATER DISTRICT



WSC

WESTERN MUNICIPAL WATER DISTRICT

Water Shortage Contingency Plan

JUNE 16, 2021

Prepared by Water Systems Consulting, Inc.

TABLE OF CONTENTS

Water Shortage Contingency Plan 1
1.1 Overview of the WSCP 2
1.2 Western Wholesale Water Shortage Contingency Plan 3
1.2.1 Background 3
1.2.2 Wholesale Water Supply Reliability Analysis 4
1.2.3 Wholesale Annual Water Supply and Demand Assessment 5
1.2.4 Wholesale Water Shortage Levels and Response Actions 8
1.2.5 Communication Protocols 11
1.2.6 Legal Authorities 11
1.2.7 Financial Consequences of WSCP 11
1.3 Western Retail Water Shortage Contingency Plan 12
1.3.1 Retail Water Supply Reliability Analysis 12
1.3.2 Retail Annual Water Supply and Demand Assessment 13
1.3.3 Retail Water Shortage Levels 15
1.3.4 Shortage Response Actions 17
1.3.5 Communication Protocols 20
1.3.6 Compliance and Enforcement 21
1.3.7 Legal Authorities 23
1.3.8 Financial Consequences of WSCP 23
1.3.9 Monitoring and Reporting 25
1.4 Emergency Response, Seismic Risk Assessment and Mitigation 26
1.4.1 Emergency Response Plan 26
1.4.2 Seismic Risk Assessment and Mitigation Plan 26
1.5 WSCP Refinement Procedures 27
1.6 Plan Adoption, Submittal, Availability 27
References 28
Attachment 1 - Western Drought Allocation Plan 29
Attachment 2 - Metropolitan Water Supply Allocation Plan 30
Attachment 3 - Western Ordinance 385 31
Attachment 4 - Western Ordinance 384 32
Attachment 5 - Adoption Resolution 3155 33

LIST OF FIGURES

Figure 1. Western's Shortage Stages in Relation to DWR's Six Standard Shortage Stages 16

LIST OF TABLES

Table 1. Wholesale Annual Assessment Timeline 6
Table 2. Wholesale Water Shortage Levels and Potential Response Actions 8
Table 3. Potential Supply Shortage Reduction for Response Actions 10
Table 4. Retail Annual Assessment Procedure 14
Table 5. Western Retail Water Shortage Contingency Plan Levels 16
Table 6. Supply Augmentation 17
Table 7. Demand Reduction Actions 18
Table 8. Administrative Compliance Actions 22
Table 9. Allowable Uses of Collected Penalties 23
Table 10. Revenue and Expenditure Impacts 25
Table 11. Mitigation to Financial Impacts 25

ACRONYMS & ABBREVIATIONS

°F	Degrees Fahrenheit
AF	Acre Foot
AFY	Acre Feet per Year
AWWA	American Water Works Association
BMP	Best Management Practice
CALWARN	California Water/Wastewater Agency Response Network
CAT	Climate Action Team
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CUWCC	California Urban Water Conservation Council
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
DFW	California Department of Fish and Wildlife
DMM	Demand Management Measure
DWR	California Department of Water Resources
EPA	United States Environmental Protection Agency
ET	Evapotranspiration
ETo	Reference Evapotranspiration
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
LAFCO	Local Agency Formation Commission
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons per Day
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

RWQCB	Regional Water Quality Control Board
SBX7-7	Senate Bill 7 of Special Extended Session 7
SWRCB	State Water Resources Control Board
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
WSCP	Water Shortage Contingency Plan
WFF	Water Filtration Facility
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

WESTERN MUNICIPAL WATER DISTRICT

Water Shortage Contingency Plan

The Water Shortage Contingency Plan (WSCP) is a strategic plan that Western Municipal Water District (Western) uses to prepare for and respond to foreseeable and unforeseeable water shortages. A water shortage occurs when water supply available is insufficient to meet the normally expected customer water use at a given point in time. A shortage may occur due to a number of reasons, such as water supply quality changes, climate change, drought, regional power outage, and catastrophic events (e.g., earthquake).

Additionally, the State may declare a statewide drought emergency and mandate that water suppliers reduce demands, as occurred in 2014. The WSCP serves as the operating manual that Western will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The Western WSCP provides a process for an annual water supply and demand assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation provide accountability and predictability and will help Western maintain reliable supplies and reduce the impacts of any supply shortages and/or interruptions.

This WSCP was prepared in conjunction with Western's 2020 Urban Water Management Plan (UWMP) and is a standalone document that can be modified as needed. This document is compliant with the California Water Code (CWC) Section 10632 and incorporates guidance from the State of California Department of Water Resources (DWR) UWMP Guidebook 2020 (California Department of Water Resources, 2021). This WSCP is required to be updated based on new requirements every five years and will be adopted as a current update for submission to the California Department of Water Resources by July 1, 2021.

IN THIS SECTION

- Overview of the WSCP
- Western Wholesale WSCP
- Western Retail WSCP

1.1 Overview of the WSCP

Western serves water to both wholesale and retail customers and this WSCP addresses Western's response to shortages in both its wholesale and retail systems, in separate sections. Some elements of the WSCP do not apply to the wholesale system and are noted below.

The WSCP describes the following:

Water Supply Reliability Analysis

Summarizes Western's water supply analysis and reliability and identifies any key issues that may trigger a shortage condition.

Annual Water Supply and Demand Assessment Procedures

Describes the key data inputs, evaluation criteria, and methodology for assessing the system's reliability for the coming year and the steps to formally declare any water shortage levels and response actions.

Shortage Stages

Establishes water shortage levels to clearly identify and prepare for shortages.

Shortage Response Actions

Describes the response actions that may be implemented or considered for each stage to reduce gaps between supply and demand.

Communication Protocols

Describes communication protocols under each stage to ensure customers, the public, and government agencies are informed of shortage conditions and requirements.

Compliance and Enforcement

Defines compliance and enforcement actions available to administer demand reductions.

Legal Authority

Lists the legal documents that grant Western the authority to declare a water shortage and implement and enforce response actions.

Financial Consequences of WSCP Implementation

Describes the anticipated financial impact of implementing water shortage stages and identifies mitigation strategies to offset financial burdens.

Monitoring and Reporting

Summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation. Results are used to determine if additional shortage response actions should be activated or if efforts are successful and response actions should be reduced.

WSCP Refinement Procedures

Describes the factors that may trigger updates to the WSCP and outlines how to complete an update.

Special Water Features Distinctions

Identifies exemptions for decorative features aside from pools and spas.

Plan Adoption, Submittal, and Availability

Describes the process for the WSCP adoption, submittal, and availability after each revision.

1.2 Western Wholesale Water Shortage Contingency Plan

This section of the WSCP describes how Western will respond to a wholesale water shortage.

As a member agency of Metropolitan Water District (Metropolitan), Western provides wholesale imported water to various retail agencies in the region. Western has also secured local groundwater supplies to supplement imported supplies, which provides additional reliability and flexibility in the event of a water shortage.

Not all retail agencies within Western's service area purchase wholesale water from Western; as such, the Wholesale WSCP only applies to Western's wholesale customers, which currently include:

- Box Springs Mutual Water Company
- City of Corona
- City of Norco
- Eagle Valley Mutual Water Company
- Elsinore Valley Municipal Water District
- Temescal Valley Water District
- Rancho California Water District
- Western Retail

Additional information on Western's wholesale customers can be found in Western's 2020 UWMP.

1.2.1 Background

Metropolitan Reliability Planning and Water Supply Allocation Plan

The majority of Western's wholesale supplies are imported via Metropolitan and are subject to availability of Metropolitan supplies. Metropolitan, in coordination with its member agencies, has conducted extensive reliability planning, including 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 secure 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 member agencies during extreme water shortages when Metropolitan determines it is unable to meet all its demands. Metropolitan's WSAP identifies 10 levels of shortage designed to reduce demands by up to 50%. The WSAP does not prescribe demand reduction or limit the available supply but incentivizes reductions through higher fees for use over the allocation amount.

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' 2020 UWMP and WSCP.

Metropolitan's WSCP acknowledges that WSAP allocation is a costly shortage response action that places acute burdens upon member agencies and the public. Other shortage response actions are generally preferred to the extent practicable. Metropolitan's overall strategy considers WSAP allocations to be a fallback option to address any remaining shortages when supply augmentation actions and other demand management measures are insufficient to meet demand reduction objectives. Metropolitan's WSAP in included as Attachment 1.

Western has aligned its water shortage policies with Metropolitan's with respect to imported water supplies.

Western Drought Allocation Plan

Western has adopted a Drought Allocation Plan (DAP) that passes through Metropolitan's WSAP actions for imported water shortages to Western wholesale customers. The DAP was prepared by Western in conjunction with its retail agencies and mirrors the 10 stages of Metropolitan's WSAP. The DAP establishes a means to allocate limited imported water supplies among Western's imported water agencies if Metropolitan implements various stages of its WSAP. Initially developed in 2008, the DAP was updated in 2015 to reflect changes from Metropolitan and the potential impacts of future droughts. The allocation methodology in the DAP was updated for consistency with Metropolitan's WSAP and agreed upon by Western's wholesale customers. A copy of Western's DAP is included as Attachment 1.

The DAP establishes water allocations based on several variables including base period demand, conservation, growth, regional shortage, availability of local supplies, retail water agency dependence on imported supplies, and conservation demand hardening. The allocation method was designed to be equitable on the wholesale level, while helping to minimize hardships experienced by retail agencies and the customers they serve throughout the region.

As with Metropolitan's WSAP, the DAP does not prescribe how Western's wholesale customers reduce demands during shortage, rather the DAP incentivizes conservation through fees for excessive use. Metropolitan charges penalties for use above an allocation established by implementing one of the 10 stages of its WSAP. At the end of the 12-month allocation year, any allocation surcharges or penalties incurred through excessive use of Metropolitan supplies will be passed along to Western's wholesale customers, prorated to reflect each agency's contribution towards penalty and fee accrual.

Metropolitan's WSAP was incorporated into its WSCP but was not modified as part of Metropolitan's WSCP development. Similarly, Western's DAP is incorporated into this Wholesale WSCP, but has not been changed since it was last updated and adopted in 2015. A copy of Metropolitan's WSAP is included as Attachment 2.

1.2.2 Wholesale Water Supply Reliability Analysis

Understanding water supply reliability, factors that could contribute to water supply constraints, availability of alternative supplies, and what effect these have on meeting customer demands provides Western with a solid basis on which to develop appropriate and feasible response actions in the event of a water shortage. In the 2020 UWMP, Western conducted a Water Reliability Assessment to compare the total water supply sources available to long-term projected water use over the next 25 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. Western also conducted a Drought Risk Assessment to evaluate a drought period that lasts five consecutive water years starting from the year following when the assessment is conducted.

The primary constraint on the available of water supplies has been in extreme drought conditions. As described in Metropolitan's 2020 UWMP, Metropolitan has made substantial investments to increase imported water supply reliability during periods of extended drought. As a result, Metropolitan's 2020 UWMP projects the ability to meet all imported water demands under normal, single dry year, and multiple dry year conditions, with excess supplies.

Through implementation of the Arlington GSP, Western expects its local wholesales supply from the Riverside-Arlington groundwater basin water to be stable and does not anticipate any reduction to supplies in dry years.

An analysis of both assessments determined that Western is reliable and anticipates that sufficient local and imported supplies will be available to meet demands, even in dry years, based on Metropolitan's 2020 UWMP.

1.2.3 Wholesale Annual Water Supply and Demand Assessment

As an urban water supplier, Western must prepare and submit an Annual Water Supply and Demand Assessment for its wholesale system (Wholesale Annual Assessment). The Wholesale Annual Assessment is an evaluation of the near-term outlook for supplies and demands to determine whether the potential for a supply shortage exists and whether there is a need to trigger a WSCP shortage stage and response actions in the current calendar year to maintain supply reliability. This process will take place at the same time each year based on known circumstances and information available to Western at the time of analysis and can be updated or revised at any time if circumstances change. Starting in 2022, the Wholesale Annual Assessment will be due by July 1 of every year, as indicated by CWC Section 10632.1.

As a member agency of Metropolitan, Western's protocols for evaluating water supply and demands and implementing shortage restrictions are integrated with Metropolitan's.

Western will establish and convene a WSCP Team to conduct the Wholesale Annual Assessment each year. The WSCP Team may include the following Western staff:

- Director of Water Resources
- Deputy Director of Water Resources
- Director of Finance
- Director of Strategic Communications
- Water Resources Specialist
- Operations Manager

Western's Wholesale Annual Assessment procedure, including key data inputs, evaluation criteria and responsible staff is summarized in Table 1.

Table 1. Wholesale Annual Assessment Timeline

TIMING	ASSESSMENT ACTIVITIES	PROCEDURE, KEY DATA INPUTS, EVALUATION CRITERIA AND OTHER CONSIDERATIONS	WESTERN STAFF RESPONSIBLE
MARCH	Estimate unconstrained demands for coming year	Each year in July, Metropolitan requests "Member Agency Demand Estimate Surveys" from each of their member agencies as part of their annual budgeting process. Western wholesale customers submit a 5-year demand estimate, subtotaled by imported water source (potable or non-potable) and by delivery point (for the following 12-months only). Western will use the estimates provided the previous July. For other Western wholesale supplies, Western coordinates with wholesale customers each year at budget time (March) to establish demands for the following year.	Water Resources Specialist Director of Water Resources
MARCH	Estimate available supplies for the year, considering the following year will be dry	Western anticipates that sufficient imported supplies will be available to meet demands, even in dry years, based on Metropolitan's 2020 UWMP. If Metropolitan has declared a WSAP stage (typically done in spring of a given year if needed), water use above the WSAP allocation will be charged a penalty rate. The Arlington Basin Groundwater Sustainability Plan (GSP) framework will be used to estimate available supplies from the Arlington Desalter.	Director of Water Resources
MARCH	Consider potential infrastructure constraints that may impact supply delivery	Identify any known Metropolitan or Western infrastructure issues that may pertain to near-term water supply reliability, including repairs, construction, and environmental mitigation measures that may temporarily constrain capabilities, as well as any new projects that may add to system capacity. Identify any facilities out of service due to water quality problems, equipment failure, etc. that may impact normal water deliveries.	Operations Manager
APRIL	Convene WSCP Team to conduct Wholesale Annual Assessment	Compare supplies and demands and discuss any infrastructure constraints that may impact supply delivery. If the potential for a shortage exists or if Metropolitan has enacted a WSAP stage, determine which Western shortage response stage and actions are recommended to reduce/eliminate the shortage or to pass through the Metropolitan WSAP.	WSCP Team

TIMING	ASSESSMENT ACTIVITIES	PROCEDURE, KEY DATA INPUTS, EVALUATION CRITERIA AND OTHER CONSIDERATIONS	WESTERN STAFF RESPONSIBLE
MAY	Engineering, Operations and Water Resources (EOWR) Committee Update	If a shortage stage and response actions are recommended by the WSCP Team, or if Metropolitan has enacted a WSAP stage, provide an update to the EOWR Committee with the findings of the Wholesale Annual Assessment and planned actions. Western's DAP gives the General Manager the authority to implement the DAP in response to Metropolitan implementing its WSAP without further Board action.	Director of Water Resources
JUNE	Western Board of Directors Update	If a shortage stage and response actions are recommended by the WSCP Team, or if Metropolitan has enacted a WSAP stage, provide an update to the Board of Directors with the findings of the Wholesale Annual Assessment and planned actions. Western's DAP gives the General Manager the authority to implement the DAP in response to Metropolitan implementing its WSAP without further Board action.	Director of Water Resources
ON-GOING	Implement WSCP actions, if needed	Relevant members of Western staff will implement shortage response actions if needed.	WSCP Team
PRIOR TO JULY 1	Submit Wholesale Annual Assessment	Send Final Wholesale Annual Assessment to DWR.	Water Resources Specialist

1.2.4 Wholesale Water Shortage Levels and Response Actions

With the exception of a catastrophic failure of the Mills Gravity Line or other infrastructure failure of similar magnitude, Western does not foresee implementing water shortage levels except under Metropolitan's direction and according to Metropolitan's WSAP. If a potential water supply shortage is identified in the Wholesale Annual Assessment, this section provides information on the wholesale water shortage levels and response actions that Western may implement. It is important to note that Western's system is complex and the ultimate actions taken by Western will depend on the unique issues of each particular condition and the opportunities available during a particular shortage condition.

Western has aligned its Wholesale WSCP shortage levels with the six standard water shortage levels outlined in the Water Code. Shortage levels indicate the gap in supply compared to normal year availability. The six standard water shortage levels correspond to progressively increasing estimated shortage conditions (up to 10-, 20-, 30-, 40-, 50-percent, and greater than 50-percent shortage compared to the normal reliability condition) and align with the response actions that Western would implement to meet the severity of the impending shortages.

Western will evaluate the water shortage conditions on a case-by-case basis and determine which response actions are appropriate to maintain water supply reliability or mitigate potential impacts. In collaboration with its wholesale customers, Western's response to potential shortages may include increased public outreach throughout the region, exploration of additional supply sources, changes to typical operations, and promoting voluntary actions to reduce demands. If Metropolitan implements its WSAP, Western will implement its DAP to align with Metropolitan. Western's six water Shortage Levels and corresponding response actions that could be implemented by Western are summarized in Table 2. The following subsections describe Western's potential response actions in more detail.

Western may also implement additional actions not listed in Table 2. Western may implement a combination of the actions specified below, as appropriate, but not necessarily all six actions for each level. Selected actions will depend on the nature of water shortage conditions at a given time.

Table 2. Wholesale Water Shortage Levels and Potential Response Actions

WHOLESALE WATER SHORTAGE LEVELS[1]	ONGOING WATER USE EFFICIENCY	PUBLIC OUTREACH	SUPPLY AUGMENTATION	OPERATIONAL CHANGES	VOLUNTARY DEMAND REDUCTIONS	IMPLEMENT DROUGHT ALLOCATION PLAN[2]
Normal Conditions	✓	✓				
Level 1 (Up to 10%)	✓	✓	✓	✓	✓	✓
Level 2 (Up to 20%)	✓	✓	✓	✓	✓	✓
Level 3 (Up to 30%)	✓	✓	✓	✓	✓	✓
Level 4 (Up to 40%)	✓	✓	✓	✓	✓	✓
Level 5 (Up to 50%)	✓	✓	✓	✓	✓	✓
Level 6 (Above 50%)	✓	✓	✓	✓	✓	✓

[1]Percentages represent supply shortage compared to normal conditions.

[2]Western DAP is only triggered in response to Metropolitan WSAP allocations

Ongoing Water Use Efficiency

Western has been a leader in water use efficiency for many years and actively collaborates with local and regional agencies and the communities it serves to implement innovative programs and drive change. As described in Western's 2020 UWMP, Western implements a variety of wholesale demand management measures (DMMs) on a routine basis intended to promote water use efficiency and partner with its wholesale customers to support sustainable management of regional water supplies.

Communication Plan

During a water shortage condition, including short term supply constraints caused by infrastructure impacts, Western collaborates with its wholesale customers to provide enhanced and coordinated public outreach to communicate current conditions, potential impacts to water service and actions that are being taken by Western and its wholesale customers, and actions the public is being asked to take to help reduce water use during the shortage.

Supply Augmentation

In the event of a shortage in normally available supplies, Western may be able to augment supplies through other local groundwater sources and storage programs, if available at the time of the shortage. Such augmentation actions would be short-term and do not overlap with the normal supplies.

Operational Changes

During shortage conditions, operations may be affected by supply augmentation or demand reduction responses. Western will consider its operational procedures at the time of a shortage to identify changes that can be implemented to address water shortage on a short-term basis. In addition, Western and its neighboring agencies have mutual aid agreements and assist each other, if possible, in emergency situations.

Voluntary Demand Reductions

If Metropolitan implements a WSAP allocation, Western will implement its DAP to align. The WSAP and DAP does not require Western's wholesale customers reduce demands during shortage, rather they incentivize demand reduction through fees for excessive use. Metropolitan charges penalties for use above an allocation established by implementing one of the 10 stages of its WSAP and Western passes any penalties charged through to the respective wholesale customers that contributed to accruing the penalties. Demand reductions are voluntary and supplies beyond the allocation can still be purchased at higher penalty rates.

Additional Mandatory Restrictions

Western does not impose mandatory restrictions on its wholesale customers.

Shortage Response Action Effectiveness

Western is committed to working with its wholesale customers to mitigate the impacts of potential supply shortages. Western expects to address any supply shortages through a combination of public outreach, supply augmentation, operational changes, voluntary demand reductions, and implementation of the DAP. The range of potential supply shortage reductions that could be achieved from each response action is summarized in Table 3.

Table 3. Potential Supply Shortage Reduction for Response Actions

RESPONSE ACTION	POTENTIAL SUPPLY SHORTAGE REDUCTION	DESCRIPTION
Ongoing Water Use Efficiency	N/A	Western supports the water use efficiency programs of its wholesale customers but does not directly track resulting water savings from wholesale customers.
Public Outreach	Supports effectiveness of other actions	Anticipated shortages will involve an appropriately sized outreach campaign to address the targeted demand reduction, which depends on the combined effectiveness of other shortage response actions.
Supply Augmentation	0-100%	Supply augmentation actions consisting of stored water and as-needed flexible supplies are expected to address between 0 to 100 percent of anticipated shortages for any shortage level, depending on availability of those supplies; in lesser WSCP shortage levels, it is more likely that shortages can be completely addressed through supply augmentation.
Voluntary Demand Reductions	0-100 %	Efficacy of demand reduction efforts is difficult to estimate or predict and water savings are a function of the extent to which public information campaigns reach water users and the degree of consumer response to those messages, as well as the response of Western wholesale customers and their ability to utilize other supplies.
Implement Drought Allocation Plan	0-50%	Metropolitan's WSAP is designed to reduce demands by up to approximately 50 percent of the WSAP's calculated base demand.

1.2.5 Communication Protocols

Western routinely communicates with local water agencies through quarterly general manager meetings. General managers of all the local water agencies meet and discuss regional and agency specific issues, which may include impacts or changes to wholesale supplies and demands.

In the event of water supply shortage, Western will use this forum for ongoing communication about supply shortages and response actions. The region's general managers can also utilize these meetings to help coordinate consistent regional messaging in times of drought.

1.2.6 Legal Authorities

Western obtains legal authority to implement its DAP though Ordinance 385, which was approved and adopted on May 20, 2015, by Western's Board after a public hearing. A copy of Ordinance 385 is included as Attachment 3.

Western 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.

1.2.7 Financial Consequences of WSCP

As mentioned above, in times of extreme shortage, Metropolitan may elect to implement its WSAP and Western will implement its DAP in response. The WSAP reduces allocations to Metropolitan's member agencies, including Western. If Western's wholesale agencies consume more water than their allocation, Metropolitan charges Western penalties based on the percentage of use over the allocation amount. Western will pass along any penalties or surcharges incurred to Western's wholesale customers, prorated to reflect each agency's contribution towards penalty and fee accrual.

In the event of a wholesale water shortage, Western anticipates that revenues will decrease as wholesale customers shift to using other supplies, whether in response to short term outages or the WSAP/DAP penalty pricing, if implemented.

1.3 Western Retail Water Shortage Contingency Plan

Western Retail refers to customers that directly purchase and use water from Western, such as single-family residences or commercial businesses. Western provides water to nearly 25,000 connections within the retail service area, including the Riverside Retail Service Area, Murrieta Retail Service Area, and Rainbow Retail Service Area. These three service areas are collectively referred to as Western Retail and cover a total of 104 square miles and serve water to an estimated population of nearly 100,000.

The Riverside Service Area includes a portion of the City of Riverside and unincorporated areas of Riverside County, including the communities of El Sobrante, Eagle Valley, Temescal Creek, Woodcrest, Lake Matthews and March Air Reserve Base. In 2005, Western took ownership of the Murrieta County Water District as a separate retail service area, now called the Murrieta Service Area. The entire area lies within the city of Murrieta. Western also serves a very small area, called the Rainbow Service Area, in an area just south of the City of Temecula in the unincorporated portion of Riverside County.

Western Retail currently obtains approximately 60% of its supply from Metropolitan and 40% of its supply from local groundwater sources. Note that Western treats its retail system as a wholesale customer as it relates to imported water supplies and demands.

1.3.1 Retail Water Supply Reliability Analysis

Understanding water supply reliability, factors that could contribute to water supply constraints, availability of alternative supply sources, and the effect these have on Western's ability to meet customer demands provide Western with a solid understanding used to develop appropriate and feasible response actions in the event of a water shortage. In the 2020 UWMP, Western conducted a Water Reliability Assessment to compare the total water supply sources available to long-term projected water use over the next 25 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. Western also conducted a Drought Risk Assessment to evaluate a drought period that lasts five consecutive water years starting in 2021. An analysis of both assessments determined that Western is reliable and anticipates meeting retail demands through local and imported water sources.

As described in Section 1.2.2, Western Wholesale expects to have sufficient supplies available to meet the demands of Western Retail and its other wholesale customers, even in dry years, based on Metropolitan's 2020 UWMP.

Western Retail also obtains groundwater supplies from several local groundwater basins. Each of the groundwater sources are adjudicated and closely managed by Watermasters and/or Groundwater Sustainability Agencies. Western plays a key role in the management of the groundwater basins it relies on to meet retail demands and participates in ongoing water conservation measures and regional recharge projects to enhance and protect the reliability of local groundwater.

Western Retail's recycled water supply is not expected to be affected by climatic factors because source wastewater flows coming from indoor use are generally not impacted by temperature and precipitation

Western Retail is reliable and anticipates that sufficient local and imported supplies will be available to meet demands, even in dry years.

1.3.2 Retail Annual Water Supply and Demand Assessment

As an urban water supplier, Western must prepare and submit an Annual Water Supply and Demand Assessment for its retail system (Retail Annual Assessment). The Retail Annual Assessment is an evaluation of the near-term outlook for supplies and demands to determine whether the potential for a supply shortage exists and whether there is a need to trigger a WSCP shortage level and response actions in the current calendar year to maintain supply reliability. Starting in 2022, the Retail Annual Assessment will be due by July 1 of every year, as indicated by CWC Section 10632.1. Western's Retail Annual Assessment procedure, including key data inputs, evaluation criteria and responsible staff is summarized in Table 4.

Western will establish and convene a WSCP Team to conduct the Retail Annual Assessment each year. The WSCP Team may include the following Western staff:

- Director of Water Resources
- Deputy Director of Water Resources
- Director of Finance
- Director of Strategic Communications
- Water Resources Specialist
- Operations Manager

Table 4. Retail Annual Assessment Procedure

TIMING	ASSESSMENT ACTIVITIES	PROCEDURE, KEY DATA INPUTS, EVALUATION CRITERIA AND OTHER CONSIDERATIONS	WESTERN STAFF RESPONSIBLE
MARCH	Estimate unconstrained demands for coming year	Western has several potential approaches to estimate demand for the coming year, including a demand climate model that uses a time series regression analysis, estimates developed by the Finance Department based on historical use, and a California Data Collaborative (CaDC) tool. Western tracks demand estimates from multiple approaches compared to actual demand to refine its estimates over time.	Water Resources Specialist Finance Manager
MARCH	Estimate available supplies for the year, considering the following year will be dry	Western anticipates that sufficient imported supplies will be available to meet demands, even in dry years, based on Metropolitan's 2020 UWMP. If Metropolitan declares a WSAP stage (typically done in spring of a given year if needed), normal quantities of water will still be available, but will be charged at penalty rate above the allocation. Western's local supplies are from groundwater basins that are sustainably managed to provide long term supply reliability and are not anticipated to be impacted in dry years. In the unlikely event that local supplies are reduced, Western will coordinate with the groundwater management groups in the respective basins to identify any supply reductions. Western plays an active role in these groups to help ensure long term water supply reliability for Western Retail customers.	Director of Water Resources
MARCH	Consider potential infrastructure constraints that may impact supply delivery	Identify any known Metropolitan or Western infrastructure issues that may pertain to near-term water supply reliability, including repairs, construction, and environmental mitigation measures that may temporarily constrain capabilities, as well as any new projects that may add to system capacity. Identify any facilities out of service due to water quality problems, equipment failure, etc. that may impact normal water deliveries.	Operations Manager
APRIL	Convene WSCP Team to conduct Retail Annual Assessment	Compare supplies and demands and discuss any infrastructure constraints that may impact supply delivery. If the potential for a shortage exists or if Metropolitan has enacted a WSAP stage, determine which Western shortage response level and actions are recommended to reduce/eliminate the shortage or to reduce demands on Metropolitan. Additionally, if the State declares a drought state of emergency and requires demand reductions, the WSCP Team will determine which water shortage level and response actions are needed to comply with the State mandate.	WSCP Team
MAY	Engineering, Operations and Water Resources (EOWR) Committee	If the potential for a shortage exists, if Metropolitan has enacted a WSAP stage or if the State has mandated demand reductions, the results of the Retail Annual Assessment will be presented to EOWR Committee, including the recommended shortage level and response actions.	Director of Water Resources

TIMING	ASSESSMENT ACTIVITIES	PROCEDURE, KEY DATA INPUTS, EVALUATION CRITERIA AND OTHER CONSIDERATIONS	WESTERN STAFF RESPONSIBLE
JUNE	Western Board of Directors	If the potential for a shortage exists, if Metropolitan has enacted a WSAP stage or the State has mandated demand reductions, the results of the Retail Annual Assessment will be presented to the Western Board of Directors, including the recommended shortage level and response actions. The Board of Directors may order the implementation of a shortage level and will adopt a resolution declaring the applicable water shortage level.	Director of Water Resources Western Board of Directors
ON-GOING	Implement WSCP actions, if needed	Relevant members of Western staff will implement shortage response actions associated with the declared water shortage level.	WSCP Team
PRIOR TO JULY 1	Submit Retail Annual Assessment	Send Final Retail Annual Assessment to DWR.	Water Resources Specialist

1.3.3 Retail Water Shortage Levels

With the exception of a catastrophic failure of the Mills Gravity Line or other infrastructure failure of similar magnitude, Western does not foresee imposing a retail water shortage level except under the State's direction, as occurred in 2014. If a potential water supply shortage is identified in the Retail Annual Assessment, this section provides information on the retail water shortage levels and response actions that Western may implement.

Western Retail uses five (5) shortage stages to identify and respond to water shortage emergencies. At a minimum, Western encourages baseline conservation efforts year-round, regardless of a shortage emergency.

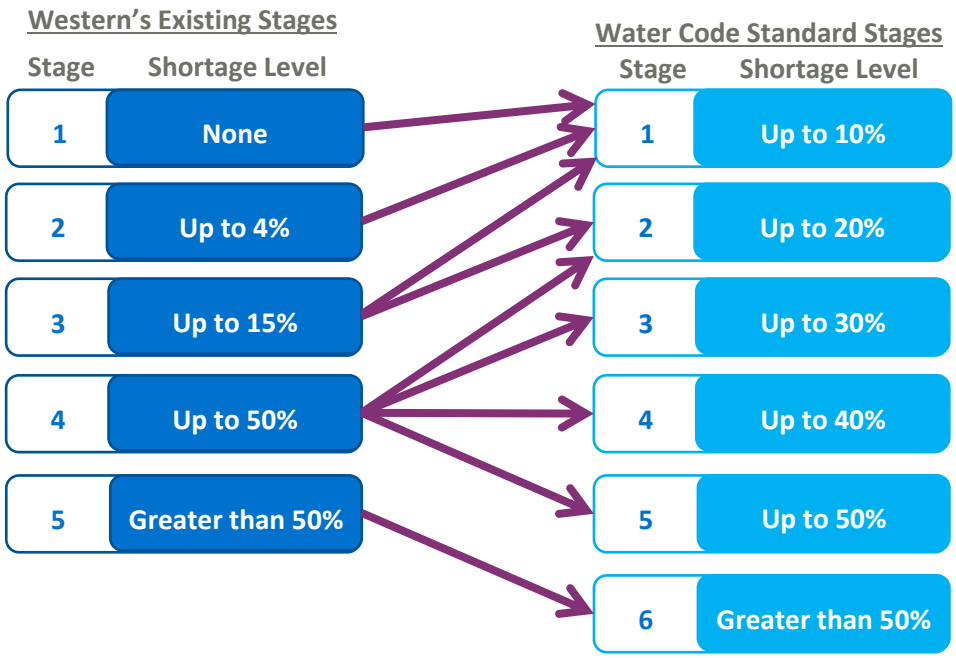
The Water Code outlines six standard water shortage levels that correspond to a gap in supply compared to normal year availability. The six standard water shortage levels correspond to progressively increasing estimated shortage conditions (up to 10-, 20-, 30-, 40-, 50-percent, and greater than 50-percent shortage compared to the normal reliability condition) and align with the response actions that a water supplier would implement to meet the severity of the impending shortages.

The Water Code allows suppliers with an existing Water Shortage Contingency Plan that uses different water shortage levels to comply with the six standard levels by developing and including a cross-reference relating its existing shortage categories to the six standard water shortage levels. Western Retail is maintaining the current five shortage stages for this WSCP, as shown in Table 5. A cross reference to the six standard stages is shown in Figure 1.

Table 5. Western Retail Water Shortage Contingency Plan Levels

SHORTAGE LEVEL	PERCENT SHORTAGE RANGE	WATER SHORTAGE CONDITION
1	At all times	Water Supply Watch
2	Up to 4%	Water Supply Alert
3	Up to 15%	Targeting Waste Reduction
4	Up to 50%	Targeting Outdoor Reductions
5	Greater than 50%	Mandatory Targeted Indoor/Outdoor Reductions – Catastrophic Failure or "Immediate Emergency"

Figure 1. Western's Shortage Stages in Relation to DWR's Six Standard Shortage Stages



1.3.4 Shortage Response Actions

Western expects to mitigate supply shortages through a variety of response actions including various supply sources, demand reduction actions, conservation, operational changes, outreach, and if necessary, mandatory prohibitions.

Supply Augmentation

Western currently maintains interconnections with the cities of Riverside and Corona, Eastern Municipal Water District and Elsinore Valley Municipal Water District. During water shortage emergencies, Western may be able to obtain supplemental water supply though these connections, if available.

Western Retail may also purchase additional imported or local groundwater supply from Western Wholesale.

Supply augmentation actions are summarized in Table 6.

Table 6. Supply Augmentation

SHORTAGE LEVEL	SUPPLY AUGMENTATION METHOD	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE
All	Purchased or Imported Water	Up to 100%	Depends on supply availability from neighboring agencies or Western Wholesale

Demand Reduction

Western has identified a variety of demand reduction actions to offset supply shortages. These actions include, but are not limited to conservation and rebate programs, leak detection and repair, limitations on irrigation and other voluntary actions to reduce customer demand. Demand reduction actions are summarized in Table 7.

The Water Code Section 10623 (b) now requires that suppliers analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code. Non-pool or non-spa water features may use or be able to use recycled water, whereas pools and spas must use potable water for health and safety considerations so limitations to pools and spas may require different considerations compared to non-pool or non-spa water features. Western's Ordinance 384 includes a demand reduction response action that applies to both water features and swimming pools, requiring them to be equipped with recirculating pumps. While this response action is appropriate for both water features and pools and spas, Western will consider these features separately when the WSCP Ordinance is updated.

Table 7. Demand Reduction Actions

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP? (AFY)	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT
All	Landscape - Other landscape restriction or prohibition	480	Adjust automatic irrigation timers for weather patterns and landscape requirements; Texas Living Waters (Texas Living Waters Project, 2018)	Yes
All	Other - Require automatic shut of hoses			Yes
All	Landscape - Limit landscape irrigation to specific times	4,800	Texas Living Waters (Texas Living Waters Project, 2018)	Yes
All	Other water feature or swimming pool restriction		Features and pools shall be equipped with re-circulating pumps.	Yes
All	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	6,000	EPA Cases in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs (United States Environmental Protection Agency, Office of Water, 2002)	Yes
All	Landscape - Restrict or prohibit runoff from landscape irrigation			Yes
3 and Up	Implement or Modify Drought Rate Structure or Surcharge		Eliminate Adjustments to outdoor water budgets; Eliminate Tier in rates	Yes
4 and Up	Other		No new potable service connections, temporary meters, or permanent meters	No
4 and Up	Landscape - Other landscape restriction or prohibition		No new landscapes unless irrigated with recycled water.	No
5 and Up	Landscape - Prohibit all landscape irrigation			Yes

Operational Changes

During shortage conditions, operations may be affected by supply augmentation or demand reduction responses. Western will consider its operational procedures at the time of a shortage to identify changes that can be implemented to address water shortage on a short-term basis.

Additional Mandatory Restrictions

Western has identified additional mandatory restrictions to implement in a water shortage emergency. Such restrictions will first be evaluated on the type of shortage condition and needs to close the gap between supply and demand needs.

Potential restrictions include, but are not limited to:

- Restricting watering to the hours of 8:00 pm to 8:00 am.
- No potable water for washing hard surfaces except to alleviate immediate fire or sanitation hazards, and then only by the use of certain water saving equipment.
- No runoff from irrigation or leaks.
- No installation of new landscapes unless irrigated with recycled water.
- No potable water for construction and dust control, except as necessary for public health, safety, and welfare.

Shortage Response Action Effectiveness

Western has estimated the effectiveness of shortage response actions when data pertaining to such actions is available. Estimates of the effectiveness for actions are included in Table 6 and Table 7. It is expected that response actions effectiveness is also a result of successful communication and outreach efforts, described below.

1.3.5 Communication Protocols

Western prioritizes effective communication, especially in times of a water shortage emergency. Western provides details on droughts, shortage stages and restrictions on its website at https://www.wmwd.com/391/Drought-Restrictions.

Western also has a Community Affairs Office that oversees public affairs, legislative programs, and initiatives. The Community Affairs Office also develops programs and information about Western's efficiency programs, water reliability initiatives, and other educational programs. Western staff members also engage with their customers through presentations to community service organizations and other groups.

The Community Affairs team created a strategic outreach plan that provides the framework for customer outreach as needed for Stage implementation for the Water Supply Shortage Contingency Plan.

It will be imperative to swiftly communicate with Western Retail customers as to what will be required and how to achieve the required water efficiency results. The following methods may be used to communicate information about stages to retail customers:

- **Bill message** – bill messages would be placed directly on customer bills and note key information about the specific Stage.
- **Bill insert** – inserts go out in Western's monthly water bills. Bill inserts would contain key information about the specific Stage.
- **Direct mail postcard** – postcards would feature specific information about the specific Stage and be mailed directly to customers.
- **Auto-call greeting/message** – telephonic, recorded message highlighting key information about the specific Stage would be sent to customers.
- **Website content** – website content containing key information about the specific Stage would be posted on Western's website.
- **Social media posts** – social media posts containing key information about the specific Stage would go on the District's Facebook and Twitter accounts; each Stage would utilize roughly 10 posts.
- **Fact sheet** – a fact sheet for each Stage with key information would be used within District offices, at community events, etc.
- **News release and/or advisory** – news release with key information and messages on each specific Stage would be provided to the media.

1.3.6 Compliance and Enforcement

Western always discourages excessive water consumption. Western may issue various penalties, charges, and other enforcement actions in response to violation of prohibitions in effect at a given time and/or stage. Western's tiered-rate structure promotes conservation and discourages excessive use during all stages and is modified as more severe stages are enacted to act as a penalty for exceeding the water restrictions set by a stage. Enforcement measures in the WSCP are organized as:

- Violations and remedies
- Notices
- Administrative compliance orders and fines and/or penalties
- Over-budget water use penalties
- Recovery of costs

Violations and Remedies

Violations of the WSCP may result in a variety of responses, including declaration of criminal violation, issuance of a cease-and-desist order, civil actions, or a combination of the three. Violations are considered on-going, as described below.

Criminal Violation

It is unlawful for any person to willfully violate the provisions of the WSCP. Any violation of the WSCP is a misdemeanor, unless made an infraction by the prosecutor, subject to imprisonment in the county jail for not more than 30 days or by fine not to exceed $1,000, or by both as provided in California Water Code section 377.

Civil Action

In addition to any other remedies provided in the WSCP, any violation of the WSCP may be enforced by civil action brought by Western and the imposition of administrative fines and/or penalties. In any such action, Western may seek, and the court may grant, as appropriate, any or all of the following remedies:

- a temporary and/or permanent injunction
- assessment of the violator for the costs of enforcement of the violation and for the reasonable costs of preparing and bringing legal action under the WSCP
- assessments under this subsection shall be paid to Western to be used exclusively for costs associated with implementing or enforcing the water supply shortage and regulatory provisions of the WSCP.

Cease-and-Desist Order

Western's General Manager may issue a cease-and-desist order directing the Property Owner, or occupant, or other Person in charge of day-to-day operations of any property, and/or any other Person responsible for a violation of the WSCP to immediately discontinue any prohibited use of water pursuant to Ordinance 384 and immediately cease any activity not in compliance with the terms, conditions, and requirements of this Ordinance 384.

Cumulative

All remedies provided in the WSCP shall be cumulative and not exclusive.

On-going

A Person shall be deemed guilty of a separate offense for every day or portion thereof during which any violation of any provision of the WSCP is committed, continued, or permitted.

Notices

If enforcement of the WSCP is required, Western will issue notices as appropriate. Any notice, notice of violation, cease-and-desist order, and administrative compliance order shall be served pursuant to the requirements of set in Ordinance 384. In addition to or in conjunction with the notice of violation, Western will provide notices as required for administrative compliance orders.

After one written notice of violation, Western may order a special meter reading or readings to ascertain whether wasteful or unreasonable use of water is occurring and may impose a meter reading fee for each meter reading it conducts.

Administrative Compliance Order and Fines and/or Penalties

Separate from, in addition to, or in combination with a notice of violation or cease and desist order, Western may issue an administrative compliance order against the Property Owner and/or occupant of the property where a violation of the WSCP occurred and/or any other Person responsible for a violation of the WSCP. Issuance of a notice of violation or a cease-and-desist order is not a prerequisite to the issuance of an administrative compliance order. The administrative compliance order shall allege the act(s) or failure(s) to act that constitute violations of the WSCP and shall set forth the penalty for the violation(s).

Western may impose administrative monetary fines and/or penalties, in addition to other appropriate action requirements and measures as described in the WSCP and summarized in Table 8.

Table 8. Administrative Compliance Actions

	METERS SMALLER THAN 2"		METERS 2" OR LARGER	
VIOLATION NUMBER	STAGES 1 & 2	STAGES 3, 4, & 5	STAGES 1 & 2	STAGES 3, 4, & 5
First	First written notice identifying violation, potential penalties, and compliance requirements		First written notice identifying violation, potential penalties, and compliance requirements	
Second[1]	Second written notice with copy of WSSCP, potential penalties, and compliance requirements		Second written notice with copy of WSSCP, potential penalties, and compliance requirements	
Third[1]	Fine of $100/day for each day of the violation	Fine of $200/day for each day of the violation	Fine of $100/day for each day of the violation	Fine of $300/day for each day of the violation
Fourth[1]	Fine of $200/day for each day of the violation	Fine of $400/day for each day of the violation	Fine of $300/day for each day of the violation	Fine of $600/day for each day of the violation
Fifth, and subsequent	Installation of flow-restricting device or termination of service; requires compliance and payment of fees prior to restoration of service		Installation of flow-restricting device or termination of service; requires compliance and payment of fees prior to restoration of service	

[1]Within the preceding 12 calendar months.

Over-Budget Water Use Penalties

Any funds collected by Western as penalties for use of water in excess of a property's allocated water budget during a declared water shortage will be deposited in designated special funding accounts, for uses summarized in Table 9.

Table 9. Allowable Uses of Collected Penalties

CONSERVATION PENALTY ACCOUNT	SUPPLY PENALTY ACCOUNT
• Water conservation programs • Outreach and education for water conservation, decreasing water waste, or water awareness. • Enforcement of the WSCP	• Additional water supplies • Operations and maintenance • Revenue shortfalls from operation and maintenance, budgeted and actual for Tiers 1 and 2 • Payments of allocation exceedance penalties to Metropolitan • Payment of other costs associated with water deliveries or service during water curtailment, shortage emergency, or immediate emergency

Recovery of Costs

Western will provide an invoice for costs to the Property Owner and/or occupant, or any other responsible party who is subject to an enforcement action. Additional fines, penalties, or fees, as determined by Western's Board, may also be applied. These charges may include costs for:

- Visits of an Enforcement Officer or other staff for time incurred for meter reading, follow-up visits, or the installation or removal of a flow- restricting device.
- Monitoring, inspection, and surveillance procedures pertaining to enforcement of the WSCP.
- Enforcing compliance with any term or provision of the WSCP.
- Re-initiating service at a property where service has been discontinued pursuant to the WSCP.
- Processing any fees necessary to carry out the provisions of the WSCP

1.3.7 Legal Authorities

Ordinance 384 was adopted and approved on February 18, 2015, by Western's Board of Directors. Ordinance 384 established Western's WSCP and declared that water resources shall be put to beneficial use to the fullest extent possible. Ordinance 384 provides Western with the authority to implement conservation programs and restrict water in emergencies or during droughts. Ordinance 384, included as Attachment 4, continues to serve as the legal foundation for Western's Retail WSCP.

Western 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.

1.3.8 Financial Consequences of WSCP

Western anticipates that revenues will decrease as customers comply with the WSCP and any potential declared shortage stage. A three-point program (in order of preference) has been developed to meet the fiscal shortfall from reduced revenues:

- Reduce operation, maintenance, and administration expenses.
- Defer selected capital improvement projects that are non-critical.
- Utilize reserves where needed to offset impact of reduced revenues.

Since most of the rate charged for water delivered to customers is used to pay for the cost of supply (e.g., local supplies purchased from neighboring agencies or imported water purchased from Metropolitan), the net impact from reduced water sales is the loss of revenue contributed by the Operations & Maintenance (O&M) component in the water rate. The O&M component in the water rate is used to help pay for a portion of the cost to provide water service to customers (e.g., water quality testing, maintenance and repairs, meter reading, customer billing, etc.). Revenue from the O&M component can be considered the "net revenue" received from water sales.

In addition, the penalties for excess water use beyond a customer's water budget have encouraged conservation, thereby reducing net revenues from water sales. While penalties incurred for violation of the WSCP can be used to cover the O&M funding shortfall created by the reduced sales, penalties generally provide only a small amount of revenue. If the water shortage is deemed temporary, a rate increase may not be required. However, for long-term shortages, rate increases and/or drought surcharges applied to the water rate would be considered to make up for reduced net revenue. A consequence of increasing the commodity cost may be further conservation by customers. Fixed monthly service charges that are not commodity-based are not expected to significantly change due to a water shortage. These charges would continue to provide revenue to pay for O&M expenditures.

Water shortages may also impact construction activities, especially during Stage 4 and 5, when water use for construction is heavily restricted, and a moratorium is in place for new meters and approval of new service. A reduction in construction activities will reduce fees collected by Western from developers, such as capacity charges, as well as engineering related fees, such as plan check fees and annexation fees.

As consumption decreases and additional conservation programs and/or efforts are implemented, purchased water, and purchased power expenses will decrease. However, some expenditures are expected to increase. Staff costs and other costs for community education, enforcement of ordinances, monitoring and evaluation of water use, drought planning, and assisting with customer questions and complaints are expected to rise. If construction is drastically reduced, staff may not be required for certain functions, but it is expected that the increased workload to deal with water shortage issues will more than offset the reduced workload for construction support. Table 10 summarizes general estimates of potential impacts to revenues and expenditures related to water shortage.

Table 10. Revenue and Expenditure Impacts

REVENUE/EXPENDITURE IMPACT	ESTIMATED DEGREE OF IMPACT
Reduced Sales	Decrease in water sales could range from 10 to 30%.
Reduced Development	Reduction in fees collected during planning and construction activities.
Increased Staff Cost	Existing staff will be used where available, but additional temporary staff may be needed.
Increased O&M Cost	Other non-purchased water/power O&M costs could increase by 1 to 5%, including identifying and quickly repairing all system water leaks.
Increased Cost of Supply	Only if assessed penalties from Metropolitan for exceeding drought determined water allocation.

Western has developed reserve funds to sustain the revenue and expenditure impacts of a short- term water shortage. Reserve funds could be used for a 1- to 2-year period to cover the impact of reduced water sales. However, these reserves will need to be restored to minimum levels after the water shortage. If the water shortage is long-term, rate increases, and drought surcharges are expected to be considered to mitigate the financial impact. Long-term water shortages may also require reducing capital expenditures by delaying projects for major facilities construction, upgrade, or replacement, limiting new connections to decrease operational expenditures and to decrease the likelihood of exceeding imported water allocations, and evaluating methods to reduce administrative overhead. Summaries of measures to overcome revenue and expenditure impacts are provided in Table 11.

Table 11. Mitigation to Financial Impacts

BUDGET SOURCE	POTENTIAL MEASURES
Reserves	Use of reserves may provide short-term rate stabilization but will require delays in capital expenditures and require rebuilding reserves after the water shortage.
Decrease Capital Expenditures	Delay major construction projects for facilities as well as upgrades and replacements.
Reduce O&M and Overhead	Defer maintenance where feasible. Defer overhead expenses where possible. If staff reductions are required, service level will be impacted.

1.3.9 Monitoring and Reporting

Water savings from implementation of the WSCP will be determined by consumption and production meter readings. Customer meters will be read every month in Stages 1, 2, and 3, and weekly in Stages 4 and 5. If necessary, Western may read customer meters more often, especially for customers that exceed their water budget. Western will monitor production meters on a weekly basis.

Under normal conditions, Western monitors sales and deliveries on a monthly and daily basis. All of Western's water sales are metered and all connections are read monthly. Water orders are scheduled daily with water deliveries recorded daily. Water deliveries and transfers at booster stations can be monitored through Western's Supervisory Control and Data Acquisition (SCADA) system to determine usage in various portions of the retail area. Western prepares monthly sales and delivery reports that are reviewed and compared to previous reports and statistics for prior months and seasons. Under shortage conditions, Western may prepare these reports daily. In addition, billing reports may be reviewed to identify users who are exhibiting high water use so that Western may work with them to reduce their demand.

1.4 Emergency Response, Seismic Risk Assessment and Mitigation

1.4.1 Emergency Response Plan

In the event of a catastrophic supply interruption, Western would follow its Emergency Response Plan (ERP) in addition to the WSCP.

In 2020, Western completed a Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP) in accordance with America's Water Infrastructure Act (AWIA) of 2018. The purpose of the RRA and ERP is to meet the AWIA compliance requirements and plan for long-term resilience of Western's infrastructure. The RRA assessed Western's water system in order to identify critical assets and processes that may be vulnerable to human and natural hazards, and to identify measures that can be taken to reduce risk and enhance resilience from service disruption for the benefit of customers. The RRA identifies and characterizes both infrastructure-specific and system-wide vulnerabilities and threats and quantifies the consequences of disruption. The RRA also identifies various options (and constraints) in addressing and mitigating risk. The RRA, is conjunction with the ERP, charts a course for water system resilience. The RRA also provided various recommendations to increase reliability of Western's system. Since critical pieces of infrastructure and specific vulnerabilities are detailed in the RRA and ERP, the contents of the document are confidential and for use by Western staff only.

1.4.2 Seismic Risk Assessment and Mitigation Plan

Per the Water Code Section 10632.5, suppliers are required to assess seismic risk to water supplies as part of their WSCP. Western published a Local Hazard Mitigation Plan (LHMP) in 2017 that identified relevant local hazards, reviewed and assessed past disasters, estimated the probability of future disaster occurrences, and set goals to mitigate potential risks and reduce or eliminate longer-term risks to people and property from both natural and man-made hazards. The LHMP identified risks pertaining to earthquakes, floods, wildfires, landslides, pandemics, high winds, drought, power outages, hazardous materials, terrorism, and several others. On a scale of 0 to 4, the LHMP identified the probability of an earthquake occurring and its severity as a 3. An earthquake was ranked as the 6th most important hazard to plan for, after a pipeline issue, power outage, extreme summer or winter weather, drought, and a severe wind event (Western Municipal Water District, 2017).

Historically, Western has experienced a couple of large earthquakes. The most significant earthquakes in the region both occurred in June 1992 and were the Landers earthquake with a 7.3 magnitude, and the Big Bear earthquake with a 6.4 magnitude (the Big Bear earthquake was an aftershock to the Landers earthquake). Both earthquakes were over 40 miles from Western and did not cause any significant damage to Western's infrastructure (Western Municipal Water District, 2017). It is expected that faults within Western's region could generate an earthquake with an 8.2 magnitude or greater and would severely impact Western's infrastructure.

- The LHMP identified various projects Western has planned to mitigate seismic risks and impacts, including:
- Study to determine if the installation of seismically activated valves for drinking and/or irrigation water would be operationally and fiscally beneficial to maintain water supply and service after an earthquake.
- Acquiring debris removal equipment for use after a disaster. Western can perform typical pipeline repairs and debris removal but may require more robust equipment to remove large amounts of debris after a disaster.
- Develop a staff team trained to evaluate the safety of Emergency Operations Center locations immediately following an earthquake. Project includes training in post-earthquake structural evaluation.

- Purchase a greater variety of materials and sizes for pipeline repair. Items may include PVC pipe, steel pipe, ductile iron fittings, air vacs, and valves. Materials would be stockpiled throughout Western's service area to be readily available after an earthquake.
- Provide additional back-up power for use during large scale power failures at all pump stations.
- Map and possibly relocate pipeline alignments near creeks or areas subject to ground movement such as landslide and rock areas.
- Perform a seismic evaluation of entire water distribution system to determine priority of retrofit projects.
- Perform seismic analysis and retrofits to older tanks that were constructed to past seismic standards.
- Install Compressed Natural Gas (CNG) tanks at natural gas-powered facilities as several transmission mains within Western's service area are powered by natural gas.

1.5 WSCP Refinement Procedures

The WSCP is best prepared and implemented as an adaptive management plan. Western will use results obtained from its monitoring and reporting program to evaluate any needs for revisions. Potential changes to the WSCP that would warrant an update include, but are not limited to, any changes to trigger conditions, changes to the shortage stage structure, changes to rate structures or development of water budgets, and/or changes to customer reduction actions.

Any prospective changes to the WSCP would need to be presented to Western's Board of Directors (Board) for approval. Western will hold a public hearing, obtain any comments, and formally adopt the updated WSCP. Notices for refinement and the public hearing date will be published in the local newspaper in advance of any public meetings.

1.6 Plan Adoption, Submittal, Availability

The WSCP will be presented for adoption to Western's Board at a public meeting. The Board and members of the public may submit any comments prior to approval and adoption. The WSCP will be submitted to DWR at the same time as the 2020 Urban Water Management Plan.

The WSCP will be made available to all staff, customers, and any affected cities, counties, or other members of the public through Western's website, located under the Water Reliability, Drought and Restrictions section.

References

California Department of Water Resources. (2021). *Urban Water Management Plan Guidebook 2020.* Sacramento: California Department of Water Resources.

Texas Living Waters Project. (2018). *Water Conservation by the Yard: A Statewide Analysis of Outdoor Water Savings Potential.* Austin: Texas Living Waters Project, Sierra Club, National Wildlife Federation. Retrieved from Texas Living Waters Project.

United States Environmental Protection Agency, Office of Water. (2002). *Cases in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs.* United States Environmental Protection Agency.

Western Municipal Water District. (2017). *Local Hazard Mitigation Plan.* Riverside: Western Municipal Water District.

Attachment 1 -
Western Drought Allocation Plan

Drought Allocation Plan
for the
Western Municipal Water District of Riverside County

Updated
May 2015

WESTERN
MUNICIPAL
WATER
DISTRICT

Table of Contents

Section 1 Introduction 1

Section 2 Drought Allocation Plan Preparation 2

Section 3 DAP Supply Allocation Methodology 3

Section 4 Estimate of Retail Agency Allocation under Drought Allocation Plan 10

Section 5 Allocation Plan Implementation Elements 12

Appendix A Wholesale Customer Allocation by Shortage Level

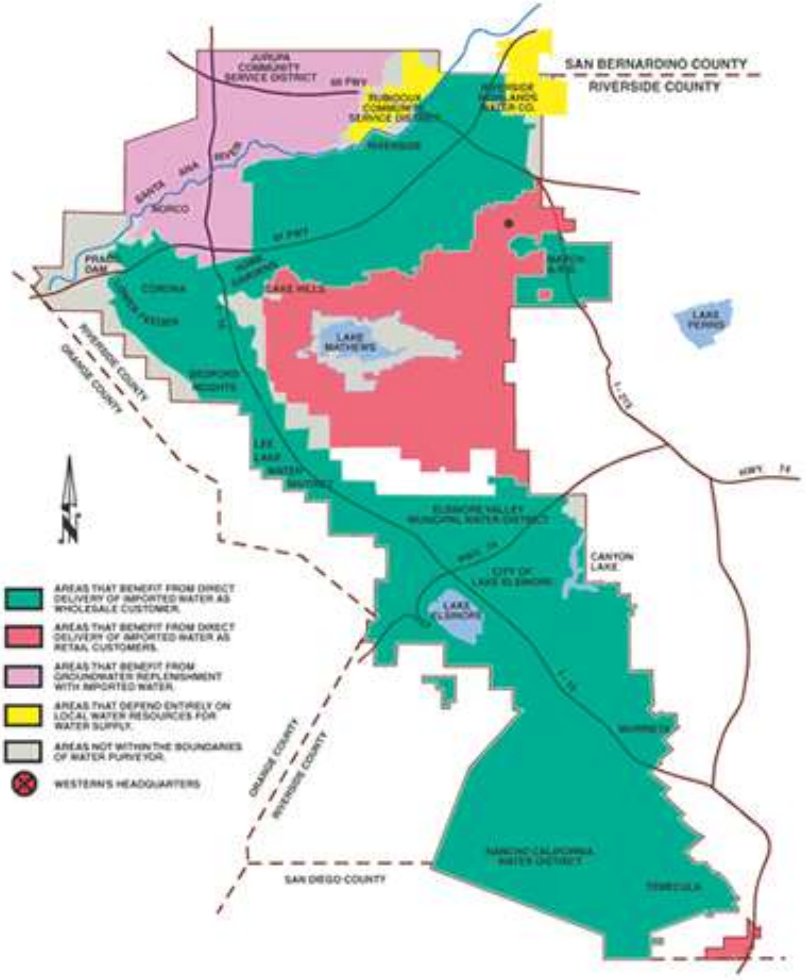
Appendix B Overview of the Metropolitan Water District Shortage Allocation Plan

Section 1 Introduction

The purpose of the Drought Allocation Plan (DAP) is to provide Western Municipal Water District of Riverside County (Western) and its wholesale customers with a means of allocating limited imported water supplies from the Metropolitan Water District of Southern California (Metropolitan) under various shortage conditions. The DAP is intended to help the region minimize the impacts of shortages and ensure an equitable allocation of imported water supplies.

The DAP will be used to allocate water for retail municipal, industrial, and agricultural purposes among the following agencies:

- Box Springs Mutual Water Company
- City of Corona
- City of Norco
- Eagle Valley Mutual Water Company
- Elsinore Valley Municipal Water District
- Lee Lake Water District
- Rancho California Water District
- Western Municipal Water District Retail Customers



Section 2 Drought Allocation Plan Preparation

A fourth year of dry climate conditions throughout the state and uncertainty about water availability from the State Water Project have increased the possibility that Metropolitan may not have access to the supplies necessary to meet total firm demands at some point in the future and may have to allocate shortages in supplies to its member agencies. To prepare for this possibility, Metropolitan staff worked jointly with member agencies to develop an updated Water Shortage Allocation Plan (WSAP) for 2015 and beyond. This plan, which addresses the principles adopted by the Metropolitan Board of Directors in the 1999 *Water Surplus and Drought Management Plan* (WSDM Plan), was adopted by Metropolitan's Board of Directors in December 2014. A summary of the 2007 plan and the 2014 update is included in Appendix B, attached.

To facilitate implementation of Metropolitan's plan at the local level, Western has developed this DAP. The DAP identifies the methods that will be used to allocate limited imported supplies among Western's wholesale customers, if and when Metropolitan implements its WSAP.

Wholesale Customer Coordination

In 2008, the initial preparation and implementation of a DAP for the Western service area required input from Western's wholesale customers. Recognizing the importance of wholesale customer involvement for the first-of-its-kind plan document, Western created a workgroup, made up of staff from Western and the potentially affected wholesale customers. For this update, Western staff simply modified the allocation methodology so that it was consistent with Metropolitan's recently updated WSAP plan. These changes in methodology were presented to wholesale customer representatives at a regular meeting hosted by Western's general manager in January 2015. As these changes, which are explained in Section 3, did not substantially change the plan outcome, the need for formal workshops was unnecessary to gain support for this update.

Section 3 DAP Supply Allocation Methodology

This section includes a description of the updated supply allocation methodology developed following the 2014 modification of Metropolitan's WSAP. The goal of the DAP is to provide an equitable means of apportioning imported supplies during periods where Metropolitan implements the various shortage levels of its WSAP. This allocation methodology is consistent with the approach defined within Metropolitan's plan and has been adjusted for local needs and conditions. Appendix A, attached, includes estimated retail agency allocations based on the following methodology.

Base Period Calculations

The first step in estimating retail demands and wholesale water needs in the allocation year is to establish a base period with established water supply and delivery data that approximates a base operating condition within Western's service area. **The base period for each of the different categories of demands and supplies is calculated using data from the two most recent non-allocation years (Fiscal Years 2012-13 and 2013-14)**; exceptions to this methodology are noted in the following descriptions of base period calculations.

The following are the components of the Base Period calculation:

Base Period Total Demand: Total water demands for the base period are calculated by adding the Base Period Import Supplies (the demands on Western), and the Base Period Local Supplies.

Base Period Local Supplies: Local supplies for the base period are calculated using the two-year average of groundwater production, groundwater recovery, surface-water production, and other imported supplies. Non-potable recycled water production is not included in this calculation. (This is to address the impact of demand hardening due to recycled water use.)

Base Period Wholesale Demands: Firm demands on Western for the base period are calculated using the two-year average of retail Municipal & Industrial (M&I) demands.

Base Period Gallons per Capita Daily (*GPCD):* Conservation Demand Hardening occurs at the retail water use level as consumers install more conservation-saving devices and participate in available programs. In order to estimate conservation savings, Metropolitan requires each member agency to establish an historical baseline GPCD calculated in a manner consistent with California Senate Bill SBx7-7. Western's 10-year GPCD base period for this plan is 1999 through 2008. The calculated regional Base Period GPCD is 362. Reductions from the Base Period GPCD to the Allocation Year are the basis used to calculate the equivalent conservation savings in acre-feet.

Allocation Year Calculations

The next step in estimating water demands in the allocation year is to adjust the base period estimates of retail demand for population or economic growth, and to adjust for changes in local supplies.

Allocation Year Demand Adjustment: Total retail demands for the allocation year are calculated by adjusting the Base Period Retail Demands for growth.

Growth Adjustment: The lesser of 159.4 GPCD (value provided by Metropolitan), or the calculated base period for each agency, is applied to the change in population from the base period to the allocation year.

Allocation Year Local Supplies: Allocation year local supplies are estimated using the base period local supplies and should include any adjustments for gains and losses of local supply, and extraordinary increases in production over the base period. These adjustments are made to give a more accurate estimate of actual supplies in the allocation year, and in turn, more accurately reflect an agency's demand for supplies from Western.

Gain of Local Supply Adjustment: This adjustment accounts for planned or scheduled gains in local supply production above the base period, which are not due to extraordinary actions to increase water supply in the allocation year. These previously-scheduled increases in supply programs or local production should be added to the base period local supplies.

Loss of Local Supply Adjustment: This adjustment accounts for losses of local supply production from the base period. Losses of local supply, due to such things as hydrology or water quality, should be subtracted from the Base Period Local Supplies.

Extraordinary Increased Production Adjustment: This adjustment accounts for extraordinary increases in local supplies above the base period. Extraordinary increases in production include such efforts as purchasing transfers or mining of groundwater basins. In order not to discourage such extraordinary efforts, only a percentage of the yield from these supplies is added back to Allocation Year Local Supplies. This has the effect of "setting aside" the majority of the yield for the agency who procured the supply. The following table shows the percentages of the extraordinary increases in local supply that are counted in each level of supply allocation:

Regional Shortage Level (%)	Percentage Counted in Local Supply
1 (5%)	0%
2 (10%)	0%
3 (15%)	15%
4 (20%)	20%
5 (25%)	25%
6 (30%)	30%
7 (35%)	35%
8 (40%)	40%
9 (45%)	45%
10 (50%)	50%

Allocation Year Wholesale Demands: Demands on Western for the allocation year are calculated by subtracting the Allocation Year Local Supplies from the Allocation Year Retail Demands.

Allocation Formula and Accounting

The following table contains the elements used in the allocation formula. The formula was designed to be equitable on the wholesale level while helping to minimize hardships experienced by individuals and by the regional economy at the retail level.

(1) Regional Shortage Level	(2) Regional Shortage Percentage	(3) Wholesale Minimum Allocation	(4) Retail Impact Adjustment Maximum
1	5%	92.5%	0%
2	10%	85.0%	5.0%
3	15%	77.5%	7.5%
4	20%	70.0%	10.0%
5	25%	62.5%	12.5%
6	30%	55.0%	15.0%
7	35%	47.5%	17.5%
8	40%	40.0%	20.0%
9	45%	32.5%	22.5%
10	50%	25.0%	25.0%

Shortage Levels(1): The formula allocates shortages of Western supplies over ten levels: from 5 to 50 percent, in 5 percent increments.

Shortage Percentage(2): The maximum total regional shortage percentage of Western's available supplies when compared to the sum of the demands in the allocation year.

Wholesale Minimum Allocation(3): The Wholesale Minimum Allocation is established to ensure a minimum level of wholesale water service (Western supplies) at the wholesale customer level, and sets the target for recognizing a wholesale customer's ongoing investment in Western's system. The Wholesale Minimum Allocation ensures that wholesale customers will not experience shortages on the wholesale level that are greater than one-and-a-half times the percentage shortage of Western's regional water supplies. The Wholesale Minimum Allocation is equal to 100 percent minus one-and-a-half times the shortage level.

Retail Impact Adjustment Maximum(4): The Retail Impact Adjustment Maximum is the factor used to address major differences in retail level shortages associated with across-the-board cuts. The purpose of this adjustment is to ensure that agencies with a high level of dependence on Western do not experience highly disparate shortages compared to other agencies when faced with a reduction in wholesale water supplies. The Retail Impact Adjustment Maximum factor is calculated as the difference between the Regional Shortage Percentage and the Wholesale Minimum Allocation. The amount of the adjustment each wholesale customer receives is prorated on a linear scale, based on its dependence on Western at the retail level. The prorated amount of allocation is referred to as the Retail Impact Adjustment Allocation. For agencies that are 100 percent dependent on Western, this method will result in an allocation of Western supplies that, at the retail level, will result in a shortage equal to the Regional Shortage Percentage. In other words, through this allocation, no agency will experience a greater percentage shortage than the regional shortage percentage.

Conservation Demand Hardening Credit: The Conservation Demand Hardening Credit is calculated at the regional level in Metropolitan's WSAP. The value of the regional conservation credit is divided proportionally among the agencies within Western's service area that purchased imported water during the Base Period. The individual agency's volume of imported water is compared to the total of all agency purchases of imported water. The Conservation Demand hardening credit will be 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 of Directors during implementation of the WSAP. The credit will also be adjusted for:

- overall percentage reduction in retail water demand, and
- Western's dependence on Metropolitan.

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.

M&I Allocation: The allocation of Western supplies to an agency for its retail demand is the sum of the Wholesale Minimum Allocation, the Retail Impact Adjustment, and the Conservation Demand Hardening Credit.

Allocation Example – Calculating Base Period Information to Determine Allocation Year Needs

The following example gives a step-by-step description of how the recommended formula would be used to calculate an allocation of Western's imported supplies to its wholesale customers and retail service area. This example is based on a Fiscal Year 2015-16 allocation using the average of Fiscal Year 2012-13 and Fiscal Year 2013-14 as the base period. The data used for this example was provided by each agency in late 2014.

Step 1: *Calculate Base Period Retail Demand*

The first step in developing an agency's allocation is to estimate the agency's retail level water needs. Two pieces of information are required to calculate retail level water needs:

(1) The amount of local supplies that were produced in the base period, and
(2) The amount of demands on Western in the base period.

Base Period Local Supplies are calculated using the average of production data from Fiscal Year 2012-13 and Fiscal Year 2013-14 for groundwater, groundwater recovery, surface water, and/or other non-Western imported supplies.

Base Period Wholesale Demands on Western are calculated using the same averaged time period as the Base Period Local Supplies.

Base Period Retail Demand can be calculated once the information described above has been determined. The sum of the Base Period Local Supplies and the Base Period Wholesale Demands equals the Base Period Retail Demand.

Step 2: *Adjust Base Period Retail Demand for Growth*

The second step in developing an agency's allocation is to adjust the Base Period Retail Demand for growth that occurred since the Base Period. Based on Department of Finance statistics, the projected population growth in Riverside County was 1.12 percent for the period 2011 through 2013. The Base Period population is adjusted by 1.12 percent for each year between the Base Period and the allocation year. The change in the demand for water is calculated by multiplying the change in population by the lesser of 159.4 gallons per capita daily or the calculated base period GPCD for each agency.

Agency within Western	Applied GPCD
Box Springs Mutual Water Company	104.0
City of Corona	159.4
City of Norco	159.4
Eagle Valley Mutual Water Company	-
Elsinore Valley Municipal Water District	159.4
Lee Lake Water District	138.0
Metropolitan Water District	-
Rancho California Water District	159.4
Western Municipal Water District Retail	159.4

Allocation Year Retail Demand is the result of applying the growth adjustment to the Base Period Retail Demand. It represents a reasonable estimate of the total amount of firm water that an agency needs at the retail level in the year of allocation.

Step 3: *Adjustment for changes in local supply from the Base Period*

The third step in calculating each agency's allocation is to calculate the agency's local supply production in the year of the allocation. This is done by using Base Period Local Supplies that were calculated in Step 1 as a base estimate, and adding back any gains or losses in Base Period Local Supplies that are occurring in the allocation year. If an agency has undertaken extraordinary efforts to secure alternative supplies, this Extraordinary Increase in Local Supplies would also be added here.

Allocation Year Local Supplies are the result from adjusting the Base Period Local Supply for all of the changes listed above.

Step 4: *Calculate Wholesale Water Needs in the Allocation Year*

Now that both the Allocation Year Retail Demands and the Allocation Year Local Supplies have been estimated, the agency's Allocation Year Wholesale Demand can be calculated.

Allocation Year Wholesale Demands on Western are calculated by subtracting the Allocation Year Local Supplies from the Allocation Year Retail Demands. Any demand that is remaining after the agency's local supplies are accounted for represents demand for wholesale supplies from Western.

Dependence on Western is calculated as the percentage of an agency's retail need that is met by Western wholesale supplies.

Step 5: *Apply Base Period Conservation Demand Hardening Credit*

The Conservation Demand Hardening Credit is calculated at the regional level in Metropolitan's WSAP. The value of the regional conservation credit is divided proportionally between the agencies within Western's service area that purchased imported water in the Base Period. The individual agency's volume of imported water is compared to the total of all agencies purchases of imported water.

Allocation Example – Calculating a Supply Allocation in a Regional Shortage Level 3

This example will follow the allocation formula accounting, through a Regional Shortage Level 3 (15%). The table below shows the essential elements of the allocation formula under a Regional Shortage Level 3.

(1) Regional Shortage Level	(2) Regional Shortage Percentage	(3) Wholesale Minimum Allocation	(4) Retail Impact Adjustment Maximum
3	15%	77.5%	7.5%

Step 1: *Calculate Wholesale Minimum Allocation*

The Wholesale Minimum Allocation is calculated by multiplying the agency's Allocation Year Wholesale Demand by the Wholesale Minimum Allocation percentage from the allocation table.

Step 2: *Calculate Retail Impact Adjustment Allocation*

The next step in determining this agency's allocation is to calculate the Retail Impact Adjustment Allocation. Recall from the allocation table, the Retail Impact Adjustment Maximum factor is the difference between the Wholesale Minimum Allocation and the Regional Shortage Percentage. Under a Regional Shortage Level 3 (15 percent), the Retail Impact Adjustment Maximum factor available to any agency is 7.5 percent. Each agency's Retail Impact Adjustment factor is calculated by multiplying the 7.5 percent Retail Impact Adjustment Maximum factor by the agency's Dependence of Western, which was calculated in a previous step.

Step 3: *Apply the Conservation Hardening Credit*

Step 4: *Add the Wholesale Minimum Allocation, the Retail Impact Adjustment Allocation, and the Conservation Hardening Credit to get the final M&I agency allocation.*

The Wholesale Minimum Allocation, the Retail Impact Adjustment Allocation, and the Conservation Hardening Credit are added together to total to the M&I allocation.

Step 5: *Add Unallocated Supplies*

After each agency's M&I allocation is calculated, each agency's M&I allocation is added together to determine the total M&I allocation for all of Western's wholesale customers. As with the example above, if the total M&I allocation is lower than the allocation that Western is receiving from Metropolitan, the surplus is allocated among the wholesale customers based on the proportion of each agency's Wholesale Minimum Allocation to the Western's total Wholesale Minimum Allocation. If the amount is greater than

the allocation from Metropolitan, then the next regional shortage level will be applied until the total M&I allocation is equal or less than allocation from Metropolitan.

Step 6: *Total Allocation*

The final step in calculating this agency's allocation of Western supplies is to sum up all of the elements of the allocation formula that were calculated above.

Section 4 Estimate of Retail Agency Allocation under Drought Allocation Plan

Western (retail) and the retail water suppliers within Western's general service area are, to varying degrees, dependent upon Metropolitan for imported water supply. The following table summarizes the estimated impact of the Metropolitan Board of Directors-adopted (December 2014) WSAP process for the allocation of water supplies to Western's general service area during ten levels of water supply shortage. The water supply available to Western is further allocated between the retail water suppliers in a fashion similar to the Metropolitan process.

MWD WATER SUPPLY ALLOCATION PLAN - 2014 UPDATE			
Regional Shortage Level	MWD Declared Shortage	Import Water Available[1]	Regional Reduction Level[2]
0	-	-	-
1	-5.0%	72,689	-5.1%
2	-10.0%	72,689	-5.1%
3	-15.0%	71,496	-6.7%
4	-20.0%	69,489	-9.3%
5	-25.0%	67,482	-11.9%
6	-30.0%	65,475	-14.5%
7	-35.0%	63,469	-17.2%
8	-40.0%	61,462	-19.8%
9	-45.0%	59,455	-22.4%
10	-50.0%	57,488	-25.0%

FY 2014 Import Demand = 76,614 acre feet.

1. The total *Imported Water Available* subject to change based on the certification of local production at the end of a fiscal year.
2. *Regional Reduction Level* percentages are based on FY 2014 imported water demands, not the base period demands. The reduction levels also apply to the region as a whole, not to the individual retail agencies.

Appendix B includes an overview of Metropolitan's WSAP methodology for shortage allocations. Western will use a process similar to that of Metropolitan to allocate imported water supplies among the retail water agencies within Western's general service area. Agencies that purchased water in the Metropolitan base period (Fiscal Years 2012-13 and 2013-14) share in the allocation of imported water. These agencies include: Box Springs Mutual Water Company, the City of Corona Department of Water and Power, Eagle Valley Mutual Water Company, Elsinore Valley Municipal Water District, Lee Lake Water District, Metropolitan, the City of Norco, Rancho California Water District, and Western Municipal Water District for its retail water service area. The following agencies within Western's general service area did not purchase imported water during Metropolitan's base period and, therefore, are not included in the allocation of imported water supplies: Home Gardens County Water District, Jurupa Community Services District, the City of Riverside Public Utilities, Riverside Highlands Water Company, and Rubidoux Community Services District.

The following table summarizes the estimated imported water supply available to the retail water suppliers within Western's general service area at each of Metropolitan's shortage levels 1 through 10. These values are estimates as the actual volumes of water available to each agency are dependent on the production of local

supplies throughout Western's imported agency region and is reconciled at the completion of each fiscal year during which a Metropolitan water allocation is in place.

Shortage Level	Box Springs MWC	City of Corona	Eagle Valley MWC	Elsinore Valley MWD	Lee Lake WD	MWD	City of Norco	Rancho California WD	Western MWD (Retail)	Total
1	88	14,643	488	16,734	3,104	11	171	17,797	19,646	72,689
2	88	14,643	488	16,734	3,104	11	171	17,797	19,646	72,689
3	84	14,275	437	16,639	3,098	10	154	17,455	19,339	71,496
4	81	13,799	411	16,230	3,037	9	143	16,946	18,828	69,489
5	77	13,323	385	15,822	2,976	9	133	16,436	18,317	67,482
6	74	12,847	360	15,413	2,915	8	122	15,927	17,806	65,475
7	70	12,371	334	15,005	2,855	7	111	15,417	17,294	63,469
8	66	11,896	308	14,596	2,794	7	101	14,907	16,783	61,462
9	63	11,420	283	14,188	2,733	6	90	14,398	16,272	59,455
10	59	10,944	257	13,780	2,672	6	80	13,888	15,760	57,488

Appendix A includes spreadsheets detailing the calculation of retail agency allocations under Metropolitan shortage allocation levels 1 through 10.

Section 5 Allocation Plan Implementation Elements

The following are the implementation elements that are necessary for administering an allocation during a time of shortage. These elements cover the processes needed to declare a shortage level as well as providing a penalty rate structure for enforcing each agency's allocation.

Implementing an Allocation of Supplies
At this time, it is anticipated that the only time Western would allocate imported supplies from Metropolitan is if Metropolitan is forced to allocate its supplies through its WSAP process.

Setting the Shortage Level
Should Metropolitan implement the WSAP, Western staff will determine the appropriate Shortage Level so that supplies allocated at the Western service area level are equal to or less than the Metropolitan allocation. Simultaneously, Western will determine whether any appeals need to be filed with Metropolitan.

Allocation Period
The allocation period for the DAP will be consistent with the period defined within Metropolitan's WSAP. This allocation period covers twelve consecutive months, typically from July of a given year through the following June. This period was selected by Metropolitan so as to minimize the impacts of varying State Water Project allocations. It was also selected to provide wholesale customers with sufficient time to implement their outreach strategies and rate modifications. Metropolitan has indicated that it is their intention when possible to set allocations through the declaration of a shortage level at the April Board of Directors' meeting preceding the next fiscal year.

Determination of Penalties
At the end of the allocation year, Metropolitan will bill Western for any accrued penalties. Penalties will be based on the water rates in effect the last day of June of the allocation year. Western will bill its agencies for penalties based on its penalty rate structure. Any excess funds collected will be refunded proportionately to those agencies that paid penalties.

Allocation Surcharge
At the end of each allocation year, Metropolitan will bill Western for any accrued Allocation Surcharges ("surcharges") based on Metropolitan's adopted WSAP. Western will pass-through Metropolitan's surcharges to its retail agencies (which includes Western's own retail customers) based on Metropolitan's allocation surcharge rate structure described at the end of this section.

If Western exceeds its total allocation from Metropolitan for the year, the underutilization of any individual retail agency's allocation will be reallocated that year to other retail agencies that exceed their allocation in accordance with the same methodology used when Western exceeds its total Metropolitan Tier 1 Maximum. This methodology is described in Western's Board of Directors-adopted "Determining Water Rates and Charges for Water User Agencies" Resolution (this Resolution changes from time to time and is currently Resolution 2876). Only retail agencies that had Metropolitan water deliveries in the WSAP base year, and thus contributed to the amount of Metropolitan water allocated to Western, will be included in the underutilization reallocation calculation described in this paragraph.

No billing or assessment of surcharges to retail agencies will take place until the end of the twelve-month allocation year unless Western at its sole discretion determines that significant surcharges are probable. In this latter case, Western will use an equitable method of invoicing all or a portion of such anticipated surcharges to

retail agencies exceeding their individual allocation. This invoicing will be done prior to the end of the allocation year. At the end of the allocation year and after being assessed any surcharges by Metropolitan, Western will reconcile any collected surcharge revenue and issue invoices or credit memos to retail agencies accordingly, with invoice payment terms consistent with those described in the current applicable Resolution (referenced in the previous paragraph). The purpose of this latter provision is to reduce Western's risk from collecting significant receivable amounts after the end of the allocation year. If at the end of the allocation year Western does not incur any surcharges from Metropolitan, then individual retail agencies will not be invoiced for surcharges (or will be refunded any surcharges paid in advance of year-end).

Metropolitan's surcharge is based on the costs that Metropolitan and its member agencies are incurring to implement outdoor water use reductions through turf removal programs. The surcharge is designed to provide a price signal based on the marginal conservation costs incurred to reduce water use in dry and shortage years. Any revenues collected by Metropolitan from the surcharge would be used to fund the implementation of the Turf Removal Program, or other similar programs designed to conserve water and reduce future demands.

Metropolitan is currently paying $2 per square foot of turf removed. The estimated water savings is 44 gallons per year for each square foot of turf removed for a period of ten years. Based on this savings rate, the estimated cost of the program is $1,480 per acre-foot. Water use between 100 percent and 115 percent of a member agency's water supply allocations would be charged with a surcharge of $1,480 per acre-foot. Water use greater than 115 percent would be charged two times the surcharge or $2,960 per acre-foot. Two times the surcharge would allow the funding of additional turf removal and conservation programs to conserve additional water and further reduce demand or, if appropriate, allow for a higher per square foot incentive payment. The surcharge rates are assessed in addition to the normal rates for Metropolitan water purchases. The penalty rate structure is summarized in the table below:

Water Use	Allocation Surcharge In Addition to Cost of Water
100% of Allocation	$0
Between 100% & 115%	$1,480
Greater than 115%	$2,960

Below are three potential scenarios related to the assessment of the surcharge:

Scenario 1: Retail agency water deliveries are less than Western's Metropolitan allocation. The result after the allocation year would be that retail agencies would not owe any surcharges even if agencies are over their individual allocation.

Scenario 2: Retail agency water deliveries are over Western's Metropolitan allocation, but less than 115 percent. The $1,480 per acre-foot surcharge would be assessed only to retail agencies that exceed their individual allocation after taking into consideration the proration of underutilized allocation.

Scenario 3: Retail agency water deliveries are over Western's Metropolitan allocation by more than 115 percent with individual agencies' exceedance varying. First, underutilized allocation would be prorated to the water deliveries that are over by 100 and 115 percent, with the balance assessed a surcharge of $1,480 per acre-foot. Any water remaining that exceeds 115 percent would be assessed a surcharge of $2,960 per acre-foot (two times $1,480).

Appendix A Wholesale Customer Allocation by Shortage Level

Shortage Level 1: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%
Import Minimum Allocation	**82.7**	**13,601.3**	**475.2**	**15,381.3**	**2,851.0**	**10.6**	**165.9**	**16,487.8**	**18,173.9**	**67,237.2**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	0.6%	1.1%	2.5%	1.5%	2.5%	2.5%	0.1%	1.6%	2.0%	1.4%
Retail Impact Adjustment CREDIT	0.5	155.7	12.8	255.1	77.1	0.3	0.1	279.7	383.4	1,031.2
Import Allocation with Retail Credit	**83.3**	**13,757.0**	**488.0**	**15,636.5**	**2,928.0**	**10.9**	**166.0**	**16,767.5**	**18,557.3**	**68,268.4**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**5**	**886**	**0**	**1,097**	**176**	**0**	**5**	**1,029**	**1,088**	**4,420**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**88**	**14,643**	**488**	**16,734**	**3,104**	**11**	**171**	**17,797**	**19,646**	**72,689**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	5%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 1. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 2: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Import Minimum Allocation	**76.0**	**12,498.5**	**436.6**	**14,134.2**	**2,619.8**	**9.7**	**152.4**	**15,151.0**	**16,700.4**	**61,785.5**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	1.2%	2.1%	5.0%	3.1%	5.0%	5.0%	0.1%	3.1%	3.9%	2.8%
Retail Impact Adjustment CREDIT	1.0	311.4	25.7	510.3	154.1	0.6	0.2	559.4	766.8	2,062.4
Import Allocation with Retail Credit	**77.1**	**12,809.9**	**462.3**	**14,644.5**	**2,773.9**	**10.3**	**152.6**	**15,710.4**	**17,467.2**	**63,847.9**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**10**	**1,772**	**0**	**2,194**	**351**	**0**	**11**	**2,059**	**2,177**	**8,841**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**87**	**14,582**	**462**	**16,839**	**3,125**	**10**	**163**	**17,769**	**19,644**	**72,689**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	10%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 2. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 3: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	77.5%	77.5%	77.5%	77.5%	77.5%	77.5%	77.5%	77.5%	77.5%	77.5%
Import Minimum Allocation	**69.3**	**11,395.7**	**398.1**	**12,887.1**	**2,388.7**	**8.9**	**139.0**	**13,814.1**	**15,226.8**	**56,333.9**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	1.8%	3.2%	7.5%	4.6%	7.5%	7.5%	0.2%	4.7%	5.9%	4.3%
Retail Impact Adjustment CREDIT	1.6	467.1	38.5	765.4	231.2	0.9	0.3	839.2	1,150.2	3,093.6
Import Allocation with Retail Credit	**70.9**	**11,862.8**	**436.6**	**13,652.5**	**2,619.8**	**9.7**	**139.3**	**14,653.3**	**16,377.0**	**59,427.4**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**13**	**2,412**	**0**	**2,986**	**478**	**0**	**14**	**2,802**	**2,962**	**12,068**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**84**	**14,275**	**437**	**16,639**	**3,098**	**10**	**154**	**17,455**	**19,339**	**71,496**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	15%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 3. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 4: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Import Minimum Allocation	**62.6**	**10,292.9**	**359.6**	**11,639.9**	**2,157.5**	**8.0**	**125.5**	**12,477.3**	**13,753.2**	**50,882.2**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	2.3%	4.2%	10.0%	6.1%	10.0%	10.0%	0.2%	6.3%	7.8%	5.7%
Retail Impact Adjustment CREDIT	2.1	622.8	51.4	1,020.5	308.2	1.1	0.4	1,118.9	1,533.6	4,124.8
Import Allocation with Retail Credit	**64.7**	**10,915.6**	**411.0**	**12,660.5**	**2,465.7**	**9.2**	**125.9**	**13,596.2**	**15,286.9**	**55,007.0**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**16**	**2,883**	**0**	**3,570**	**571**	**0**	**17**	**3,350**	**3,541**	**14,482**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**81**	**13,799**	**411**	**16,230**	**3,037**	**9**	**143**	**16,946**	**18,828**	**69,489**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	20%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 4. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 5: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Import Minimum Allocation	**55.9**	**9,190.0**	**321.1**	**10,392.8**	**1,926.3**	**7.2**	**112.1**	**11,140.4**	**12,279.7**	**45,430.5**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	2.9%	5.3%	12.5%	7.7%	12.5%	12.5%	0.3%	7.8%	9.8%	7.1%
Retail Impact Adjustment CREDIT	2.6	778.5	64.2	1,275.7	385.3	1.4	0.5	1,398.6	1,917.0	5,156.0
Import Allocation with Retail Credit	**58.5**	**9,968.5**	**385.3**	**11,668.5**	**2,311.6**	**8.6**	**112.5**	**12,539.0**	**14,196.7**	**50,586.5**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**19**	**3,354**	**0**	**4,153**	**664**	**0**	**20**	**3,897**	**4,120**	**16,896**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**77**	**13,323**	**385**	**15,822**	**2,976**	**9**	**133**	**16,436**	**18,317**	**67,482**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	25%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 5. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 6: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Import Minimum Allocation	**49.2**	**8,087.2**	**282.5**	**9,145.7**	**1,695.2**	**6.3**	**98.6**	**9,803.6**	**10,806.1**	**39,978.9**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	3.5%	6.4%	15.0%	9.2%	15.0%	15.0%	0.3%	9.4%	11.7%	8.5%
Retail Impact Adjustment CREDIT	3.1	934.2	77.1	1,530.8	462.3	1.7	0.6	1,678.3	2,300.5	6,187.2
Import Allocation with Retail Credit	**52.3**	**9,021.4**	**359.6**	**10,676.4**	**2,157.5**	**8.0**	**99.2**	**11,481.9**	**13,106.6**	**46,166.0**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**21**	**3,826**	**0**	**4,737**	**758**	**0**	**23**	**4,445**	**4,699**	**19,309**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**74**	**12,847**	**360**	**15,413**	**2,915**	**8**	**122**	**15,927**	**17,806**	**65,475**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	30%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 6. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 7: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%
Import Minimum Allocation	**42.5**	**6,984.4**	**244.0**	**7,898.5**	**1,464.0**	**5.4**	**85.2**	**8,466.7**	**9,332.6**	**34,527.2**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	4.1%	7.4%	17.5%	10.7%	17.5%	17.5%	0.4%	11.0%	13.7%	9.9%
Retail Impact Adjustment CREDIT	3.7	1,089.9	89.9	1,785.9	539.4	2.0	0.6	1,958.1	2,683.9	7,218.4
Import Allocation with Retail Credit	**46.2**	**8,074.3**	**333.9**	**9,684.4**	**2,003.4**	**7.4**	**85.8**	**10,424.8**	**12,016.4**	**41,745.6**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**24**	**4,297**	**0**	**5,320**	**851**	**0**	**26**	**4,992**	**5,278**	**21,723**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**70**	**12,371**	**334**	**15,005**	**2,855**	**7**	**111**	**15,417**	**17,294**	**63,469**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	35%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 7. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 8: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Import Minimum Allocation	**35.8**	**5,881.6**	**205.5**	**6,651.4**	**1,232.9**	**4.6**	**71.7**	**7,129.9**	**7,859.0**	**29,075.5**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	4.7%	8.5%	20.0%	12.3%	20.0%	20.0%	0.4%	12.6%	15.6%	11.3%
Retail Impact Adjustment CREDIT	4.2	1,245.6	102.7	2,041.1	616.4	2.3	0.7	2,237.8	3,067.3	8,249.6
Import Allocation with Retail Credit	**40.0**	**7,127.2**	**308.2**	**8,692.4**	**1,849.3**	**6.9**	**72.5**	**9,367.7**	**10,926.3**	**37,325.1**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**26**	**4,768**	**0**	**5,904**	**945**	**0**	**28**	**5,540**	**5,857**	**24,137**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**66**	**11,896**	**308**	**14,596**	**2,794**	**7**	**101**	**14,907**	**16,783**	**61,462**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	40%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 8. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 9: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%
Import Minimum Allocation	**29.1**	**4,778.8**	**167.0**	**5,404.3**	**1,001.7**	**3.7**	**58.3**	**5,793.0**	**6,385.4**	**23,623.9**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	5.3%	9.5%	22.5%	13.8%	22.5%	22.5%	0.5%	14.1%	17.6%	12.8%
Retail Impact Adjustment CREDIT	4.7	1,401.3	115.6	2,296.2	693.5	2.6	0.8	2,517.5	3,450.7	9,280.7
Import Allocation with Retail Credit	**33.8**	**6,180.1**	**282.5**	**7,700.4**	**1,695.2**	**6.3**	**59.1**	**8,310.5**	**9,836.1**	**32,904.6**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**29**	**5,240**	**0**	**6,488**	**1,038**	**0**	**31**	**6,087**	**6,436**	**26,550**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**63**	**11,420**	**283**	**14,188**	**2,733**	**6**	**90**	**14,398**	**16,272**	**59,455**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	45%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 9. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Shortage Level 10: Calculations Spreadsheet

	BOX SPRINGS	CORONA	EAGLE VALLEY	EVMWD	LLWD	MWD	NORCO	RANCHO	WESTERN	TOTAL
BASE PERIOD DEMAND										
Base Period Import Supplies (AVG FY13 & FY14)	86	15,518	514	19,214	3,074	11	93	18,029	19,060	75,599
Base Period Local Supplies (AVG FY13 & FY14)	295	19,177	0	7,832	0	0	8,651	10,562	6,136	52,653
Base Period Total Demand	**380**	**34,696**	**514**	**27,047**	**3,074**	**11**	**8,743**	**28,591**	**25,196**	**128,252**
ALLOCATION YEAR DEMAND ADJUSTMENT										
Base Period Average Population	3,300	158,611	0	139,599	19,962	0	27,063	24,742	94,807	468,083
% of growth	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%
Allocation Year Population	3,337	160,390	0	141,165	20,185	0	27,367	25,019	95,871	473,334
GPCD Applied to Growth	104	159	0	159	138	0	159	159	159	159
Demand Growth	4.29	317.71	0.00	279.63	34.62	0.00	54.21	49.56	189.91	938.00
LESS Growth in Conservation & Recycling	3.26	297.17	0.00	231.66	26.33	0.00	74.89	244.89	215.81	1094.00
Adjusted Allocation Year Demand	**381**	**34,716**	**514**	**27,094**	**3,082**	**11**	**8,722**	**28,396**	**25,170**	**128,096**
ALLOCATION YEAR IMPORT DEMAND										
Allocation Year Local Supplies (FY2014)	**292**	**20,012**	**0**	**10,466**	**0**	**0**	**8,543**	**10,571**	**5,523**	**55,407**
Allocation Year Imported Demand	**89**	**14,704**	**514**	**16,628**	**3,082**	**11**	**179**	**17,825**	**19,647**	**72,689**
IMPORT MINIMUM ALLOCATION										
Import Minimum Percentage	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Import Minimum Allocation	**22.4**	**3,676.0**	**128.4**	**4,157.1**	**770.5**	**2.9**	**44.8**	**4,456.2**	**4,911.9**	**18,172.2**
RETAIL IMPACT ADJUSTMENT CREDIT[1]										
Dependence on Metropolitan	23%	42%	100%	61%	100%	100%	2%	63%	78%	57%
Retail Impact Adjustment Allocation	5.9%	10.6%	25.0%	15.3%	25.0%	25.0%	0.5%	15.7%	19.5%	14.2%
Retail Impact Adjustment CREDIT	5.2	1,557.0	128.4	2,551.3	770.5	2.9	0.9	2,797.2	3,834.1	10,311.9
Import Allocation with Retail Credit	**27.6**	**5,233.0**	**256.9**	**6,708.4**	**1,541.1**	**5.7**	**45.8**	**7,253.4**	**8,746.0**	**28,484.2**
DEMAND HARDENING CREDIT[2]										
Demand Hardening Credit	**32**	**5,711**	**0**	**7,071**	**1,131**	**0**	**34**	**6,635**	**7,015**	**28,964**
TOTAL DAP IMPORT ALLOCATION										
Total DAP Allocation	**59**	**10,944**	**257**	**13,780**	**2,672**	**6**	**80**	**13,888**	**15,760**	**57,448**

Base GPCD	362
Allocation Year GPCD	242
Change in GPCD	120
Acre-Foot Change	63,837
Regional Shortage Percentage	50%
GPCD Percent Reduction	33.3%

1. The MWD Retail Impact Adjustment Credit, when applied to the individual water agencies within Western's general service area, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such the amount of water over allocated is subtracted from the total Demand Hardening Credit.
2. The MWD Conservation Demand Hardening Credit methodology, when applied to the various GPCD values and GPCD changes at the local level with significantly lower water demands, results in individual agency allocations that exceed the total wholesale allocation from MWD. As such, the wholesale Demand Hardening Credit has been divided among the urban retail water suppliers in proportion to the base period demand for imported water relative to the total imported water demand for all urban retail water suppliers.

The table above illustrates the calculation of the estimated import water supply available to each water supplier within Western's service area during DAP Shortage Level 10. All values are estimates as the actual volumes of water available to each agency are ultimately dependent on the certified production of local supplies throughout Western's import agency region. The final allocation will be reconciled at the completion of each fiscal year during which a water allocation is in place.

Appendix B Overview of the Metropolitan Water District Shortage Allocation Plan

Metropolitan's WSAP is the basis for allocation of shortages in supplies to member agencies should Metropolitan be unable to meet total firm demands. The first WSAP was prepared in 2007 due to dry conditions and uncertainty about future pumping operations from the State Water Project caused by fishery protection measures in the Sacramento-San Joaquin Bay-Delta. Since 2007, Metropolitan staff worked jointly with the member agency managers and staff to revise the plan. In December of 2014, the Metropolitan Board of Directors adopted the revisions as described later in this appendix.

The WSAP is based upon the 1999 Water Surplus and Drought Management Plan (WSDM Plan), which introduced the concept of using a base period to estimate water needs under an allocation.

Water Surplus and Drought Management Plan
The WSDM is the drought management plan that Metropolitan currently operates under which addresses both drought actions and water surplus actions. However, a water allocation methodology in the event "rationing" becomes necessary is not included in the WSDM Plan.

The following are the guiding principle, supporting principles and implementation goals of the WSDM Plan:

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.
- 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.[9]

Although an allocation method was not adopted, a draft plan was devised and specific concepts of an allocation are laid out in the WSDM Plan. These concepts include an overall policy objective of the allocation method as follows: "…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,
- local resources, and
- total retail demands."[10]

Water sales to an agency up to the amount allocated will be at the prevailing full service rate. Deliveries for water use from 100 to 102 percent of the allocation would be charged the prevailing full service rate plus $175 per acre-foot (this cost is similar to the cost of Governors Water Bank water offered for sale in the 1987–92 drought). Water deliveries in excess of 102 percent of the target amount would be charged three times the full service rate.

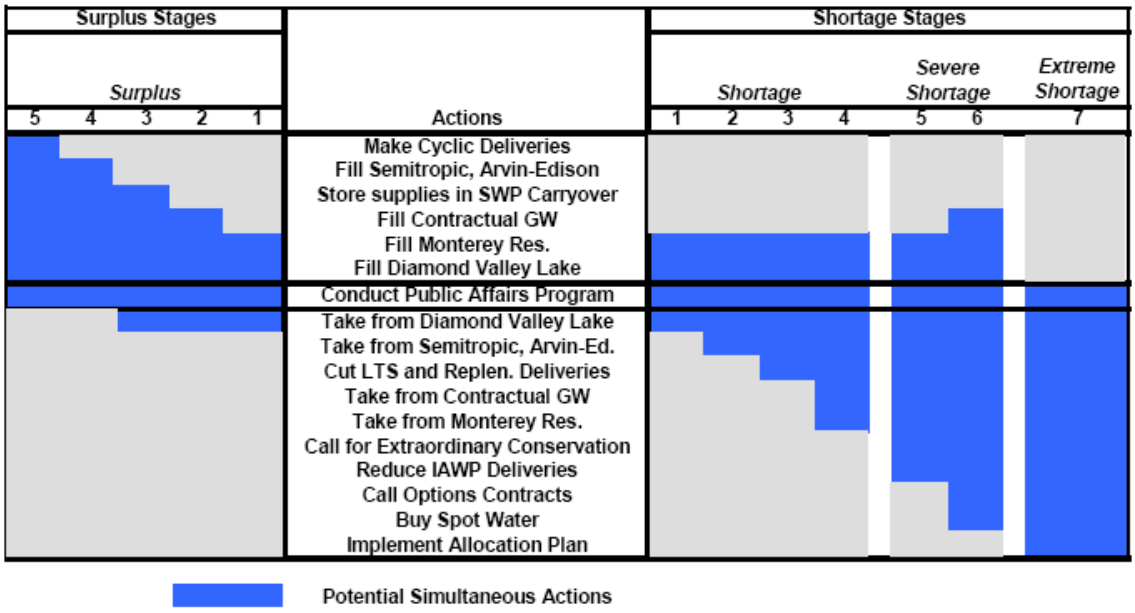
The WSDM Plan has four resource stages in which actions fall. These resource stages are:

- **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.[11]

Based on the resource stage that Metropolitan is in, varying actions may occur. These actions are shown in Figure 1, below, as developed by Metropolitan. The matrix acts as a "framework." Actual response would be based on conditions at the time of need.

Figure 3-1: Sequence of WSDM Plan Water Resource Management Steps

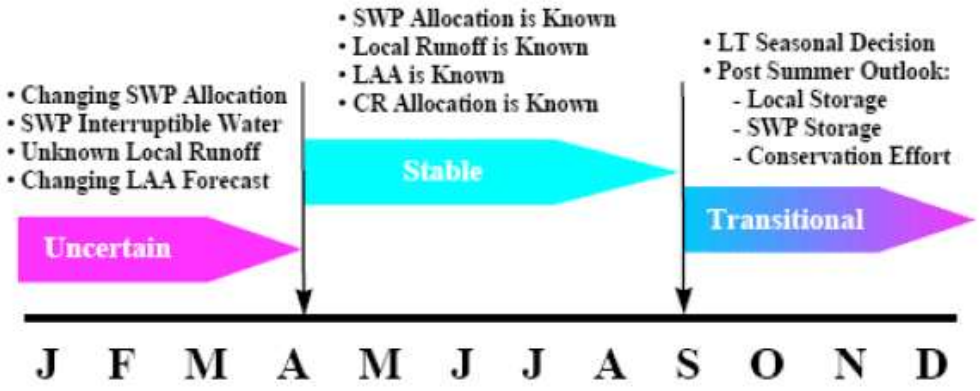
Figure 1: Sequence of WSDM Plan Water Resource Management Steps



The matrix is read from the center of the "Actions" column to the right or left. If Metropolitan is in a surplus stage, it would be read from the center up and to the left. If Metropolitan is in shortage stages, it would be read from the center down and to the right. Metropolitan's General Manager has authority to act on all surplus actions and shortage actions 1 through 4. Metropolitan's Board of Directors must approve actions 5 through 7.

The timeline below, from the WSDM Plan, shows a hypothetical shortage year.[12]

Figure 3-2: Shortage Year Timeline



From January through April, supplies are uncertain. The State Water Project (SWP) allocation is changing based on hydrology as well as the Los Angeles Aqueduct. From May through the end of September, supplies are known and actions have been taken in response to those known supplies. From October through December, a transitional period develops where there is uncertainty on the availability of supplies for the following period, and a decision is made on whether to offer long-term storage deliveries to member agencies as well as assess local storage, SWP storage and conservation efforts that have occurred.

A Drought Program Officer (DPO) will administer the public outreach programs. The DPO will be responsible for coordinating the various activities during a drought.

2007 Metropolitan Shortage Allocation Plan

Metropolitan's November 20, 2007 Board of Directors letter on the Draft Metropolitan Proposed Shortage Allocation Plan identifies the following central objectives of the Plan:

1. Address retail demands and wholesale water needs in the allocation year;
2. Adjust for factors such as population or economic growth, demand hardening, conservation savings, local investment, and the need for wholesale imported water; and
3. Employ an allocation formula that is as equitable as possible on the wholesale level while helping minimize hardships experienced by individuals and by the regional economy at the retail level.

The Plan employs a "two promise method" for supply allocation to ensure that:

1. On a retail level, shortages do not exceed the total Metropolitan percentage shortage (Retail Promise).
2. On a wholesale level, shortages do not exceed one and a half times the total Metropolitan percentage shortage (Wholesale Promise).

Key elements of the plan include:

- **Base Period –** Use of historical data is needed to estimate retail demands, local supplies, and wholesale water needs. The Plan uses a three-year average historical period as its base, with the initial period being 2004 through 2006. It is understood that this base period will be updated or adjusted as time progresses.
- **Growth Adjustment –** Estimates of retail demands need to be adjusted for growth that occurred between an allocation year and the base period. The Proposal uses county-level estimates of average annual growth in population as a proxy for member agency growth. Agencies will also have a choice to use a weighted average of population and job growth instead of just population.
- **Local Supply Adjustment –** Estimates of local supplies need to be adjusted for gains, losses, and extraordinary increases. These adjustments are critical to having reasonable estimates of total retail water needs.

- **Demand Hardening –** The Plan recognizes that significant increases in non-potable recycling and conservation savings devices can harden demands, and make additional reductions in water use more difficult to achieve. To address hardening due to non-potable recycling, non-potable recycling deliveries and the associated demands are not included in the allocation formula, thereby making all elements of the plan applicable to potable water uses only. To address hardening due to conservation, the Plan provides a credit based on the amount of conservation savings within a member agency and the regional shortage level declared by Metropolitan.
- **Depth of Shortage –** The Plan treats shallow shortages, defined as regional shortages up to ten percent, differently than deeper shortages. In shallow shortages, reductions in Metropolitan supplies will be done on an across-the-board basis, with adjustments for conservation demand hardening. This means that severely disparate impacts at a retail level are not addressed until regional shortages are greater than ten percent. At that point, the Plan employs an allocation formula that is equitable on the wholesale level while helping to minimize impacts to the regional economy from disparate shortages at the retail level.

Allocation Procedure

The shortage allocation formula has been developed for ten shortage levels from 5 to 50 percent.

1	5%	92.50%	0.00%	30%
2	10%	85.00%	0.00%	30%
3	15%	77.50%	7.50%	40%
4	20%	70.00%	10.00%	50%
5	25%	62.50%	12.50%	75%
6	30%	55.00%	15.00%	90%
7	35%	47.50%	17.50%	100%
8	40%	40.00%	20.00%	100%
9	45%	32.50%	22.50%	100%
10	50%	25.00%	25.00%	100%

Allocation Period
The allocation period covers twelve consecutive months, from July of a given year through the following June. This period was selected by Metropolitan so as to minimize the impacts of varying SWP allocations. It was also selected to provide member agencies with sufficient time to implement their outreach strategies and rate modifications.

Setting the Regional Shortage Level
Metropolitan staff shall be responsible for recommending a Regional Shortage Level for Board consideration. The final recommendation shall be based on water supply availability and Metropolitan water supply management actions, storage, and transfer operations that are consistent with those outlined in the WSDM Plan adopted by the Board in 1999, and the monthly status reports provided to the Water Planning and Stewardship Committee. Metropolitan's Board of Directors, through the Water Planning and Stewardship Committee, shall be 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 a stable supply picture. Barring

unforeseen large-scale circumstances, the shortage level will be put in place for the entire allocation period without change. This will allow a stable planning platform for the agencies.

Allocation Appeals Process
An appeals process will be necessary for the administration of any changes or corrections to an agency's allocation. Metropolitan shall designate an Appeals Liaison as the official point of contact for all information and inquiries regarding appeals. Basis for appeals claims can include but are not limited to:

- Adjusting erroneous historical data used in base year calculations
- Adjusting for unforeseen loss or gain in local supply
- Adjusting for extraordinary increases in local supply

Small appeals, defined as those that would change an agency allocation by a threshold of less than 10 percent and less than 5,000 acre-feet, shall be evaluated and approved or denied by Metropolitan staff determination. For process transparency, Metropolitan staff shall provide a report to the Board of Directors on all submitted appeals, including the basis for determination of the outcome of the appeal. 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. For large appeals, defined as those that would change an agency allocation by a threshold of 10 percent and at least 5,000 acre-feet, Metropolitan staff shall refer the appeal to the Board of Directors through the Water Planning and Stewardship Committee for approval.

Allocation Penalty Rates
Member agency allocations shall be enforced through a penalty rate structure. The recommended penalty rate structure is an ascending block structure. This structure provides a lower penalty for minor overuse of allocations, and a higher penalty for major overuse of allocations.

Changes since the 2007 Plan

The WSAP has undergone a series of updates since the plan was first developed in 2007 and implemented in 2009. The most recent update approved in December of 2014 includes the following changes:

- Replaced the WSAP Base Period with the Fiscal Years ending 2013 and 2014 and included a credit process for mitigating for reduced local demands as a result of restrictions in place during the new Base Period;
- Replaced the method for calculating Conservation Demand Hardening;
- Added a separate allocation for drought-impacted groundwater basins; and
- Replaced the WSAP Penalty Rates with an Allocation Surcharge based on the marginal costs of water conservation programs.

Updated Base Period
The WSAP "Base Period" is used to determine the retail consumptive water demands for each member agency. The Base Period retail demand is adjusted for growth in population, conservation savings, and non-potable recycling production occurring from the base period to the year in which an allocation is declared (Allocation Year). The recent update replaces the WSAP Base Period of 2004–2006 with Fiscal Years ending 2013 and 2014. The change provides a more up-to-date estimate of current retail consumptive water demand.

Western's complete general water service area Base Period consumptive water demands at the time of Metropolitan Board adoption are summarized in the following table.

Local Supplies		MWD Purchases		Retail Demand		Allocation Year 2015		
FY 2012-2013	FY 2013-2014	FY 2012-2013	FY 2013-2014	FY 2012-2013	FY 2013-2014	Retail Demand	Local Supply	WSAP Baseline
186,497	183,858	68,457	75,910	260,997	259,768	261,793	183,858	77,934

Demand Hardening Methodology
Conservation Demand Hardening occurs at the retail water use level as consumers install more conservation saving devices and participating in available programs. In order to estimate conservation savings, each member agency will establish a historical baseline GPCD calculated in a manner consistent with California Senate Bill SBx7-7. Reductions from the baseline GPCD to the Allocation Year would be the basis used to calculate the equivalent conservation savings in acre-feet. The Conservation Demand Hardening credit will be 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 of Directors during implementation of the WSAP. The credit will also be adjusted for:

- overall percentage reduction in retail water demand, and
- Western's dependence on Metropolitan.

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.

Separate Allocation for Drought-Impacted Groundwater Basins
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. Metropolitan provides a limited allocation for drought impacted groundwater basins based on the following framework:

- Metropolitan staff will meet with a requesting member agency and the appropriate groundwater basin manager to document whether the basin is in one of the following conditions:
  - Groundwater basin overdraft conditions that will result in water levels being outside normal operating ranges during the WSAP allocation period; or
  - Violations of groundwater basin water quality and/or regulatory parameters that would occur without imported deliveries.
- Metropolitan will 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).
- 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.
- 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:
  - Maintenance of groundwater production levels;
  - Maintenance of, or reducing the further decline of, groundwater levels;
  - Maintenance of key water quality factors/indicators;
  - Avoidance of permanent impacts to groundwater infrastructure or geologic features, and;
  - Consideration of severe and/or inequitable financial impacts.

Final amounts and allocations will be determined following consultation with groundwater basin managers and member agencies.

WSAP Penalty Rates

The Allocation Surcharge is based on the costs that Metropolitan and its member agencies are incurring to implement outdoor water use reductions through turf removal programs. The Allocation Surcharge is designed to provide a price signal based on the marginal conservation costs incurred to reduce water use in dry and shortage years. Any revenues collected from the Allocation Surcharge would be used to fund the implementation of the Turf Removal program or other similar programs designed to conserve water and reduce future demands.

- The Allocation Surcharge is based on Metropolitan's current cost of the turf removal program. Metropolitan is currently paying $2 per square foot of turf removed. The estimated water

savings is 44 gallons per year for each square foot of turf removed for a period of ten years. Based on this savings rate, the estimated cost of the program is $1,480 per acre-foot.

- Water use between 100 percent and 115 percent of WSAP supply allocations is charged with the Allocation Surcharge of $1,480 per acre-foot. Water use greater than 115 percent of WSAP supply allocations is charged two times the Allocation Surcharge or $2,960 per acre-foot. Two times the Allocation Surcharge provides funding for additional turf removal and conservation programs to conserve additional water and further reduce demand or, if appropriate, allow for a higher per square foot incentive payment.

Attachment 2 - Metropolitan Water Supply Allocation Plan

Water Supply Allocation Plan



December 2014 Revision

Metropolitan Water District of Southern California

Inside cover: Photo courtesy of Cora Edmonds/ArtXchange for the Healing Planet

Water Supply Allocation Plan

Table of Contents

List of Acronyms 3
Definitions 3
Section 1: Introduction 4
Section 2: Development Process 4
- Member Agency Input 4
- Board of Directors Input 4
- The 12-Month Review Process 5
- The Three-Year Review Process 5
- 2014 Review Process 6

Section 3: Review of Historical Shortage Plans 7
- Interruptible Water Service Program 7
- Incremental Interruption and Conservation Plan 7
- 1995 Drought Management Plan 7
- 1999 Water Surplus and Drought Management Plan 7

Section 4: Water Supply Allocation Formula 8
- Base Period Calculations 8
- Allocation Year Calculations 9
- Water Supply Allocation Calculations 10

Section 5: WSAP Implementation 13
- Allocation Period 13
- Setting the Regional Shortage Level 13
- Exit Strategy 14
- Allocation Appeals Process 14
- Allocation Surcharge 14
- Tracking and Reporting 16
- Key Dates for Water Supply Allocation Implementation 16

Appendix A: Metropolitan Member Agencies 18
Appendix B: Water Supply Allocation Plan Process Timeline 19
Appendix C: 12-Month Review Process and Results 21
Appendix D: Three-Year Review Process and Results 23
Appendix E: 2014 Review Process and Results 25
Appendix F: Summary of Historical Shortage Plans 27
Appendix G: Water Supply Allocation Formula Example 28
Appendix H: Board Policy Principles on Determining the Status of Extraordinary Supply 34
Appendix I: Base Period Mandatory Rationing Adjustment 35

Appendix J: Per-Capita Water Use Minimum Example 36
Appendix K: Qualifying Income-Based Rate Allocation Surcharge Adjustment Example 39
Appendix L: Groundwater Replenishment Allocation 41
Appendix M: Water Rates, Charges, and Definitions 42
Appendix N: Allocation Appeals Process 43
Appendix O: Appeals Submittal Checklist 46

List of Tables and Figures

Table 1: Shortage Allocation Index 10
Table 2: Allocation Surcharge 15
Table 3: Board Adopted Allocation Timeline 17
Table 4: Member Agencies 18
Table 5: Historical Shortage Plan Overview 27
Figure 1: Base Period Retail Demand Calculation 28
Figure 2: Allocation Year Retail Demand Calculation 29
Figure 3: Allocation Year Wholesale Demand Calculation 30
Figure 4: WSAP Allocation Regional Shortage Level 4 33
Table 6: Total Retail Level Allocation Year Supplies 37
Table 7: Total Per-Capita Water Use Adjustment 38
Table 8: Residential Per-Capita Water Use Adjustment 38
Table 9: Water Rates and Charges 42

Figure 1: Base Period Retail Demand Calculation 28
Figure 2: Allocation Year Retail Demand Calculation 29
Figure 3: Allocation Year Wholesale Demand Calculation 30
Figure 4: WSAP Allocation Regional Shortage Level 4 33

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

[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]

[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]

[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.

[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]

[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%

[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

[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]

[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.

[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).

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				
	August		Assess		
	September				
	October				
	November				
	December				
Year 3	January				**Effective Period** Continuous Tracking of Member Agency Local Supply and Imported Water Use
	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

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

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

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.

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

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

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			√

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.

$$[(gw1+gwr1+laa1+sw1+sd1+os1) + (gw2+gwr2+laa2+sw2+sd2+os2)] \div 2 = 59{,}000 \text{ af}$$

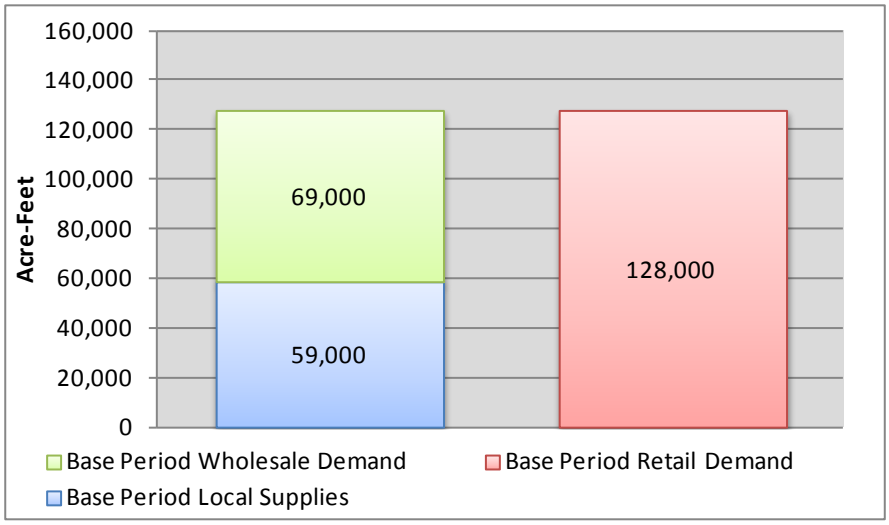
Base Period Wholesale Demands: Calculated using the same two-year time period as the Base Period Local Supplies. The Base Period Wholesale Demands include firm purchases (fp) and in-lieu deliveries to long-term groundwater replenishment (il), conjunctive use (cup), cyclic (cyc), and supplemental storage 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



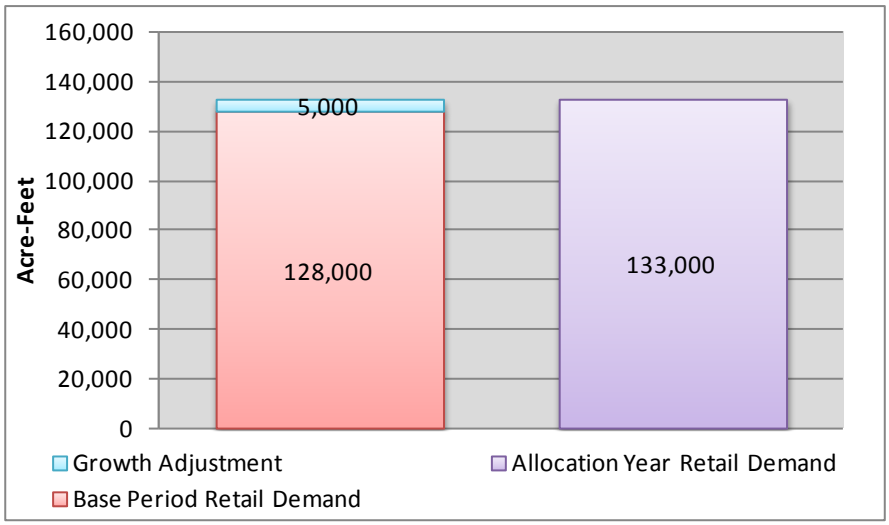
Calculate Adjustment for Base Period Mandatory Rationing (if applicable): The hypothetical agency used in this example is assumed not to qualify for the Base Period Mandatory Rationing Adjustment. A detailed discussion of the adjustment methodology can be found in Appendix I: Base Period Rationing Adjustment 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

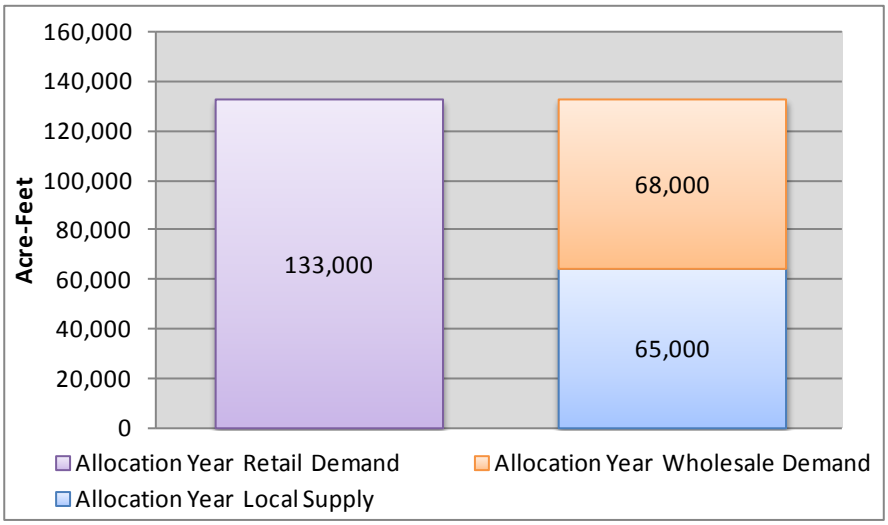
For this example assume also that this agency has an additional 5,000 acre-feet of supplies that meet the determinations for Extraordinary Supply. These supplies are withheld from the allocation formula except for in calculating the Retail Impact Adjustment Allocation.

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.

$$\text{Conservation Savings} = \frac{(\text{GPCD Reduction}) \times 365 \text{ days/yr} \times \text{Population})}{325{,}851 \text{ gallons/af}}$$

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

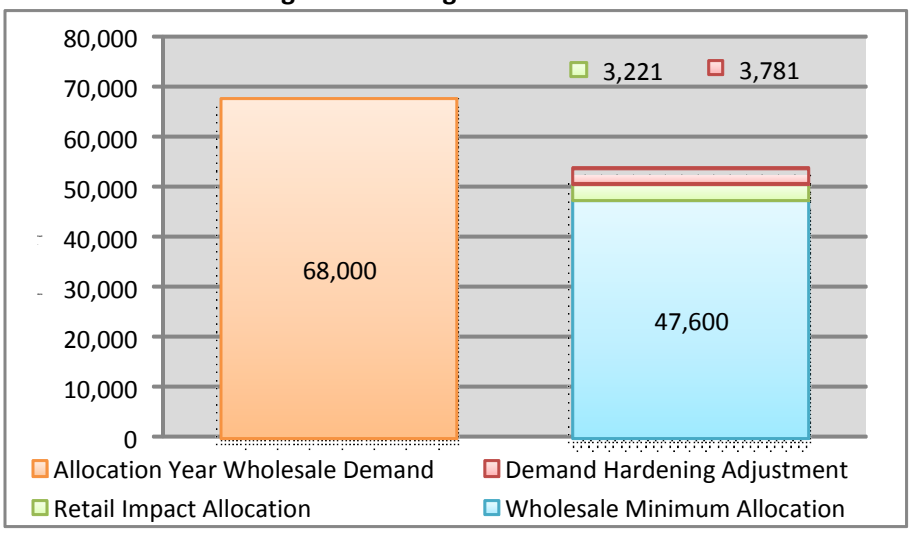
Step 8: Calculate the Low Per-Capita Adjustment Allocation: The hypothetical agency used in this example is assumed not to qualify for the Low Per-Capita Adjustment. A detailed discussion and example of the Low Per-Capita Adjustment calculation can be found in Appendix J: Per Capita Water Use Minimum 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.

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.

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.

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.

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.

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
  - o Name
  - o Address
  - o Phone Number
  - o E-mail Address
- ☐ General Manager
  - o Name
  - o Address
  - o Phone Number
  - o E-mail Address

Type of Appeal

- ☐ State the type of appeal
  - o Erroneous historical data used in base period calculations
    - Metropolitan Deliveries
    - Local Production
    - Growth adjustment
    - Conservation savings
  - o Exclusion of physically isolated areas
  - o Extraordinary supply designation
  - o Groundwater Replenishment Allocation
  - o Base Period Mandatory Rationing Adjustment
  - o 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
  - o 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 3 -
Western Ordinance 385

ORDINANCE 385

ORDINANCE OF THE BOARD OF DIRECTORS OF THE WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ADOPTING A DROUGHT ALLOCATION PLAN

WHEREAS, Western Municipal Water District ("Western") was formed by the voters in 1954 for the purpose of importing water supplies from the Metropolitan Water District of Southern California ("Metropolitan"); and

WHEREAS, Western delivers these imported water supplies, from the State Water Project and the Colorado River Aqueduct and treated at Metropolitan's Henry J. Mills and Robert A. Skinner Filtration Plants, to communities on a wholesale basis to augment their own supplies; and

WHEREAS, Western serves a population of more than 70,000 people directly on a retail basis and over 880,000 people through its member agencies with State Water Project water and various locally-produced supplies; and

WHEREAS, Metropolitan has adopted the 1999 Water Surplus and Drought Management Plan ("WSDM Plan"). The guiding principle of the WSDM Plan is to encourage storage of water during periods of surplus and to work jointly with its member agencies, such as Western, to minimize impacts on the retail consumers and the economy during periods of shortage; and

WHEREAS, recent dry conditions and uncertainty about future pumping operations from the State Water Project have brought about the possibility that Metropolitan may not have access to the supplies necessary to meet total firm demands in the near future and may have to allocate shortages in supplies to its member agencies, such as Western. To prepare for this possibility, Metropolitan adopted an updated Water Supply Shortage Allocation Plan ("WSAP") in December of 2014, which

addresses the principles adopted pursuant to the WSDM Plan; and

WHEREAS, Western desires to adopt this Ordinance in order to adopt a Drought Allocation Plan ("DAP") which is required in order to plan for, and implement, the reduced Metropolitan water deliveries which will result if certain provisions of the WSAP are implemented. The DAP identifies the method that will be used to allocate limited imported supplies among Western's retail agencies if Metropolitan implements said provisions of the WSAP; and

WHEREAS, on April 15, 2015, Western's Board of Directors adopted Resolution 2904, setting a public hearing regarding the proposed adoption of this Ordinance and the DAP; and

WHEREAS, Water Code sections 71640 et seq. authorize Western to restrict the use of Western water during any emergency caused by drought, or other threatened or existing water shortage; and

WHEREAS, Water Code sections 375 et seq. provide that Western may, by a majority vote of the members of the Board of Directors after holding a public hearing upon notice, adopt and enforce a water conservation program, such as the DAP, to reduce the quantity of water used by its customers for the purpose of conserving the water supplies of Western; and

WHEREAS, Western has the power and authority to enact a water conservation program, such as the DAP, pursuant to Water Code sections 375 et seq. and 71640 et seq.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF DIRECTORS OF WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY AS FOLLOWS:

Section 1. Notice and Public Hearing. The Board of Directors conducted a public hearing on May 20, 2015 at 14205 Meridian Parkway, Riverside, California in order for customers to have the opportunity to be heard to protest against, and to present their respective needs to the Board of Directors regarding the proposed adoption of this Ordinance 385 and the DAP. Pursuant to Water Code section 376, notice of the public hearing was published on May 12, 2015 in the Riverside Press-Enterprise, a newspaper printed, published, and circulated within the area in which the subject water supply is distributed. Said notice was published at least seven (7) days prior to the date of the hearing;

Section 2. Adoption of Drought Allocation Plan.

(a) Western hereby adopts and authorizes the implementation of the DAP attached hereto as Exhibit "A" and incorporated herein by reference. The General Manager, or his/her designee, are hereby authorized and directed to immediately implement the applicable provisions of this Ordinance and the DAP upon the effective date hereof.

(b) The DAP includes a supply allocation methodology which was patterned after the Metropolitan WSAP methodology and in collaboration with Western's retail agencies. The goal of said methodology is to provide an equitable means of apportioning imported municipal and industrial supplies during periods when Metropolitan implements its WSAP. As further described in the DAP, Western staff and designated wholesale customer representatives have

collectively agreed to the allocation methodology described in the DAP.

(c) The Allocation Plan Implementation Elements shall be implemented at the time, and in the manner, as set forth in the DAP and therefore, shall not require any further action by Western's Board of Directors before being implemented by Western's General Manager, or his/her designee, as set forth in the DAP. For example, and not by way of limitation, it is anticipated that the allocation of imported supplies under the DAP shall be implemented at the time that Metropolitan allocates its supplies through its WSAP process. Should Metropolitan implement its WSAP, Western's General Manager, or his/her designee, will determine the appropriate shortage level, as set forth in the DAP, so that supplies allocated at the Western service area level are equal to or less than the Metropolitan allocation.

Section 3. Application of the DAP. The provisions of the DAP and this Ordinance shall apply to the allocation of water for retail municipal and industrial purposes among the following agencies:

(a) Box Springs Mutual Water Company;
(b) City of Corona;
(c) City of Norco;
(d) Eagle Valley Mutual Water Company;
(e) Elsinore Valley Municipal Water District;
(f) Lee Lake Water District;
(g) Rancho California Water District;
(h) Western Municipal Water District Retail Customers

Section 4. Severability. If any provision, section, subsection, sentence, clause, or phrase of this Ordinance or

the application of same to any person or set of circumstances is held to be unconstitutional, void, or invalid, such decision shall not affect the remaining portions of this Ordinance which shall remain in full force and effect, and all provisions of this Ordinance are declared to be severable for that purpose.

Section 5. Incompatible Provisions. To the extent any provision of this Ordinance is incompatible with or at variance with any other Western policy or rules and regulations, the provisions of this Ordinance shall be controlling, and all other Western policies and rules and regulations shall be interpreted to harmonize with and not change the provisions of this Ordinance.

Section 6. Exemption From California Environmental Quality Act. The Board of Directors determines that the adoption of the DAP and this Ordinance, for the purpose of addressing water shortages and allocation of supplies, are exempt from the requirements of the California Environmental Quality Act ("CEQA") pursuant to Section 15269(c) of the State CEQA Guidelines. Section 15269(c) provides that actions necessary to prevent or mitigate for an emergency are exempt from CEQA. The Board of Directors finds that the adoption of the DAP is necessary to mitigate for the emergency water shortages that may result in the near future if Metropolitan implements its WSAP. The Board of Directors hereby directs staff to prepare and file a Notice of Exemption within five (5) working days of adoption of this Ordinance.

Section 7. Effective Date. This Ordinance shall be effective immediately upon adoption and shall be presumed to continue in effect unless or until a contrary finding is made by applicable action of the Board of Directors. Within fifteen

(15) days from the date of adoption, a summary of this Ordinance shall be published one time in the Riverside Press-Enterprise with the names of those Board members voting for and against. A certified copy of this Ordinance shall be posted in the District offices along with the names of those Board members voting for and against.

Section 8. Prior Ordinances. This Ordinance shall supersede and otherwise control over the provisions of Ordinance 371. As of the effective date of this Ordinance 385, Ordinance 371 shall be of no further force or effect.

Section 9. Incorporation of Recitals. All of the foregoing Recitals are true and correct and the Board of Directors so finds and determines. The Recitals set forth above are incorporated herein and made an operative part of this Ordinance.

ADOPTED AND APPROVED this 20th day of May, 2015 by the Board of Directors of the Western Municipal Water District of Riverside County.

DONALD D. GALLEANO
President

May 20, 2015

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of Ordinance 385 adopted by the Board of Directors of Western Municipal Water District of Riverside County at a duly-noticed regular meeting held on May 20, 2015.

THOMAS D. EVANS
Secretary-Treasurer

Attachment 4 -
Western Ordinance 384

ORDINANCE 384

AN ORDINANCE OF THE WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ESTABLISHING AN UPDATED RETAIL CUSTOMER WATER SUPPLY SHORTAGE CONTINGENCY PROGRAM

WHEREAS, California Constitution article X, section 2 and California Water Code section 100 provide that because of conditions prevailing in the State of California, it is the declared policy of the State that the general welfare requires that the water resources of the State shall be put to beneficial use to the fullest extent of which they are capable, the waste or unreasonable use of water shall be prevented, and the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and the public welfare; and

WHEREAS, pursuant to California Water Code section 106, it is the declared policy of the State that the use of water for domestic use is the highest use of water and that the next highest use is for irrigation; and

WHEREAS, pursuant to California Water Code section 71610.5, the District may undertake a water conservation program to reduce water use and may require, as a condition of new service, that reasonable water-saving devices and water reclamation devices be installed to reduce water use; and

WHEREAS, pursuant to California Water Code section 71640, the District may restrict the use of District water during any emergency caused by drought, or other threatened or existing water shortage, and may prohibit the waste of District water or the use of District water during such periods for any purpose other than those that the District determines to be necessary. The District may also prohibit

use of District water during such periods for specific uses which it finds to be nonessential. Pursuant to Water Code section 71641, the District may prescribe and define by ordinance the restrictions, prohibitions, and exclusions referred to in section 71640; and

WHEREAS the Board of Directors recognizes continued long term challenges to the region and the state. The District's Mediterranean climate typically exhibits hot, dry summers and mild, wet winters. Annual precipitation totals vary substantially from year to year, averaging 10.24 to 12.06 inches depending on the region. Climate change impacts are predicted to increase the uncertainty of water supplies. Additionally, regulatory restrictions on pumping from the Bay-Delta region affecting State Water Project ("SWP") deliveries will continue to impact the District's supply reliability. The District relies heavily on SWP supplies, obtaining approximately up to 75 percent of its total supply through imported water sources from MWD; and

WHEREAS, because of the prevailing conditions in the State and the declared policy of the State that the District manage its water resources for the general welfare to ensure their beneficial use to the fullest extent of which they are capable, the District hereby finds and determines that it is necessary and appropriate for the District to adopt, implement, and enforce a Water Supply Shortage Contingency Program (the "Program") to reduce the quantity of water used by consumers within the District to ensure that there is sufficient water for human consumption, sanitation, and fire protection; and

WHEREAS, pursuant to California Water Code section 350, the Board of Directors is authorized to declare a Water Shortage Emergency to prevail within its jurisdiction

when it finds and determines that the District will not be able to or cannot satisfy the ordinary demands and requirements of water consumers without depleting the water supply of the District to the extent that there would be insufficient water for human consumption, sanitation, and fire protection, and as more fully set forth in this Ordinance; and

WHEREAS, the Board of Directors hereby finds and determines that in the event the District determines that it is necessary to declare that a Water Shortage Emergency exists, the District will be authorized pursuant to this Ordinance to implement supply shortage response measures to regulate water consumption activities within the District and ensure that the water delivered in the District is put to beneficial use for the greatest public benefit, with particular regard to domestic use, including human consumption, sanitation, and fire protection, and that the waste or unreasonable use of water is prevented; and

WHEREAS, the Board of Directors is authorized and hereby finds and determines that it is necessary to prescribe and define by ordinance restrictions, prohibitions, and exclusions for the use of water during a threatened or existing water shortage and adopt and enforce a water supply shortage contingency program to: (i) prohibit the waste of District water or the use of District water during such period; (ii) prohibit use of water during such periods for specific uses which the District may from time to time find nonessential; and (iii) reduce and restrict the quantity of water used by Persons within the District; and

WHEREAS, the Board of Directors hereby finds and determines that the District shall: (i) implement water supply shortage response measures; (ii) regulate the water

consumption activities of Persons within the District for the purposes of conserving and protecting the District's water supplies, reducing the quantity of water consumed, and deterring and preventing the waste or unreasonable use or unreasonable method of use of valuable water resources; and (iii) establish and collect regulatory fees and impose fines and/or penalties as set forth herein to accomplish these purposes and recover the costs of the District's water conservation and regulatory program; and

WHEREAS, the Board of Directors hereby finds that the District's five (5) Tier water budget-based rate structure is an effective method of managing demand through price signals and eliminating inefficient usage while maintaining revenue stability and proportionately allocate the costs of service to those who place the greatest demands on the District's water system and limited water supplies; and

WHEREAS, the Board of Directors hereby finds and determines that it is desirable to adopt the Program in order to codify the rules and regulations governing its actions, and the actions of Persons using and consuming water within the District, particularly during declared water shortages and water shortage emergencies, to protect the general welfare and the District's water supplies, and to reduce water consumption all in accordance with the declared policies and laws of the State; and

WHEREAS, the Board of Directors hereby further finds and determines that this Ordinance and the Program set forth herein are in the public interest and serve the public purpose of the District; and

WHEREAS, California Constitution Article XIII D, Section 6 ("Article XIII D")requires that prior to imposing any increase to the District's water service fees, the District shall provide written notice (the "Notice") by

mail of: (1) the proposed increases to such rates and charges to the record owner of each parcel upon which the rates and charges are proposed for imposition and any tenant directly liable for payment of the rates and charges; (2) the amount of the rates and charges proposed to be implemented on each parcel; (3) the basis upon which the rates and charges were calculated; (4) the reason for the rates and charges; and (5) the date, time, and location of a public hearing (the "Hearing") on the proposed rates and charges; and

WHEREAS, pursuant to Article XIII D such Notice is required to be provided to the affected property owners and any tenant directly liable for the payment of the rates and charges not less that forty-five (45) days prior to the Hearing on the proposed rate and charges; and

WHEREAS, the District did provide such Notice to the affected property owners and tenants of the proposed rates for the water service fees in compliance with Article XIII D; and

WHEREAS, at the Hearing held on February 18, 2015, the Board heard and considered all oral testimony, written materials, and written protests concerning the establishment and imposition of the proposed rates and charges for the water service fees, and at the close of the Hearing the District did not receive written protests against the establishment of and imposition of the proposed Water Shortage Contingency Program and associated Drought Pricing for the water service fees from a majority of the affected property owners and tenants directly liable for the payment of water service fees; and

WHEREAS, due to the fiscal impacts referenced above, the Board has determined that it is in the best interests of the District to adopt the proposed Water Supply Shortage

Contingency Program identified herein and as more particularly described and set forth herein; and

NOW, THEREFORE, BE IT ORDAINED by the Board of Directors of the Western Municipal Water District of Riverside County as follows:

Section 1. Recitals

The Board of Directors hereby finds and determines that the above recitals are true and correct and incorporated herein.

Section 2. Findings and intent

(A) The Board of Directors finds and determines that because of the prevailing conditions in the state, and the declared policy of the State, it is necessary and appropriate for the District to adopt, implement, and enforce this Program to reduce the quantity of water used by Persons within the District to ensure that there is sufficient water for human consumption, sanitation, and fire protection. The District further finds and determines that during periods of drought, water shortages, and water shortage emergencies the general welfare requires that the District maximize the beneficial use of its available water resources to the extent that it is capable, and that the waste or unreasonable use, or unreasonable method of use of water shall be prevented and the conservation of water is to be extended with the view to the reasonable and beneficial use thereof in the interests of the people of the District and for the public health, safety, and welfare.

(B) This Ordinance adopts the Program which establishes water waste restrictions, supply shortage response measures, regulations, structural pricing changes, and administrative fines and/or penalties to be implemented during declared water supply shortage stages.

(C) This Ordinance adopts the Program which establishes five (5) water supply shortage stages with sub-stages in Stages 3, 4, and 5 and supply shortage response measures to be implemented by the District, with increasing restrictions on water use and administrative fines and/or penalties for water waste in response to decreasing water supplies and/or worsening drought conditions.

(D) The water supply shortage stages may be caused by, but are not limited to, any or all of the following circumstances or events:

(1) A regional water supply shortage exists;

(2) Delivery infrastructure such as storage reservoirs, pipes, pumps, filtration devices or groundwater wells are inoperable or unusable (such as by power outages, mechanical failure, or contamination);

(3) Alternative water supplies are limited or unavailable;

(4) Groundwater levels or groundwater quality is approaching levels which may require augmentation of the groundwater basin or other actions necessary to protect the groundwater basin as prescribed by the California Department of Water Resources, the Regional Water Quality Control Board, Riverside County, or some other regulatory body; or

(5) MWD's Water Surplus and Drought Management Plan stages and the MWD Water Supply Allocation Plan stages and corresponding actions have been implemented.

Section 3. Purpose and scope

(A) The purposes of the provisions of this Ordinance and Program are to assure the highest beneficial use of District water supplies and to provide sufficient

water supplies to meet the basic needs of human consumption, sanitation, and fire protection within the District's direct retail service area.

(B) This Ordinance is not intended to repeal, abrogate, annul, impair or in any way interfere with the free use of property by covenant, deed, or other private agreement or with restrictive covenants running with the land to which the District provides water services.

(C) The provisions of this Ordinance shall apply to all Persons within the District's direct retail service area and all property served in a retail capacity by the District wherever situated.

(D) Nothing in this Ordinance is intended to affect or limit the ability of the District to respond to an emergency, including an emergency that affects the ability of the District to supply water.

Section 4. Definitions

For the purposes of this Ordinance, the following words, terms, and phrases shall have the following meanings:

"Appellant" means the Person appealing a decision of the Approving Authority, General Manager or other District official.

"Approving Authority" means the General Manager of the District, or his or her designee, charged with approving or denying written applications for Relief.

"Base Period" means a period of time similar to a Customer's Billing Period in both fiscal year 2012-2013 and fiscal year 2013-2014. For the purposes of determining historical water use for a Billing Period, the average is calculated using the similar Billing Period from both fiscal year 2012-2013 and fiscal year 2013-2014.

"Billing Period" means the billing period in which a Customer's water use is measured for purposes of calculating the amount of the water service fees that shall be collected for the water service provided.

"Billing Tier" means the volume of water within a defined and adopted rate.

"Board of Directors" means the Board of Directors of the District.

"Conservation Offset" means the implementation of proven conservation techniques which, when installed, will result in a reduction equal to the demand of a new or proposed use, or the payment of a fee (a "Conservation Offset Fee") in an amount established by the District to cover the cost of implementing such conservation techniques or acquiring alternative water sources to offset the demand of the new or proposed use.

"District" means the Western Municipal Water District.

"Enforcement Officer" means any individual employed or otherwise charged by the District to inspect or enforce codes, ordinances, mandates, regulations, resolutions, rules or other laws adopted by the Board of Directors or other regulatory bodies.

"General Manager" means the General Manager of the District or his or her authorized designee.

"Immediate Emergency" means a breakage or failure of a dam, pump, pipeline or conduit, a disaster or other disruption of the District's water supply.

"Medical Adjustment" means an adjustment to the residential indoor water allocation based on medical needs. Medical adjustments must be approved by the District and are not subject to mandatory residential indoor water allocation reductions in any stage. The District will

consider a request for medical adjustment at any time and at any stage. The adjustment shall be removed with any changes to the account holder.

"MWD" means the Metropolitan Water District of Southern California.

"Non-Potable Water" means water that is not of drinking water quality, but which may still be used for purposes other than for human consumption.

"Person" means any natural person, firm, joint venture, joint stock company, partnership, public or private association, club, company, corporation, business trust, organization, public or private agency, government agency or institution, school district, college, university, any other user of water provided by the District, or the manager, lessee, agent, servant, officer or employee of any of them or any other entity which is recognized by law as the subject of rights or duties.

"Program" means the Water Supply Shortage Contingency Program adopted pursuant to this Ordinance.

"Property Owner" means the owner of a parcel whose name and address appears on the last Riverside County equalized secured property tax assessment roll, or in the case of any public entity, the State of California, or the United States, means the representative of that public entity at the address of that entity known to the District.

"Recycled Water" means municipal wastewater that has been treated to meet all applicable Federal, State and local standards for use in approved applications, including, but not limited to, agricultural and landscape irrigation.

"Relief" means excuse from compliance with the regulations and restrictions on water use contained in this Ordinance.

"State" means the State of California.

"Water Budget" means a Customer's total water billing allocation for indoor and outdoor water use. The specific indoor and outdoor allocation of water depends on the type of Customer (Customer sector) and the specific characteristics of the Customer's site. Use in excess of the allocation is charged at incrementally higher rates.

"Water Customer" or "Customer" means a Person who, according to the District's records, receives water service to a parcel of property.

"Water Shortage Emergency" means a condition existing within the District in which the ordinary water demands and requirements of Persons within the District cannot be satisfied without depleting the water supply of the District to the extent that there would be insufficient water for human consumption, sanitation, and fire protection. A Water Shortage Emergency includes both an Immediate Emergency, in which the District is unable to meet current water needs of Persons within the District, as well as a threatened water shortage, in which the District determines that its supply cannot meet an increased future demand.

"Water Supply Allocation Plan" or "WSAP" means the Plan developed by MWD to calculate member agencies' supply allocations should a shortage be declared.

"Water Surplus and Drought Management" Plan or "WSDM" means the 1999 Plan that MWD uses to direct its resource operations to ensure that shortage allocations of imported water supplies are not required.

Section 5. Stage Implementation

(A) The General Manager shall monitor the projected supply of and demand for water within the retail water service area of the District during periods of a

water shortage or supply shortage and shall recommend to the Board of Directors the extent of the demand reduction required through the implementation and/or termination of particular water supply shortage stages or sub-stages to prudently plan and supply water to water Customers. Thereafter, the Board of Directors may order the implementation or termination of the appropriate stage or sub-stage.

(B) The declaration of any stage or sub-stage beyond Stage 1 shall be made by resolution of the Board of Directors. Within ten (10) calendar days of the adoption of the resolution declaring the applicable stage or sub-stage, the District shall make a public announcement and provide notice of the applicable water supply shortage stage. Such declaration and notice shall provide the extent, terms, and conditions as well as the associated water budget allocations and fines and/or penalties respecting the use and consumption of water in accordance with the applicable water supply shortage stage as provided in this Ordinance. Upon such declaration and publication of such notice, due and proper notice shall be deemed to have been given to each and every Person supplied water within the District.

(C) The water supply shortage stage designated shall become effective immediately upon announcement.

(D) Except in the event of an Immediate Emergency, the declaration of a Water Shortage Emergency during any water supply shortage stage shall be made in accordance with California Water Code sections 350 *et seq.*

(E) Notwithstanding any other provision of this Ordinance, if an Immediate Emergency occurs and the Board of Directors cannot meet in time to act to protect the public interest, the General Manager is hereby authorized and directed to implement any necessary rules and

regulations upon his or her written determination that the District cannot adequately supply water to meet the ordinary demands of water consumers, and that such implementation is necessary to protect the public health and safety.

(1) The General Manager's written determination of an Immediate Emergency shall be:

(a) filed with the District Secretary;

(b) posted on the District's website;

(c) delivered to the Board of Directors; and

(d) subsequently considered by the Board of Directors at a general or special meeting for review, revocation, or ratification.

(2) The implementation of any rules and regulations during an Immediate Emergency shall take effect immediately upon making a posting of the determination of the Immediate Emergency on the District's website.

(3) The Board of Directors' meeting shall be held on the earliest date that a quorum of the Board of Directors is available. At the Board of Directors meeting, the General Manager shall update the Board of Directors on the severity and length of the Immediate Emergency.

Section 6. Stage 1 – Water Supply Watch

(A) Stage 1 is also referred to as a "Water Supply Watch" and applies during periods when the District is able to meet all of the water demands of its Customers. Stage 1 and the permanent prohibitions set forth herein shall be in effect at all times unless the Board of Directors otherwise declares that another stage is in effect pursuant to this Ordinance and such stage establishes more stringent prohibitions on the use of water during the particular stage.

Under Stage 1, Customers are encouraged to use water efficiently and take advantage of the District's water use efficiency programs. Stage 1 also mandates the implementation of several permanent water waste prohibitions, even when there is no foreseeable threat of a water shortage. Water waste is in violation of California Law at any stage. California's water law and policy, Article X, Section 2 of the California Constitution, requires that all uses of the State's water be both reasonable and beneficial and places a significant limitation on water rights by prohibiting the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water. The permanent prohibitions shall be continually in effect at all levels of water shortage declarations in addition to the requirements specific to each level. All normal water efficiency programs and water conservation regulations of the District will be in full force and effect during Stage 1. The permanent shortage response measures include:

(1) All irrigators shall ensure automatic irrigation timers are adjusted according to changing weather patterns and landscape requirements.

(2) All open hoses shall be equipped with automatic, positive shut-off nozzles.

(3) Watering of lawns and/or groundcovers and irrigating landscaping is permitted only between the hours of 8:00 p.m. and 8:00 a.m.

(4) All swimming pools, spas, ponds, and fountains shall be equipped with re-circulating pumps.

(5) All plumbing leaks, improperly adjusted sprinklers, or other water conduits/fixtures that require repair or adjustment shall be corrected to the satisfaction

of the District within ninety-six (96) hours of notification by the District.

(6) No Person shall use water to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved or hard surface areas, except to alleviate immediate fire or sanitation hazards, and then only by use of: a hand-held bucket or similar container, a hand-held hose equipped with an automatic, positive self-closing shut-off device, or a low volume, high-pressure cleaning machine.

(7) No Person shall allow water to leave his or her property by drainage onto adjacent properties or public or private roadways or streets due to excessive irrigation and/or uncorrected leaks.

(8) The washing of automobiles, trucks, trailers, boats, airplanes and other types of mobile equipment, is permitted at any time with a hand-held bucket or a hand-held hose equipped with an automatic, positive shut-off nozzle. Provided, however, such washing may be done at any time on the immediate premises of a commercial car wash, a commercial service station or car dealership with commercial car washing equipment, or by a licensed mobile detailing/car wash professional using low volume, high pressure washing equipment. Further, such washings are exempted from these regulations where the health, safety, and welfare of the public is contingent upon frequent vehicle cleanings, such as garbage trucks and vehicles used to transport food and perishables.

(9) Construction operations receiving water from a construction meter, hydrant meter, or water truck shall not use water for any purpose other than those required by regulatory agencies. Construction projects requiring watering for new landscaping materials shall

adhere to the designated irrigation requirements set forth in Section 6(A) hereof.

(B) The District will attempt to contact Customers by telephone, mail, email and/or printed "door-hanger" to alert of a required repair, adjustment, or violation. All Customers shall ensure that the District has current telephone and email contact information. The District is not responsible for incorrect phone numbers or email addresses.

Section 7. Stage 2 – Water Supply Alert

(A) Stage 2 is also referred to as a "Water Supply Alert" and applies during periods when a reasonable probability exists that the District will not be able to meet all of the water demands of its Customers. This may correlate to MWD's WSDM Plan stage of "Water Supply Watch" or "Water Supply Alert" Conditions.

(B) The objective of Stage 2 is to affect a moderate reduction in water use up to 4% through voluntary actions and may be adjusted depending on supply conditions via a Board approved Resolution.

(C) Voluntary conservation measures will be called upon during this stage. The District shall develop a public information campaign to provide Customers with options for achieving the Stage 2 demand reduction goal. The District shall explore increased Customer incentives for conservation measures.

Section 8. Stage 3 – Targeting Waste Reduction

(A) Stage 3 is also referred to as a "Mandatory Waste Reduction" stage. The intent of Stage 3 is to target and eliminate excessive water waste and water use in the District's three budget-based water rates penalty Tiers 3, 4, and 5. Stage 3 applies during periods when a reasonable probability exists that the District will not be able to

meet all of the water demands of its Customers. This may correlate to MWD's Shortage Allocation Plan Shortage Levels 1 through 3.

(B) The objective of the measures undertaken in Stage 3 is to reduce water system consumption within the District by five to fifteen percent (5 to 15%).

(C) Stage 3 does not apply to the use of non-potable or recycled water. The use of non-potable or recycled water is permitted pursuant to the specific rules and regulations that govern its use.

(D) Potable water Customers in areas directly served by the District that do not have Water Budgets shall reduce their water use by five to fifteen percent (5 to 15%) from the Base Period during declarations of any Stage 3 sub-stage.

(E) Stage 3 has three sub-stages – Stage 3(a), Stage 3(b), and Stage 3(c). The following provisions shall apply during Stage 3:

(1) Stage 3(a). The District shall eliminate all adjustments to existing residential Customers' outdoor Water Budgets including, but not limited to, increases for landscape size, and/or swimming pool, spa, or pond maintenance adjustments. New water using features or expanded landscapes shall not qualify for a Water Budget adjustment. The provisions of this Section 8(E)(1) shall also apply during any other stage or sub-stage other than Stage 1 and Stage 2.

(2) Stage 3(b). Tier 4 water rates shall be eliminated. Customers with Water Budgets, and whose water use exceeds one hundred and twenty-five percent (125%) of their total Water Budget during a Billing Period will be charged the applicable Tier 5 water rates. The provisions of this Section 8(E)(2)shall also apply during Stage 3(c).

(3) Stage 3(c). Tier 3 water rates shall be eliminated. Customers who have Water Budgets, and whose water use exceeds one hundred percent (100%) of their total Water Budget during a Billing Period, shall be charged the applicable Tier 5 water rates.

(F) Voluntary conservation measures will be called upon during this stage. The District shall develop a public information campaign to provide Customers with options for achieving the Stage 3 demand reduction goal and complying with their applicable water allocation. The District shall explore increased Customer incentives for conservation measures.

Section 9. Stage 4 - Targeting Outdoor Reductions

(A) Stage 4 is also referred to as a "Mandatory Outdoor Reductions" stage. The intent of this stage and the related sub-stages is to strategically reduce the demand for water though targeted outdoor reduction actions. Stage 4 applies during periods when the District will not be able to meet all of the water demands of its Customers. This may correlate to any of MWD's WSAP Regional Shortage Levels 4 through 10.

(B) The objective of the measures undertaken in Stage 4 is to reduce water system consumption within the District by sixteen to fifty percent (16 to 50%).

(C) Except as otherwise provided in this Section 9, all supply shortage response measures of Stages 1 through 3 shall be in full force and effect during Stage 4.

(D) Stage 4 does not apply to non-potable or recycled water. The use of non-potable or recycled water is permitted pursuant to the specific rules and regulations that govern their use.

(E) If the District Board of Directors declares a Water Shortage Emergency during a Stage 4, no new potable

water service connections shall be provided, no new temporary meters or permanent meters shall be provided, and no statements of immediate ability to serve or provide potable water service (such as will serve letters, certificates, or letters of availability) shall be issued, except under the following circumstances:

(1) a valid, unexpired building permit has been issued for the project; or

(2) the project is necessary to protect the public's health, safety, and welfare; or

(3) the applicant provides a Conservation Offset or pays a Conservation Offset Fee established by the District in an amount necessary to cover the cost of implementing such conservation techniques or acquiring alternative water sources, to offset the new demand. The fee will be based on the Conservation Offset required to meet the projected demand of the proposed project. Such fee shall apply to residential as well as commercial and industrial buildings, and may be adjusted from time to time as determined by the District. The existence and application of a Conservation Offset, and the amount of the Conservation Offset Fee and other terms and conditions for any Conservation Offset, shall be determined at the District's sole discretion. The existence and application of any such water meter moratorium or other similar restrictions shall be determined by separate and subsequent action of the Board of Directors; or

(4) where an existing service connection exists and an existing water meter is inoperable and cannot be repaired. In such an instance, the size of the new water meter shall be the same or smaller than the water meter being replaced.

(F) Stage 4 has three sub-stages — Stage 4(a), Stage 4(b), and Stage 4(c). The following provisions shall apply during Stage 4:

(1) Stage 4(a).

(i) All landscape Water Budgets shall be reduced by ten percent (10%). Residential Customers who have Water Budgets, and whose water use exceeds one hundred percent (100%) of their Tier 1 and ninety percent (90%) of their Tier 2 Water Budgets during a Billing Period, shall be charged at the applicable Tier 5 water rates. Landscape Customers who have Water Budgets, and whose water use exceeds ninety percent (90%) of their Water Budget during a Billing Period, shall be charged the applicable Tier 5 water rates.

(ii) Commercial or industrial Customers who are served through mixed-use meters, and who have Water Budgets, shall reduce landscape and non-essential outdoor water use by twenty-five percent (25%).

(iii) Potable water Customers in areas directly served by the District and who do not have Water Budgets shall reduce their outdoor water use by ten percent (10%) from the base Period.

(2) Stage 4(b).

(i) All outdoor Water Budgets shall be reduced by forty percent (40%). Residential Customers who have Water Budgets, and whose water use exceeds one hundred percent (100%) of their Tier 1 and forty percent (40%) of their Tier 2 Water Budgets during a Billing Period, shall be charged at the applicable Tier 5 water rates. Landscape Customers who have Water Budgets, and whose water use exceeds forty percent (40%) of their Water Budget during a Billing Period, shall be charged the applicable Tier 5 water rates.

(ii) Commercial or industrial Customers who are served through dedicated or mixed-use meters, and who have Water Budgets, shall reduce their water consumption by ten percent (10%).

(iii) Potable water Customers in areas directly served by Western, and who do not have Water Budgets, shall reduce their outdoor water use by forty percent (40%) from the Base Period.

(3) Stage 4(c).

(i) All outdoor Water Budgets shall be reduced by sixty-five percent (65%). Residential Customers who have Water Budgets, and whose water use exceeds one hundred percent (100%) of their Tier 1 (indoor) Water Budget and thirty-five percent (35%) of their Tier 2 (outdoor) Water Budget during a Billing Period, shall be charged at the applicable Tier 5 water rates. Landscape Customers who have Water Budgets, and whose water use exceeds thirty-five (35%) of their total Water Budget during a Billing Period, shall be charged the applicable Tier 5 rate.

(ii) Installation of new landscapes shall be prohibited unless irrigated with recycled water. Exceptions may be provided for projects with prior approval by the appropriate jurisdiction.

(iii) Commercial and industrial Customers who are served through dedicated or mixed-use meters, and who have Water Budgets, shall reduce their water consumption by twenty percent (20%).

(iv) Potable water Customers in areas directly served by the District who do not have Water Budgets shall reduce their outdoor water use by sixty-five percent (65%).

(v) No new construction or hydrant meters will be issued. Potable water shall not be used for earth work, road construction purposes, dust control, compaction, or trenching jetting. Construction projects necessary to maintain the health, safety, and welfare of the public are exempt from these regulations.

(G) The District shall develop a public information campaign to provide Customers with options for achieving the Stage 4 demand reduction goals and complying with their applicable allocation. The District may explore increased Customer incentives for conservation measures.

Section 10. Stage 5 – Mandatory Targeted Indoor/Outdoor Reductions – Catastrophic Failure or "Immediate Emergency"

(A) Stage 5 is also referred to as a "Mandatory Indoor/Outdoor Reductions" stage. The intent of this stage and the related sub-stages is to substantially reduce the demand for water though indoor actions in addition to the elimination of landscape and non-essential outdoor water use. Stage 5 applies during periods when the District will not be able to meet all of the water demands of its Customers. This shortage level may correlate to MWD's WSAP Regional Shortage Levels 9, 10, or greater. Stage 5 may be declared during an Immediate Emergency. A Stage 5 declaration may also be accompanied by a Board Resolution declaring a Water Shortage Emergency under California Water Code sections 350 *et seq*.

(B) The objective of the measures undertaken in Stage 5 is to significantly reduce water consumption within the District to protect public health, safety, and fire flow.

(C) Except as otherwise provided in this Section 10, all water supply shortage response measures of Stages 1 through 4 shall be in full force and effect during Stage 5.

(D) Stage 5 does not apply to non-potable or recycled water, although there is no guarantee of availability. The use of non-potable or recycled water is permitted pursuant to the specific rules and regulations that govern their use and availability.

(E) All landscape and non-essential outdoor water use for all Customers in all areas of the District's retail water service area shall be prohibited.

(F) Except as to property for which a building permit has been heretofore issued, no new water meter(s) shall be provided, except in the following circumstances:

(1) for projects necessary to protect the public's health, safety, and welfare; or

(2) when using recycled water.

(G) Stage 5 has three sub-stages — Stage 5(a), Stage 5(b), and Stage 5(c). The following provisions shall apply during Stage 5:

(1) Stage 5(a).

(a) All indoor residential Water Budgets shall be reduced by ten percent (10%) to fifty-four (54) gallons per person per day. Residential Customers who have Water Budgets, and whose water use exceeds ninety percent (90%) of their modified Tier 1 Water Budget and zero percent (0%) of Tier 2 Water Budget during a Billing Period, or fifty four gallons per person per day total, shall be charged at the applicable Tier 5 water rates.

(b) Commercial and industrial Customers who are served through dedicated or mixed-use meters, and who have Water Budgets, shall reduce their water consumption by thirty percent (30%).

(c) Potable water Customers in areas directly served by Western that do not have Water Budgets shall reduce their indoor water use by ten percent (10%).

(2) Stage 5(b).

(a)All residential indoor Water Budgets shall be reduced by fifteen percent (15%) to fifty-one (51) gallons per person per day. Residential Customers who have Water Budgets, and whose water use exceeds eighty-five percent (85%) of their Tier 1 modified Water Budget and zero percent (0%) of Tier 2 Water Budget during a Billing Period, or fifty-one (51) gallons per person per day total, shall be charged at the applicable Tier 5 water rates.

(b) Commercial and industrial Customers who are served through dedicated or mixed-use meters, and who have Water Budgets, shall reduce their water consumption by forty percent (40%).

(c) Potable water Customers in areas directly served by the District who do not have Water Budgets shall reduce their indoor water use by fifteen percent (15%) from the Base Period. All non-essential outdoor and landscape water use shall be prohibited.

(3) Stage 5(c).

(a)All residential Customers who have Water Budgets shall have their indoor Water Budgets reduced by twenty percent (20%) to forty-eight (48) gallons per person per day. Residential Customers who have Water Budgets, and whose water use exceeds eighty percent (80%) of their Tier 1 modified Water Budget and zero percent (0%) of Tier 2 Water Budget during a Billing Period, or forty-eight (48) gallons per person per day total, shall be charged at the applicable Tier 5 rates.

(b) Commercial and industrial Customers who are served through dedicated or mixed-use

meters, and who have Water Budgets, shall be reduce their water consumption by fifty percent (50%).

(c) Potable water Customers in areas directly served by the District who do not have Water Budgets shall reduce their indoor water use by twenty percent (20%) from the Base period.

(H) The use of water for commercial, manufacturing, or processing purposes may be further reduced in volume than is indicated in the sub-stages of this section if it is determined to be in the best interest of the health, sanitation, and fire flow protection in the communities served by the District. This determination may be made by the Board of Directors, the General Manager or his or her authorized designee as provided for in Section 5(E).

(I) All dedicated irrigation meters will be locked off by District personnel.

(J) Customers with a District authorized Medical Adjustment to their Tier 1 allocation will be permitted 100 percent (100%) of their Tier 1 Water Budget.

(K) The District shall develop a public information campaign to provide Customers with options for achieving the Stage 5 demand reduction goals and complying with their allocation. The District may explore increased Customer incentives for conservation measures.

Section 11. Violations and remedies

(A) Criminal Violation. It shall be unlawful for any Person to willfully violate the provisions of this Ordinance. Any violation of the provisions of this Ordinance shall be a misdemeanor, unless made an infraction by the prosecutor, subject to imprisonment in the county jail for not more than thirty (30) days or by fine not to

exceed $1,000, or by both as provided in California Water Code section 377.

(B) Cease and Desist Order. The General Manager may issue a cease and desist order directing the Property Owner, or occupant, or other Person in charge of day-to-day operations of any property, and/or any other Person responsible for a violation of this Ordinance to:

(1) immediately discontinue any prohibited use of water pursuant to this Ordinance; and

(2) immediately cease any activity not in compliance with the terms, conditions, and requirements of this Ordinance.

(C) Civil Action. In addition to any other remedies provided in this Ordinance, any violation of this Ordinance may be enforced by civil action brought by the District and the imposition of administrative fines and/or penalties. In any such action, the District may seek, and the court may grant, as appropriate, any or all of the following remedies:

(1) a temporary and/or permanent injunction;

(2) assessment of the violator for the costs of enforcement of the violation and for the reasonable costs of preparing and bringing legal action under this Ordinance; and

(3) assessments under this subsection shall be paid to the District to be used exclusively for costs associated with implementing or enforcing the water supply shortage and regulatory provisions of this Ordinance.

(D) Cumulative. All remedies provided herein shall be cumulative and not exclusive.

(E) On-going. A Person shall be deemed guilty of a separate offense for each and every day or portion

thereof during which any violation of any provision of this Ordinance is committed, continued, or permitted.

Section 12. Notices

(A) Any notice, notice of violation, cease and desist order, and administrative compliance order shall be served pursuant to the requirements of this Ordinance and shall:

(1) identify the provision(s) of this Ordinance and any State law, if applicable, alleged to have been violated; and

(2) state that continued noncompliance may result in civil, criminal, or administrative enforcement actions against the Person who committed the violation, or the Property Owner and/or occupant of the property where the violation occurred; and

(3) state a compliance date that must be met by the Person who committed the violation, or the Property Owner and/or occupant of the property where the violation occurred; and

(4) order remediation work, where applicable, that must be taken by the Property Owner and/or occupant of the property; and

(5) state that the recipient has a right to appeal the matter as set forth in this Ordinance; and

(6) include the address of the affected property and be addressed to the Property Owner as shown on the most recently issued equalized assessment roll or as may otherwise appear in the current records of the District. If the order applies to a responsible party who is not the Property Owner, or if the event is not related to a specific property, the notice may be sent to the last known address of the responsible party; and

(7) be deemed served ten (10) business days after posting on the property, if the Property Owner or occupant of the affected property cannot be located after the reasonable efforts of the General Manager or his or her authorized designee.

(B) Any notice, notice of violation, cease and desist order, and administrative compliance order may be sent by regular mail. Service by regular mail is effective on the date of mailing.

(C) The notice of violation may include, where deemed applicable by the General Manager or his or her authorized designee, the following terms and conditions:

(1) specific steps or actions and time schedules for compliance as reasonably necessary to prevent future violations of this Ordinance; and

(2) any other terms, conditions, or requirements reasonably calculated to prevent continued or threatened future violations of this Ordinance, including, but not limited to, discontinuing or limiting water service with the installation of a flow-restricting device.

(D) In addition to or in conjunction with the notice of violation, for a first violation of any provision of this Ordinance, within two (2) weeks of the violation:

(1) the District may provide notice to the Property Owner or occupant of the property where the violation occurred to advise such Person of:

(a) the water supply shortage stage then in effect and the provisions of this Ordinance relating thereto;

(b) water supply shortage response measures that are required and may be implemented pursuant to this Ordinance;

(c) possible consequences and actions which may be taken by the District for future violations of this Ordinance, including discontinuance of water service; and

(d) fines and/or penalties that may be imposed for the specific violation and any future violations of this Ordinance;

(2) if the General Manager or his or her authorized designee deem it to be appropriate, the District may order the installation of a flow-restricting device on the service line for any Person who violates any term or provision of this Ordinance.

(E) In addition to or in conjunction with the notice of violation, for a second or any subsequent violation of this Ordinance, within two (2) weeks of the violation:

(1) the District may provide notice to the property where the violation occurred to notify the Property Owner or occupant of the property where the violation occurred to advise such Person of:

(a) the water supply shortage stage then in effect and the provisions of this Ordinance relating thereto;

(b) the water supply shortage response measures that are required and may be implemented by such Person; and

(c) possible consequences which may occur in the event of any future violations of this Ordinance;

(2) if the General Manager or his or her authorized designee deem it to be appropriate, the District may order the installation of a flow-restricting device on

the service line for any Person who violates any term or provision of this Ordinance;

(3) if the General Manager or his or her authorized designee deem it to be appropriate, the District may discontinue water service at the location where the violation occurred.

(F) The District may, after one (1) written notice of violation, order that a special meter reading or readings be made in order to ascertain whether wasteful or unreasonable use of water is occurring. The District may impose a meter reading fee for each meter reading it conducts pursuant to this Ordinance.

Section 13. Administrative compliance order and fines and/or penalties

(A) Separate from, in addition to, or in combination with a notice of violation or cease and desist order, the General Manager or his or her authorized designee may issue an administrative compliance order against the Property Owner and/or occupant of the property where a violation of this Ordinance occurred and/or any other Person responsible for a violation of this Ordinance who violates any provision of this Ordinance. Issuance of a notice of violation or a cease and desist order is not a prerequisite to the issuance of an administrative compliance order. The administrative compliance order shall allege the act(s) or failure(s) to act that constitute violations of this Ordinance and shall set forth the penalty for the violation(s).

(B) The General Manager may impose the following administrative monetary fines and/or penalties, in addition to other appropriate action requirements and measures:

(1) For water meters smaller than two inches (2") in size:

(a) For the first violation during any water supply shortage stage by any Person of any provision of this Ordinance, the District may issue a written notice to the Person which sets forth the facts surrounding the violation and additional information such as the required compliance and potential fines and/or penalties for noncompliance;

(b) For a second violation during any water supply shortage stage by any Person of any provision of this Ordinance within the preceding twelve (12) calendar months, the District may issue a written notice to the Person which sets forth a complete copy of this Ordinance or summary document of the District's Water Supply Shortage Contingency Program as well as additional information such as the required compliance and potential fines and/or penalties for noncompliance.

(c) For a third violation during Stages 1 and 2 by any Person of any of the provisions of this Ordinance within the preceding twelve (12) calendar months, the District may impose a monetary penalty in the amount of one hundred dollars ($100.00) per day for each day a Person violates any provision of this Ordinance. During Stages 3, 4, and 5 the District may impose a monetary penalty in the amount of two hundred dollars ($200.00) per day for each day a Person violates any provision of this Ordinance.

(d) For a fourth violation during Stages 1 and 2 by any Person of any of the provisions of this Ordinance within the preceding twelve (12) calendar months, the District may impose a monetary penalty in the amount of two hundred dollars ($200.00) per day for each day a Person violates any provision of this Ordinance. During Stages 3, 4, and 5 the District may impose a

monetary penalty in the amount of four hundred dollars ($400.00) per day for each day a Person violates any provision of this Ordinance.

(e) For a fifth and any subsequent violation, the District may install a flow-restricting device of two and one-half gallons per minute (2.5 GPM) capacity for services up to one and one-half inch (1-1/2") size and comparatively sized restrictors for larger services or terminate a Person's service in accordance with the District's applicable rules and regulations. These measures are in addition to any monetary fines and/or penalties provided for herein.

(f) Any such restricted or terminated service may be restored in accordance with the District's applicable rules and regulations and only upon a showing that the Person is in compliance with this Ordinance. Prior to any restoration of service, the Customer shall pay all District charges for any restriction or termination of service and its restoration as provided for in the District rules governing water service, including, but not limited to payment of all past due bills and fines and/or penalties and any other amounts which may be due and owing under this Ordinance.

(2) For water meters two inches (2") and larger:

(a) For the first violation during any water supply shortage stage by any Person of any provision of this Ordinance, the District may issue a written notice to the Person which sets forth the facts surrounding the violation and additional information such as the required compliance and potential fines and/or penalties for noncompliance.

(b) For a second violation during any water supply shortage stage by any Person of any provision of this Ordinance within the preceding twelve (12) calendar months, the District may issue a written notice to the Person which sets forth a complete copy of this Ordinance or summary document of the District's Water Shortage Contingency Program as well as additional information such as the required compliance and potential fines and/or penalties for noncompliance.

(c) For a third violation during water supply shortage Stages 1 and 2 by any Person of any of the provisions of this Ordinance within the preceding twelve (12) calendar months, the District may impose a monetary fine and/or penalty in the amount of one hundred dollars ($100.00) per day for each day a Person violates any provision of this Ordinance. During Stages 3, 4, and 5 the District may impose a monetary fine and/or penalty in the amount of three hundred dollars ($300.00) per day for each day a Person violates any provision of this Ordinance.

(d) For a fourth violation during water supply shortage Stages 1 and 2 by any Person of any of the provisions of this Ordinance within the preceding twelve (12) calendar months, the District may impose a monetary fine and/or penalty in the amount of three hundred dollars ($300.00) per day for each day a Person violates any provision of this Ordinance. During Stages 3, 4, and 5, the District may impose a monetary fine and/or penalty in the amount of six hundred dollars ($600.00) per day for each day a Person violates any provision of this Ordinance.

(e) For a fifth and any subsequent violation, the District may install a flow restricting device or terminate a Person's service in accordance with the District's applicable rules and regulations, in

addition to the monetary fines and/or penalties provided for herein.

(f) Any such restricted or terminated service may be restored in accordance with the District's applicable rules and regulations and only upon a showing that the Person is in compliance with this Ordinance. Prior to any restoration of service, the Customer shall pay all District charges for any restriction or termination of service and its restoration as provided for in the District rules governing water service, including, but not limited to, payment of all past due bills and fines and/or and any other amounts which may be due and owing under this Ordinance.

(3) An amount that shall not exceed one thousand dollars ($1,000.00) per day for each day on which a Person violates any provision of this Ordinance. Unless timely appealed, an administrative compliance order shall be effective and final as of the date it is issued by the General Manager.

(C) The amount of any fines and/or penalties imposed pursuant to this Section 13 may be collected by including said amount on the Customer's water bill. The amount of any fines and/or penalties imposed pursuant to this Section 13 which have remained delinquent for a period of sixty (60) calendar days shall constitute a lien against the real property of the Person violating this Ordinance. The lien provided herein shall have no force and effect until recorded with the Riverside County Recorder and when recorded shall have the force and effect and priority of a judgment lien and continue for ten (10) years from the time of recording unless sooner released, and shall be renewable in accordance with the provisions of sections 683.110 to

683.220, inclusive, of the California Code of Civil Procedure.

(D) All moneys collected under this Section 13 shall be deposited in a special account of the District and shall be made available for enforcement of this Ordinance and enhanced water conservation incentive programs.

(E) The District may, at its option, elect to petition the Superior Court to confirm any order establishing administrative fines and/or penalties and enter judgment in conformity therewith in accordance with the provisions of sections 1285 to 1287.6, inclusive, of the California Code of Civil Procedure.

Section 14. Over-Budget Water Use Penalties

(A) All penalty moneys collected from over-budget water use during a declared water shortage stage in excess of the applicable Tier 2 rate, shall be deposited in the existing special funding accounts designated for conservation penalty and/or supply penalty as appropriate and may be allocated to or used for any of the following as determined by the District:

1. Conservation Penalty Account:

(a) Enhanced conservation programs designed to reduce water demands;

(b) Outreach and Education Programs designed to reduce water demands, decrease water waste, or generally raise water awareness;

(c) Enforcement of any provision of this Ordinance;

2. Supply Penalty Account:

(a) Purchase, acquisition, delivery, or wheeling of additional water supplies;

(b) General operations and maintenance expenses, including those incurred as a result of reduced water sales;

(c) The difference between budgeted revenue expected from the operations and maintenance component in the water rates of Tier 1 and 2 and actual revenue received from this component;

(d) Payment of penalty expenses incurred as a result of exceeding a MWD water supply allocation;

(e) Payment of any other incremental cost of service associated with providing water deliveries and/or water service during any water curtailment, water shortage emergency, or "Immediate Emergency" pursuant to Water Code sections 350 *et seq.*

Section 15. Recovery of costs

(A) The General Manager shall serve an invoice for costs upon the Property Owner and/or occupant of any property, or any other responsible Person who is subject to a notice of violation, a cease and desist order, or an administrative compliance order. An invoice for costs shall be immediately due and payable to the District. If any Property Owner or Person in charge of day-to-day operations, Customer, or responsible party, or any other Person fails to either pay the invoice for costs or appeal successfully the invoice for costs in accordance with this Ordinance, then the District may institute collection proceedings. The invoice for costs may include reasonable attorneys' fees.

(B) The District shall impose any other fines and/or penalties or regulatory fees, as fixed from time to time by the Board of Directors, for a violation or enforcement of this Ordinance.

(C) In order to recover the costs of the water supply shortage program set forth in this Ordinance, the Board of Directors may, from time to time, fix and impose fees and charges. The District fees and charges may include, but are not limited to fees and charges for:

(1) any visits of a Enforcement Officer or other District staff for time incurred for meter reading, follow-up visits, or the installation or removal of a flow-restricting device;

(2) monitoring, inspection, and surveillance procedures pertaining to enforcement of this Ordinance;

(3) enforcing compliance with any term or provision of this Ordinance;

(4) re-initiating service at a property where service has been discontinued pursuant to this Ordinance;

(5) processing any fees necessary to carry out the provisions of this Ordinance.

Section 16. Appeals

Any Person subject to a notice of violation, cease and desist order, or administrative compliance order may file a written appeal of such order or notice to the General Manager within thirty (30) calendar days of the date of service of the order or notice. An appeal shall be made in accordance with the following procedures:

(1) The Appellant shall complete and submit in writing a form provided by the District for such purpose and shall state in such form the grounds for his or her appeal. All appeals shall be submitted to the District Secretary within thirty (30) calendar days of the date of

the notice of violation, cease and desist order, or administrative compliance order.

(2) The General Manager or his or her authorized designee shall review the appeal and any related information provided, and, if necessary, cause an investigation and report to be made concerning the request for Relief. The General Manager or his or her authorized designee shall have fifteen (15) calendar days from the submission of the appeal to render a decision on whether to grant the appeal and mail notice thereof to the Appellant. If the General Manager or his or her authorized designee grants the appeal, then within fifteen (15) calendar days of such determination the General Manager or his or her authorized designee shall give written notice thereof to the Appellant.

(3) The decision of the General Manager or his or her authorized designee may be appealed by the Appellant to the Board of Directors. Such appeal must be submitted in writing and filed with the District Secretary within fifteen (15) calendar days of the date of decision of the General Manager or his or her authorized designee. The Board of Directors shall conduct a hearing on such appeal at its next regularly scheduled Board of Directors meeting; provided, however, the Board of Directors shall have received the notice of appeal at least fifteen (15) calendar days prior to such meeting. If the appeal is not submitted within at least fifteen (15) calendar days prior to a regularly scheduled Board of Directors meeting, then the Hearing shall be held at the following regularly scheduled meeting of the Board of Directors. A notice of the Hearing shall be mailed to the Appellant at least ten (10) calendar days before the date fixed for the Hearing.

The Board of Directors shall review the appeal de novo. The determination of the Board of Directors shall be conclusive and shall constitute a final order. Notice of the determination by the Board of Directors shall be mailed to the Appellant within ten (10) calendar days of such determination and shall indicate whether the appeal has been granted in whole or in part and set forth the terms and conditions of the appeal, if any, granted to the Appellant. If the appeal is denied, the Appellant shall comply with all terms and conditions of this Ordinance and the applicable stage then in effect.

(4) All adjustments to water budget allocations shall follow the procedure established by the District.

(5) Until the conclusion of the appeal process, all provisions and decisions under appeal shall remain in full force and effect until the conclusion of the appeal process.

Section 17. Relief from compliance

Consideration of written applications for Relief from compliance regarding the regulations and restrictions on water use set forth in this Ordinance may be made by the District.

(A) Written applications for Relief shall be accepted, and may be granted or denied, by the Approving Authority, at his or her sole discretion, or by his or her designee at his or her sole discretion. The application shall be in a form prescribed by the District and shall be accompanied by a non-refundable processing fee in an amount as determined by the Board of Directors for the purpose of defraying the costs incidental to the proceedings.

(B) The grounds for granting or conditionally granting Relief are:

(1) due to unique circumstances, a specific requirement of this Ordinance would result in undue hardship to a Person using District water or to property upon which District water is used, that is disproportionate to the impacts to other District water users generally or to similar property or classes of water users; or

(2) failure to grant Relief would adversely affect the health, sanitation, fire protection, or safety of the applicant or the public.

(C) The application for Relief shall be accompanied, as appropriate, with photographs, maps, drawings, and other information substantiating the applicant's request, including a statement of the applicant.

(D) An application for Relief shall be denied unless the Approving Authority finds, based on the information provided in the application, supporting documentation, or such other additional information as may be requested, and on water use information for the property as shown by the records of the District, all of the following:

(1) That the Relief does not constitute a grant of special privilege inconsistent with the limitations upon other District Customers;

(2) That because of special circumstances applicable to the property or its use, the strict application of this Ordinance would have a disproportionate impact on: (a) the property or use that exceeds Customers generally; or (b) the applicant's health that exceeds Customers generally;

(3) That the authorization of such Relief will not be of substantial detriment to adjacent properties, will not materially affect the ability of the District to effectuate the purposes of this Ordinance, and will not be detrimental to the public interest; and

(4) That the condition or situation of: (a) the subject property or the intended use of the property for which the Relief is sought is not common, recurrent, or general in nature; or (b) the applicant's health or safety is not common, recurrent, or general in nature.

(E) The denial or grant of a Relief shall be acted upon within fifteen (15) business days of the submittal of the complete application, including any photographs, maps, drawings, and other information substantiating the applicant's request and the statement of the applicant. The application may be approved, conditionally approved, or denied. The decision of the Approving Authority shall be prepared in writing, include terms and conditions, if any, and promptly sent to the applicant.

(F) The denial of a request for Relief may be appealed in writing to the General Manager. An appeal shall be made in accordance with the following procedures:

(1) The Appellant shall complete and submit in writing a form provided by the District for such purpose and shall state in such form the grounds for his or her appeal. All appeals shall be submitted to the District Secretary within thirty (30) calendar days of the date of the notice of the denial of the request for Relief.

(2) The General Manager or his or her authorized designee shall review the appeal and any related information provided, and, if necessary, cause an

investigation and report to be made concerning the request for Relief. The General Manager or his or her authorized designee shall have fifteen (15) calendar days from the submission of the appeal to render a decision on whether to grant the appeal and mail notice thereof to the Appellant. If the General Manager or his or her authorized designee grants the appeal and determines that the request for Relief shall be granted, then within fifteen (15) calendar days of such determination the General Manager or his or her authorized designee shall give written notice thereof to the Appellant.

(3) The decision of the General Manager or his or her authorized designee may be appealed by the Appellant to the Board of Directors. Such appeal must be submitted in writing and filed with the District Secretary within fifteen (15) calendar days of the date of decision of the General Manager or his or her authorized designee. The Board of Directors shall conduct a hearing on such appeal at its next regularly scheduled Board of Directors meeting; provided, however, the Board of Directors shall have received the notice of appeal at least fifteen (15) calendar days prior to such meeting. If the appeal is not submitted within at least fifteen (15) calendar days prior to a regularly scheduled Board of Directors meeting, then the Hearing shall be held at the following regularly scheduled meeting of the Board of Directors. A notice of the Hearing shall be mailed to the Appellant at least ten (10) calendar days before the date fixed for the Hearing. The Board of Directors shall review the appeal de novo. The determination of the Board of Directors shall be conclusive and shall constitute a final order. Notice of the determination by the Board of Directors shall be mailed to the Appellant within ten (10) calendar days of such

determination and shall indicate whether the appeal has been granted in whole or in part and set forth the terms and conditions of the Relief, if any, granted to the Appellant. If the appeal is denied, the Appellant shall comply with all terms and conditions of this Ordinance and the applicable stage then in effect.

(4) All adjustments to Tier 1 water budget allocations shall follow the procedure established by the District.

(5) Until the conclusion of the appeal process, all provisions and decisions under appeal shall remain in full force and effect until the conclusion of the appeal process.

Section 18. Conflicting Provisions

If provisions of this Ordinance are in conflict with each other, other rules and regulations of the District, any other resolution or ordinance of the District, or any State law or regulation, the more restrictive provisions shall apply.

Section 19. Severability

If any provision, section, subsection, sentence, clause or phrase or sections of this Ordinance, or the application of same to any Person or set of circumstances, is for any reason held to be unconstitutional, void or invalid, the invalidity of the remaining portions of sections of this Ordinance shall not be affected, it being the intent of the Board of Directors in adopting this Ordinance that no portions, provisions, or regulations contained herein shall become inoperative, or fail by reason of the unconstitutionality of any other provision hereof and all provisions of this Ordinance are declared to be severable for that purpose.

Section 20. Effective Date and Publication

This Ordinance shall be effective upon adoption. Within ten (10) days after its adoption, the District Secretary shall cause this Ordinance to be published once pursuant to California Government Code section 6061 in full in a newspaper of general circulation which is printed, published, and circulated in the District. If there is no such newspaper, the Ordinance shall be posted within the District after its adoption in three public places.

ADOPTED AND APPROVED this 18th day of February 2015 by the Board of Directors of the Western Municipal Water District.

DONALD D. GALLEANO
President

February 18, 2015

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of Ordinance 384 adopted by the Board of Directors of the Western Municipal Water District of Riverside County at the scheduled Public Hearing held February 18, 2015.

THOMAS P. EVANS
Secretary-Treasurer

Attachment 5 -
Adoption Resolution 3155

RESOLUTION 3155

RESOLUTION OF THE BOARD OF DIRECTORS OF WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ADOPTING THE WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, The California Urban Water Management Planning Act, Water Code Section 10610 et seq. (the Act), mandates that every urban supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare and adopt, in accordance with prescribed requirements, a water shortage contingency plan (WSCP); and

WHEREAS, the Act specifies the requirements and procedures for adopting such Water Shortage Contingency Plans; and

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

WHEREAS, pursuant to the Water Conservation Act of 2009, also referred to as SB X7-7 (Water Code section 10608 et seq.), an "urban retail water supplier" is defined as a water supplier that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes, and an "urban wholesale water supplier" is defined as a water supplier that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes; and

hearing online, or virtually, as there was no public location for attending in person. The public hearing was live streamed online at wmwd.com in order to provide members of the public and other interested entities with the opportunity to be heard in connection with proposed adoption of the WSCP and issues related thereto; and

WHEREAS, pursuant to said public hearing on Western's WSCP, Western, among other things, encouraged the active involvement of diverse social, cultural, and economic members of the community within Western's service area with regard to the preparation of the Plan, encouraged community input regarding Western's Water Shortage Contingency Plan; and

WHEREAS, the Board of Directors has reviewed and considered the purposes and requirements of the Act and SB X7-7, the contents of the WSCP, and the documentation contained in the administrative record in support of the WSCP, and has determined that the factual analyses and conclusions set forth in the WSCP are legally sufficient; and

WHEREAS, Section 10652 of the California Water Code provides that the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of a water shortage contingency plan as part of an urban water management plan pursuant to California Water Code Section 10632; and

WHEREAS, the Board of Directors desires to adopt the WSCP in order to comply with the Act and SB X7-7.

to provide that portion of the WSCP prepared pursuant to Water Code Section 10635(a) to any city or county within which Western provides water supplies no later than sixty (60) days after submitting a copy of the WSCP with the California Department of Water Resources;

7. Western finds and determines that this resolution is not subject to CEQA pursuant to Water Code Section 10652 because CEQA does not apply to the preparation and adoption of a water shortage contingency plan or to the implementation of the actions taken pursuant to such plans. Because this resolution comprises Western's water shortage contingency plan and involves its implementation, no CEQA review is required;

8. Pursuant to CEQA, Western directs staff to file a Notice of Exemption with the Riverside County Clerk's office within five (5) working days of adoption of this resolution;

9. The document and materials that constitute the record of proceedings on which this resolution and the above findings have been based are located at Clerk of the Board of Directors of Western Municipal Water District. The custodian for these records is the Clerk of the Board of Western;

10. The General Manager is hereby authorized and directed to implement the WSCP in accordance with the Act and SB X7-7 and to provide recommendations to the Board of Directors regarding the necessary budgets, procedures, rules, regulations or further actions to carry out the effective and equitable implementation of the WSCP.

B

Appendix B Public Hearing Notices

Legal Notice

098-044 VAL VERDE USD
ITEM 4048
318081021
MONTOYA, JAMILL TRUSTEE
$3,287.00
ITEM 4049
318081022
$2,829.00
ITEM 4050
318150021
RODRIGUEZ, JOSE F JR
21330 OAKWOOD ST PERRIS CA 92570
$4,418.00
ITEM 4051
318221026
MENDOZA, PALOMA JERALDINE & VALENCIA, CASSANDRA
20480 LEE RD PERRIS CA 92570
$21,437.00
ITEM 4053
318240075
JONES, ELTON JR & THOMPSON MABLE & JONES HENRY & JONES ELTON SR & BAKER MARK & JONES HATTIE
20506 OLD ELSINORE RD PERRIS CA 92570
$12,972.00

098-055 VAL VERDE USD
ITEM 4047
317140036
DELFIS, JINESA M & POWERS, CHRISTOPHER J
23455 CAJALCO RD PERRIS CA 92570
$10,854.00

098-110 VAL VERDE USD
ITEM 4044
314060049
MONTOYA, JAMMIL TRUSTEE
$4,258.00
ITEM 4046
315020024
CORONADO, TERESA R
20086 MARKHAM ST PERRIS CA 92570
$16,941.00
ITEM 4055
319081010
LILLY, CHARLIE & PORTER
20191 HUNTER ST PERRIS CA 92570
$11,996.00

098-112 VAL VERDE USD
ITEM 4045
314200010
CUSTA, LINDA M
22738 REDWOOD DR PERRIS CA 92570
$12,513.00

098-115 VAL VERDE USD
ITEM 4038
295292040
BARNWELL DORRIS M & PAULK ESTON
$3,424.00
I certify under penalty of perjury that the foregoing is true and correct.
Dated this 1st day of April, 2021
Matthew Jennings
Treasurer-Tax Collector of Riverside County, CA
Published in The Press Enterprise on 04/1/21, 04/08/21 & 04/15/21

Legal Notice

FICTITIOUS BUSINESS NAME STATEMENT
F I L E D
County of Riverside
Peter Aldana
Assessor-County Clerk-Recorder
R-202104146 03/31/2021
The following person(s) is (are) doing business as:
MINI ROCKERS MUSIC CLUB
225 E. MONTEREY RD., CORONA, CA 92879 RIVERSIDE
Full name of all registrants and address:
CASTLE FOUR LLC
225 E. MONTEREY RD.
CORONA CA 92879 CA
This business is conducted by: Limited Liability Company
Registrant has not yet begun to transact business under the fictitious business name(s) listed above.
I declare that all the information in this statement is true and correct. (A registrant who declares as true any material matter pursuant to Section 17913 of the Business and Professions Code, that the registrant knows to be false, is guilty of a misdemeanor punishable by a fine not to exceed one thousand dollars ($1,000).)
s/ PETE CASTELLANOS
PRESIDENT
This statement was filed with the County Clerk of Riverside County on date indicated by file stamp above.
NOTICE - In Accordance with Subdivision (a) of Section 17920, A Fictitious Business Name Statement generally expires at the end of five years from the date on which it was filed in the Office of the County Clerk, Except, as provided in Subdivision (b) of Section 17920, where it expires 40 days after any change in the facts set forth in the statement pursuant to Section 17913 other than a change in the residence address of a registered owner. A new Fictitious Business Name Statement must be filed before the expiration. The filing of this statement does not of itself authorize the use in this State of a Fictitious Business Name in violation of the rights of another Federal, State or Common Law (See Section 14411 Et Seq., Business and Professional Code).
I hereby certify that this copy is a correct copy of the original statement on file in my office.
PETER ALDANA
RIVERSIDE COUNTY CLERK
Press-Enterprise: 4/08,4/15,4/22,4/29

Legal Notice

ORDER TO SHOW CAUSE FOR CHANGE OF NAME
CASE NUMBER: CIV SB 2102506
PETITION OF:
Akira Tashie Ynashone Binns
FOR CHANGE OF NAME

TO ALL INTERESTED PERSONS:
1. Petitioner: **Akira Tashie Ynashone Binns** filed a petition with this court for a decree changing names as follows:
Present name: **Akira Tashie Ynashone Binns** to
Proposed name: **Akira Izuko Tashi**
2. THE COURT ORDERS that all persons interested in this matter appear before this court at the hearing indicated below to show cause, if any, why the petition for change of name should not be granted. Any person objecting to the name changes described above must file a written objection that includes the reasons for the objection at least two court days before the matter is scheduled to be heard and must appear at the hearing to show cause why the petition should not be granted. If no written objection is timely filed, the court may grant the petition without a hearing.
NOTICE OF HEARING
Date: 04/23/21
Time: 9:00 AM Dept.: S-17
The address of the court is: **SUPERIOR COURT OF CALIFORNIA, COUNTY OF** SAN BERNARDINO 247 West 3rd St San Bernardino, CA 92415-0210 MAILING ADDRESS: 247 West 3rd St San Bernardino, CA 92415-0210 BRANCH NAME: Civil Division of the San Bernardino District
3. A copy of this **Order to Show Cause** shall be published at least once each week for four successive weeks prior to the date set for hearing on the petition in the following newspaper of general circulation, printed in this county: Inland Valley Daily Bulletin
Date: MAR 11 2021
Lynn M. Poncin JUDGE OF THE SUPERIOR COURT
Publish March 25, 2021 & April 1, 8, 15, 2021
IVDB-SB Ad#11450891

Legal Notice

APN: 285-060-042-5 TS No: CA05000214-16-4 TO No: 191180931-CA-VOI NOTICE OF TRUSTEE'S SALE (The above statement is made pursuant to CA Civil Code Section 2923.3(d)(1). The Summary will be provided to Trustor(s) and/or vested owner(s) only, pursuant to CA Civil Code Section 2923.3(d)(2).) YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED March 31, 2008. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDINGS AGAINST YOU, YOU SHOULD CONTACT A LAWYER. On June 1, 2021 at 09:00 AM, at the bottom of the stairway to the building located at 849 W. Sixth Street, Corona, CA 92882, MTC Financial Inc. dba Trustee Corps, as the duly Appointed Trustee, under and pursuant to the power of sale contained in that certain Deed of Trust recorded on April 7, 2008 as Instrument No. 2008-0170997, of official records in the Office of the Recorder of Riverside County, California, executed by LLOYD B. BRYANT AND PATRICIA J. BRYANT, HUSBAND AND WIFE AS JOINT TENANTS, as Trustor(s), in favor of MFS INVESTMENTS, INC. DBA METRO FINANCIAL as Beneficiary, WILL SELL AT PUBLIC AUCTION TO THE HIGHEST BIDDER, in lawful money of the United States, all payable at the time of sale, that certain property situated in said County, California describing the land therein as: AS MORE FULLY DESCRIBED IN SAID DEED OF TRUST The property heretofore described is being sold "as is". The street address and other common designation, if any, of the real property described above is purported to be: 15871 RAWHIDE LANE, RIVERSIDE, CA 92504 The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. Said sale will be made without covenant or warranty, express or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the Note(s) secured by said Deed of Trust, with interest thereon, as provided in said Note(s), advances if any, under the terms of the Deed of Trust, estimated fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust. The total amount of the unpaid balance of the obligations secured by the property to be sold and reasonable estimated costs, expenses and advances at the time of the initial publication of this Notice of Trustee's Sale is estimated to be $352,889.01 (Estimated). However, prepayment premiums, accrued interest and advances will increase this figure prior to sale. Beneficiary's bid at said sale may include all or part of said amount. In addition to cash, the Trustee will accept a cashier's check drawn on a state or national bank, a check drawn by a state or federal credit union or a check drawn by a state or federal savings and loan association, savings association or savings bank specified in Section 5102 of the California Financial Code and authorized to do business in California, or other such funds as may be acceptable to the Trustee. In the event tender other than cash is accepted, the Trustee may withhold the issuance of the Trustee's Deed Upon Sale until funds become available to the payee or endorsee as a matter of right. The property offered for sale excludes all funds held on account by the property receiver, if applicable. If the Trustee is unable to convey title for any reason, the successful bidder's sole and exclusive remedy shall be the return of monies paid to the Trustee and the successful bidder shall have no further recourse. Notice to Potential Bidders If you are considering bidding on this property lien, you should understand that there are risks involved in bidding at a Trustee auction. You will be bidding on a lien, not on the property itself. Placing the highest bid at a Trustee auction does not automatically entitle you to free and clear ownership of the property. You should also be aware that the lien being auctioned off may be a junior lien. If you are the highest bidder at the auction, you are or may be responsible for paying off all liens senior to the lien being auctioned off, before you can receive clear title to the property. You are encouraged to investigate the existence, priority, and size of outstanding liens that may exist on this property by contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same Lender may hold more than one mortgage or Deed of Trust on the property. Notice to Property Owner The sale date shown on this Notice of Sale may be postponed one or more times by the Mortgagee, Beneficiary, Trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about Trustee Sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call In Source Logic at 702-659-7766 for information regarding the Trustee's Sale or visit the Internet Website www.insourcelogic.com for information regarding the sale of this property, using the file number assigned to this case, CA05000214-16-4. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Website. The best way to verify postponement information is to attend the scheduled sale. Notice to Tenant NOTICE TO TENANT FOR FORECLOSURES AFTER JANUARY 1, 2021 You may have a right to purchase this property after the trustee auction pursuant to Section 2924m of the California Civil Code. If you are an "eligible tenant buyer," you can purchase the property if you match the last and highest bid placed at the trustee auction. If you are an "eligible bidder," you may be able to purchase the property if you exceed the last and highest bid placed at the trustee auction. There are three steps to exercising this right of purchase. First, 48 hours after the date of the trustee sale, you can call 702-659-7766, or visit this internet website www.insourcelogic.com, using the file number assigned to this case CA05000214-16-4 to find the date on which the trustee's sale was held, the amount of the last and highest bid, and the address of the trustee. Second, you must send a written notice of intent to place a bid so that the trustee receives it no more than 15 days after the trustee's sale. Third, you must submit a bid so that the trustee receives it no more than 45 days after the trustee's sale. If you think you may qualify as an "eligible tenant buyer" or "eligible bidder," you should consider contacting an attorney or appropriate real estate professional immediately for advice regarding this potential right to purchase. Date: April 2, 2021 MTC Financial Inc. dba Trustee Corps TS No. CA05000214-16-4 17100 Gillette Ave Irvine, CA 92614 Phone: 949-252-8300 TDD: 866-660-4288 Dalaysia Ramirez, Authorized Signatory SALE INFORMATION CAN BE OBTAINED ON LINE AT www.insourcelogic.com FOR AUTOMATED SALES INFORMATION PLEASE CALL: In Source Logic AT 702-659-7766 Trustee Corps may be acting as a debt collector attempting to collect a debt. Any information obtained may be used for that purpose. Order Number 74399, Pub Dates: 4/8/2021, 4/15/2021, 4/22/2021, PRESS ENTERPRISE MORENO VALLEY EDITION

FICTITIOUS BUSINESS NAME STATEMENT
F I L E D
County of Riverside
Peter Aldana
Assessor-County Clerk-Recorder
R-202104397 04/05/2021
The following person(s) is (are) doing business as:
VEGA ENGINEERING GROUP
29110 LAKEHURST CT MENIFEE, CA 92585 RIVERSIDE
Full name of all registrants and address:
PABLO - VEGA
29110 LAKEHURST CT
MENIFEE CA 92585
This business is conducted by: Individual
Registrant has not yet begun to transact business under the fictitious business name(s) listed above.
I declare that all the information in this statement is true and correct. (A registrant who declares as true any material matter pursuant to Section 17913 of the Business and Professions Code, that the registrant knows to be false, is guilty of a misdemeanor punishable by a fine not to exceed one thousand dollars ($1,000).)
s/ PABLO VEGA
This statement was filed with the County Clerk of Riverside County on date indicated by file stamp above.
NOTICE - In Accordance with Subdivision (a) of Section 17920, A Fictitious Business Name Statement generally expires at the end of five years from the date on which it was filed in the Office of the County Clerk, Except, as provided in Subdivision (b) of Section 17920, where it expires 40 days after any change in the facts set forth in the statement pursuant to Section 17913 other than a change in the residence address of a registered owner. A new Fictitious Business Name Statement must be filed before the expiration. The filing of this statement does not of itself authorize the use in this State of a Fictitious Business Name in violation of the rights of another Federal, State or Common Law (See Section 14411 Et Seq., Business and Professional Code).
I hereby certify that this copy is a correct copy of the original statement on file in my office.
PETER ALDANA
RIVERSIDE COUNTY CLERK
Press-Enterprise: 4/08,4/15,4/22,4/29

FICTITIOUS BUSINESS NAME STATEMENT
F I L E D
County of Riverside
Peter Aldana
Assessor-County Clerk-Recorder
R-202103787 03/26/2021
The following person(s) is (are) doing business as:
PS NAIL SUPPLY
9265 56TH ST , JURUPA VALLEY, CA 92509 RIVERSIDE
Full name of all registrants and address:
SANDRA GUADALUPE SANCHEZ
9265 56TH ST
JURUPA VALLEY CA 92509
This business is conducted by: Individual
Registrant has not yet begun to transact business under the fictitious business name(s) listed above.
I declare that all the information in this statement is true and correct. (A registrant who declares as true any material matter pursuant to Section 17913 of the Business and Professions Code, that the registrant knows to be false, is guilty of a misdemeanor punishable by a fine not to exceed one thousand dollars ($1,000).)
s/ SANDRA GUADALUPE SANCHEZ
This statement was filed with the County Clerk of Riverside County on date indicated by file stamp above.
NOTICE - In Accordance with Subdivision (a) of Section 17920, A Fictitious Business Name Statement generally expires at the end of five years from the date on which it was filed in the Office of the County Clerk, Except, as provided in Subdivision (b) of Section 17920, where it expires 40 days after any change in the facts set forth in the statement pursuant to Section 17913 other than a change in the residence address of a registered owner. A new Fictitious Business Name Statement must be filed before the expiration. The filing of this statement does not of itself authorize the use in this State of a Fictitious Business Name in violation of the rights of another Federal, State or Common Law (See Section 14411 Et Seq., Business and Professional Code).
I hereby certify that this copy is a correct copy of the original statement on file in my office.
PETER ALDANA
RIVERSIDE COUNTY CLERK
Press-Enterprise: 4/01,4/08,4/15,4/22

FICTITIOUS BUSINESS NAME STATEMENT
FILING FBN20210003378

The following person(s) is (are) doing business as:
DEES CUSTOM GLASS
913 Melrose Dr.
San Bernardino, CA 92407

County of Principal Place of Business: **San Bernardino**
Name of **Individual** Registrant:
Derrell R Garcia
913 Melrose Dr.
San Bernardino, CA 92407
This business is/was conducted by: **An Individual**
Registrant commenced to transact business under the fictitious business name or names listed above on: **Not Applicable**
By signing, I declare that all information in this statement is true and correct. A registrant who declares as true any material matter pursuant to Section 17913 of the Business and Professions Code that the registrant knows to be false is guilty of a misdemeanor punishable by a fine not to exceed one thousand dollars ($1,000).
/s/ Derrell R Garcia, Owner
Date: **03/30/2021**
This statement was filed with the County Clerk of San Bernardino on **03/31/2021**
Notice-In accordance with subdivision (a) of Section 17920. A Fictitious Name Statement generally expires at the end of five years from the date on which it was filed in the office of the County Clerk, except, as provided in subdivision (b) of Section 17920, where it expires 40 days after any change in the facts set forth in the statement pursuant to Section 17913 other than a change in the residence address of a registered owner. A new Fictitious Business Name Statement must be filed before the expiration. The filing of this statement does not of itself authorize the use in this state of a fictitious business name in violation of the rights of another under federal, state, or common law (see Section 14411 et seq., Business and Professions Code).
Publish April 8, 15, 22, 29, 2021
IVDB-SB Ad#11453851

Legal Notice

NOTICE TO BIDDERS

The **County of Riverside** ("County") will receive sealed bids for the **Construction Management - Multi-Prime Bid – Riverside County Law Library HVAC Replacement Project– All Bid Categories (see Bid Category List Below).**

Bids must be received no later than **2:00 PM** on **Thursday, May 6th, 2021** (the "Bid Deadline") at **3612 Mission Inn Ave. Riverside, CA 92501** (entrance and parking located on Orange St.)

The Project consists of replacement of wet & dry HVAC system with electrical, switchgear and transformer upgrades within a 35,000 SF building as further described in the bid and contract documents ("County Documents"). The pre-qualified Bidders shall review the County Documents for more complete information regarding the Project and submission of bids. The architect's/engineer's construction cost estimate for this Project is **$3,200,000.**

Bid Documents will be available on **April 8th, 2021** via Smartbid by contacting Tilden-Coil Constructors at 951-684-5901. **Bidders shall submit all documents for bidding as provided for in the Instruction to Bidders. Bids will only be accepted from bidders who have previously pre-qualified with the County of Riverside. Bidders viewing plans online are responsible for contacting Melanie Lopez – mlopez@tilden-coil.com (951) 684-5901 Tilden-Coil Constructors and requesting to be included on the Plan holders List. Bidders are responsible for confirmation that they have viewed all addenda prior to the bid deadline and will be required to acknowledge addenda on their bid form.**

A **mandatory** pre-bid meeting and job walk for prime contractors will be held on **April 14, 2021** at **3535 Tenth St. - Riverside, CA 92501. RSVP is required, please RSVP using this link. https://bit.ly/3ubznL3**

The deadline to submit a request for information is **April 22, 2021.** RFI's may be submitted to rkahrs@tilden-coil.com.

Only Pre-qualified contractors are allowed to bid. Bids must be submitted to the County on the County's bid forms. **All bids must be addressed, sealed in an envelope, and received by the County no later than the Bid Deadline.** All bids will be publicly opened immediately after the Bid Deadline. Bids received after the Bid Deadline shall be rejected. County reserves the right to reject any or all bids and to waive any informality or irregularity in any bid received.

Bids shall be valid for **one hundred twenty (120) days** after the Bid Deadline. Bids must be accompanied by cash, a certified or cashier's check, or a bid bond in favor of the County in an amount not less than ten percent (10%) of the submitted total bid price. The successful bidder will be required to furnish a performance bond and a payment bond, each in the amount of one hundred percent (100%) of the total bid price in the manner described in the Contract Documents. Bidders shall comply with California Public Contract Code Section 4108 with respect to subcontractor bond requirements.

Bidders shall possess one or more of the following California Contractor's license(s) at the time of the bid opening in order to perform the work:

Category #	Description	License
1	HVAC	C20
2	Electrical & Low Voltage	C10
3	General Package	B

Contractors wishing to bid on select trades must have been previously pre-qualified by the County prior to release of this Notice. Subcontractors must possess the appropriate licenses for each specialty subcontracted.

Bid Form . If Alternates are included in the Bidding Documents, then a Bid amount for each and every such Alternate shall be included in the spaces provided in the Bid Form for that purpose. If the Bidder determines that the Alternate does not affect the amount of its Base Bid, then the Bidder shall enter "No Change" in the Bid Form.

Basis for Award . Where the Bidding Documents include Allowances; the Lowest Bid Price is the Total Bid Amount identified on the Bid Form and shall include the Base Bid plus all Allowances. In the event of Alternate Bids, Alternate Bids shall not be included in the Total Bid Amount. If applicable the Alternate Bids shall be listed separately on the spaces provided on the Bid Form for Alternate Bids.

This Project is a public work for purposes of the California Labor Code, which requires payment of prevailing wages. County has obtained the general prevailing rates, which will be on file with the County's Construction Manager and will be available to any interested party.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless registered and qualified to perform public work pursuant to Labor Code section 1725.5.

The contractor and all subcontractors shall furnish certified payroll records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 at least monthly (or more frequently if required by the County or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/Department of Labor Standards Enforcement (DLSE), and by the County.

Riverside County Board of Law Library Trustees

By: Hon. Jackson Lucky, Law Library Board President

Published: Law Library HVAC Replacement Project: 04/08/21 & 04/15/21
Press-Enterprise

Western Municipal Water District
Public Hearing Notice
2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to the 2015 Urban Water Management Plan

Notice is hereby given that on **June 16, 2021** at **9:30 a.m.** in the Western Municipal Water District (Western) Boardroom, first floor at 14205 Meridian Parkway, Riverside, CA 92518, the Western Board of Directors will conduct a public hearing to receive public comments and consider adoption of the Draft 2020 Urban Water Management Plan (UWMP), Draft Water Shortage Contingency Plan (WSCP), and Draft Addendum to Western's 2015 UWMP. Following the public hearing, the Western Board of Directors may adopt the Draft 2020 UWMP, Draft WSCP, and Draft Addendum to the 2015 UWMP with recommended modifications as a result of public input.

The Draft 2020 UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages. The Draft WSCP documents Western's plans to manage and mitigate an actual water shortage condition, should one occur because of drought or other impacts on water supplies. The Draft Addendum to the 2015 UWMP is a requirement of the Delta Plan for agencies to demonstrate consistency with the Delta Plan policy to reduce reliance on the Delta through improved regional water self-reliance.

A copy of the Draft 2020 UWMP, Draft WSCP, and Draft Addendum to the 2015 Plan will be available for public review beginning on April 30, 2021 and can be downloaded at [www.wmwd.com/uwmp]. Please contact Western if you require special accommodations.

Please provide written comments on the Draft 2020 UWMP documents to board secretary@wmwd.com prior to June 16, 2021.

In an effort to protect public health and prevent the spread of COVID-19 (coronavirus), and in accordance with the Governor's Executive order N-29-20, the public may view the public hearing online, or virtually, as there will be no public location for attending in person. The public hearing will be live-streamed online at wmwd.com. Members of the public who wish to comment on the 2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to the 2015 Urban Water Management Plan, may make comments virtually during the public hearing, or may submit comments at the following web Address: https://wmwd.com/publiccomments, or directly to boardsecretary@wmwd.com. Comments received before 4:30 p.m., June 15, 2021, will become part of the June 16 2021 public hearing and Board meeting records.

Members of the public may join the live public hearing via Zoom as follows: Join Zoom Meeting: https://wmwd.zoom.us/j/87320624891. Meeting ID: 873 2062 4891. To join the Zoom meeting by telephone only: Dial (669) 219-2599 or (669) 900-6833, Meeting ID: 873 2062 4891.

If you have any questions regarding Western's 2020 UWMP, WSCP, Addendum to the 2015 Plan, or public hearing meeting, please contact Melissa Matlock at 951.571.7260 or mmatlock@wmwd.com.
Press-Enterprise: 4/15, 4/22

GOVERNMENT ACTIONS & THE NEWSPAPER ROLE

Throughout our nation's history, government agencies have been required to alert citizens of certain government activities that may impact a local community, providing citizens with an opportunity to stay informed and take action when necessary. Newspapers have long partnered with government agencies by publishing public notices, enabling the **government to be fully transparent and accountable to citizen taxpayers.**

Publishing public notices in newspapers informs a wide audience in a local community of a government agency's action; reaching citizens that are passive information seekers. Publishing public notices through the local newspaper also serves an important audit role as the newspaper acts as an independent third party able to legally verify that the government agency has given the public notice.

Take a moment and look through the public notices. You may be surprised by what you will learn.

BEST DELIVERY IN THE GAME!
Turn to the Sports section for outstanding coverage of the Dodgers, Angels and ALL local baseball action.


THE PRESS-ENTERPRISE

1825 Chicago Ave, Suite 100
Riverside, CA 92507
951-684-1200
951-368-9018 FAX

PROOF OF PUBLICATION
(2010, 2015.5 C.C.P)

Publication(s): The Press-Enterprise

PROOF OF PUBLICATION OF

Ad Desc.: WMWD Public Hearing Notice_Newspaper_English /

I am a citizen of the United States. I am over the age of eighteen years and not a party to or interested in the above entitled matter. I am an authorized representative of THE PRESS-ENTERPRISE, a newspaper in general circulation, printed and published daily in the County of Riverside, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Riverside, State of California, under date of April 25, 1952, Case Number 54446, under date of March 29, 1957, Case Number 65673, under date of August 25, 1995, Case Number 267864, and under date of September 16, 2013, Case Number RIC 1309013; that the notice, of which the annexed is a printed copy, has been published in said newspaper in accordance with the instructions of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

04/15, 04/22/2021

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Date: April 22, 2021
At: Riverside, California

Legal Advertising Representative, The Press-Enterprise

WESTERN MWD OF RIVERSIDE CO
14205 MERIDIAN PKWY
MARCH AIR RESERVE BASE, CA 92518

Ad Number: 0011448048-01

P.O. Number: 68617-0-SER

Ad Copy:

Western Municipal Water District
Public Hearing Notice
2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to the 2015 Urban Water Management Plan

Notice is hereby given that on **June 16, 2021** at **9:30 a.m.** in the Western Municipal Water District (Western) Boardroom, first floor at 14205 Meridian Parkway, Riverside, CA 92518, the Western Board of Directors will conduct a public hearing to receive public comments and consider adoption of the Draft 2020 Urban Water Management Plan (UWMP), Draft Water Shortage Contingency Plan (WSCP), and Draft Addendum to Western's 2015 UWMP. Following the public hearing, the Western Board of Directors may adopt the Draft 2020 UWMP, Draft WSCP, and Draft Addendum to the 2015 UWMP with recommended modifications as a result of public input.

The Draft 2020 UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages. The Draft WSCP documents Western's plans to manage and mitigate an actual water shortage condition, should one occur because of drought or other impacts on water supplies. The Draft Addendum to the 2015 UWMP is a requirement of the Delta Plan for agencies to demonstrate consistency with the Delta Plan policy to reduce reliance on the Delta through improved regional water self-reliance.

A copy of the Draft 2020 UWMP, Draft WSCP, and Draft Addendum to the 2015 Plan will be available for public review beginning on April 30, 2021 and can be downloaded at [www.wmwd.com/uwmp]. Please contact Western if you require special accommodations.

Please provide written comments on the Draft 2020 UWMP documents to board secretary@wmwd.com prior to June 16, 2021.

In an effort to protect public health and prevent the spread of COVID-19 (coronavirus), and in accordance with the Governor's Executive order N-29-20, the public may view the public hearing online, or virtually, as there will be no public location for attending in person. The public hearing will be live-streamed online at wmwd.com. Members of the public who wish to comment on the 2020 Urban Water Management Plan, Water Shortage Contingency Plan, and Addendum to the 2015 Urban Water Management Plan, may make comments virtually during the public hearing, or may submit comments at the following web Address: https://wmwd.com/publiccomments, or directly to boardsecretary@wmwd.com. Comments received before 4:30 p.m., June 15, 2021, will become part of the June 16 2021 public hearing and Board meeting records.

Members of the public may join the live public hearing via Zoom as follows: Join Zoom Meeting: https://wmwd.zoom.us/j/87320624891. Meeting ID: 873 2062 4891. To join the Zoom meeting by telephone only: Dial (669) 219-2599 or (669) 900-6833, Meeting ID: 873 2062 4891.

If you have any questions regarding Western's 2020 UWMP, WSCP, Addendum to the 2015 Plan, or public hearing meeting, please contact Melissa Matlock at 951.571.7260 or mmatlock@wmwd.com.

Press-Enterprise: 4/15, 4/22

Employment Empleo

Oportunidades de empleo Employment Opportunities

Accountant, F/T, Bachelor's degree in Accounting, Mail resume to: Premium Meats, Co.,100 Spectrum Center Dr., Ste. 1260, Irvine, CA 92618

Electromechanical Engineer sought by ICU Medical, Inc. in San Clemente, CA, for dvlpg & implmtg new products & pilot assembly lines through adherence to established dsgn control processes. Send resume to: Ricci Chila, 951 Calle Amanecer, San Clemente, CA 92673. REF. JOB CODE: CA0519AR.

NURSING ASSISTANT (5) - Needed by Miravilla Care Center send only resumes to 9246 Avenida Miravilla, Cherry Valley CA 92223

SE BUSCA PERSONAS para la limpieza de las habitaciones y personas para el mantenimiento del HOTEL. Debe trabajar los fines de semana. Debe aplicar en persona. No llamadas. Grand Legacy Hotel. 1650 S. Harbor Blvd, Anaheim CA 92802.

Sr Applications Analyst. Implement, manage, provide technical support & training re: Oracle E-Business Suite & Oracle Business Intelligence & associated applications for employer's financial and business operations. Req: BS computer applications or related field (Foreign equiv degree ok), 60 mos exp in Oracle EBS applications functional & technical analysis & support, extensive exp. in Oracle EBS Finance & HR modules, & Developers tools. Apply online at https://www.governmentjobs.com/careers/irwd or mail resume to: HR, Irvine Ranch Water District, 15600 Sand Canyon Ave., Irvine, CA 92618.

Technology Engineer III sought by Capital Group Companies Global in Irvine, CA: Participates in the strategy research/planning efforts w/in the domain. Must have unrestricted right to work in U.S. Send resume to: Capital Group/Brian Zimmer, 400 S. Hope St., 22nd Fl., Los Angeles, CA 90071. REF. JOB CODE: IR0720DM

Transportation Planner: Lin Consulting, Inc. (Tustin), MS in Civil Engineering req. Email: hr@linconsulting.com

William Grant & Sons has an opening for a Manager, Brand Advocacy position in its Irvine, CA office responsible for serving as an internal specialist resource to the Marketing Team, ensuring that WGS brands and company get a disproportionate share of mind and recommendation within the media, with our trade partners and consumers. Frequent travel in U.S. Req. experience in a bar management or brand ambassador/marketing/sales representative position within spirit industry. Send resume to Shanta Ramkissoon, William Grant & Sons, 130 Fieldcrest Avenue, Edison, NJ 08837.

Rentals Alquiler Casa

Departamentos No amueblados Unfurnished Apts

Aceptando Aplicaciones
APARTAMENTOS GEEL PLACE
3990 Reynolds Rd, Riverside, CA
Apartamentos tipo estudio para personas con necesidades especiales.
Pregunte sobre la disponibilidad del subsidio de alquiler.
Llame al 951.359.3040
Lunes a Jueves. de 8am a 5pm O
TDD # 1-800-735-2929. Somos un igual proveedor de oportunidades y empleador
IGUALDAD DE OPORTUNIDADES DE VIVIENDA
IGUALDAD DE OPORTUNIDADES ACCESO



Announcements Anuncios

VIAJES COMPARTIDOS CARPOOL RIDESHARE

ATT: Nuevos Negocios La ley estatal requiere que dentro de los 30 dias despues de una Declaracion de Nombre Comercial Ficticio se ha presentado el registrante debera public ar una copia de la declaracion en un periodico de circulacion general en el condado en que se encuentra la sede principal del negocio.
Riverside County
SEC. 6000, ET WEQ.,
GOV CODE
The Press-Enterprise
es un periodico de circulacion general en el Condado de Riverside.
Llame al: 951-368-9222
Email: legals@pe.com

Pets Mascotas

Perros Dogs

♥ SHELTIES ♥
Beautiful babies, Sable/Tri's.
209-824-4545

Garage Sale Venta de garaje

Ventas de garaje Garage Sales

Buena Park/Cyp
GARAGE SALE
Sat. April 24th
Huge Neighborhood Garage Sale
7:00 AM - 2:00 PM
Square Block of Valley View & Holder & Ball & Cerritos.
Great Bargains within a friendly community.

Costa Mesa
College Park 21st Annual
Sat. 4/24. 8a-2p
Neigbhorhood of 550 Homes. SOUTH Of Fair Dr. between Harbor & Fairview.
Map of homes & List of items at facebook.com/LindaHartman RealEstate.
Linda 949-644-2144

Merchandise Mercancías

Subastas Auctions

CAPTAIN'S AUCTION WAREHOUSE SPRING FLING AUCTION!
REAL-TIME LIVE ONLINE ONLY AUCTION
from your home in compliance with current CDC COVID-19 guidelines.
Fri. 4/23 @ 3pm PST
VENDING MACHINE PRIZE & TICKET REDEMPTION
Sat 4/24@11am PST
ARCADE GAMES, PINBALLS & REDEMPTIONS
FREE Registration
Bid LIVE ONLINE in REAL-TIME from YOUR HOME!
captainsauction warehouse.com
714-701-9486

Rentals Alquiler Casa

Departamentos No amueblados Unfurnished Apts

RIVERSIDE APTS
$99 MOVE IN SPEC.
oac 1BR from $1050
Chelsy 951-784-1128
oac 2BR from $1350
Shirlen 951.680.9943
Katelynn 686.0186
Se Habla Espanol.
Free Credit Check
★ (951) 264-6296 ★

RIVERSIDE Victoria Heights Apts, 7650 Lincoln Av,Riverside
2, 3 & 4 bedrooms
All Utilities Paid.
1 bd Wait List Clsed
Must Income qualify. (951) 687-2070

Transportation Transporte

Venta de Autos Autos For Sale

#1 $1,500 - $6,500 Cars, Trucks, Vans, SUVs. Text or Call 714-808- 3084
OC Since 1987

$ $
2012 Nissan Altima
$4,999
Pwr win, auto
221246 Fin. Avail *
909.342.4062

2013 CHRYSLER 300
SRT 8 Blk **$27,800**
OEM mint cond. 60k mi #651565
909.238.2436

2013 Prius 3
HOT DEAL
$8,999
Auto, low mi.
78,000 #078725
Financing Avail *
909.342.4062

Venta de Autos Autos For Sale

2014 Mitsubshi Outlander
MUST SEE
$7,999
Auto, pwr win.
Financing Avail *
909.342.4062

Venta de Autos Autos For Sale

LOOK
$8,999
2014 Ford Fusion
SE Auto, pwr win.
338068 Fin. Avail *
909.342.4062


Nobody Beats Our Coverage.
THE ORANGE COUNTY REGISTER

Public Notice

Call 714-796-2209 • Fax 714-796-7913 • www.ocregister.com

Western Municipal Water District
Notificación de Audiencia Pública
Plan de Gestión de Agua Urbana 2020, Plan de Contingencia Para la Escasez de Agua y Anexo al Plan de Gestión de Agua Urbana 2015

Por la presente se notifica que el **16 de junio de 2021** a las **9:30 am** en la sala de juntas de Western Municipal Water District (Western), en el primer piso en 14205 Meridian Parkway, Riverside, CA 92518, la Junta Directiva de Western llevará a cabo una audiencia para recibir comentarios del público y considerar la adopción del Borrador del Plan de Manejo de Agua Urbana (UWMP) 2020, el Borrador del Plan de Contingencia para la Escasez de Agua (WSCP) y el Borrador del Apéndice al UWMP 2015 de Western. Después de la audiencia pública, la Junta Directiva de Western podría adoptar el Borrador del UWMP 2020, el Borrador del WSCP y el Borrador del Apéndice del UWMP 2015 con las modificaciones recomendadas como resultado de los comentarios del público.

El Borrador 2020 del UWMP documenta los planes de Western para garantizar un suministro de agua adecuado para satisfacer las demandas actuales y futuras considerando variaciones en las condiciones de suministro de agua, incluyendo la escasez de agua. El borrador del WSCP documenta los planes de Western para manejar y mitigar una condición real de escasez de agua, en caso de que ocurra debido a sequías u otros impactos en los suministros de agua. El Borrador del Apéndice al UWMP 2015 es un requisito del Plan Delta para que las agencias demuestren coherencia con la política del Plan Delta para reducir la dependencia del Delta a través de una autosuficiencia regional mejorada del agua.

Una copia del Borrador del UWMP 2020, el Borrador del WSCP y el Borrador del Apéndice del Plan 2015 estarán disponibles para revisión pública a partir del 30 de abril de 2021 y se pueden descargar en [www.wmwd.com/uwmp]. Comuníquese con Western si necesita adaptaciones especiales.

Por favor proporcione comentarios por escrito sobre los borradores de los documentos UWMP 2020 enviándolos a board secretary@wmwd.com antes del 16 de junio de 2021.

En un esfuerzo por proteger la salud pública y prevenir la propagación del COVID-19 (coronavirus), y de acuerdo con la Orden Ejecutiva del Gobernador N-29-20, el público puede ver la audiencia pública en línea, o virtualmente, ya que no habrá lugar público para asistir en persona. La audiencia pública se transmitirá en vivo en línea por wmwd.com. Los miembros del público que deseen comentar sobre el Plan de Gestión de Agua Urbana 2020, el Plan de Contingencia para la Escasez de Agua y el Anexo al Plan de Gestión de Agua Urbana 2015 pueden hacer comentarios virtualmente durante la audiencia pública, o pueden enviar comentarios en la siguiente dirección web: https://wmwd.com/publiccomments, o directamente a boardsecretary@wmwd.com. Los comentarios recibidos antes de las 4:30 p.m. del 15 de junio de 2021 pasarán a formar parte de la audiencia pública del 16 de junio de 2021 y los registros de las reuniones de la Junta.

Los miembros del público pueden asistir a la audiencia pública en vivo a través de Zoom de la siguiente manera: Únase a la reunión de Zoom: https://wmwd.zoom.us/j/87320624891. ID de la reunión: 873 2062 4891. Para unirse a la reunión de Zoom solo por teléfono: Marque (669) 219-2599 o (669) 900-6833, ID de reunión: 873 2062 4891.

Si tiene alguna pregunta sobre el UWMP 2020, el WSCP, el Apéndice del Plan 2015 o la audiencia pública de Western, comuníquese con Melissa Matlock al 951.571.7260 o mmatlock@wmwd.com.

4/16, 4/23

CNS-3460575#
SE DA AVISO POR EL PRESENTE QUE el Distrito De Los Colegios Comunitarios de San Bernardino del Condado de San Bernardino, actuando por y a través de su la Junta de Gobierno, en lo sucesivo denominado SBCCD, está solicitando CALIFICACIONES/PROPUESTAS para Los Servicios de Design-Build del Careers Pathways 2 en el colegio San Bernardino Valley College,por medio de el Programa De Bonos Medida CC RFQP CC01-3608.04. Todos los requisitos deben ser presentados a más tardar a las **2:00 pm PST del 25 de mayo de 2021.** El documentode Solicitud de Calificaciones Y Propuestas (RFQP), incluyendo las instrucciones de presentación, se pueden encontrar en la página de red de SBCCD http://www.sbccd.org/bidsy PlanetBids https://pbsyste.planetbids.com/portal/29414/portal-home. Todas las adendas se publicarán en los mismos sitios web. Los Proponedores son responsables de obtener todos y cada uno de los documentos originales y presentar su PROPUESTA (PROPOSAL) de acuerdo con las especificaciones dentro del documento RFQP, incluyendo todas las adendas. El Distritoreserva el derecho de rechazar cualquiera o todas las PROPOSAL y de ser el único juez de los méritos de cada presentación. Se hará un adjudicación, si acaso, a la empresa cuyo PROPOSAL sea en el mejor interés del Distrito basado en los criterios indicados en eldocumento RFQP. Las Entidades de Diseño-Construcción, como se define en la Sección 81701 (c) del Código de Educación, deben enviar formularios y Cuestionarios de Precalificación completados y ser precalificados por el DISTRITO como parte de este proceso.
4/23/21

LeadHax
Online real estate advertising made simple.
Find out more at
Leadhax.com

"I go to every assignment with eyes wide open to make the best pictures I can."

- **Terry Pierson**, named Photographer of the Year by the NPPA West.



SCNG photojournalist **Terry Pierson** has been named photographer of the year by the National Press Photographer Association's West Region, which represents California, Arizona, Nevada and Hawaii. This is the seventh time in the past 10 years that Terry has received this well-deserved recognition. You can read more about the awards and view a gallery of Terry's extraordinary work by going here: **bit.ly/3sCmrNH**

Great work, Terry. Congratulations!

SOUTHERN CALIFORNIA NEWS GROUP
Los Angeles Daily News ■ The Orange County Register ■ The Press-Enterprise ■ Press-Telegram (Long Beach) ■ Daily Breeze (Torrance) ■ Pasadena Star-News ■ San Gabriel Valley Tribune ■ Whittier Daily News ■ Inland Valley Daily Bulletin ■ The Sun (San Bernardino) ■ The Facts (Redlands)

C

Appendix C Letters of Notification

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Todd Corbin
General Manager
Riverside Public Utilities
3750 University Avenue, 3rd Floor
Riverside, CA 92501

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Todd Corbin,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Todd Moody
General Manager
City of Corona, Department of Water and Power
755 Corporation Yard Way
Corona, CA 92880

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Todd Moody,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lenoire
for

Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Mike Lanni
President
Eagle Valley Mutual Water Company
P.O. Box 7284
Newport Beach, CA 92660

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Mike Lanni,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemaire
for

Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Jeff Sims
General Manager
Rubidoux Community Services District
3590 Rubidoux Boulevard
Riverside, CA 92509

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Jeff Sims,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemaire

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Marcel Lyons
Field Superintendent
Box Springs Mutual Water Company
21740 Dracaea Ave
Moreno Valley, CA 92553

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Marcel Lyons,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine
for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Todd Jorgenson
Assistant General Manager - Water
Riverside Public Utilities
3750 University Avenue, 3rd Floor
Riverside, CA 92501

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Todd Jorgenson,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams, Division 1
Gracie Torres, Division 2
Brenda Dennstedt, Division 3
Donald D. Galleano, Division 4
S.R. "Al" Lopez, Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Andy Okoro
City Manager
City of Norco
2870 Clark Avenue
Norco, CA 92860

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Andy Okoro,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Luc Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams, Division 1
Gracie Torres, Division 2
Brenda Dennstedt, Division 3
Donald D. Galleano, Division 4
S.R. "Al" Lopez, Division 5

WESTERN MUNICIPAL WATER DISTRICT
Securing Your Water Supply

12/11/2020

Mr. Jeff Pape
General Manager
Temescal Valley Water District
22646 Temescal Canyon Road
Corona, CA 92883

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Jeff Pape,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine
for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Eva Plajzer
Interm General Manager
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Eva Plajzer,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

for Lisa Lemoine

Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams, Division 1
Gracie Torres, Division 2
Brenda Dennstedt, Division 3
Donald D. Galleano, Division 4
S.R. "Al" Lopez, Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Greg Thomas
General Manager
Elsinore Valley Municipal Water District
P.O. Box 3000
Lake Elsinore, CA 92530

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Greg Thomas,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Don Hough
General Manager
Riverside Highland Water Company
12374 Michigan Street
Grand Terrace, CA 92313-5602

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Don Hough,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Ms. Janey Gress
General Manager
Home Gardens Sanitary District
13538 Magnolia Avenue
Corona, CA 92879

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Ms. Janey Gress,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lyn Lemoine
for

Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Chris Berch
General Manager
Jurupa Community Services District
11201 Harrel Street
Mira Loma, CA 91752

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Chris Berch,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. David Vigil
General Manager
Home Gardens County Water District
3832 Grant Street
Corona, CA 92879

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. David Vigil,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lua Lemoine
for

Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Al Zelinka
City Manager
City of Riverside
3900 Main Street, 3rd Floor
Riverside, CA 92522

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Al Zelinka,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lua Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Steve Weiss
Planning Director
County of Riverside
4080 Lemon Street
Riverside, CA 92502

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Steve Weiss,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lua Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Ms. Joanne Coletta
Community Development Director
City of Corona
400 S. Vicentia Avenue
Corona, CA 92882

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Ms. Joanne Coletta,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Grant Taylor
Community Development Director
City of Lake Elsinore
130 S. Main Street
Lake Elsinore, CA 92530

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Grant Taylor,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Jarrett Ramaiya
City Planner
City of Murrieta
1 Town Square
Murrieta, CA 92562

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Jarrett Ramaiya,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Luke Watson
Director of Community Development
City of Temecula
41000 Main Street
Temecula, CA 92590

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Luke Watson,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Steve King
Planning Director
City of Norco
2870 Clark Avenue
Norco, CA 92860

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Steve King,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams, Division 1
Gracie Torres, Division 2
Brenda Dennstedt, Division 3
Donald D. Galleano, Division 4
S.R. "Al" Lopez, Division 5

WESTERN MUNICIPAL WATER DISTRICT
Securing Your Water Supply

12/11/2020

Mr. Gustavo Gonzalez
Planning Manager
City of Eastvale
12363 Limonite Avenue, Ste. 910
Eastvale, CA 91752

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Gustavo Gonzalez,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Thomas Merrell
Planning Director
City of Jurupa Valley
8930 Limonite Avenue
Jurupa Valley, CA 92509

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Thomas Merrell,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Steven K. Adams, Division 1
Gracie Torres, Division 2
Brenda Dennstedt, Division 3
Donald D. Galleano, Division 4
S.R. "Al" Lopez, Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

12/11/2020

Mr. Brad Coffey
Water Resources Management Group
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

SUBJECT: WESTERN MUNICIPAL WATER DISTRICT'S URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Brad Coffey,

State law requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP) at least once every five years. Western Municipal Water District (Western) is currently preparing an update to its 2015 UWMP. The UWMP documents Western's plans to ensure adequate water supplies to meet existing and future demands under a range of water supply conditions, including water shortages.

In compliance with California Water Code Section 10621(b), Western is notifying Agencies within the County within which Western provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft 2020 UWMP available for public review in April 2021 and will post the draft plan to Western's website for review. We will notify your agency once the draft plan is posted. Prior to adoption of the updated 2020 UWMP, the Western Board of Directors will hold a public hearing in May 2021 for the purpose of receiving comments, but we also encourage comments to be submitted prior to the public hearing. The final 2020 UWMP will be submitted to the California Department of Water Resources by July 1, 2021.

Melissa Matlock, Western's Water Resource Specialist, is leading the effort. If you have any questions about the Urban Water Management Plan Update, please feel free to contact me at mmatlock@wmwd.com or by phone at (951-571-7260).

Sincerely,

Lisa Lemoine

for Melissa Matlock, Ph.D.
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Riverside
Attn: Al Zelinka
City Manager
3900 Main Street, 3rd Floor
Riverside, CA 92522
azelinka@riversideca.gov

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Norco
Attn: Andy Okoro
City Manager
2870 Clark Avenue
Norco, CA 92860
aokoro@ci.norco.ca.us

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Jurupa Community Services District
Attn: Chris Berch
General Manager
11201 Harrel Street
Mira Loma, CA 91752
cberch@JCSD.US

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Home Gardens County Water District
Attn: David Vigil
General Manager
3832 Grant Street
Corona, CA 92879
hgcwd@yahoo.com

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Riverside Highland Water Company
Attn: Don Hough
General Manager
12374 Michigan Street
Grand Terrace, CA 92313-5602
dhough@rhwco.com

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Metropolitan Water District of Southern California
Attn: Edgar Fandialan
Water Resources Management Group
P.O. Box 54153
Los Angeles, CA 90054-0153
efandialan@mwdh2o.com

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Rancho California Water District
Attn: Eva Plajzer
Interm General Manager
42135 Winchester Road
Temecula, CA 92590
plajzere@ranchowater.com

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Lake Elsinore
Attn: Grant Taylor
Community Development Director
130 S. Main Street
Lake Elsinore, CA 92530
gtaylor@lake-elsinore.org

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Elsinore Valley Municipal Water District
Attn: Greg Thomas
General Manager
P.O. Box 3000
Lake Elsinore, CA 92530
gthomas@evmwd.net

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Eastvale
Attn: Gustavo Gonzalez
Planning Manager
12363 Limonite Avenue, Ste. 910
Eastvale, CA 91752
ggonzalez@eastvaleca.gov

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Home Gardens Sanitary District
Attn: Janey Gress
General Manager
13538 Magnolia Avenue
Corona, CA 92879
hgsd@sbcglobal.net

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Murrieta
Attn: Jarrett Ramaiya
City Planner
1 Town Square
Murrieta, CA 92562
jramaiya@MurrietaCA.gov

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Temescal Valley Water District
Attn: Jeff Pape
General Manager
22646 Temescal Canyon Road
Corona, CA 92883
jeffp@temescalvwd.com

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Rubidoux Community Services District
Attn: Jeff Sims
General Manager
3590 Rubidoux Boulevard
Riverside, CA 92509
jsims@rcsd.org

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Corona
Attn: Joanne Coletta
Community Development Director
400 S. Vicentia Avenue
Corona, CA 92882
Joanne.Coletta@ci.corona.ca.us

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Jurupa Valley
Attn: Joe Perez
Planning Director
8930 Limonite Avenue
Jurupa Valley, CA 92509
jperez@jurupavalley.org

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Temecula
Attn: Luke Watson
Director of Community Development
41000 Main Street
Temecula, CA 92590
Luke.Watson@cityoftemecula.org

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Box Springs Mutual Water Company
Attn: Marcel Lyons
Field Superintendent
21740 Dracaea Ave
Moreno Valley, CA 92553
info@bsmwc.org

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Corona, Department of Water and Power
Attn: Tom Moody
General Manager
755 Corporation Yard Way
Corona, CA 92880
Tom.Moody@CoronaCA.gov

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Eagle Valley Mutual Water Company
Attn: Mike Lanni
President
P.O. Box 7284
Newport Beach, CA 92660
jmichaellanni@gmail.com

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

City of Norco
Attn: Steve King
Planning Director
2870 Clark Avenue
Norco, CA 92860
Sking@ci.norco.ca.us

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

County of Riverside
Attn: Steve Weiss
Planning Director
4080 Lemon Street
Riverside, CA 92502
sweiss@rctlma.org

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Riverside Public Utilities
Attn: Todd Corbin
General Manager
3750 University Avenue, 3rd Floor
Riverside, CA 92501
tcorbin@riversideca.gov

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

February 5, 2021

Riverside Public Utilities
Attn: Todd Jorgenson
Assistant General Manager - Water
3750 University Avenue, 3rd Floor
Riverside, CA 92501
tjorgenson@riversideca.gov

Subject: Western Municipal Water District 2020 Urban Water Management Plan Update

Western Municipal Water District (Western) is in the process of preparing and updating its 2020 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the Western's UWMP is required every five (5) years.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as Western's notice that it is preparing and updating its 2020 UWMP, to be adopted and submitted to the California Department of Water Resources by the July 1, 2021 deadline. Western will also be adopting its Water Shortage Contingency Plan (WSCP) as part of the 2020 UWMP.

Western is also considering an Addendum to its 2015 UWMP to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of Western's draft 2020 UWMP, WSCP, and 2015 UWMP Addendum will be available for review on Western's website (www.wmwd.com/uwmp) in spring of 2021, and Western will subsequently hold noticed public hearings on the 2020 UWMP, WSCP, and 2015 UWMP Addendum in advance of their proposed adoption.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum. Western anticipates holding a public comment period in spring 2021, with a public hearing planned during that time.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-7260 or by email at mmatlock@wmwd.com.

Sincerely,

Melissa Matlock

Melissa Matlock, Ph.D.
Water Resources Specialist
Western Municipal Water District

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Marcel Lyons, Field Superintendent
Box Springs Mutual Water Company
21740 Dracaea Ave
Moreno Valley, CA 92553

Dear Mr. Lyons:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Ms. Joanne Coletta, Community Development Director
City of Corona
400 S. Vicentia Avenue
Corona, CA 92882

Dear Ms. Coletta:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Steven K. Adams
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5

WESTERN MUNICIPAL WATER DISTRICT
Securing Your Water Supply

April 15, 2021

Mr. Tom Moody, General Manager
City of Corona, Department of Water and Power
755 Corporation Yard Way
Corona, CA 92880

Dear Mr. Moody:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Gustavo Gonzalez, Planning Manager
City of Eastvale
12363 Limonite Avenue, Ste. 910
Eastvale, CA 91752

Dear Mr. Gonzalez:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Mike Lanni, President
Eagle Valley Mutual Water Company
P.O. Box 7284
Newport Beach, CA 92660

Dear Mr. Lanni:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Greg Thomas, General Manager
Elsinore Valley Municipal Water District
P.O. Box 3000
Lake Elsinore, CA 92530

Dear Mr. Thomas:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. David Vigil, General Manager
Home Gardens County Water District
3832 Grant Street
Corona, CA 92879

Dear Mr. Vigil:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Ms. Janey Gress, General Manager
Home Gardens Sanitary District
13538 Magnolia Avenue
Corona, CA 92879

Dear Ms. Gress:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Chris Berch, General Manager
Jurupa Community Services District
11201 Harrel Street
Mira Loma, CA 91752

Dear Mr. Berch:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Joe Perez, Planning Director
City of Jurupa Valley
8930 Limonite Avenue
Jurupa Valley, CA 92509

Dear Mr. Perez:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Grant Taylor, Community Development Director
City of Lake Elsinore
130 S. Main Street
Lake Elsinore, CA 92530

Dear Mr. Taylor:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Jarrett Ramaiya, City Planner
City of Murrieta
1 Town Square
Murrieta, CA 92562

Dear Mr. Ramaiya:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Edgar Fandialan, Water Resources Management Group
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Dear Mr. Fandialan:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Steve King, Planning Director
City of Norco
2870 Clark Avenue
Norco, CA 92860

Dear Mr. King:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Andy Okoro, City Manager
City of Norco
2870 Clark Avenue
Norco, CA 92860

Dear Mr. Okoro:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Jeff Sims, General Manager
Rubidoux Community Services District
3590 Rubidoux Boulevard
Riverside, CA 92509

Dear Mr. Sims:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Ms. Eva Plajzer, Interm General Manager
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590

Dear Ms. Plajzer:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Don Hough, General Manager
Riverside Highland Water Company
12374 Michigan Street
Grand Terrace, CA 92313-5602

Dear Mr. Hough:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Steve Weiss, Planning Director
County of Riverside
4080 Lemon Street
Riverside, CA 92502

Dear Mr. Weiss:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Al Zelinka, City Manager
City of Riverside
3900 Main Street, 3rd Floor
Riverside, CA 92522

Dear Mr. Zelinka:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Jeff Pape, General Manager
Temescal Valley Water District
22646 Temescal Canyon Road
Corona, CA 92883

Dear Mr. Pape:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Todd Corbin, General Manager
Riverside Public Utilities
3750 University Avenue, 3rd Floor
Riverside, CA 92501

Dear Mr. Corbin:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: www.wmwd.com/uwmp.

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Todd Jorgenson, Assistant General Manager - Water
Riverside Public Utilities
3750 University Avenue, 3rd Floor
Riverside, CA 92501

Dear Mr. Jorgenson:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

Craig D. Miller
General Manager

Mike Gardner
Division 1

Gracie Torres
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

Fauzia Rizvi
Division 5

WESTERN MUNICIPAL WATER DISTRICT

Securing Your Water Supply

April 15, 2021

Mr. Luke Watson, Director of Community Development
City of Temecula
41000 Main Street
Temecula, CA 92590

Dear Mr. Watson:

Subject: Western Municipal Water District 2020 Urban Water Management Plan Public Hearing Notice

In February 2021, Western Municipal Water District (Western) informed all counties, cities, and local water agencies that the District is updating its 2020 Urban Water Management Plan (UWMP), Water Shortage Contingency Plan (WSCP), and considering an Addendum to Western's 2015 UWMP.

Western is pleased to announce that the draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are now posted on Western's website and available for public review. This satisfies California Water Code (CWC) Section 10642 requiring agencies to make their plans available for public inspection prior to adoption. The posted draft documents may be accessed on April 30 using the following link: (www.wmwd.com/uwmp).

Public hearings for Western's draft 2020 UWMP, draft Addendum to the 2015 UWMP, and draft WSCP are scheduled for June 16 as part of Western's Board meeting. As required by CWC Section 10621(b), Western sent 60-day notice letters to the cities and counties on February 4, 2021. The letters were sent to the city managers, the county public works and planning directors, and general managers of Western's member agencies within which Western provides water.

In addition, Western scheduled the publication of the Notice of Public Hearing to satisfy the requirement of CWC Section 10642 and Government Code 6066. 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 notification for public hearing will be published under the following schedule:

- For English language – Press Enterprise newspaper – April 15 and April 22, 2021.
- For Spanish language newspaper – La Prenza – April 16 and April 23, 2021.

Western invites you to submit comments and consult with Western regarding its 2020 UWMP update, WSCP, and 2015 UWMP Addendum to boardsecretary@wmwd.com.

If you have any input for the matters contained in this notice letter, require additional information, or would like to set up a meeting to discuss these issues, please contact me at (951) 571-6270 or by email at mmatlock@wmwd.com.

Sincerely,
Melissa Matlock
Melissa Matlock, Ph.D.
Water Resources Specialist

D

Appendix D Adoption Resolutions

RESOLUTION 3154

RESOLUTION OF THE BOARD OF DIRECTORS OF WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN

WHEREAS, The California Urban Water Management Planning Act, Water Code Section 10610 et seq. (the Act), mandates that every urban supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan (Plan); and

WHEREAS, the Act generally requires that said Plan be updated and adopted at least once every five years on or before July 1, in years ending in six and one; and

WHEREAS, pursuant to recent amendments to the Act, urban water suppliers are required to update and electronically submit their 2020 Plans to the California Department of Water Resources by July 1, 2021; and

WHEREAS, pursuant to the Water Conservation Act of 2009, also referred to as SB X7-7 (Water Code section 10608 et seq.), an "urban retail water supplier" is defined as a water supplier that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes, and an "urban wholesale water supplier" is defined as a water supplier that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes; and

WHEREAS, Western Municipal Water District of Riverside County (Western) meets the definition of both an

live streamed online at wmwd.com in order to provide members of the public and other interested entities with the opportunity to be heard in connection with proposed adoption of the 2020 Plan and issues related thereto; and

WHEREAS, pursuant to said public hearing on Western's 2020 Plan, Western, among other things, encouraged the active involvement of diverse social, cultural, and economic members of the community within Western's service area with regard to the preparation of the Plan, encouraged community input regarding Western's 2020 Urban Water Management Plan; and

WHEREAS, the Board of Directors has reviewed and considered the purposes and requirements of the Act and SB X7-7, the contents of the 2020 Plan, and the documentation contained in the administrative record in support of the 2020 Plan, and has determined that the factual analyses and conclusions set forth in the 2020 Plan are legally sufficient; and

WHEREAS, Section 10652 of the California Water Code provides that the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of urban water management plans pursuant to this part; and

WHEREAS, the Board of Directors desires to adopt the 2020 Plan in order to comply with the Act and SB X7-7.

NOW THEREFORE BE IT RESOLVED, the Board of Directors of the Western Municipal Water District of Riverside County hereby resolve as follows:

(60) days after submitting a copy of the Plan with the California Department of Water Resources;

7. Western finds and determines that this resolution is not subject to CEQA pursuant to Water Code Section 10652 because CEQA does not apply to the preparation and adoption of an urban water management plan or to the implementation of the actions taken pursuant to such plans. Because this resolution comprises Western's urban water management plan and involves its implementation, no CEQA review is required;

8. Pursuant to CEQA, Western directs staff to file a Notice of Exemption with the Riverside County Clerk's office within five (5) working days of adoption of this resolution;

9. The document and materials that constitute the record of proceedings on which this resolution and the above findings have been based are located at Clerk of the Board of Directors of Western Municipal Water District. The custodian for these records is the Clerk of the Board of Western;

10. The General Manager is hereby authorized and directed to implement the 2020 Plan in accordance with the Act and SB X7-7 and to provide recommendations to the Board of Directors regarding the necessary budgets, procedures, rules, regulations, or further actions to carry out the effective and equitable implementation of the 2020 Plan.

ADOPTED, this 16th day of June 2021.

Brenda Dennstedt
President

RESOLUTION 3155

RESOLUTION OF THE BOARD OF DIRECTORS OF WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ADOPTING THE WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, The California Urban Water Management Planning Act, Water Code Section 10610 et seq. (the Act), mandates that every urban supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare and adopt, in accordance with prescribed requirements, a water shortage contingency plan (WSCP); and

WHEREAS, the Act specifies the requirements and procedures for adopting such Water Shortage Contingency Plans; and

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

WHEREAS, pursuant to the Water Conservation Act of 2009, also referred to as SB X7-7 (Water Code section 10608 et seq.), an "urban retail water supplier" is defined as a water supplier that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes, and an "urban wholesale water supplier" is defined as a water supplier that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes; and

hearing online, or virtually, as there was no public location for attending in person. The public hearing was live streamed online at wmwd.com in order to provide members of the public and other interested entities with the opportunity to be heard in connection with proposed adoption of the WSCP and issues related thereto; and

WHEREAS, pursuant to said public hearing on Western's WSCP, Western, among other things, encouraged the active involvement of diverse social, cultural, and economic members of the community within Western's service area with regard to the preparation of the Plan, encouraged community input regarding Western's Water Shortage Contingency Plan; and

WHEREAS, the Board of Directors has reviewed and considered the purposes and requirements of the Act and SB X7-7, the contents of the WSCP, and the documentation contained in the administrative record in support of the WSCP, and has determined that the factual analyses and conclusions set forth in the WSCP are legally sufficient; and

WHEREAS, Section 10652 of the California Water Code provides that the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of a water shortage contingency plan as part of an urban water management plan pursuant to California Water Code Section 10632; and

WHEREAS, the Board of Directors desires to adopt the WSCP in order to comply with the Act and SB X7-7.

to provide that portion of the WSCP prepared pursuant to Water Code Section 10635(a) to any city or county within which Western provides water supplies no later than sixty (60) days after submitting a copy of the WSCP with the California Department of Water Resources;

7. Western finds and determines that this resolution is not subject to CEQA pursuant to Water Code Section 10652 because CEQA does not apply to the preparation and adoption of a water shortage contingency plan or to the implementation of the actions taken pursuant to such plans. Because this resolution comprises Western's water shortage contingency plan and involves its implementation, no CEQA review is required;

8. Pursuant to CEQA, Western directs staff to file a Notice of Exemption with the Riverside County Clerk's office within five (5) working days of adoption of this resolution;

9. The document and materials that constitute the record of proceedings on which this resolution and the above findings have been based are located at Clerk of the Board of Directors of Western Municipal Water District. The custodian for these records is the Clerk of the Board of Western;

10. The General Manager is hereby authorized and directed to implement the WSCP in accordance with the Act and SB X7-7 and to provide recommendations to the Board of Directors regarding the necessary budgets, procedures, rules, regulations or further actions to carry out the effective and equitable implementation of the WSCP.

RESOLUTION 3158

RESOLUTION OF THE BOARD OF DIRECTORS OF WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ADOPTING AN ADDENDUM TO THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, The California Urban Water Management Planning Act, Water Code Section 10610 et seq. (the Act), mandates that every urban supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan (Plan); and

WHEREAS, the Act generally requires that said Plan be updated and adopted at least once every five years on or before July 1, in years ending in six and one; and

WHEREAS, pursuant to recent amendments to the Act, urban water suppliers are encouraged by the California Department of Resources (DWR) and the Delta Stewardship Council (DSC) to consider adopting an Addendum to their 2015 Plan to demonstrate consistency with the Delta Plan Policy WR P1 to Reduce Reliance on the Delta through Improved Regional Water Self-Reliance, Cal. Code Regs. tit. 23, § 5003; and

WHEREAS, Western Municipal Water District of Riverside County (Western) meets the definition of an urban retail water supplier for purposes of the Act; and

WHEREAS, Western has prepared an Addendum to Western's 2015 Plan in accordance with Delta Plan Policy WR P1, and in accordance with applicable legal requirements, has undertaken certain coordination, notice, public

WHEREAS, pursuant to said public hearing on Western's Addendum to the 2015 Plan, Western, among other things, encouraged the active involvement of diverse social, cultural, and economic members of the community within Western's service area with regard to the preparation of the Plan, encouraged community input regarding Western's Addendum to the 2015 Urban Water Management Plan; and

WHEREAS, the Board of Directors has reviewed and considered the purposes and requirements of the Act and Delta Plan Policy WR P1, the contents of the Addendum to the 2015 Plan, and the documentation contained in the administrative record in support of the Addendum, and has determined that the factual analyses and conclusions set forth in the Addendum are legally sufficient; and

WHEREAS, the Board of Directors desires to adopt the Addendum to the 2015 Plan prior to July 1, 2021 in order to comply with the Act and Delta Plan Policy WR P1.

NOW THEREFORE BE IT RESOLVED, the Board of Directors of the Western Municipal Water District of Riverside County hereby resolve as follows:

1. The Addendum to Western's 2015 Urban Water Management Plan to demonstrate consistency with the Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance is hereby adopted as amended by changes incorporated by the Board of Directors as a result of input received (if any) at the public hearing and ordered filed with the Secretary of the Board of Directors;

ADOPTED, this 16th day of June 2021.

BRENDA DENNSTEDT
President

June 16, 2021

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of Resolution 3158 adopted by the Board of Directors of Western Municipal Water District of Riverside County at its regular meeting held on June 16, 2021.

MIKE GARDNER
Secretary-Treasurer

The Undersigned Certifies That This
Is a True Copy on File as a
Permanent Record of the District.
This Stamp Must be in Pink Ink
To Constitute a Certified Copy.

Western Municipal Water District
By _____ Date 6/16/2021

E

Appendix E USBR Climate Change Analysis for the Santa Ana River Watershed

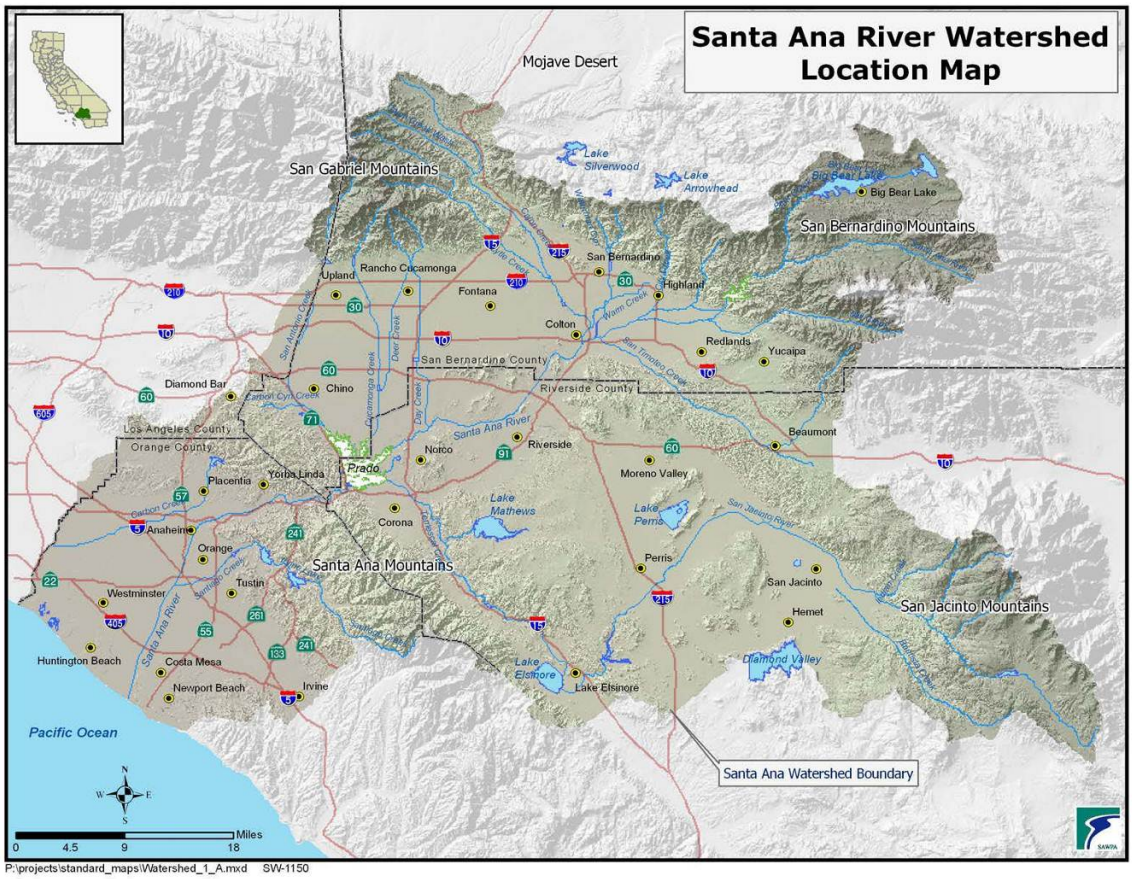
RECLAMATION

Managing Water in the West

Technical Memorandum No. 1

Climate Change Analysis for the Santa Ana River Watershed

Santa Ana Watershed Basin Study, California
Lower Colorado Region



U.S. Department of the Interior
Bureau of Reclamation

August 2013

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

BUREAU OF RECLAMATION
Water and Environmental Resources Division (86-68200)
Water Resources Planning and Operations Support Group (86-68210)
Technical Services Center, Denver, Colorado

Technical Memorandum No. 86-68210-2013-02

Climate Change Analysis for the Santa Ana River Watershed

Santa Ana Watershed Basin Study, California
Lower Colorado Region

Prepared by:

Kristine Blickenstaff, Hydraulic Engineer
Subhrendu Gangopadhyay, Hydrologic Engineer
Ian Ferguson, Hydrologic Engineer
Laura Condon, Hydrologic Engineer
Tom Pruitt, Civil Engineer

Peer reviewed by:

Marketa Elsner, Hydrologic Engineer

This page intentionally left blank.

Contents

Page

Executive Summary **1**
1.0 Introduction **5**
1.1 Purpose, Scope, and Objective of Study 5
1.1.1 Location and Description of Study Area 5
1.2 Summary of Previous and Current Studies 7
1.2.1 Historical Trends 7
1.2.2 Climate Projections 9
1.2.3 Hydrological Projections 9
1.2.4 Climate Change Impacts 10
1.3 Identification of Interrelated Activities 10
1.3.1 Federal – WaterSMART 10
1.3.2 State – Proposition 84 and IRWM 11
1.3.3 Local – OWOW 11
2.1 Climate Projections 12
2.2 Hydrology Models for the Santa Ana River Watershed 13
2.2.1 Surface Water 13
2.2.2 Groundwater 18
Development of Groundwater Model Inputs 23
Historical Input Data (1990-2009) 23
Groundwater Elevation (h_t) 23
Precipitation (P_t) 25
Evaporative Demand (E_t) 25
Streamflow (Q_t) 25
Municipal and Industrial Demand (M_t) 27
Agricultural Demand (A_t) 27
Trans-basin Imported Water (I_t) 27
Exogenous Variable (X_t) 27
Projected (Future) Input Data (2010-2099) 28
Precipitation (P_t) 28
Evaporative Demand (E_t) 28
Streamflow (Q_t) 28
Municipal and Industrial Demand (M_t) 28
Agricultural Demand (A_t) 29
Trans-basin Imported Water (I_t) 29
Exogenous Variable (X_t) 29
3.0 Water Supply and Demand Projections **30**
3.1 Water Supply 30
3.1.1 Hydroclimate Projections 30
Timeseries Plots 30
Spatial Plots 32
3.1.2 Impacts on Runoff Annual and Seasonal Cycles 35
3.1.3 Groundwater Impacts 38

3.2 Water Demands 43
3.2.1 Water Demand Projections 43
3.3 Supply and Demand Summary 45
4.0 Decision Support and Impact Assessment 46
4.1 Impacts on Recreation in Lake Elsinore 46
4.1.1 Background 46
4.1.2 Methodology 47
4.1.3 Results 47
4.2 Alpine Climate Impacts 48
4.2.1 Background 48
4.2.2 Methodology 49
4.2.3 Results 49
Recreation at Big Bear 49
Jeffrey Pine Ecosystem 51
4.3 Extreme Temperature Impacts 54
4.3.1 Background 54
4.3.2 Methodology 54
4.3.3 Results 54
4.4 Flood Impacts 56
4.4.1 Background 56
4.4.2 Methodology 58
4.4.3 Results 59
4.5 Sea Level Rise Impacts 62
4.5.1 Background 62
4.5.2 Methodology 62
4.5.3 Results 64
4.6 Decision Support and Impact Assessment Summary 66
5.0 Demand Management to Inform Adaptive Strategies 69
5.1 Background 69
5.2 Methods 70
5.3 Application 72
6.0 Uncertainties 75
6.1 Climate Projection Information 75
6.1.1 Global Climate Forcing 75
6.1.2 Global Climate Simulations 76
6.1.3 Climate Projection Bias Correction 76
6.1.4 Climate Projection Spatial Downscaling 76
6.2 Assessing Hydrologic Impacts 77
6.2.1 Generating Weather Sequences Consistent with Climate Projections 77
6.2.2 Natural Runoff Response 77
6.2.3 Hydrologic Modeling 77
6.2.4 Bias and Calibration 77
6.2.5 Time Resolution of the Applications 78
7.0 References 79

Figures

Figure 1: SAWPA member agencies 6
Figure 2: Downscaled GCM key elements figure 13
Figure 3: VIC macroscale hydrologic model 15
Figure 4: VIC routing model 16
Figure 5: Distribution of routing locations 18
Figure 6: Groundwater basins and monitoring well locations 19
Figure 7: Conceptual model of basin-scale groundwater fluctuations used in developing the groundwater screening tool 21
Figure 8: Locations for streamflow inputs 26
Figure 9: Projection ensemble for six hydroclimate indicators for the site Santa Ana River at Adams Street Gage 32
Figure 10: Spatial distribution of simulated decadal precipitation. The vertical axis represent latitude, the horizontal axis represent longitude 34
Figure 11: Spatial distribution of simulated decadal temperature. The vertical axis represent latitude, the horizontal axis represent longitude 35
Figure 12: Simulated mean annual and mean-seasonal runoff change 36
Figure 13: (a) Timeseries of observed and simulated fluctuations in monthly groundwater elevation for the period 1990-2009; (b) scatter plot of simulated monthly change in groundwater elevation as a function of observed change groundwater elevation; (c) Timeseries of observed and simulated monthly groundwater elevation for the period 1990-2009 (zero represents mean sea level); (d) scatter plot of simulated monthly groundwater elevation as a function of observed groundwater elevation (all plots are for Orange County groundwater basin) 39
Figure 14: Projected groundwater elevations for Orange County for a no action scenario 40
Figure 15: Projected groundwater elevations for Upper Santa Ana Valley for a no action scenario 41
Figure 16: Projected groundwater elevations for San Jacinto for a no action scenario 42
Figure 17: Projected groundwater elevations for Elsinore for a no action scenario 42
Figure 18: Population for the Santa Ana River Watershed 43
Figure 19: Water demand by member agency (Western Municipal Water District (WMWD); San Bernardino Valley Municipal Water District (SBVMWD); Orange County Water District (OCWD); Inland Empire Utilities Agency (IEUA); Eastern Municipal Water District (EMWD)) 44
Figure 20: Santa Ana Watershed water demand calculated for this study 44
Figure 21: Lake Elsinore and VIC model grid cell used to determine data for Lake Elsinore analysis 47
Figure 22: Projected average annual volumes for Lake Elsinore for two future periods, with and without EVMWD project 48
Figure 23: Median percent change (from 112 climate projections) in April 1st SWE for the grid cells containing the Bear Mountain and Snow Summit ski areas 50
Figure 24: Percent change in April 1st SWE from Hayhoe et al. (2004) for areas of 2,000 to 3,000 m elevation 51
Figure 25: Fig. 4 from Lenihan et al., (2008). Percent change in total land cover for vegetation classes by 2100 for three climate change scenarios predicted using the MC1 Dynamic Vegetation Model 52

Figure 26: Viability scores for Jeffery Pine currently and for three future projections for 2030 53
Figure 27: Viability scores for Jeffery Pine currently and for three future projections for 2090 53
Figure 28: Projected annual number of days above 95°F. Solid black line is the median and the red shading denotes the 5th and 95th percentile bounds 56
Figure 29: Station 8 Prado Dam - boxplots of 200-year flood volumes and future return periods for the median historical 200-year flood 59
Figure 30: Station 34 Seven Oaks Dam - boxplots of 200-year flood volumes and future return periods for the median historical 200-year flood 60
Figure 31: Station 21 Adams Street Gage - boxplots of 200-year flood volumes and future return periods for the median historical 200-year flood 60
Figure 32: Locations selected for OCWD analysis 63
Figure 33: Projections of global mean sea level rise 64
Figure 34: Area at risk of inundation from 100-year flood event under current conditions (blue) and under 1400 mm sea level rise (yellow) 65
Figure 35: AB 32 GHG Emission Reduction Targets 70
Figure 37: Conservation for Orange County to meet a 20% reduction in GHG emissions by 2020 (also referred to as 20x2020) 73
Figure 38: GHG emissions resulting from a 20% reduction in per capita water use every 10 years from 2020 to 2030 for Orange County 74
Figure 39: GHG emissions resulting from reductions in per capita water use shown in Table 7 for Orange County 74
Figure 40: Comparison of GHG emissions resulting from conservation scenarios 75

Tables

Table 1: Routing locations in the Santa Ana River Watershed 17
Table 2: Streamflow locations for groundwater basins 26
Table 3: Percent change from 1990s for annual, DJFM, and AMJJ runoff 37
Table 4: Summary of Effects of Climate Change on Supply 45
Table 5: Summary of Water Demand for the Santa Ana River Watershed 45
Table 6: Median annual number of days above 95°F for one historical (1951-1999), and three future (2005-2034, 2035-2064, 2055-2084) time periods 55
Table 7: Summary of 200-year flood flows (cfs) 61
Table 8: Summary of return periods, in years, for the median 200-year historical flood 61
Table 9: Conservation measures required to meet AB 32 2050 target 75

Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
%	percent
~	Approximately
AB 32	Assembly Bill 32
AMJJ	April - July
AR4	Fourth Assessment Report
BCSD	Bias Correction and Spatial Disaggregation or bias-corrected and spatially downscaled
CDF	Cumulative Distribution Function
CO_2e	Carbon Dioxide Equivalent
CMIP	Coupled Model Intercomparison Project (CMIP1, CMIP2, CMIP3, and CMIP5 are CMIP phases 1, 2, 3, and 5 respectively)
DCP	Downscaled Climate Projections
DEM	Digital Elevation Model
DJFM	December - March
DOE	U.S. Department of Energy
DWR	California Department of Water Resources
EMWD	Eastern Municipal Water District
EVMWD	Elsinore Valley Municipal Water District
FAQs	Frequently Asked Questions
GCM	General Circulation Model, or Global Climate Model

GHG	Greenhouse Gas
IEUA	Inland Empire Utilities Agency
IPCC	Intergovernmental Panel on Climate Change
IRWM	Integrated Regional Water Management
km	kilometer
LESJWA	Lake Elsinore and San Jacinto Watersheds Authority
LLNL	Lawrence Livermore National Laboratory
MAF	million acre-feet
MAFY	million acre feet per year
MGD	million gallons per day
MWDSC	The Metropolitan Water District of Southern California
NCAR	National Center for Atmospheric Research
OCWD	Orange County Water District
OWOW	One Water One Watershed
PCMDI	Program for Climate Model Diagnosis and Intercomparison
PET	Potential Evapotranspiration
QSA	Quantification Settlement Agreement
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
SARP	Santa Ana River Mainstem Project
SARW	Santa Ana River Watershed
SAWPA	Santa Ana Watershed Project Authority
SBVMWD	San Bernardino Valley Municipal Water District

SECURE	Science and Engineering to Comprehensively Understand and Responsibly Enhance
SCAG	Southern California Association of Governments
SLR	Sea Level Rise
SWE	Snow Water Equivalent
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VIC	Variable Infiltration Capacity hydrologic model
WaterSMART	WaterSMART (Sustain and Manage America's Resources for Tomorrow)
WCRP	World Climate Research Programme
WMWD	Western Municipal Water District
WRMS	Water Resources Management System

Executive Summary

The Santa Ana Watershed Basin Study (Basin Study) is a collaborative effort by the Santa Ana Watershed Project Authority (SAWPA) and the Bureau of Reclamation (Reclamation), authorized under the Sustain and Manage America's Resources for Tomorrow SECURE Water Act (Title IX, Subtitle F of Public Law 111-11). The study began in 2011 and was completed in the spring of 2013. The Basin Study complements SAWPA's Integrated Regional Water Management (IRWM) planning process, also known as the "One Water One Watershed" (OWOW) Plan, and refines the watershed's water projections, and identifies potential adaptation strategies, in light of projected effects of climate change. This climate change analysis for the Santa Ana River Watershed (SARW) is a contributing section to the Basin Study.

This report explains the methods used to develop an analysis of potential implications of the changing climate, and how those implications might affect issues of importance to the Santa Ana River Watershed. Chapter 1 provides an introduction to the project and the study area, along with a summary of relevant previous studies. The development of climate projections and hydrology models used can be found in Chapter 2. Chapter 3 provides projections for water supply and demand in the SARW. An impact analysis was conducted focusing on key areas of importance to the SARW, the results of which can be found in Chapter 4. A tool to evaluate demand management is presented in Chapter 5, along with a case study of potential adaptation strategies. Chapter 6 addresses uncertainties in climate change analysis.

In light of climate change, prolonged drought conditions, growth, and population projections, a strong concern exists to ensure there will be adequate water supplies to meet future water demand. The findings of this Basin Study will be used to update the OWOW Plan, evaluate the implications of climate change, assess increased energy demand, and ensure that future water quality and supply needs are met. Goals of the study include: incorporating existing regional and local planning studies within the watershed; sustaining the innovative "bottom up" approach to regional water resources management planning; ensuring an integrated, collaborative approach; using science and technology to assess climate change and greenhouse emissions effects; facilitating watershed adaptation planning; and expanding outreach to all major water uses and stakeholders.

Future water supply was analyzed for the Santa Ana River Watershed using the Variable Infiltration Capacity (VIC) hydrologic model (Liang et al., 1994; Liang et al., 1996; Nijssen et al., 1997) to project streamflow using 112 different projections of future climate. Projected climate variables, including daily precipitation, minimum temperature, maximum temperature, and wind speed,

came from the Bias Corrected and Spatially Downscaled Coupled Model Intercomparison Project Phase 3 (BCSD-CMIP3) archive. Historical VIC model simulations over the period 1950-1999 were conducted using historical meteorological forcings (factors affecting the climate of the earth that drive or "force" the climate to change) developed by Maurer et al., (2002), and subsequent extensions. The VIC hydrologic model solves the water balance for each of a series of 1/8° by 1/8° (~12km x 12 km) grid cells, which represent the watershed. Daily climate projections span the time period January 1, 1950 to December 31, 2099 and exist for each grid cell. Grid based outputs of daily runoff and baseflow generated by the VIC hydrologic model are routed to select sites throughout the watershed to produce daily streamflow projections. Through coordination with SAWPA and local water agencies, 36 key locations in the basin were determined, so that sub-basins could be delineated. Change factors were developed by calculating decade mean (reference decade – 1990s; three future decades – 2020s, 2050s, and 2070s) total precipitation and temperature, then calculating percent change, and finally calculating the median change for all the 112 projections. Final products include data sets at key locations for precipitation, temperature, evapotranspiration, April 1st Snow Water Equivalent (SWE), and streamflow.

These data sets were used to answer frequently asked questions regarding impacts of climate change on the Santa Ana River Watershed. The questions and key findings can be found below.

Will surface water supply decrease?

- Annual surface water is likely to decrease over future periods.
- Precipitation shows somewhat long term decreasing trends.
- Temperature will increase, which is likely to cause increased water demand and reservoir evaporation.
- April 1st SWE will decrease.

Will groundwater availability be reduced?

- Groundwater currently provides approximately 54% of total water supply in an average year, and groundwater use is projected to increase over the next 20 years.
- Projected decreases in precipitation and increases in temperature will decrease natural recharge throughout the basin.
- Management actions such as reducing municipal and industrial water demands or increasing trans-basin water imports and recharge will be required in order to maintain current groundwater levels.
- A basin-scale groundwater screening tool was developed to facilitate analysis of basin-scale effects of conservation, increasing imported supply, changing agricultural land use, and other factors on basin-scale groundwater conditions.

Is Lake Elsinore in danger of drying up?

- Lake Elsinore has less than a 10% chance of drying up (2000-2099).
- In the 2000-2049 period, Lake Elsinore has a greater than 75% chance of meeting the minimum elevation goal of 1,240 ft.
- In the future period 2050-2099, Lake Elsinore has less than a 50% chance of meeting the minimum elevation goal of 1,240 ft.
- There is less than a 25% chance that Lake Elsinore will drop below low lake levels (1,234 ft) in either period.
- The Elsinore Valley Municipal Water District (EVMWD) project does aid in stabilizing lake levels; however, for the period 2050-2099 additional measures will likely be required to help meet the minimum elevation goal of 1,240 ft.

Will the region continue to support an alpine climate and how will the Jeffrey Pine ecosystem be impacted?

- Warmer temperatures will likely cause Jeffrey pines to move to higher elevations and may decrease their total habitat.
- Forest health may also be influenced by changes in the magnitude and frequency of wildfires or infestations.
- Alpine ecosystems are vulnerable to climate change because they have little ability to expand to higher elevations.
- Across the State it is projected that alpine forests will decrease in area by 50-70% by 2100.

Will skiing at Big Bear Mountain Resorts be sustained?

- Simulations indicate significant decreases in April 1st snowpack that amplify throughout the 21st century.
- Warmer temperatures will also result in a delayed onset and shortened ski season.
- Lower elevations are most vulnerable to increasing temperatures.
- Both Big Bear Mountain Resorts lie below 3,000 m and are projected to experience declining snowpack that could exceed 70% by 2070.

How many additional days over 95°F are expected in Anaheim, Riverside and Big Bear City?

- All the climate projections demonstrate clear increasing temperature trends.
- Increasing temperatures will result in a greater number of days above 95°F in the future.

- The number of days above 95°F gets progressively larger for all cities advancing into the future.
- By 2070 it is projected that the number of days above 95°F will quadruple in Anaheim (4 to 16 days) and nearly double in Riverside (43 to 82 days). The number of days above 95°F at Big Bear City is projected to increase from 0 days historically to 4 days in 2070.

Will floods become more severe and threaten flood infrastructure?

- Simulations indicate a significant increase in flow for 200-year storm events in the future.
- The likelihood of experiencing what was historically a 200-year event will nearly double (i.e. the 200-year historical event is likely to be closer to a 100-year event in the future).
- Findings indicate an increased risk of severe floods in the future, though there is large variability between climate simulations.

How will climate change and sea level rise affect coastal communities and beaches?

- Climate change will contribute to global sea level rise (SLR) through melting of glaciers and ice caps and thermal expansion of ocean waters, both of which increase the volume of water in the oceans.
- Regional SLR may be higher or lower than global SLR due to effects of regional ocean and atmospheric circulation.
- Average sea levels along the Southern California coast are projected to rise by 5-24 inches by 2050 and 16-66 inches by 2100.
- SLR is likely to inundate beaches and coastal wetlands and may increase coastal erosion. Effects on local beaches depend on changes in coastal ocean currents and storm intensity, which are highly uncertain at this time.
- SLR will increase the area at risk of inundation due to a 100-year flood event.
- Existing barriers are sufficient to deter seawater intrusion at Talbert and Alamitos gaps under a 3-foot rise in sea levels. However, operation of barriers under SLR may be constrained by shallow groundwater concerns.

As climate science continues to evolve, periodic reanalysis and evaluation will be needed to inform the decision-making process.

1.0 Introduction

1.1 Purpose, Scope, and Objective of Study

The Santa Ana Watershed Basin Study (Basin Study) is a collaborative effort by the Santa Ana Watershed Project Authority (SAWPA) and the Bureau of Reclamation (Reclamation), authorized under the Sustain and Manage America's Resources for Tomorrow SECURE Water Act (Title IX, Subtitle F of Public Law 111-11). The study began in 2011 and was completed in the spring of 2013. The Basin Study complements SAWPA's Integrated Regional Water Management (IRWM) planning process, also known as their "One Water One Watershed" (OWOW) Plan, and refines the watershed's water projections, and identifies potential adaptation strategies, in light of projected effects of climate change. This climate change analysis for the Santa Ana River Watershed is a contributing section to the Basin Study.

SAWPA is a joint powers authority that represents five major water resource agencies. SAWPA's area includes over 350 water, wastewater and groundwater management, flood control, environmental, and other nongovernmental organizations. These entities work together collaboratively and focus on the region's OWOW Plan.

In light of climate change, prolonged drought conditions, growth, and population projections, a strong concern exists to ensure there will be adequate water supplies to meet future water demand. The findings of this Basin Study will be used to update the OWOW Plan, evaluate the implications of climate change, and ensure that future water quality and supply needs are met. Goals of the study include: incorporating existing regional and local planning studies within the watershed; sustaining the innovative "bottom up" approach to regional water resources management planning; ensuring an integrated, collaborative approach; using science and technology to assess climate change and greenhouse emissions affects; facilitating watershed adaptation planning; and expanding outreach to all major water uses and stakeholders.

1.1.1 Location and Description of Study Area

The Santa Ana River Watershed (also referred to as SARW, or 'Watershed') is home to over 6 million people, within an area of 2,650 square miles in southern California. The regional population is projected to grow to almost ten million within the next 50 years (U.S. Census Bureau, 2010). The watershed includes much of Orange County, the northwestern corner of Riverside County, the southwestern corner of the San Bernardino County, and small portions of Las Angeles County. The watershed is bounded on the south by the Santa Margarita watershed, on the east by the Salton Sea and Southern Mojave watersheds, and on the northwest by the Mojave and San Gabriel watersheds. SAWPA has five member agencies: Eastern Municipal Water District (EMWD), Inland Empire

Utilities Agency (IEUA), Orange County Water District (OCWD), San Bernardino Valley Municipal Water District (SBVMWD), and Western Municipal Water District (WMWD). shown below in Figure 1.

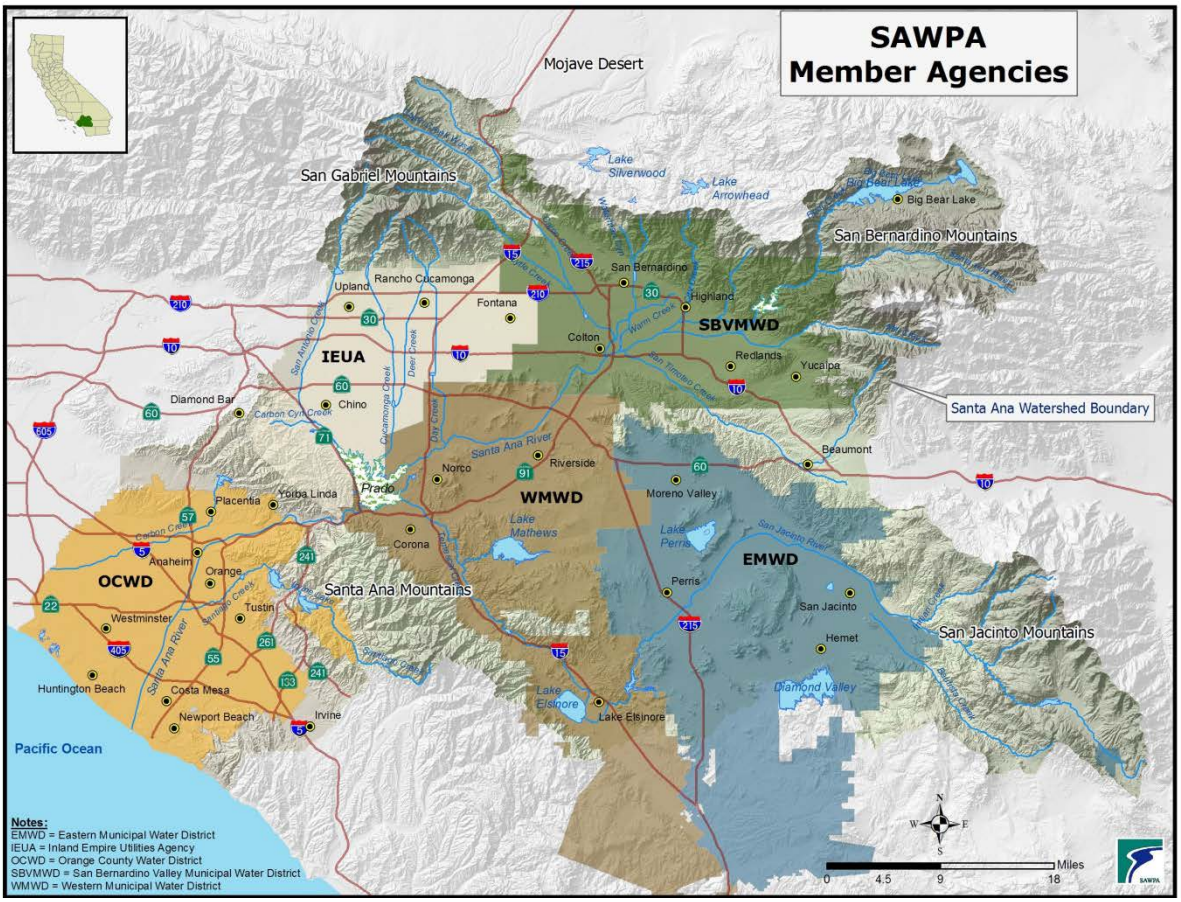


Figure 1: SAWPA member agencies

The climate and geography of the State of California present a unique challenge to the management and delivery of water. While most of the State's precipitation falls on the northern portion of the State, most of California's population resides in the semi-arid, southern portion of the State. Water is diverted, stored, and then transferred from the water-rich north to the more arid central and southern sections of the state through the California State Water Project (SWP), the Central Valley Project, and the Los Angeles Aqueduct. In addition to the projects that transport water from the north to the south, the southern coastal area relies on water imported through The Metropolitan Water District of Southern California's (Metropolitan) Colorado River Aqueduct. The Bureau of Reclamation and seven basin states manage the Colorado River system under the authority of the Secretary of the Interior and for the benefit of the seven basin states. Over-allocation of this resource, along with a U.S Supreme Court Decision (Arizona v. California, 1964) and population and economic growth, led to the recent California "4.4 Plan" and Quantification Settlement Agreement (QSA). The QSA

limits California's share of the Colorado River water supply to 4.4 million acre-feet (MAF). As a result of these actions, Metropolitan's supply from the Colorado River was significantly reduced, especially during extended dry periods. In the past, a buffer supply was developed by constructing new facilities, such as dams and/or aqueducts, to provide water supply for future growth. Today, the gap between supply and demand has closed and increasing emphasis is placed on conservation and development of local supplies. Building new facilities is costly and such projects face strict environmental review before they can be approved. This has caused California to seek more creative and sustainable solutions to water resource management.

1.2 Summary of Previous and Current Studies

A large body of research has been conducted over the past ten or more years on climate change and its potential impacts on the western United States. Most of this research has focused on large scale implications (for example, over the western United States), while providing limited regional scale information. The following section summarizes research that is relevant to the Watershed, and shows that although these results are applicable, additional research was required, through this Basin Study, to evaluate smaller scale, site specific, climate change impacts. For additional information on previous and current climate change studies, not directly related to the Watershed, please see Reclamation's Literature Synthesis on Climate Change Implications for Water and Environmental Resources (http://www.usbr.gov/research/docs/climatechangelitsynthesis.pdf).

1.2.1 Historical Trends

California's historical temperature has increased by about 1.7°F over the past 116 years (Moser et al., 2012), while showing declines in spring snowpack and a shift to earlier spring runoff (Knowles et al., 2007; Regonda et al., 2005; Peterson et al., 2008; Stewart et al., 2009). It is difficult to distinguish long-term climate change from natural climate variability, although many studies have tried to distinguish between the two (Bonfils et al., 2007; Cayan et al., 2001; Gershunov et al., 2009). It is likely that the historical temperature trends are due to a combination of anthropogenic climate change and natural climate variability (Reclamation, 2011k).

A study by Gershunov et al., (2012) shows that generally, there is a positive trend (1950-2010) in heat wave activity over the entire California region that is expressed most strongly and clearly in nighttime rather than daytime temperature extremes. This trend in nighttime heat wave activity has intensified markedly since the 1980s and especially since 2000. The two most recent nighttime heat waves were also strongly expressed in extreme daytime temperatures. Circulations associated with great regional heat waves advect hot air into the region. This air can be dry or moist, depending on whether a moisture source is available, causing heat waves to be expressed preferentially during day or night.

A remote moisture source centered within a marine region west of Baja California has been increasing in prominence because of gradual sea surface warming and a related increase in atmospheric humidity. Adding to the very strong synoptic dynamics during the 2006 heat wave were a prolonged stream of moisture from this southwestern source, and despite the heightened humidity, an environment in which afternoon convection was suppressed, keeping cloudiness low and daytime temperatures high.

Vermeera and Rahmstorf (2009) suggest a simple relationship linking global sea-level variations to temperature. This relationship is tested on synthetic data from a global climate model for the past millennium and the next century. When applied to observed data of sea level and temperature for 1880–2000, and taking into account known anthropogenic hydrologic contributions to sea level, the correlation explains 98% of the variance.

Trends in historical precipitation are more sporadic making it difficult to attribute them to climate change (Hoerling et al., 2010). A series of regression analyses, conducted by Dettinger and Cayan (1995), indicate that runoff timing responds equally to the observed decadal-scale trends in winter temperature and interannual temperature variations of the same magnitude, suggesting that the trend in temperature is sufficient to explain the increasingly early runoff. However, this trend is not immediately distinguishable from natural atmospheric variability.

A well-documented shift towards earlier runoff can be attributed, in part, to more precipitation falling as rain instead of snow (Regonda et al., 2005; Pierce et al., 2008; Das et al., 2009; Hidalgo et al., 2009; Lindquist et al., 2009). Knowles et al., (2007) showed a regional trend during the period 1949–2001 toward smaller ratios of winter-total snowfall water equivalent (SWE) to winter-total precipitation, with the most pronounced reductions occurring in the Sierra Nevada and the Pacific Northwest, with more varied changes (but still predominantly reductions) in the Rockies. The trends in this ratio correspond to shifts toward less SWE rather than to changes in overall precipitation, except in the Southern Rockies, where both snowfall and precipitation have increased. The trends toward reduced SWE are a response to warming across the region, with the most significant reductions occurring where winter-average wet-day minimum temperature changes have been less than +3°C over the course of the study period. The observed trends in hydroclimatology over the western United States will likely have significant impacts on water resources planning and management.

There have been preliminary efforts by agencies managing California's water resources to incorporate climate change research into their planning and management tools, including preliminary modeling studies of potential impacts of climate change to operations of the State Water Project and Central Valley Project, Delta water quality and water levels, flood forecasting and evapotranspiration rates (Anderson et al., 2008).

1.2.2 Climate Projections

The Intergovernmental Panel on Climate Change (IPCC) projections of future climate have been utilized in assessing climate over California. Projections indicate the rate of increase in global mean annual temperature nearly doubles before 2100, and that increases in summer temperatures are greater than winter (IPCC, 2007). There is less confidence in projections of future precipitation than temperature (Reclamation, 2011). However, precipitation projections show less snowfall and more rainfall, less snowpack development and earlier runoff, more intense and heavy rainfall interspersed with longer dry periods (Congressional Budget Office, 2009; Lundquist et al., 2009; Moser et al., 2009; Rauscher et a l2008; Maurer et al.,2007).

1.2.3 Hydrological Projections

The changing climate will likely result in lower stream flow, lower reservoir storage, and decreased water supply deliveries and reliability later in the 21st century throughout California (Vicuna and Dracup, 2007). Drought in the Southwest may no longer be driven by precipitation, but rather by temperature (Hoerling and Eischeid, 2007).

Two hydrologic impacts, in which there is high confidence, are increasing winter streamflow and decreasing late spring and summer flow (Maurer, 2007). There is also high confidence in reduced snowpack at the end of winter, and earlier arrival of the annual peak flow volume, which has important implications for California's water management. The shift to earlier peak streamflow timing, and the decline in end-of-winter snow pack, results in more extreme impacts under higher emissions scenarios in all cases. This indicates that future emissions scenarios play a significant role in the degree of impacts to water resources in California.

The potential effects of climate change on the hydrology and water resources of the Sacramento–San Joaquin River Basin were evaluated by Van Rheenen et al., (2004) using an ensemble of climate projections generated by the U.S. Department of Energy and National Center for Atmospheric Research Parallel Climate Model (DOE/NCAR PCM). From these global simulations, transient monthly temperature and precipitation sequences were statistically downscaled to produce continuous daily hydrologic model forcings, which drove a macro-scale hydrology model (VIC) of the Sacramento–San Joaquin River Basins at a 1/8° spatial resolution, and produced daily streamflow sequences for each climate projection. Each streamflow scenario was used in a water resources system model that simulated current and predicted future performance of the system. Results from the water resources system model indicated that achieving and maintaining status quo system performance in the future would be nearly impossible, given the altered hydrologic projections.

1.2.4 Climate Change Impacts

With respect to management, a number of studies have investigated the implications of climate change on water management in the region, suggesting management of reservoir systems will become more challenging (Vicuna and Dracup, 2007). The impacts are expected to be expensive, but not catastrophic for California (Harou et al., 2010).

Subtle changes in hydrology due to climate change can alter wetlands, resulting in a positive biotic feedback, contributing methane and carbon dioxide to the atmosphere (Burkett and Kusler, 2007). Policy options for minimizing the adverse impacts of climate change on wetland ecosystems include the reduction of current anthropogenic stresses, allowing for inland migration of coastal wetlands as sea-level rises, active management to preserve wetland hydrology, and a wide range of other management and restoration options.

Ficke et al. (2007) summarizes the general effects of climate change on freshwater systems to be increased water temperatures, decreased dissolved oxygen levels, and the increased toxicity of pollutants. Altered hydrologic regimes and increased groundwater temperatures could affect the quality of fish habitat. Eutrophication may be exacerbated and stratification will likely become more pronounced. Model predictions indicate that global climate change will continue even if greenhouse gas emissions decrease or cease. Therefore, proactive management strategies such as removing other stressors from natural systems will be necessary to sustain our freshwater fisheries.

Projected temperature and carbon dioxide increases may extend growing seasons, stimulate weed growth, increase pests, and may impact pollination (Baldocchi and Wong 2006). Stream temperatures in many areas are increasing due to increases in air temperature and reduced summer flows that make streams more sensitive to warmer air temperatures (Haak et al., 2010).

1.3 Identification of Interrelated Activities

1.3.1 Federal – WaterSMART

The WaterSMART Program, established by the Secretary of the Interior under Secretarial Order 3297, addresses an increasing set of water supply challenges, including chronic water supply shortages due to increased population growth, climate variability and change, and heightened competition for finite water supplies. The WaterSMART Program was developed as means of implementing the SECURE Water Act of 2009 (Public Law 111-11). The WaterSMART Program provides the scientific and financial tools and the collaborative environment needed to help balance water supply and demand through the efficient use of current supplies and the development of new supplies. Through WaterSMART, Reclamation is making use of the best available science in the assessments it conducts and the policies it employs. WaterSMART science has

and will continue to inform the real-time decisions of water managers who need reliable estimates of current conditions in the hydrologic cycle and projections of supply and demand in watersheds throughout the nation. Many examples of best available science are being developed through the WaterSMART Program. Much of that science can be accessed through the WaterSMART Clearinghouse, an online collaborative site where best practices and cost-effective technologies for water conservation and sustainable water strategies are shared with the public (http://www.doi.gov/watersmart/html/index.php).

1.3.2 State – Proposition 84 and IRWM

California's Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Prop 84) authorizes $5.388 billion in general obligation bonds to fund safe drinking water, water quality and supply, flood control, waterway and natural resource protection, water pollution and contamination control, state and local park improvements, public access to natural resources, and water conservation efforts.

Integrated Regional Water Management (IRWM) is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions. The California Department of Water Resources is currently working to ensure that IRWM planning is continued and expanded throughout the State; better align state and federal programs, polices, and regulations to support IRWM; identify stable and sufficient funding for IRWM; and further support regional water management groups.

1.3.3 Local – OWOW

The Santa Ana Watershed Project Authority is a planning and implementation agency that was formed in 1972 with the goal of building facilities to protect the water quality of the Watershed. Their planning efforts have expanded and, in 2006, SAWPA's One Water One Watershed (OWOW) plan was adopted. The OWOW plan is a comprehensive view of the watershed and water issues. The plan encompasses all sub-regions, political jurisdictions, water agencies and non-governmental stakeholders (private sector, environmental groups, and the public at large) in the watershed. All types of water (imported, local surface and groundwater, stormwater, and wastewater effluent) are viewed as components of a single water resource, inextricably linked to land use and habitat, and the plan tries to limit impacts of water use and climate change on natural hydrology.

2.0 Climate Projections and Hydrology Models

2.1 Climate Projections

Projected changes in climate (including both anthropogenic changes and natural variability), and their influence on streamflow and basin water supply, have been studied by several researchers in recent years, as described in Chapter 1. Future projections from global climate models (GCMs) indicate that the climate may exhibit trends and increased variability over the 21st century, beyond what has occurred historically. Downscaled GCM projections are one way to consider plausible future conditions.

Downscaled GCM projections are produced by internationally recognized climate modeling centers around the world and make use of greenhouse gas (GHG) emissions scenarios, which include assumptions of projected population growth and economic activity. GCM projections used in this study are spatially downscaled to 12 km grids to make them relevant for regional climate change impacts analysis. This process is illustrated in Figure 2. The downscaled GCM projections used in the Basin Study are based on the Coupled Model Intercomparison Project Phase 3 (CMIP3). These projections were the basis for analysis in the IPCC Fourth Assessment Report (IPCC, 2007).The emission scenarios used in the downscaled GCM projections based on CMIP3 are A2 (high), A1b (medium), and B1 (low), and reflect a range of future GHG emissions. The A2 scenario is representative of high population growth, slow economic development, and slow technological change. It is characterized by a continuously increasing rate of GHG emissions, and features the highest annual emissions rates of any scenario by the end of the 21st Century. The A1B scenario features a global population that peaks mid-century and rapid introduction of new and more efficient technologies balanced across both fossil- and non-fossil intensive energy sources. As a result, GHG emissions in the A1B scenario peak around mid-century. Last, the B1 scenario describes a world with rapid changes in economic structures toward a service and information economy. GHG emission rates in this scenario peak prior to mid-century and are generally the lowest of the scenarios.

Emission scenarios exist that have both higher and lower GHG emissions than those considered in this Basin Study (e.g. A1fi). However, the three scenarios included in the analysis span a wide range of projected GHG, and there are more GCM projections available based on these three emissions scenarios than any others.

This Study used the downscaled CMIP3 climate projections; however, new projections from the CMIP5 were recently published in May 2013. CMIP5 climate projections are based on emission scenarios referred to as representative concentration pathways (RCPs; Taylor, 2011). Even though CMIP5 projections are more current, it has not been determined that they are a more reliable source of climate projections compared to existing CMIP3 climate projections. At this time, CMIP5 projections should be considered an addition to (not a replacement for) the existing CMIP3 projections, unless the climate science community can offer an explanation as to why CMIP5 should be favored over CMIP3.

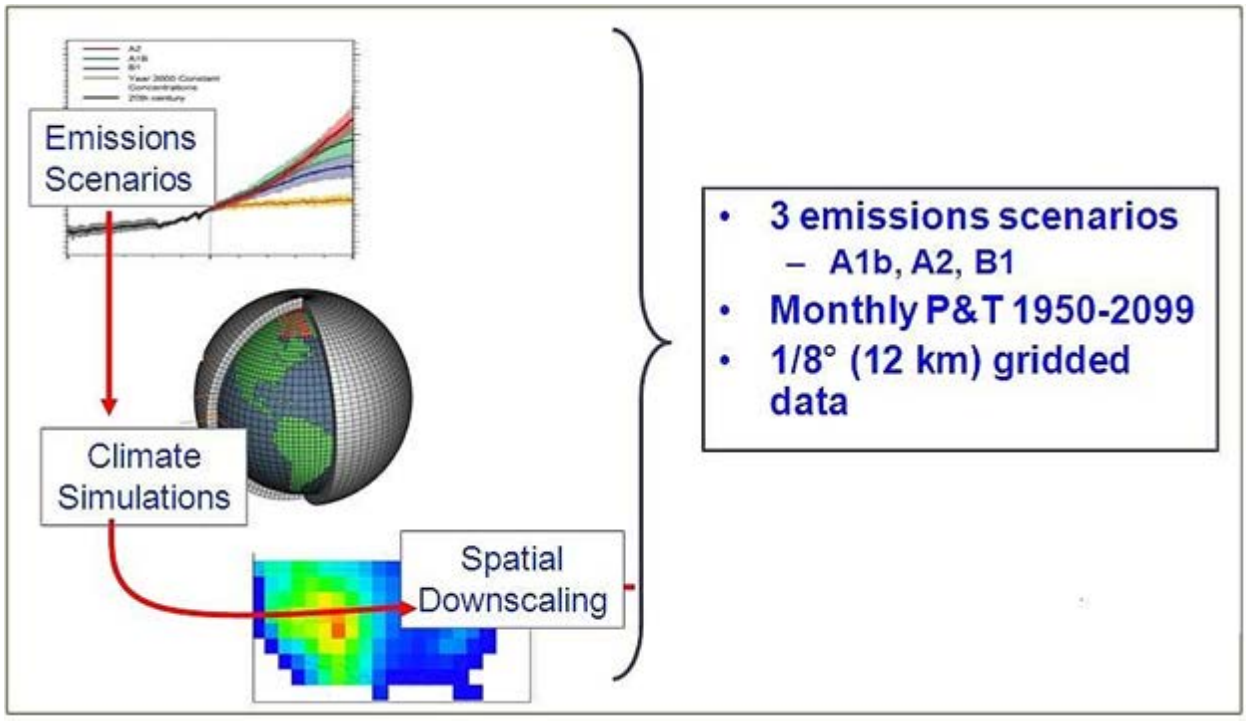


Figure 2: Downscaled GCM key elements figure

2.2 Hydrology Models for the Santa Ana River Watershed

2.2.1 Surface Water

Surface water hydrology projections for the Watershed were developed using the Variable Infiltration Capacity (VIC) model (Liang et al., 1994; Liang et al., 1996; Nijssen et al., 1997) as part of Reclamation's SECURE report on surface water hydrology projections (Reclamation, 2011).

The VIC model is a spatially distributed hydrology model that solves the water balance at each model grid cell. The model initially was designed as a land-surface model to be incorporated in a GCM so that land-surface processes could

be more accurately simulated. However, the model now is run almost exclusively as a stand-alone hydrology model (not integrated with a GCM) and has been widely used in climate change impact and hydrologic variability studies. For climate change impact studies, VIC is run in what is termed the water balance mode that is less computationally demanding than an alternative energy balance mode, in which a surface temperature that closes both the water and energy balances is solved for iteratively. A schematic of the VIC hydrology and energy balance model is given in Figure 3.

The VIC model may be implemented at any spatial resolution, adhering to a latitude-longitude grid. For this Basin Study, and for consistency with Reclamation's West-Wide Climate Risk Assessment, the model was implemented over the study area at 1/8° or ~12 km resolution. Physical characteristics of each cell are predefined within the study area to simulate runoff and other water/land/atmosphere interactions at each grid cell. The VIC hydrology model uses daily weather data (precipitation, maximum temperature, minimum temperature and wind) along with land cover, soils, and elevation information at 1/8° grid scale to simulate hydrologic processes.

VIC provides a wide array of hydrologic outputs, typically including runoff, snow-water equivalent and evapotranspiration, which are routinely analyzed to assess climate change impacts on watershed hydrology. Also, note that all these outputs are produced at the native VIC grid cell resolution of 1/8° or ~12 km. Analysis of these hydrologic variables for the watershed is described in Chapter 3.

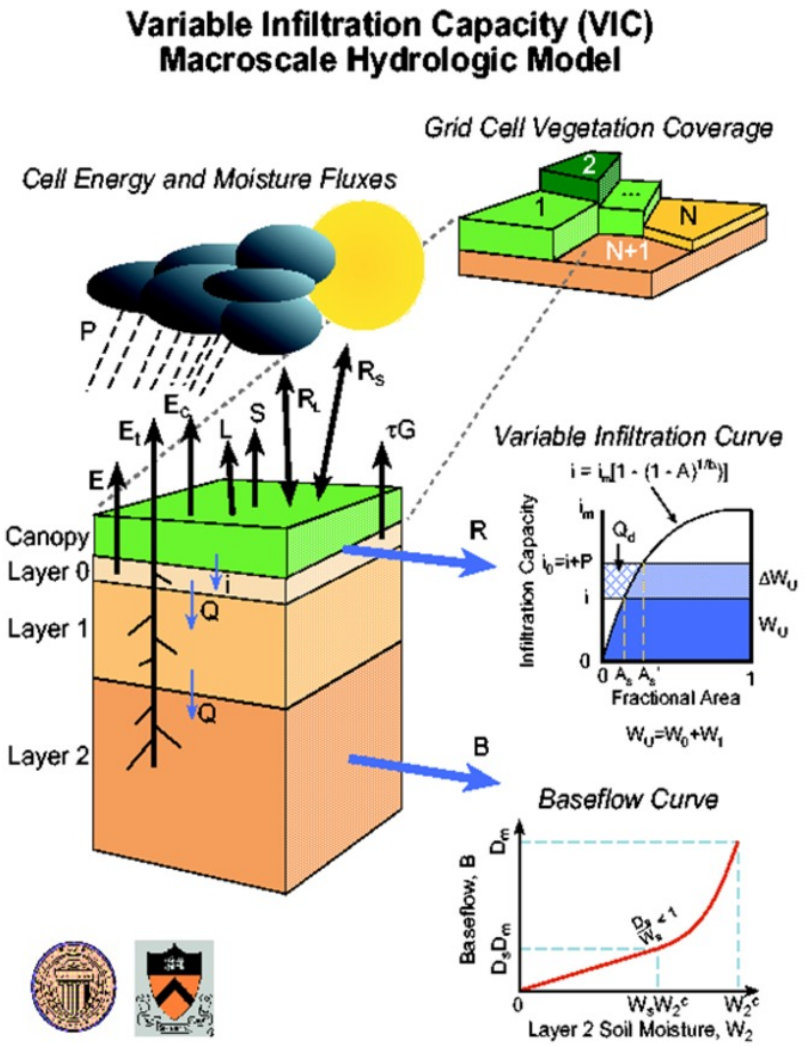


Figure 3: VIC macroscale hydrologic model

However, to analyze streamflow, gridded runoff was routed (Figure 4) to 36 gage locations (Table 1; Figure 5) within the Watershed using the Lohmann et al., (1998) routing model. Additional inputs to the routing model, developed for this Basin Study include, a routing network derived from 15 arc-second (~450 meters) Digital Elevation Model (DEM), flow accumulation, and flow direction data available from the United States Geological Survey (USGS) HydroSHEDS (hydrological data and maps based on Shuttle Elevation Derivatives at Multiple Scales) archive using ArcGIS™. The result of this approach is 112 unique sequences of natural flow under future climate projections. Further details on the development and choice of using the VIC model are available from Reclamation's West-Wide Climate Risk Assessments: Bias-Corrected and Spatially Downscaled Surface Water Projections (2011) report.

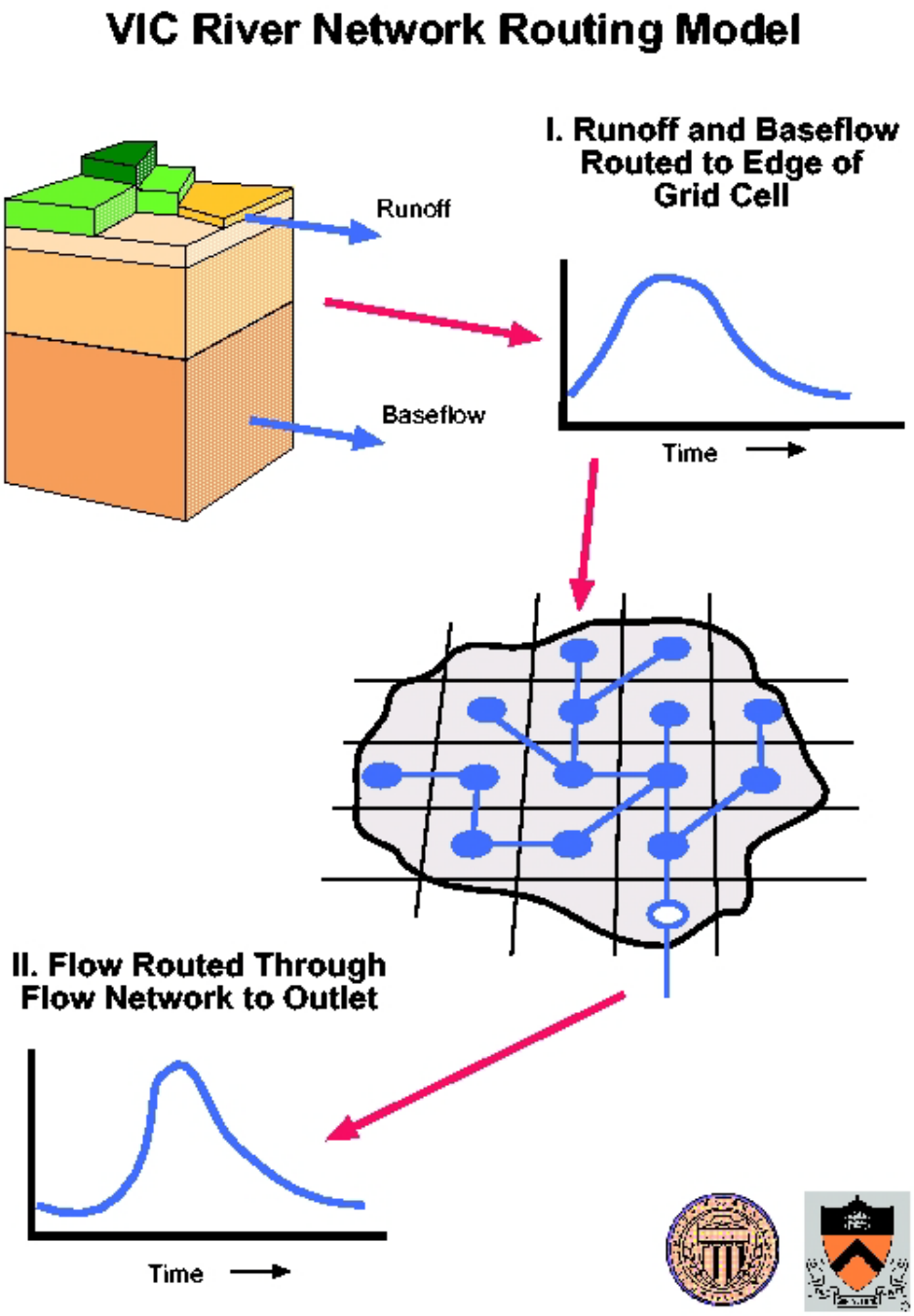


Figure 4: VIC routing model

Table 1: Routing locations in the Santa Ana River Watershed

ID	Latitude (decimal degree)	Longitude (decimal degree)	Site Description
1	33.675020160	-117.835611000	Peters Canyon Wash Tustin Gage
2	33.683909460	-117.745330710	Marshburn Channel Gage
3	33.681686820	-117.809499150	San Diego Creek Myford Rd Gage
4	33.725442191	-117.802408768	El Modina-Irvine Channel Gage
5	33.693809460	-117.823037908	Peters Canyon Wash Irvine Gage
6	33.672798000	-117.835888800	San Diego Creek Lane Rd Gage
7	33.655576290	-117.845611300	San Diego Creek Campus Dr Gage
8	33.885294816	-117.651816486	Santa Ana River Prado Dam Gage
9	33.872738742	-117.670852174	Santa Ana River County Line Gage
10	33.856404490	-117.790611220	Santa Ana River Imperial Highway Gage
11	33.855848910	-117.797555880	Santa Ana River AB SPRD Imperial Highway Gage
12	33.856404440	-117.800889300	Santa Ana River SPRD Imperial Highway Gage
13	33.888903530	-117.845335820	Carbon Creek Olinda Gage
14	33.889459080	-117.845335830	Carbon Creek Yorba Linda Gage
15	33.818812586	-117.873013779	Santa Ana River Ball Rd Gage
16	33.802238450	-117.878390750	Santa Ana River Katella Ave Gage
17	33.822794190	-117.776721310	Santiago Creek Villa Park Gage
18	33.822794190	-117.776721310	Santiago Creek Div Villa Park Gage
19	33.777261477	-117.878057039	Santiago Creek Santa Ana Gage
20	33.752045602	-117.906379262	Santa Ana River Santa Ana Gage
21	33.672033347	-117.943733939	Santa Ana River Adams St Gage
22	33.887792060	-117.926449600	Brea Channel Brea Dam Gage
23	33.873625670	-117.925893710	Brea Channel Fullerton Gage
24	33.895847650	-117.886170600	Fullteron Channel Fullerton Dam Gage
25	33.872875108	-117.902127395	Fullerton Channel Fullerton Gage
26	33.860696271	-117.929366516	Fullerton Channel Richman Ave Gage
27	33.810571570	-118.075342080	Coyote Creek Los Alamitos Gage
28	34.259256110	-117.330684440	Devils Canyon
29	33.968611110	-117.447500000	Santa Ana River AT Metropolitan Water District Crossing NR Arlington
30	34.064688346	-117.303911477	Santa Ana River AT E Street NR San Bernardino
31	33.889166670	-117.561944440	Temescal Creek AB Main Street AT Corona
32	33.982777780	-117.598611110	Cucamonga Creek NR Mira Loma
33	34.003888890	-117.726111110	Chino Creek AT Schaefer Avenue NR Chino
34	34.114206940	-117.096661940	Seven Oaks Dam Outlet
35	34.252500000	-117.525277780	Middle Fork Lytle Creek Gage
36	34.263888890	-117.401388890	Ridge Top Gage NR Devore

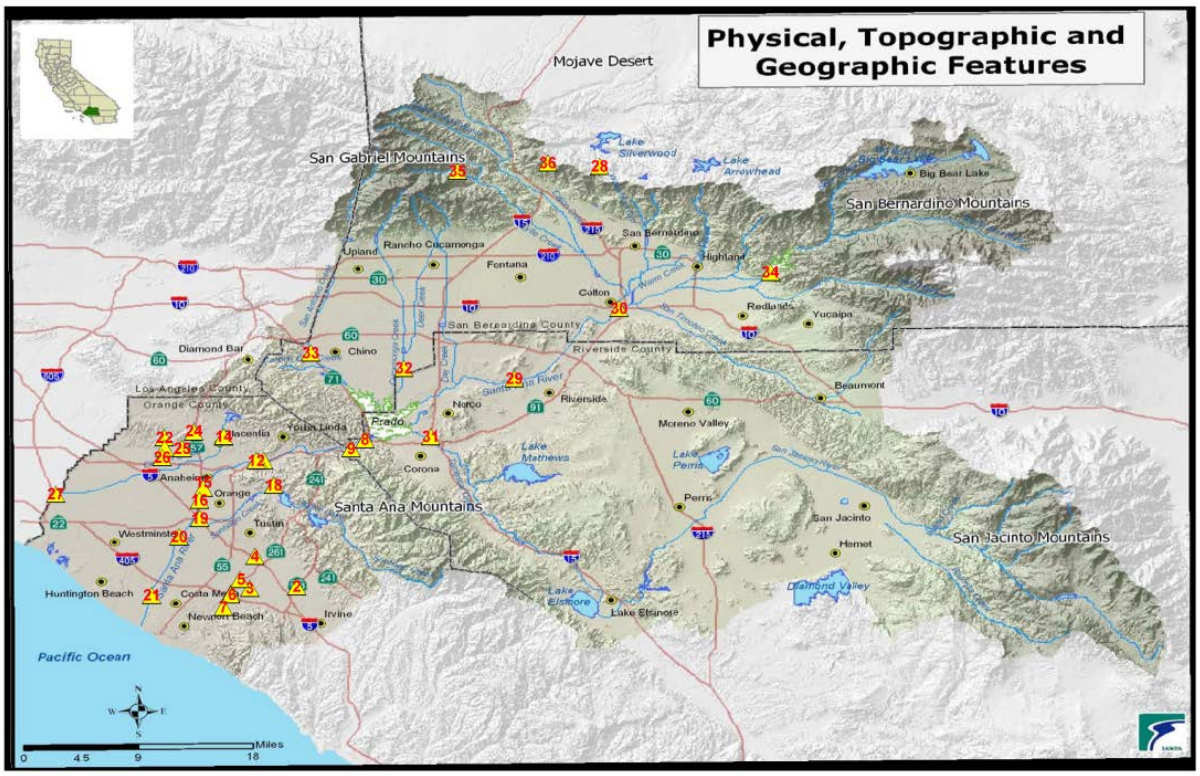


Figure 5: Distribution of routing locations

2.2.2 Groundwater

Changes in climate, population, land use, water management practices, and other natural and anthropogenic factors may affect the quantity and quality of future groundwater resources within the Watershed. Groundwater currently provides approximately 54% of total water supply in the watershed during an average year, and groundwater use is projected to increase over the next 20 years, according to the first OWOW plan (2010). The potential effects of natural and anthropogenic changes on future groundwater resources—including the potential effects of climate change—are therefore a critical component of water resources planning in the Watershed.

Changes in precipitation and temperature directly affect hydrologic processes at the land surface, including groundwater recharge. Changes in precipitation and temperature may also affect groundwater storage and discharge indirectly through changes in water demands. Accurately projecting the potential effects of climate change on groundwater resources within the Watershed, however, is a significant challenge due to the many local factors that govern groundwater recharge and use throughout the watershed. The Watershed encompasses 17 individual groundwater basins and sub-basins; however, only 4 have consistent historical data available, as shown in Figure 6 (California Department of Water Resources [DWR] Bulletin 118). Effects of changes in precipitation and temperature on

groundwater resources are likely to vary substantially between groundwater basins due to differences in local hydrologic, geologic, and topographic conditions, as well as differences in local water supplies, water demands, and water management practices between basins.

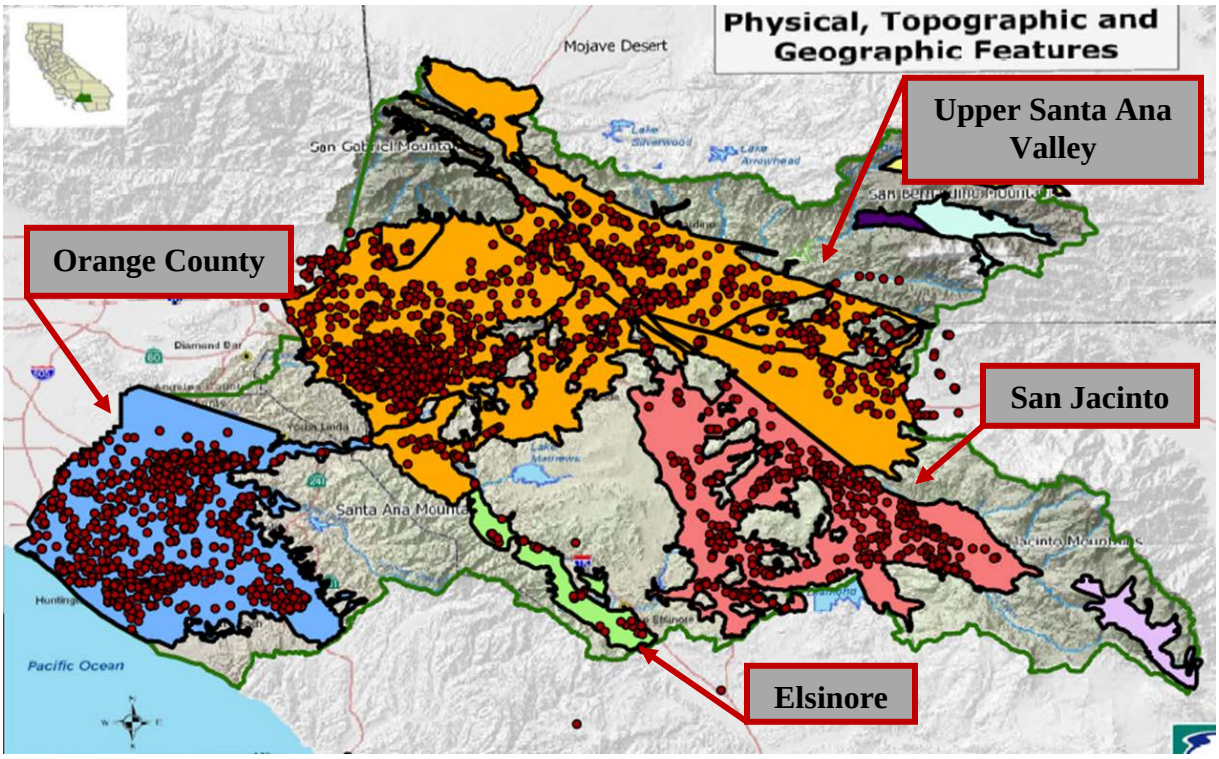


Figure 6: Groundwater basins and monitoring well locations (illustrated by red dots)

The effects of climate change on groundwater resources are commonly evaluated using a spatially distributed numerical model of the groundwater flow system in question, which may consist of a single aquifer or unit, multiple aquifers, or an entire groundwater basin or sub-basin. A numerical model of the groundwater flow system is constructed to represent the relevant physical properties of the system, including its geographic extent and orientation, the porosity and permeability of subsurface materials, and the location and extent of key features affecting groundwater flow such as faults, aquitards, and aquicludes. Historical inflows and outflows from the groundwater system are estimated from available data and formatted as model inputs, including spatially distributed recharge from precipitation, focused recharge from stream and canal seepage losses or deep percolation of irrigation water, groundwater abstraction by pumping, and other inflows and outflows. The model is then calibrated and verified with respect to available observations. A second set of groundwater inflows and outflows is then developed based on projected future climate conditions, and is again formatted as model inputs. Finally, the model is used to simulate groundwater flow and storage under historical and projected climate conditions and the resulting model

outputs are compared to evaluate the effects of climate change on groundwater resources.

The use of spatially-distributed numerical models to evaluate climate change impacts on groundwater is both data intensive and computationally intensive, and requires explicit representation of the many local factors that affect groundwater recharge and use. As a result, this approach generally bears a large cost and long timeline. Moreover, the use of spatially-distributed numerical models to evaluate climate change impacts on groundwater resources in the Watershed would require development of separate models for individual groundwater basins and sub-basins. The cost of such an analysis is therefore prohibitive at the watershed scale.

In order to evaluate basin-scale groundwater conditions in the Watershed under future climate, population, land use, and water management scenarios, a basin-scale groundwater screening tool was developed based on a simplified representation of individual groundwater basins. The groundwater screening tool estimates fluctuations in basin-scale groundwater levels in response to natural and anthropogenic drivers, including climate and hydrologic conditions, agricultural land use, municipal water demand, and trans-basin water imports. The tool allows users to quickly estimate basin-scale groundwater conditions under a broad range of future scenarios and provides insight into the primary factors driving basin-scale groundwater fluctuations.

A basin-scale groundwater screening tool was developed to facilitate evaluation of groundwater conditions within the Watershed under future climate, population, land use, and water management scenarios. The tool estimates fluctuations in average groundwater levels over a given groundwater basin, at a monthly time scale, in response to natural and anthropogenic drivers, including climate and hydrologic conditions, agricultural land use, municipal water demand, and trans-basin water imports. The tool allows users to quickly estimate changes in basin-average groundwater levels in response to projected changes in future climate, and provides insight into the primary factors driving basin-scale groundwater fluctuations.

In groundwater basins where groundwater is a primary source of water supply, fluctuations in basin-averaged groundwater level depend on both water availability and water demands. In general, higher than average water availability from precipitation, local streamflow, and imported water contributes to increased recharge and/or decreased groundwater pumping, resulting in rising groundwater levels. By contrast, higher than average water demands for municipal and agricultural uses and higher than average evaporative demand from native and landscaped vegetation contribute to decreased recharge and/or increased groundwater pumping, resulting in declining groundwater levels. In addition to supply and demand, large-scale management objectives in some groundwater basins such as pressurization of hydraulic barriers against sea water intrusion and

dewatering for hydraulic control of groundwater discharge may also affect basin-average groundwater levels.

The competing influences of water availability, water demand, and large-scale groundwater management objectives on basin-scale groundwater elevations are illustrated schematically in Figure 7, which forms the conceptual model for the basin-scale groundwater screening tool. This conceptual model considers fluctuations in basin-average groundwater elevations as a function of basin-scale drivers. As a result, use of the groundwater screening tool does not require detailed information regarding local hydrologic, geologic, climatic, and anthropogenic factors that may affect local groundwater fluctuations; however, it should be noted that as a result of this basin-scale approach, the groundwater screening tool is primarily applicable at the scale of individual groundwater basins or sub-basins, where the effects of local-scale conditions are largely averaged out and where subsurface inflows and outflows from surrounding areas are negligible.

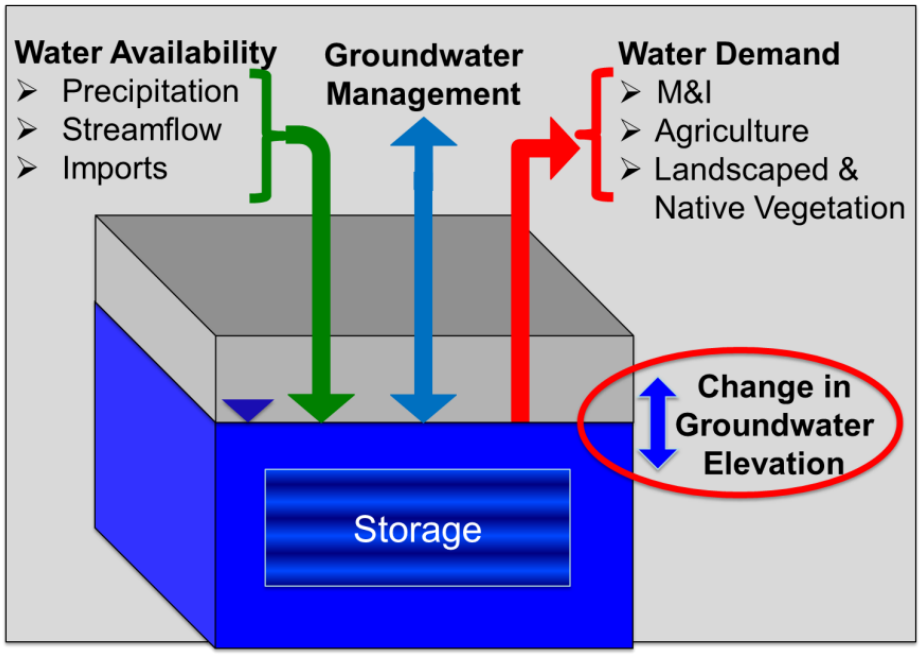


Figure 7: Conceptual model of basin-scale groundwater fluctuations used in developing the groundwater screening tool

In the basin-scale groundwater screening tool, fluctuations in groundwater elevation are estimated as a function of three inputs that characterize water availability (precipitation, local streamflow, and trans-basin imports), three inputs that characterize water demand (municipal and industrial demand, agricultural land use [irrigated acreage], and evaporative demand), and an optional exogenous input that represents groundwater management objectives that affect basin-scale groundwater levels. The functional relationship is implemented in the form of a multi-variate linear regression equation (Equation 1):

$$\frac{\Delta h}{\Delta t} = (C_1 \cdot P_t) + (C_2 \cdot E_t) + (C_3 \cdot Q_t) + (C_4 \cdot M_t) + (C_5 \cdot A_t) + (C_6 \cdot I_t) + (C_7 \cdot X_t) \quad \text{..... Eq. 1}$$

Where:

$\frac{\Delta h}{\Delta t}$ is the change in basin-averaged groundwater elevation (t is in months)

P_t is total precipitation over the groundwater basin

Q_t is streamflow at a representative location that reflects surface water availability in the basin

I_t is the volume of trans-basin water imports to the groundwater basin

M_t is municipal and industrial demand within the basin

E_t is evaporative demand from native and landscaped (non-agricultural) vegetation

A_t is agricultural water demand (applied water demand)

X_t is a timeseries of values representing the effect of a specific large-scale water management practice on groundwater levels within the basin

C_i are linear regression coefficients

Variables P_t, Q_t, and I_t represent the available water supplies within the groundwater basin during the given time period, whereas variables M_t, E_t, and A_t represent the primary water demands within the basin during the same period. Variable X_t is optional and can be used to reflect specific large-scale management activities that affect groundwater levels throughout the basin. Coefficients C_i are determined via linear regression (i.e., by fitting Equation 1 to historical observations). After the coefficient values have been determined, the groundwater screening tool uses Equation 1 to estimate future groundwater elevations under various future scenarios. For example, the tool can be used to estimate future groundwater elevations under climate change by modifying inputs P_t, Q_t, and E_t to reflect projected future climate conditions.

In addition to reduced data and computational requirements, implementation of the basin-scale conceptual model via linear regression provides broad flexibility in the development of inputs to the groundwater screening tool. The conceptual model represents the large-scale mass balance of groundwater in a given basin. However, accurate and comprehensive data for many of the inflow and outflow terms in the conceptual model are often unavailable for most groundwater basins.

For example, evaporative demand for native and landscaped vegetation generally is not readily available for most groundwater basins. The regression-based approach used here allows the user to substitute a related variable in place of the missing data. In the case of evaporative demand, the user may substitute temperature data for evaporative demand as temperature is strongly correlated with evaporative demand. As long as fluctuations in the substituted dataset (in this case temperature) are strongly correlated with fluctuations in the primary input variable (in this case evaporative demand), discrepancies in magnitudes of two variables are accounted for by the regression coefficient on this term.

Development of Groundwater Model Inputs

As detailed above, the groundwater screening tool estimates changes in basin-averaged groundwater levels over time as a function of seven natural and anthropogenic factors that govern groundwater recharge and discharge: precipitation, local streamflow, trans-basin water imports, municipal and industrial water demands, agricultural water demand, evaporative demand from native and landscaped vegetation (non-agricultural), and an optional exogenous input that represents groundwater management objectives that affect basin-scale groundwater levels. The regression-based approach used in the groundwater screening tool allows substitution of related datasets where accurate data for one or more model input is not available. This section summarizes the development of inputs to the groundwater screening tool for groundwater basins within the Watershed.

Historical Input Data (1990-2009)

Historical data were used to fit the regression coefficients in Equation 1 and to evaluate model performance over the historical period (1990-2009). For each groundwater basin, historical inputs are required for the six primary input variables to Equation 1. Additional inputs may be provided for the optional exogenous variable if desired. No exogenous inputs were developed for groundwater basins within the Watershed; however, exogenous inputs may be incorporated by water resources planners and decision makers in the watershed based on knowledge of management operations relevant to individual groundwater basins.

Groundwater Elevation (h_t)

The groundwater screening tool requires an input timeseries representative of historical monthly groundwater elevations within the basin for the period 1990-2009. For this study, a database of historical groundwater elevations from more than 4,000 monitoring wells within the Watershed was obtained from SAWPA. Monitoring well locations are shown in Figure 6. Well records were evaluated to determine the period of record, completeness of record, and occurrence of outlier or spurious values. Wells exhibiting records shorter than 10 consecutive years or exhibiting a high frequency of missing values were excluded from this analysis. For each well identified as having a sufficient period of record and sufficient sampling frequency, monthly mean groundwater elevations were calculated from the available instantaneous measurements. For months containing more than one

measurement, the monthly average was computed as the unweighted arithmetic average of the available measurements. For months with a single measurement, the single measurement was assumed to reflect average conditions during that month. It should be noted that individual outlier points were excluded from averaging; outliers likely reflect measurement errors, data transcription errors, or measurements taken during or after permeability testing was carried out (i.e., during or after a slug test or pump test). Lastly, monthly averages were linearly interpolated to develop a complete timeseries of monthly mean groundwater elevations over the period of record. Accuracy of monthly timeseries was evaluated by sub-sampling and cross-validation. Interpolated monthly timeseries were shown to accurately reflect raw measurements.

Monthly timeseries of basin-averaged groundwater elevations were then developed for each of the individual groundwater basins and sub-basins (defined by DWR) in the Watershed. Steps were required to avoid two sources of bias in calculating basin-average groundwater elevations: variations in the period of record between wells, and outlier wells that are not representative of large-scale groundwater fluctuations within a basin. These steps are described below.

Very few wells in the database used here exhibit complete monthly timeseries for the full historical period (1990-2009). As a result, simply taking the arithmetic average of well records over each groundwater basin results in a biased estimate of basin-average groundwater elevations. This bias occurs due to differences in the period of record of wells within a given basin: if the basin average for different months is based on a different sub-set of wells, and each well has a different mean groundwater elevation, then the resulting average reflects variations in the sub-set of well used. To minimize biases associated with varying record lengths, averaging was carried out based on monthly deviations rather than monthly groundwater elevations. This was done by computing monthly deviations (anomalies) for each record (i.e. for each well), where monthly deviations are calculated as the difference between the monthly mean value and the long-term average value for that month.

In addition to differences in record length, potential biases may occur in cases where individual well records reflect unique local conditions that are not broadly representative of groundwater fluctuations within the basin. This situation might occur when groundwater pumping throughout a basin is not driven primarily by municipal and industrial demand, but is driven by agricultural demand in one small area of the basin. Groundwater fluctuations in the agricultural portion of the basin are likely to exhibit substantially different behavior than groundwater fluctuations throughout the rest of the basin. In basins where a large number of monitoring wells are available, individual outliers have little effect on the basin-scale average and therefore do not need to be excluded from analysis. Where a small number of samples are available, however, individual outliers can disproportionately impact the basin average, resulting in potentially significant bias.

For this study, a correlation-based clustering procedure was developed to group wells into sub-sets exhibiting similar behavior. In basins and sub-basins where a large number of monitoring records were available, the majority of wells fell into a single cluster. For the purposes of this analysis, the largest cluster was assumed to reflect basin-average conditions, and basin-average groundwater elevations were calculated based on wells in this cluster. In basins and sub-basins where, only a small number of records were available, wells generally fell into a small number of similar size clusters. For the purposes of this analysis, these clusters were assumed to represent conditions in different portions of the basin where groundwater fluctuations were subject to different primary stressors. In these cases, averages were computed for each cluster and were evaluated separately. This report only presents results for basins where the majority of groundwater records fell into a single cluster.

Precipitation (P_t)

The groundwater screening tool requires an input timeseries that is representative of historical monthly precipitation over the groundwater basin for the period 1990-2009. Precipitation input may be basin-averaged monthly precipitation calculated from multiple gage records or from a gridded precipitation dataset. Alternatively, precipitation input may be derived from gage data at a single location or selected locations that represent key areas within the groundwater basin, such as areas of significant recharge or runoff. For this study, basin-average monthly precipitation was calculated for each groundwater basin based on the historical gridded daily precipitation dataset developed by Maurer et al. (2002), the same dataset used to derive the surface water projections. Area-weighted monthly total precipitation was computed for each basin based on groundwater basin polygons developed by DWR.

Evaporative Demand (E_t)

The groundwater screening tool requires an input timeseries that is representative of historical monthly evaporative demand from native and landscaped (non-agricultural) vegetation over the groundwater basin for the period 1990-2009. Because evaporative demand is generally not measured directly, monthly mean temperature or calculated monthly potential evapotranspiration (PET) may be used as surrogates for evaporative demand. For this study, basin-average monthly-mean temperature was calculated for each groundwater basin based on the historical gridded daily temperature dataset developed by Maurer et al. (2002), the same dataset used to derive the surface water hydrology projections. Area-weighted monthly-mean temperature was computed for each basin based on groundwater basin polygons developed by DWR.

Streamflow (Q_t)

The groundwater screening tool requires an input timeseries that is representative of historical monthly streamflow that contributed to water supply in the groundwater basin for the period 1990-2009. This streamflow excludes that

which is provided by trans-basin imported water. Locations selected for the streamflow inputs for the four basins can be seen in Figure 8; the latitude and longitude for each point can be found in Table 2. Locations were chosen to be representative of streamflow in the basin. The San Jacinto and Elsinore Basins are able to share a stream flow point because the point is representative of water leaving the San Jacinto Basin and water entering the Elsinore Basin. Streamflow input may be based on a single gage that is representative of natural streamflow conditions within the basin, or may be estimated natural flow in the absence of storage and trans-basin diversions (i.e., naturalized streamflow). For this study, simulated historical natural flow at a representative point was used for each basin, development of which is described in section 2.2.1.

Table 2: Streamflow locations for groundwater basins

Groundwater Basin	Latitude (decimal degree)	Longitude (decimal degree)
Orange County	33.85640444	-117.80088930
Upper Santa Ana Valley	33.88916667	-117.56194444
Elsinore/San Jacinto	33.66411200	-117.29397600

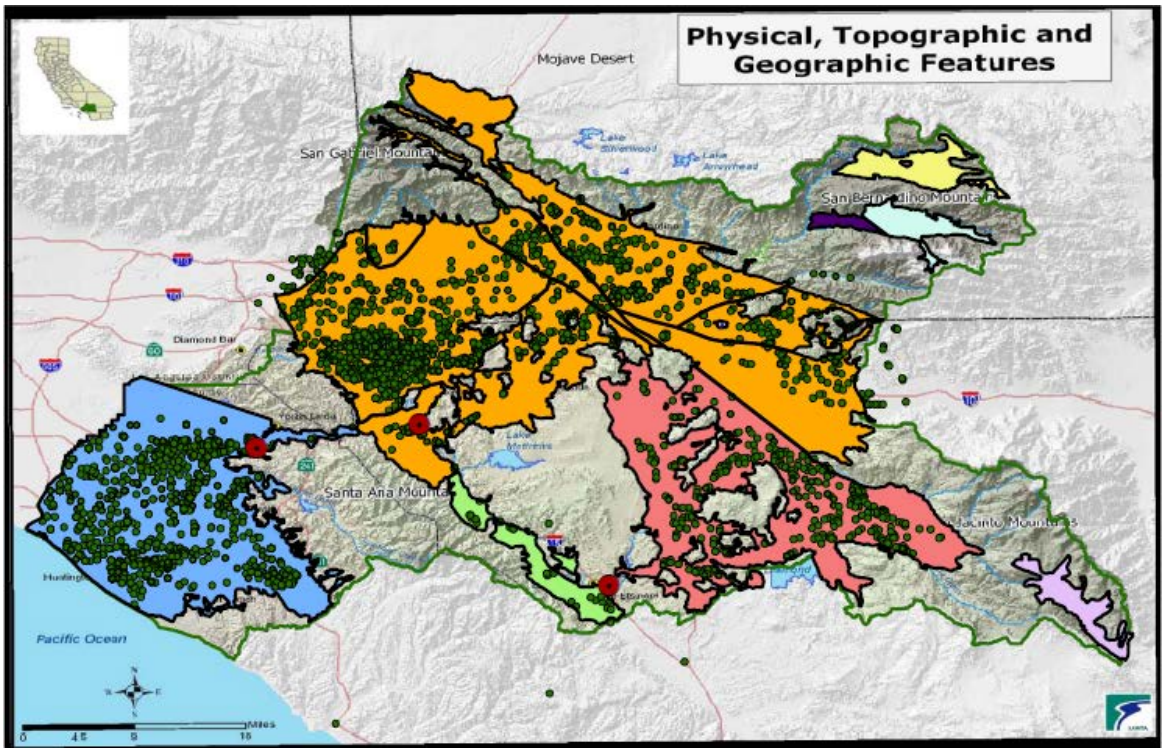


Figure 8: Locations for streamflow inputs (represented by red dots)

Municipal and Industrial Demand (M_t)

The groundwater screening tool requires an input timeseries that is representative of historical monthly municipal and industrial water demand within the groundwater basin for the period 1990-2009. Where municipal and industrial demand data are not directly available, demand may be estimated from available population and per capita water use data, interpolated as needed to obtain monthly data for the period 1990-2009. For this study, population within each groundwater basin was calculated from census tract data for years 1990, 2000, and 2010, and were interpolated to obtain monthly values. Data for annual per capita water use were obtained from urban water management plans for SAWPA member agencies and other water providers within each basin, and were similarly interpolated to obtain monthly values. Municipal and industrial demand was then estimated as the product of population and per capita use.

Agricultural Demand (A_t)

The groundwater screening tool requires an input timeseries that is representative of historical monthly agricultural water demand within the groundwater basin for the period 1990-2009. Accurate and consistent data on agricultural water use is not available for the groundwater basins within the Watershed. For this study, agricultural land area (irrigated acreage) was used as a surrogate for agricultural demand. For each groundwater basin, irrigated acreage was calculated from available land use datasets developed by the Southern California Association of Governments (SCAG). Available values were interpolated to obtain estimates of monthly values over the period 1990-2009. Where cropping patterns and irrigation practices are reasonably constant, agricultural acreage is strongly correlated with agricultural demand.

Trans-basin Imported Water (I_t)

The groundwater screening tool requires an input timeseries that is representative of historical monthly trans-basin water imported into the groundwater basin for the period 1990-2009. For this study, import data were obtained from SAWPA member agencies and associated, to the extent possible, with the corresponding groundwater basin. Initial analysis revealed that trans-basin imports are generally small compared to precipitation and natural streamflow for most groundwater basins in the watershed; as a result, uncertainties associated with the historical trans-basin import data used in this analysis is considered negligible.

Exogenous Variable (X_t)

The simplified approach used by the groundwater screening tool does not represent many of the complex and dynamic processes that may affect groundwater fluctuations within a given basin. For this purpose, the tool allows for an optional exogenous input, which provides the user an opportunity to account for a key driver that is not explicitly represented by the above inputs. Key drivers may include groundwater injection operations for a hydraulic barrier against sea water intrusion, dewatering for hydraulic control of groundwater

discharge, or other management objectives that affect groundwater levels. No exogenous variable was used in this study.

Projected (Future) Input Data (2010-2099)

The groundwater screening tool estimates future groundwater elevations over the period 2010-2099 based on input data reflecting projected water supply, water demand, and water management conditions over this period. Future inputs are required for each of the primary input variables to the screening tool. If an exogenous variable is used for the historical period, projected values of the same exogenous variable are required for the future period. As noted above, no exogenous inputs were developed for groundwater basins within the Watershed. It should also be noted that projected groundwater elevations are calculated by the screening tool; groundwater elevation is not an input for the future period.

Precipitation (P_t)

The groundwater screening tool allows users to provide up to 250 projections of future precipitation for a given basin. Consideration of multiple future projections provides insight into the range of future conditions corresponding to uncertainties in projected future climate. For this study, projected basin-average monthly precipitation for the period 2010-2099 was calculated based on an ensemble of 112 bias corrected and spatially disaggregated climate projections (see Section 2.2.1). For each projection, input timeseries were developed by calculating the area-weighted monthly total precipitation for groundwater basin polygons developed by DWR.

Evaporative Demand (E_t)

Similar to precipitation, the groundwater screening tool allows users to provide up to 250 projections of future evaporative demand for a given basin. For consistency with historical inputs, basin-average monthly-mean temperature was used to represent monthly evaporative demand over the future period. Projected basin-average monthly average temperature inputs were calculated for each groundwater basin based on an ensemble of 112 BCSD climate projections (see Section 2.2.1). For each projection, input timeseries were developed by calculating the area-weighted monthly average temperature for groundwater basin polygons developed by DWR.

Streamflow (Q_t)

Similar to precipitation and temperature, the groundwater screening tool allows users to provide up to 250 projections of streamflow for a given basin. For this study, projected natural flow at a representative point for the period 2010-2099 was used for each basin (see Section 2.2.1).

Municipal and Industrial Demand (M_t)

The groundwater screening tool requires a single timeseries input representing projected municipal and industrial demand for the future period. For the purposes of this study, it was assumed that future municipal and industrial demand will

remain at current levels. However, the tool allows water resources planners and decision makers to input alternative projections of future municipal and industrial demand based on various scenarios and planning objectives related to individual groundwater basins.

Agricultural Demand (A_t)

The groundwater screening tool requires a single timeseries input representing projected agricultural demand for the future period. For consistency with historical inputs, agricultural land area (irrigated acreage) was used to represent agricultural water demand in the future. For the purposes of this study, it was assumed that future agricultural land area will remain at current levels. However, the tool allows water resources planners and decision makers to input alternative projections of future agricultural demand based on various scenarios and planning objectives related to individual groundwater basins.

Trans-basin Imported Water (I_t)

The groundwater screening tool requires a single timeseries input representing projected trans-basin imported water for the future period. For the purposes of this study, it was assumed that future water imports will remain at the average historical level, calculated as the average over the period 1990-2009. However, the tool allows water resources planners and decision makers to input alternative projections of future water imports based on various scenarios and planning objectives related to individual groundwater basins.

Exogenous Variable (X_t)

As for the historical period, no exogenous variable was used in this study for the future period.

The methods described in this chapter were used to project hydroclimate conditions including surface water and groundwater supplies, which are presented in Chapter 3 along with projected demand.

3.0 Water Supply and Demand Projections

3.1 Water Supply

Future water supply projections were made using the CMIP3 projections and the VIC hydrology model. The CMIP3 archive provides a downscaled 12 kilometer resolution grid on a monthly time-series of precipitation and temperature from 1950-2099 for 112 climate projections.

3.1.1 Hydroclimate Projections

Timeseries Plots

This set includes projection specific annual timeseries plots for six hydroclimate indicator variables covering the period 1950–2099 (water years 1951-2099). The six variables are:

- Annual Total Precipitation
- Annual Mean Temperature
- April 1st Snow Water Equivalent
- Annual Runoff
- December–March Runoff
- April–July Runoff

The three variables—annual total precipitation, annual mean temperature, and April 1st SWE—vary spatially (at 1/8° or ~ 12-km-grid resolution) across the basins. To estimate total annual precipitation for the basin, basin-wide average precipitation (average across the grid cells in the basin) was first calculated for each month of the years 1950–2099. These basin average monthly precipitation values then were summed for each water year 1951-2099 to obtain the annual total precipitation.

To estimate basin mean temperature, average monthly temperature was calculated from all the grid cells in the basin for each month of the water years 1951–2099. These monthly temperatures for any given year next were averaged across the grid cells in the basin to estimate the basin-wide annual mean temperature.

SWE on April 1st of a given year is a widely used measure to assess snowpack and subsequent spring–summer runoff conditions in the snowmelt dominated basins of the western United States. SWE is one possible output from the VIC hydrology model. For each of the simulation water years, April 1st SWE was

saved from the simulations for each model grid cell in the basin. Gridded SWE on April 1st was averaged over all the grid cells for the given basin to calculate the basin-wide April 1st SWE for water years, 1950–2099.

Runoff for each of the 36 site locations (Table 1) was calculated for the annual timescale and for two seasonal timescales December–March (DJFM) total runoff depicting winter season runoff conditions and April–July (AMJJ) total runoff depicting spring–summer runoff conditions. For each of the simulation years 1950–2099, monthly runoff was aggregated on a water year basis to calculate water year specific total annual runoff, DJFM runoff, and AMJJ runoff.

The annual time series plots for the six hydrologic indicator variables for all 112 projections were calculated, and the results are presented to reflect ensemble central tendency and ensemble spread. The central tendency is measured using the ensemble median. The 5th and 95th percentiles from the 112 projections provide the lower and upper uncertainty bounds in the envelope of projections through time.

Figure 9 shows the projection ensemble for six hydroclimate indicators for the site Santa Ana River at Adams Street Gage (most downstream location): annual total precipitation (top left), annual mean temperature (top right), April 1st SWE (middle left), annual runoff (middle right), DJFM runoff season (bottom left), and AMJJ runoff season (bottom right). The heavy black line is the annual time series of 50th percentile values (i.e., ensemble-median). The shaded area is the annual time series of 5th to 95th percentiles.

The annual total precipitation over the basin shows a somewhat declining trend over the transient period going out to 2099. The uncertainty envelope does not appear to expand or contract over time. The mean annual temperature over the basin shows a monotonically increasing trend and a diverging uncertainty envelope over time. April 1st SWE also shows a decreasing trend. The annual runoff follows the long-term declining trend pattern similar to precipitation. The winter season DJFM runoff shows a declining trend, so does the AMJJ summer season runoff.

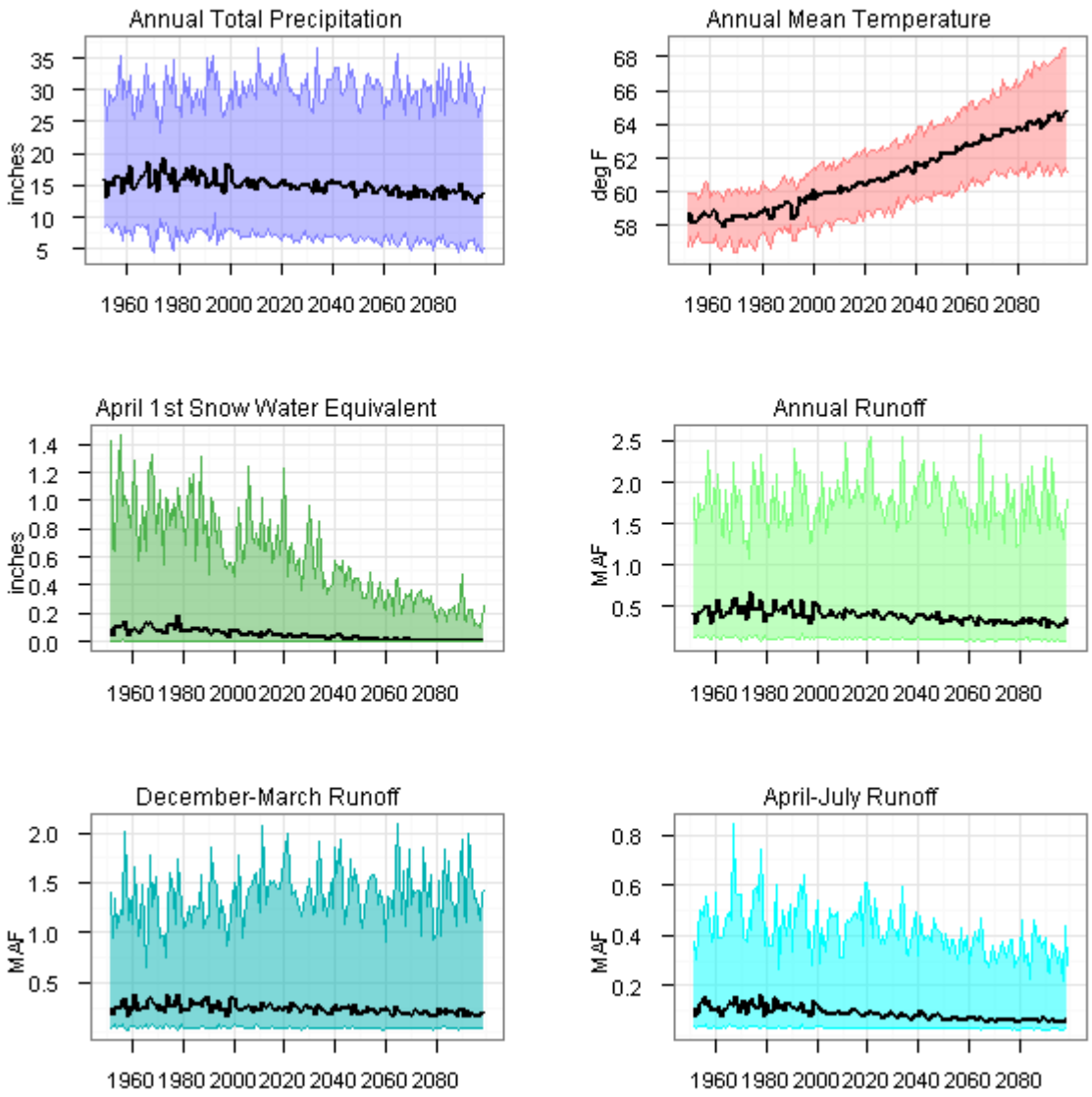


Figure 9: Projection ensemble for six hydroclimate indicators for the site Santa Ana River at Adams Street Gage

Spatial Plots

The next set of plots includes spatial plots of decade-mean precipitation, and temperature. These plots show the spatial distribution for the variables across the contributing basin. The spatial plots were developed on a water year basis for the reference decade of the 1990s (water years 1990–1999).

Spatial distribution of precipitation for the 1990s decade is presented as an ensemble median of the 112 projections. At each grid cell in the basin and for

each of the 112 projections, average total precipitation was calculated by averaging total precipitation from the 10 water years, 1990–1999. Next, for each grid cell, the ensemble median of the decade average total precipitation was calculated and used in developing the spatially varying precipitation plot.

Precipitation changes in each of the future decades – 2020s (represented by water years, 2020-2029), 2050s (represented by water years, 2050-2059), and 2070s (represented by water years, 2070-2079) – were calculated as follows. At each grid cell in the basin and for each of the 112 projections, average total precipitation was calculated by averaging total precipitation from the 10 water years in the respective future decades. Then, for a given projection and at a given grid cell, the percentage difference in average total precipitation between a given future decade and the reference 1990s decade was calculated. This percentage difference for a given cell was calculated only if the 1990's average total precipitation for that cell was greater than 0.01 millimeter. This step is necessary to threshold division by a small value, which would result in a numerically large change magnitude. Positive percentage change implies wetter conditions, while negative percentage change implies drier conditions from the 1990s reference decade.

After all projection-specific changes were calculated for a given future decade, the median change from the 112 projections was calculated. The median or 50th percentile change provides a measure of the central tendency of change in decade average total precipitation for a given future decade compared with the reference 1990s decade (Figure 10).

The 2020s decade shows some increase in the upper elevation parts of the watershed from the 1990s reference decade, but for the subsequent two decades – 2050s and 2070s – the precipitation shows consistent decline throughout the watershed.

The calculations for the spatial distribution of mean temperature are similar to the spatial distribution of precipitation calculation for the 1990s reference decade. The difference being, in case of temperature, mean annual temperature is first calculated from the 12 monthly values (in case of precipitation, it is the total precipitation) for each of the 10 water years, and subsequently, averaged to calculate the decade average mean annual temperature. The changes in mean annual temperature for the future decades are presented as magnitude changes and not as percentage change (as computed for precipitation). The median or 50th percentile change from the 112 projections represents the central tendency in decade-mean temperature distribution.

Figure 11 shows the spatial distribution of simulated decadal temperature. These results show that the watershed is expected to get hotter through the successive decades (2020s, 2050s and 2070s) compared with the 1990s reference decade.

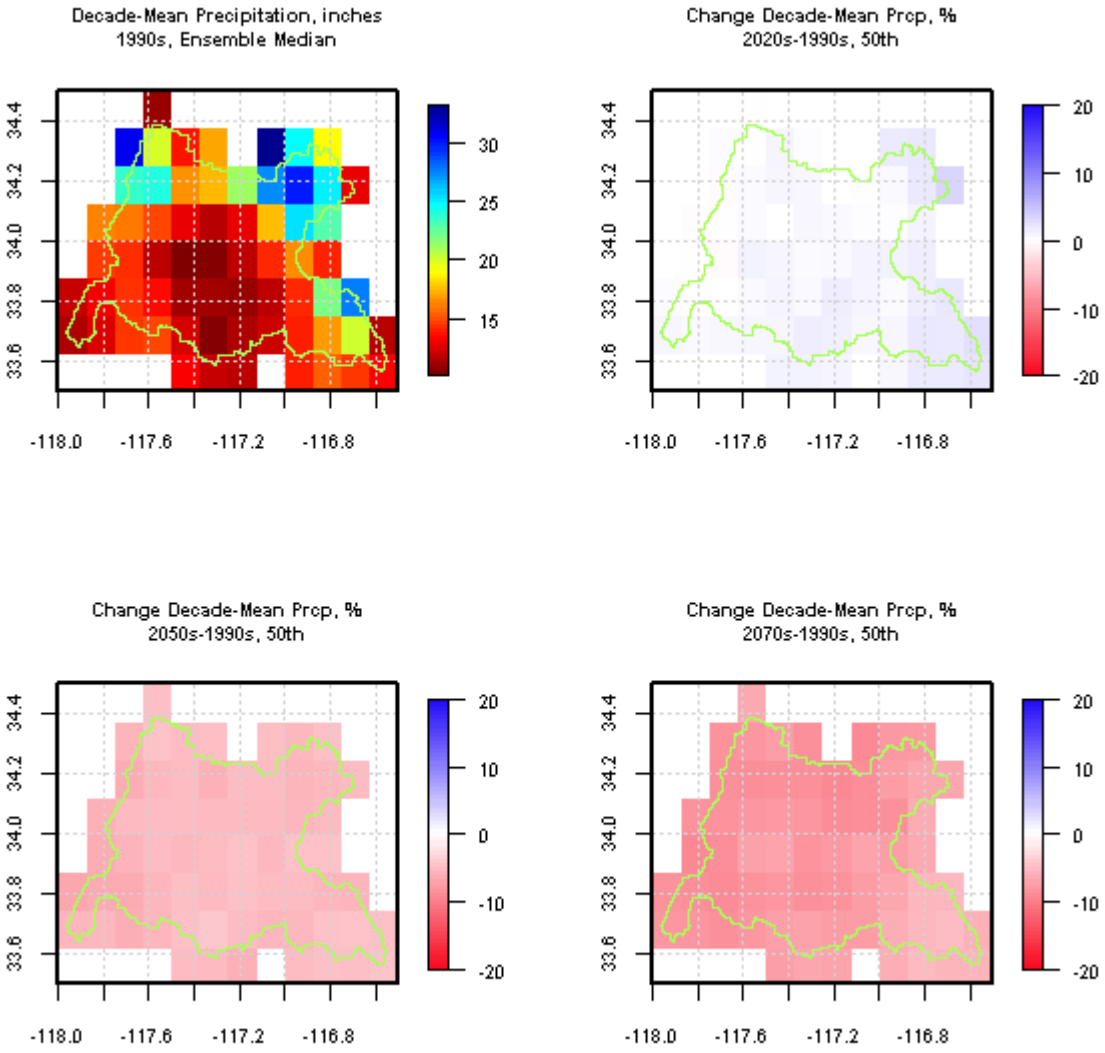


Figure 10: Spatial distribution of simulated decadal precipitation. The vertical axis represent latitude, the horizontal axis represent longitude

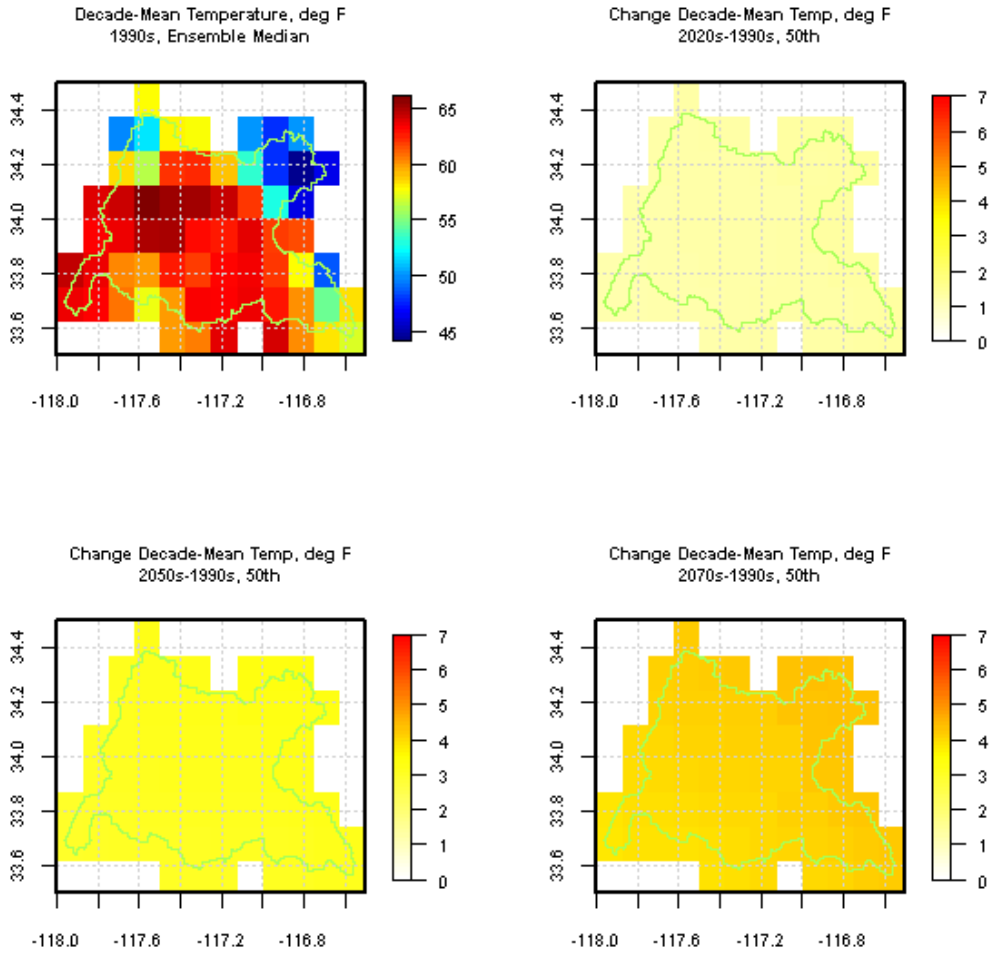


Figure 11: Spatial distribution of simulated decadal temperature. The vertical axis represent latitude, the horizontal axis represent longitude

3.1.2 Impacts on Runoff Annual and Seasonal Cycles

Similar to the calculations of precipitation and temperature changes, annual and seasonal runoff changes were calculated for all 36 sites listed in Table 1. Figure 12 shows mean annual and mean-seasonal runoff change for the site, Santa Ana River at Adams Street Gage (most downstream location). Changes in mean runoff (annual or seasonal) were calculated for the three future decades – 2020s, 2050s and 2070s – from the reference 1990s decade. For the 2050s and 2070s decade, there is a decline in the mean annual and seasonal runoff from the 1990s decade; for the 2020s decade the change in runoff is nominal. Similar change in runoff patterns was observed for all sites across the basin, as can be seen in Table 3.

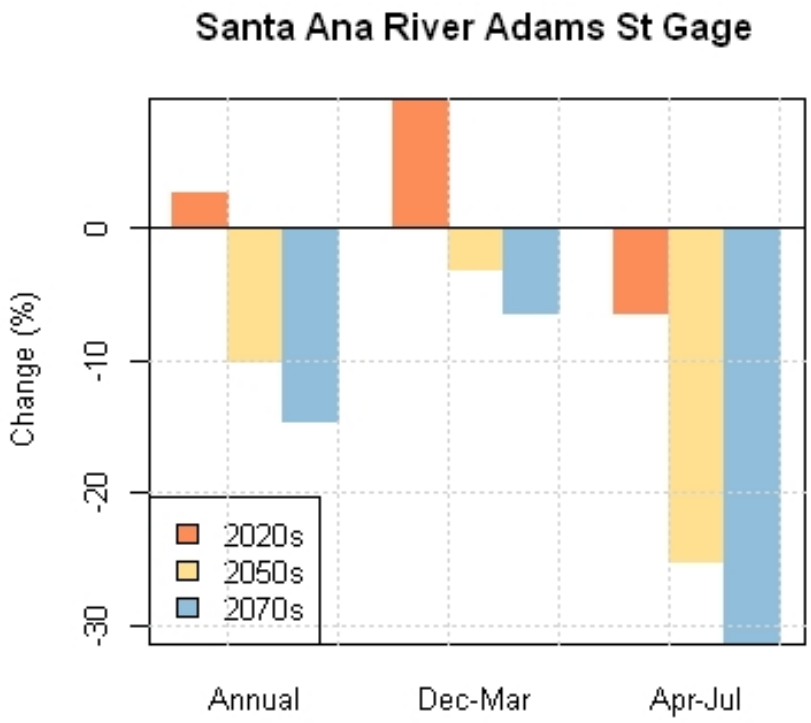


Figure 12: Simulated mean annual and mean-seasonal runoff change

Table 3: Percent change from 1990s for annual, DJFM, and AMJJ runoff

ID	Site Description	2020s			2050s			2070s		
		Annual Flow	DJFM	AMJJ	Annual Flow	DJFM	AMJJ	Annual Flow	DJFM	AMJJ
1	Peters Canyon Wash Tustin Gage	2.58	5.95	-6.08	-8.92	-1.19	-15.75	-11.82	-8.96	-19.06
2	Marshburn Channel Gage	5.10	6.76	-8.79	-6.41	-2.60	-21.70	-10.73	-8.12	-23.97
3	San Diego Creek Myford Rd Gage	4.40	6.98	-7.87	-8.36	-3.28	-18.67	-11.44	-7.34	-21.36
4	El Modina-Irvine Channel Gage	2.89	4.01	-3.50	-6.36	-3.54	-14.84	-9.05	-8.46	-15.37
5	Peters Canyon Wash Irvine Gage	2.59	5.98	-6.15	-8.86	-1.20	-15.77	-11.84	-8.98	-19.10
6	San Diego Creek Lane Rd Gage	2.58	5.93	-6.03	-8.95	-1.19	-15.73	-11.81	-8.95	-19.03
7	San Diego Creek Campus Dr Gage	4.37	6.48	-4.81	-7.74	-3.22	-13.80	-10.30	-8.42	-15.05
8	Santa Ana River Prado Dam Gage	2.71	9.76	-6.65	-10.69	-1.90	-26.04	-14.97	-7.19	-32.29
9	Santa Ana River County Line Gage	2.72	9.84	-6.66	-10.67	-2.20	-25.96	-14.95	-7.08	-32.24
10	Santa Ana River Imperial Highway Gage	2.69	9.87	-6.54	-10.57	-2.52	-25.88	-14.91	-6.92	-32.13
11	Santa Ana River AB SPRD Imperial Highway Gage	2.68	9.86	-6.54	-10.56	-2.53	-25.88	-14.91	-6.92	-32.13
12	Santa Ana River SPRD Imperial Highway Gage	2.68	9.86	-6.54	-10.56	-2.53	-25.88	-14.90	-6.92	-32.12
13	Carbon Creek Olinda Gage	3.06	6.96	-4.49	-3.09	-3.69	-17.86	-8.07	-6.58	-20.91
14	Carbon Creek Yorba Linda Gage	3.06	6.96	-4.49	-3.09	-3.69	-17.86	-8.07	-6.58	-20.91
15	Santa Ana River Ball Rd Gage	2.67	9.84	-6.53	-10.52	-2.60	-25.82	-14.88	-6.92	-32.07
16	Santa Ana River Katella Ave Gage	2.65	9.89	-6.55	-10.49	-2.83	-25.71	-14.85	-6.88	-32.01
17	Santiago Creek Villa Park Gage	2.90	8.35	-4.59	-5.09	-0.25	-18.15	-10.07	-7.81	-23.45
18	Santiago Creek Div Villa Park Gage	2.90	8.35	-4.59	-5.09	-0.25	-18.15	-10.07	-7.81	-23.45
19	Santiago Creek Santa Ana Gage	4.15	7.43	-5.11	-5.40	-1.30	-17.99	-10.42	-7.02	-20.97
20	Santa Ana River Santa Ana Gage	2.63	9.85	-6.39	-10.09	-3.01	-25.48	-14.69	-6.41	-31.70
21	Santa Ana River Adams St Gage	2.60	9.82	-6.35	-10.08	-3.01	-25.24	-14.61	-6.38	-31.39
22	Brea Channel Brea Dam Gage	1.99	5.34	-5.77	-3.37	-1.79	-19.51	-8.88	-7.33	-19.75
23	Brea Channel Fullerton Gage	1.73	4.97	-6.04	-3.54	-1.35	-19.91	-8.84	-7.45	-19.87
24	Fullteron Channel Fullerton Dam Gage	0.94	3.76	-5.87	-4.13	-1.47	-18.91	-8.98	-8.82	-18.91
25	Fullerton Channel Fullerton Gage	0.14	3.60	-5.68	-4.54	-3.08	-18.43	-9.14	-9.08	-16.44
26	Fullerton Channel Richman Ave Gage	2.15	4.95	-5.48	-4.55	-2.02	-17.80	-8.58	-7.34	-18.39
27	Coyote Creek Los Alamitos Gage	0.31	4.85	-4.60	-3.59	-3.16	-17.37	-9.54	-7.87	-16.51
28	Devils Canyon	2.94	5.12	-3.29	-13.23	-6.71	-22.69	-13.38	-10.72	-26.62
29	Santa Ana River AT MWD Crossing NR Arlington	2.73	10.54	-9.68	-11.36	-2.04	-30.55	-17.35	-7.84	-37.75
30	Santa Ana River AT E Street NR San Bernardino	3.03	10.66	-11.25	-10.86	-2.34	-31.89	-16.98	-7.35	-39.70
31	Temescal Creek AB Main Street AT Corona	5.50	9.02	-6.01	-7.65	-1.64	-18.68	-12.06	-5.03	-28.47
32	Cucamonga Creek NR Mira Loma	2.20	7.43	-3.35	-13.45	-8.76	-27.40	-17.51	-13.81	-33.20
33	Chino Creek AT Schaefer Avenue NR Chino	2.30	4.54	-3.62	-7.11	-2.05	-19.63	-11.19	-8.46	-19.83
34	Seven Oaks Dam Outlet	1.11	12.83	-19.49	-13.17	-4.07	-40.17	-19.29	-4.76	-48.65
35	Middle Fork Lytle Creek Gage	2.94	6.88	-9.22	-15.28	-8.14	-36.30	-21.35	-16.24	-40.80
36	Ridge Top Gage NR Devore	3.08	6.48	-6.72	-7.15	-1.54	-18.56	-6.26	-5.05	-21.65

3.1.3 Groundwater Impacts

The groundwater screening tool was applied to four groundwater basins (Orange County, Upper Santa Ana Valley, San Jacinto, and Elsinore) within the Watershed where sufficient data were available, including observed groundwater elevations, municipal and industrial demands, agricultural acreage, and trans-basin imported water.

Figure 13 illustrates observed and simulated monthly changes in groundwater elevation for the Orange County Coastal Plain groundwater basin for the period 1990-2009, as well as observed and simulated monthly basin-averaged groundwater elevations. Figure 13a shows that the groundwater screening tool realistically simulates the timing of month-to-month changes in groundwater elevation, but does not capture the peak magnitudes of drawdown and rise. Similarly, Figure 13c shows that the tool accurately simulates seasonal fluctuations in groundwater elevation as well as trends in groundwater elevation over the past two decades, but does not capture interannual variations in groundwater elevation, including the groundwater decline of the early 1990s and subsequent rebound during the late 1990s and early 2000s. Interannual fluctuations may be driven by local-scale non-linear processes that are not represented in the basin-scale screening tool, or by management objectives that are not included in this analysis. The correlation between simulated and observed changes in groundwater elevation is 0.618 (R^2 = 0.382), and correlation between simulated and observed groundwater elevation is 0.884 (R^2 = 0.782).

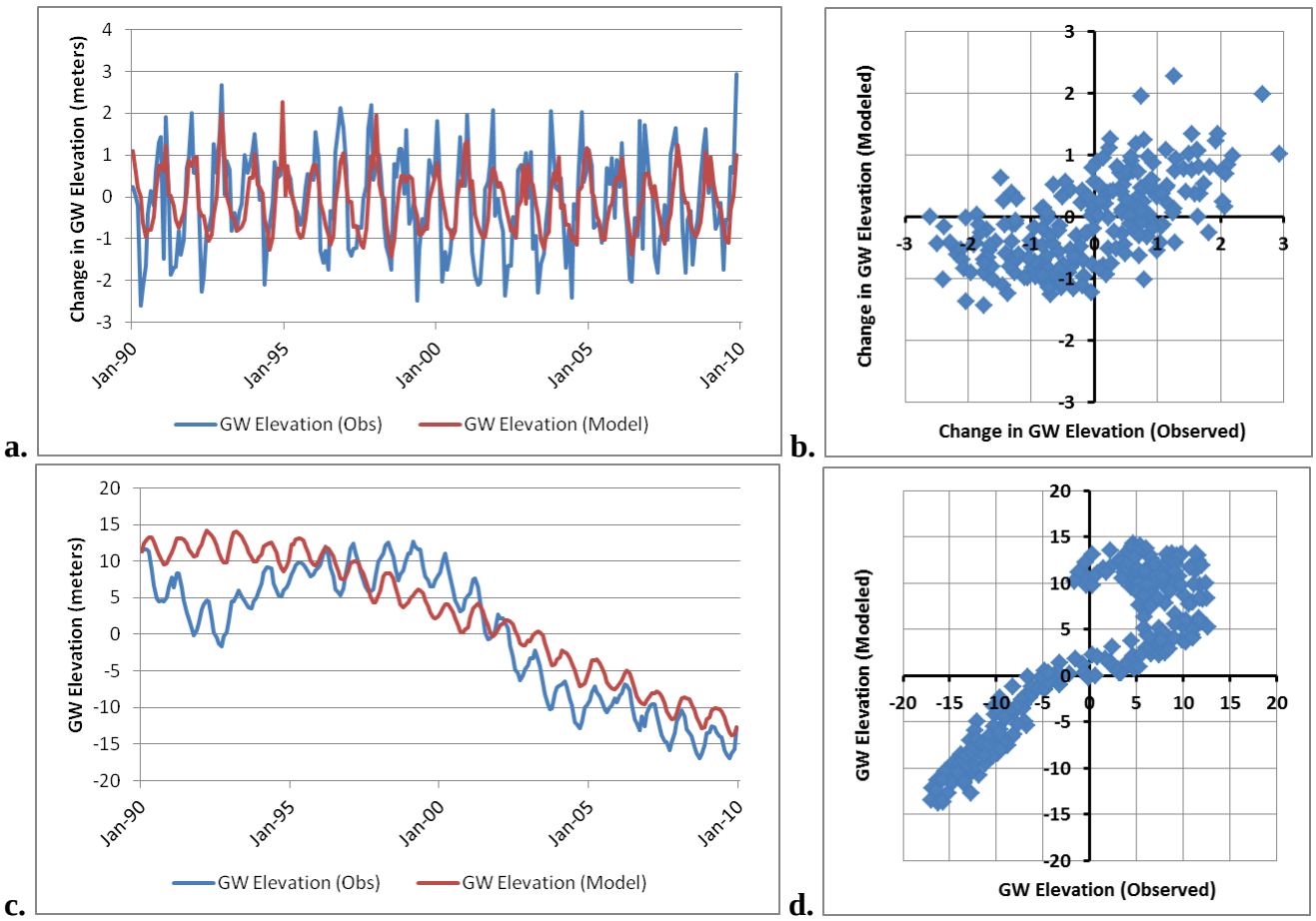


Figure 13: (a) Timeseries of observed and simulated fluctuations in monthly groundwater elevation for the period 1990-2009; (b) scatter plot of simulated monthly change in groundwater elevation as a function of observed change groundwater elevation; (c) Timeseries of observed and simulated monthly groundwater elevation for the period 1990-2009 (zero represents mean sea level); (d) scatter plot of simulated monthly groundwater elevation as a function of observed groundwater elevation (all plots are for Orange County groundwater basin)

Future groundwater availability in the Watershed will depend on future recharge from precipitation, stream seepage, and managed infiltration facilities, as well as future groundwater withdrawals to for municipal, industrial, and agricultural uses. Projected increases in temperature and decreases in precipitation will result in increased water demands and decreased groundwater recharge, respectively. Management actions will be required to protect groundwater resources under projected future climate conditions. Figure 14 illustrates the observed range of basin-averaged groundwater levels in the Orange County groundwater basin for 1990-2009, along with simulated groundwater levels under projected climate conditions. In the absence of groundwater management actions, groundwater levels are projected to decline significantly over the 21st century. It should be noted that projected declines are not constrained by the physical limits of the aquifer; for example, projected declines may exceed the actual amount of usable groundwater in the basin.

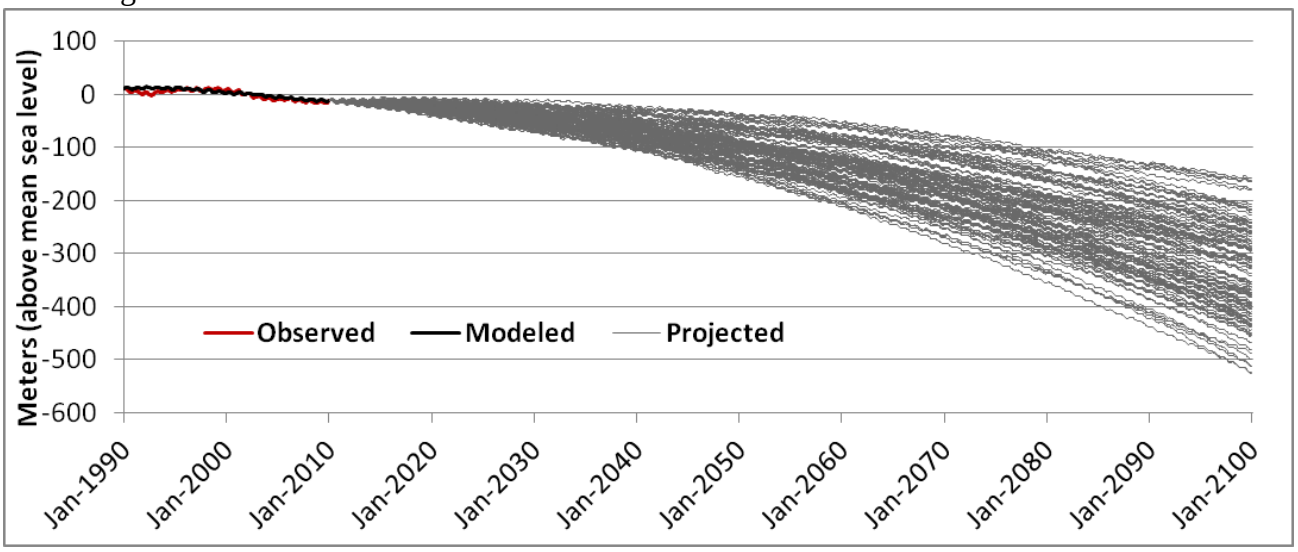


Figure 14: Projected groundwater elevations for Orange County for a no action scenario

The groundwater screening tool, developed by Reclamation for this Basin Study, can be used to evaluate potential deficiencies in future supplies and to develop sustainable management alternatives. As an example, potential actions to avoid projected water level declines in Orange County are listed below. Each alternative listed will protect against groundwater declines through 2060.

- Reduce M&I demand, gradual reduction of approx. 15% by 2020 (i.e., reduce per capita use from ~175 gallons per day in 2010 to ~150 gallons per day by 2020).
- Increase imports from the Colorado River Aqueduct and State Water Project gradually from ~30,000 acre-ft per year to ~105,000 acre-ft per

year (this may not be feasible due to cost, greenhouse gas emissions, or availability).

- Increase local water supplies by ~75,000 acre-ft per year through recycled water treatment capacity, development of seawater desalination capacity, and increase storm water capture efficiency.

Figures 15, 16, and 17 show the projected groundwater elevations for a no action scenario for the Upper Santa Ana Valley, San Jacinto, and Elsinore respectively. The groundwater screening tool can be used to develop and compare additional management alternatives in order to meet the projected growing demands that are discussed in the next section.

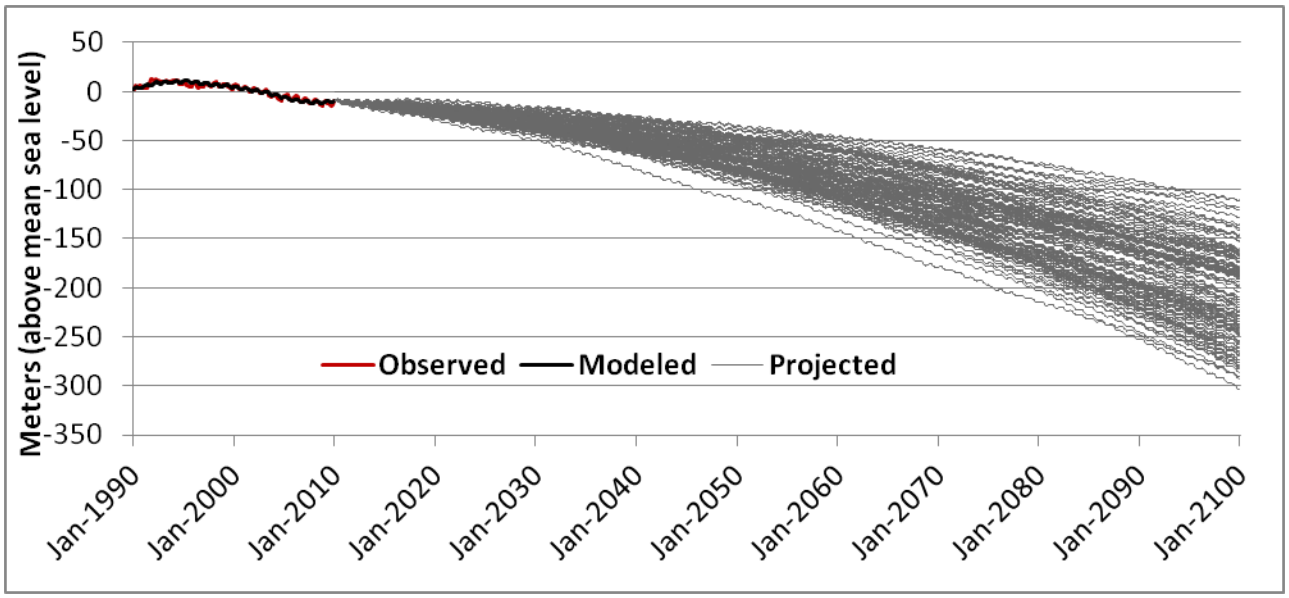


Figure 15: Projected groundwater elevations for Upper Santa Ana Valley for a no action scenario

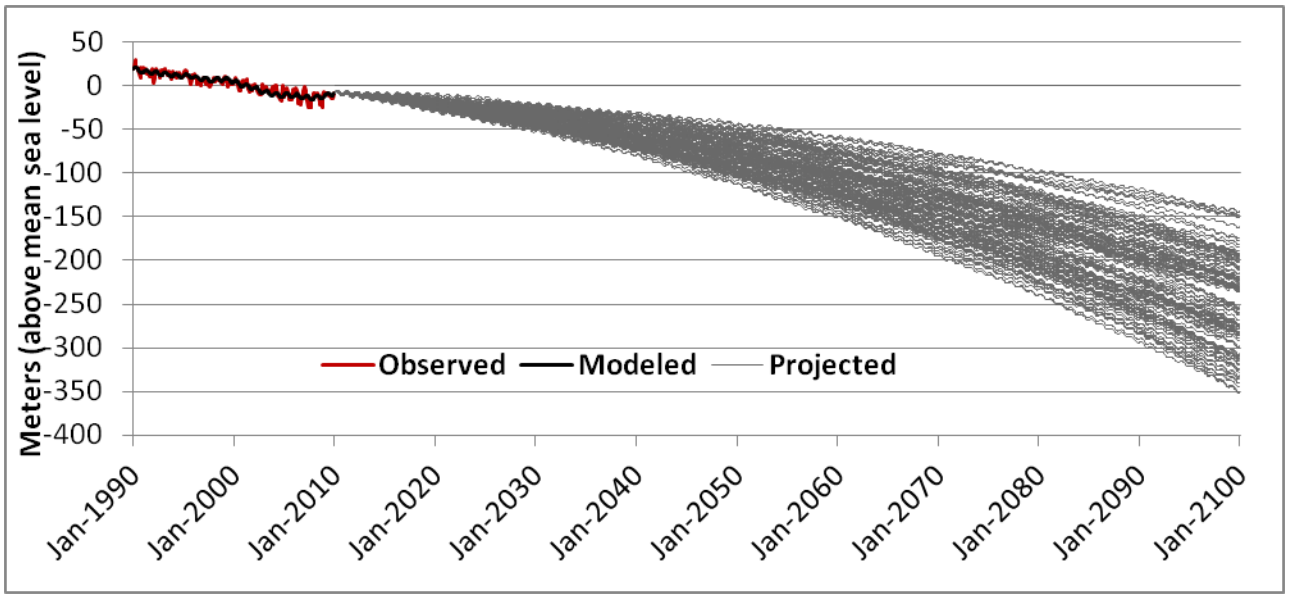


Figure 16: Projected groundwater elevations for San Jacinto for a no action scenario

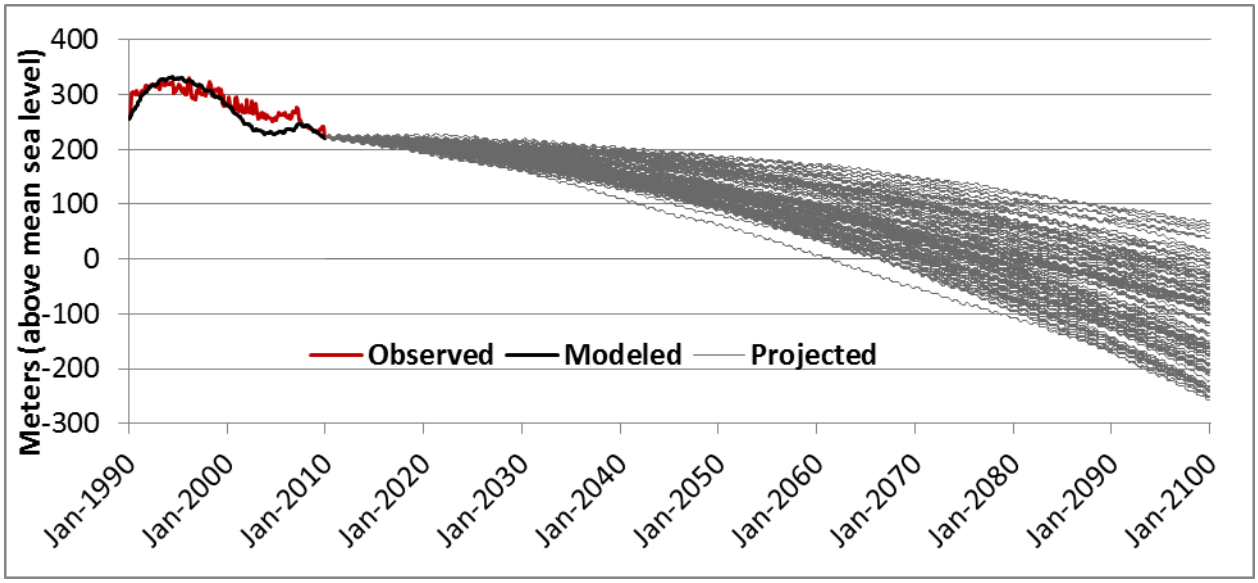


Figure 17: Projected groundwater elevations for Elsinore for a no action scenario

Note: The Elsinore groundwater basin projections, shown in Figure 17, are not as representative of what is actually happening in the basin as the other three basins. This is because the basin average groundwater timeseries is based on four wells, three of which are missing a fair amount of data, resulting in a poor model fit. More representative results could be obtained if a more complete input dataset were developed.

3.2 Water Demands

Many factors affect future water demands such as population growth, hydrologic conditions, public education, and economic conditions, among others. In 1990, 4.2 million people lived in the Watershed. In the 1990s, the population grew by 17.6%, and continued to grow to the present population of approximately 6.1 million, as shown in Figure 18. By 2050, the population is projected to reach 9.9 million (Santa Ana Integrated Watershed Plan, 2002).

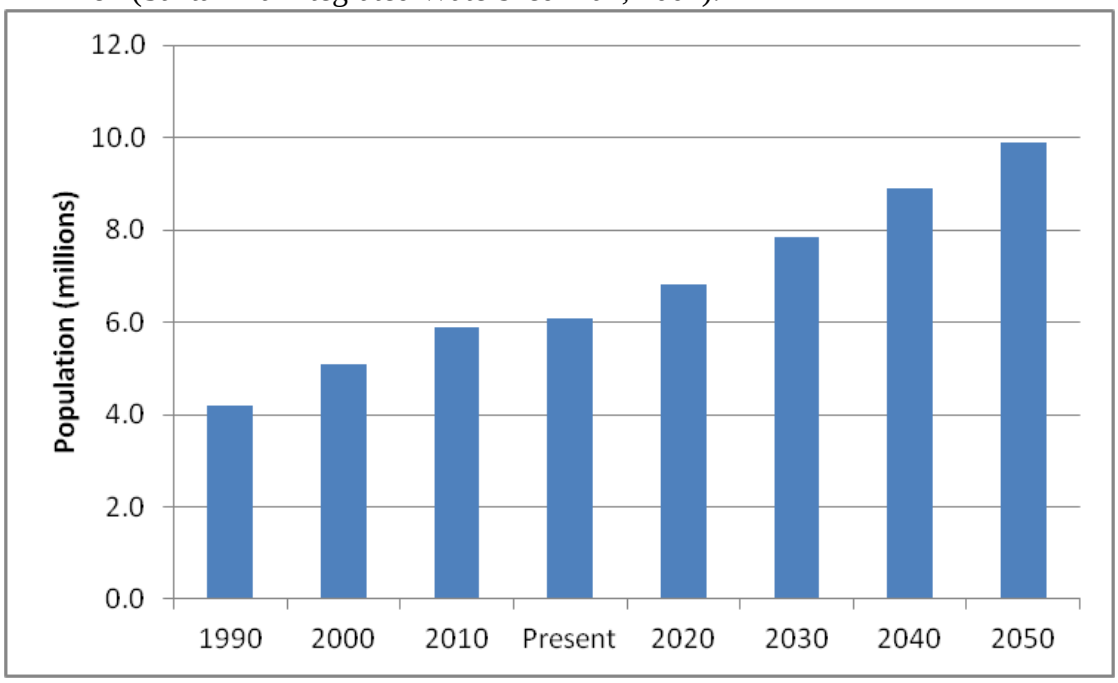


Figure 18: Population for the Santa Ana River Watershed

3.2.1 Water Demand Projections

Projected water demands out to 2050 were obtained from the various water resource plans for each of the individual member agencies. The projections, shown in Figure 19, include direct water demand for residential, municipal, commercial, and agricultural uses, but do not include recharge. Conservation is not taken into account in the projected demand. Aggressive conservation can drastically reduce the projected water demand, an example of which is shown in Chapter 5.

For the purpose of this study, the demand was calculated for the watershed, as a whole, every ten years from 1990-2050 (see Chapter 5 for a description of the tool used). The population projections from Figure 18 were used to determine the demand, and conservation was not taken into account. The results, found in Figure 20, are very similar (1% difference in 2050) to the demand projections calculated by the member agencies in Figure 16.

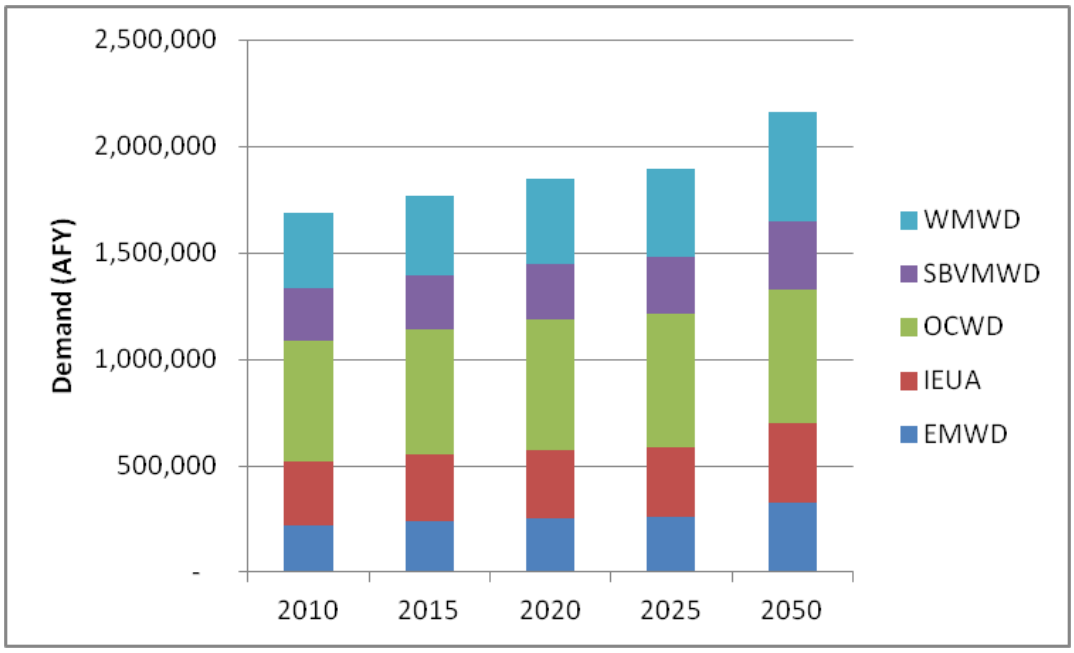


Figure 19: Water demand by member agency (Western Municipal Water District (WMWD); San Bernardino Valley Municipal Water District (SBVMWD); Orange County Water District (OCWD); Inland Empire Utilities Agency (IEUA); Eastern Municipal Water District (EMWD))

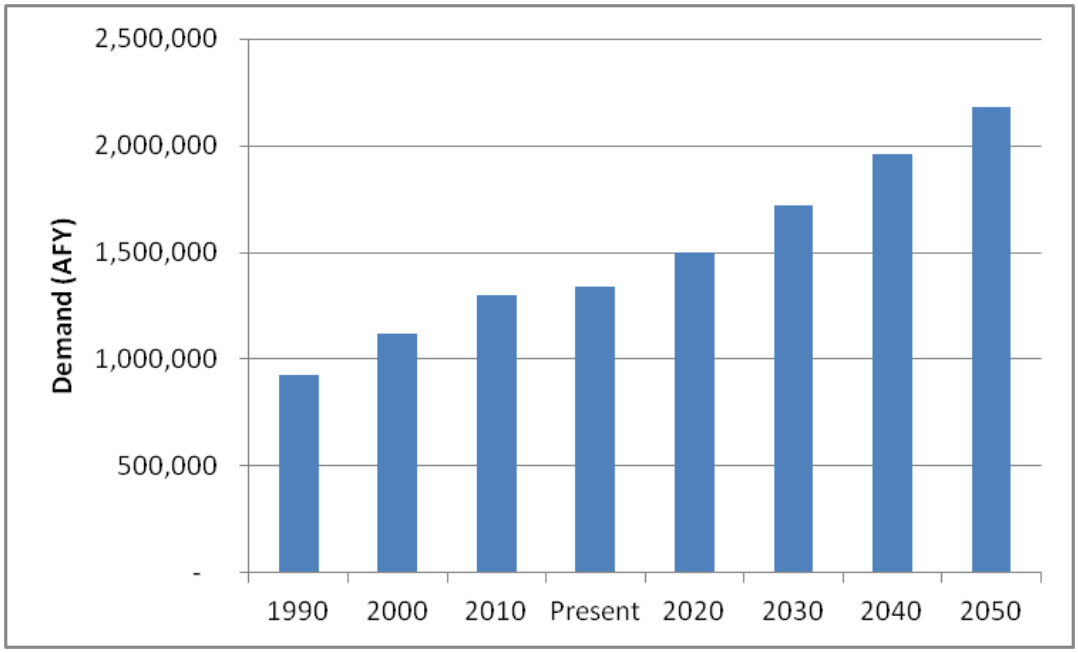


Figure 20: Santa Ana Watershed water demand calculated for this study

3.3 Supply and Demand Summary

Table 4 shows a summary of the project effects of climate change on a variety of hydroclimate metrics for three future periods (above the most downstream location, Adams St. Bridge). Table 5 shows a summary of projected water demands out to 2050.

Table 4: Summary of Effects of Climate Change on Supply

Hydroclimate Metric (change from 1990s)	2020s	2050s	2070s
Precipitation (%)	0.67	-5.41	-8.09
Mean Temperature (°F)	1.22	3.11	4.1
April 1st SWE (%)	-38.93	-80.4	-93.07
Annual Runoff (%)	2.6	-10.08	-14.61
Dec-Mar Runoff (%)	9.82	-3.01	-6.38
Apr-Jul Runoff (%)	-6.35	-25.24	-31.39

Table 5: Summary of Water Demand for the Santa Ana River Watershed

	1990	2000	2010	Present	2020	2030	2040	2050
Demand (MAFY)	**0.924**	**1.121**	**1.298**	**1.339**	**1.503**	**1.723**	**1.958**	**2.178**

Imported water for the SARW will also likely be affected by the changing climate. The 2011 SWP Reliability report projects a temperature increase of 1.3° to 4.0 °F by mid-century and 2.7° to 8.1° F by the end of the 21st century. It predicts that increased temperatures will lead to less snowfall at lower elevations and decreased snowpack. By mid-century they predict that Sierra Nevada snowpack will reduce by 25% to 40% of its historical average. Decreased snowpack is projected to be greater in the northern Sierra Nevada, closer to the origin of SWP water, than in the southern Sierra Nevada. Furthermore, an increase in "rain on snow" events may lead to earlier runoff. Given these changes, a water shortage worse than the 1977 drought could occur one out of every six to eight years by the middle of the 21st century and one out of every two to four years by the end of 21st century. Also, warmer temperatures might lead to increased demand. This factor, combined with declining flows, will likely lead to decreased carryover storage from year to year. Alternative water supply options such as recycled water, rainwater harvesting, and desalination may need to be relied upon in order to meet the continually growing demand.

4.0 Decision Support and Impact Assessment

The analyses presented in this chapter were performed using the climate and hydrological projections and models described in Chapter 3.

4.1 Impacts on Recreation in Lake Elsinore

4.1.1 Background

Lake Elsinore, shown in Figure 21, is southern California's largest natural lake and is situated at the bottom of the San Jacinto Watershed. Because Lake Elsinore is a terminal lake, historically fed only by rain and natural runoff, it has been impacted by low lake levels. As the climate continues to change it is likely that these impacts will become more severe. Lake Elsinore is used for recreation and is currently not considered a water supply source.

In 2005, Elsinore Valley Municipal Water District (EVMWD) began a two-year pilot project to introduce recycled water into Lake Elsinore to stabilize lake levels. Soon thereafter, a discharge permit was granted to EVMWD by the Santa Ana Regional Water Quality Control Board to allow recycled water to be delivered to the lake. In 2008, a 36-inch-diameter pipeline was constructed to deliver recycled water from EVMWD's Regional Wastewater Treatment Plant, funded by the State of California Proposition 40 Water Bond and the Lake Elsinore and San Jacinto Watersheds Authority. The project delivers approximately 5 million gallons per day (MGD) of recycled water to Lake Elsinore, and includes repair and retrofit of three local, shallow groundwater wells that deliver approximately 1 MGD. As part of the Basin Study, an analysis was done to determine if these measures would be enough to meet the minimum goal volume of 41,704 acre-ft (elevation 1,240 ft), avoid low lake levels (below 24,659 acre-ft, elevation 1,234 ft), and prevent the lake from drying up altogether (as occurred in the 1930s) under a changing climate.



Figure 21: Lake Elsinore and VIC model grid cell used to determine data for Lake Elsinore analysis

4.1.2 Methodology

Monthly streamflow and open water evaporation values from 1950-2099 were determined by using BCSD-CMIP3 climate projections and the VIC macro-scale hydrology model. Gridded daily meteorological forcings from Maurer et al., (2002) were used to simulate historical conditions from 1950-1999. The model accounted for the upstream contributing basin, the San Jacinto River subwatershed, feeding the inlet of Lake Elsinore, excluding the effect of any upstream regulation.

A mass balance analysis of Lake Elsinore was conducted, resulting in a natural volume, unregulated by upstream reservoirs. Change values were determined for each future period using modeled observed average annual volume applied to historic annual average volume. The operations of Canyon Lake, a reservoir upstream from Lake Elsinore, were not taken into account in this analysis.

4.1.3 Results

Figure 22 shows the distribution of projected average annual volume for two future periods, 2000-2049 and 2050-2099, based on 112 different climate change projections. The two future periods were also analyzed with the addition of the EVMWD project. For the 2000-2049 period there is greater than a 50% chance that the average annual lake level will meet the minimum goal; adding in the EVMWD project brings that likelihood up to above 75%. For the 2050-2099 period there is less than a 5% chance that the minimum goal will be met; adding the EVMWD project brings that likelihood to almost 50%. Both periods are likely to stay above low lake level, with the 2050-2099 period having less than a 10% chance of drying up completely.

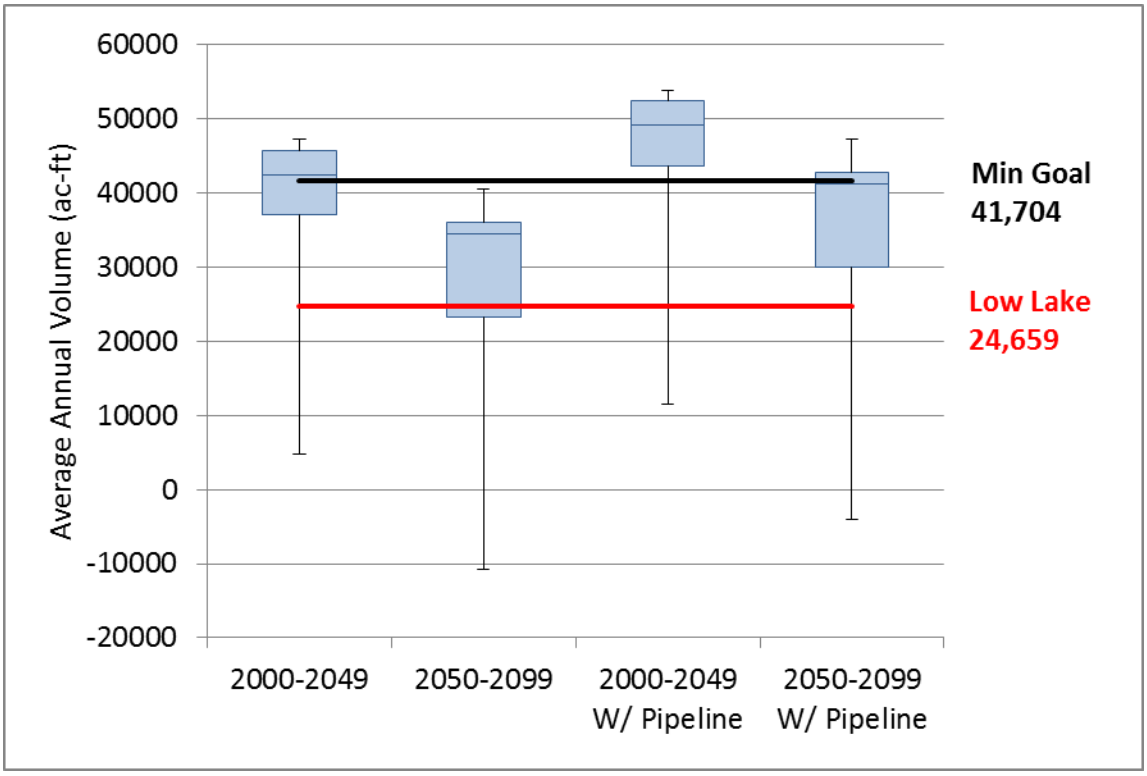


Figure 22: Projected average annual volumes for Lake Elsinore for two future periods, with and without EVMWD project

4.2 Alpine Climate Impacts

4.2.1 Background

An alpine climate is defined as the average weather for the region above the tree line. Climate change impacts could harm alpine recreation such as skiing. The Big Bear Mountain Resorts (Big Bear) are located in the San Bernardino Mountains within the SARW. They consist of two ski areas, Bear Mountain and Snow Summit, and provide nearly 750 skiable acres. They range in elevation from roughly 2,180 m to more than 2,600 m. Although Big Bear has the ability to cover 100% of its terrain with manmade snow using water from Big Bear Lake, there are still concerns about rising temperatures and decreased natural snowfall.

Member agencies of SAWPA extend to the San Bernardino Mountain, the San Gabriel Mountains, the San Jacinto Mountains and the Santa Ana Mountains. As such, potential climate change impacts to alpine ecosystems and recreational activities are an area of concern. In general, alpine ecosystems are characterized by cold temperatures and harsh growing conditions. One species of particular importance is the Jeffrey Pine. Jeffrey Pines are a coniferous species common to the area and extend through the Sierra Nevadas up to Oregon. They are a high altitude pine species that have the ability to grow in a diverse range of climates.

They can do well in harsh settings and infertile sites because they require a shorter growing season than some other species (Moore, 2006).

4.2.2 Methodology

Impacts to skiing near Big Bear Lake were analyzed by considering projected changes for April 1st SWE. April 1st SWE values from 1950 to 2099 were generated for 112 CMIP3 climate projections using the VIC model forced with downscaled (BCSD) climate variables. Each climate projection consists of 1/8° x 1/8° degree (~12 km x 12km) grid cell daily forcings. For this analysis, the locations of the Bear Mountain and Snow Summit ski areas were mapped to the single grid cell that contained them. Results shown in Section 4.2.3 summarize the median change (taken from the 112 projections) in April 1st SWE compared to the 1990s.

For comparison, results were also summarized from a study of climate change impacts in California by Hayhoe et al. (2004). They used climate forcing data generated with two GCMs of low (Parallel Climate Model, PCM) and medium (Hadley Center Climate Model version 3, HadCM3) sensitivity, forced using two emissions scenarios, one lower (B1) and one higher (A1fi). SWE results were generated using the VIC model forced with the BCSD temperature and precipitation. Results are provided in Section 4.2.3 on a statewide basis grouped by elevation.

Quantitative analysis of ecosystem impacts was not conducted as part of this work. Rather a literature review of existing climate change impact studies was conducted and the relevant findings are provided here.

4.2.3 Results

Recreation at Big Bear

It is likely that future snowpack at Big Bear will be significantly less than what is currently normal and accumulated snowpack will remain on the ground for a shorter season. Figures 23 and 24 illustrate future changes in April 1st SWE. Projected declines are between 30% and 40% by the 2020s, and are generally projected to be greater than 70% by the 2070s. These changes are largely a result of increased winter temperatures and potential declines in winter precipitation. Warmer temperatures will result in a delayed onset of the ski season, as well as earlier spring melting. Future precipitation is much more uncertain but many projections show decreased winter precipitation. Lower altitudes will likely be the most sensitive to increased temperature because small temperature changes can result in precipitation falling as rain rather than snow. Hayhoe et al. (2004) note that reductions in SWE are most pronounced below 3,000 m where roughly 80% of California's snowpack storage currently occurs. The Bear Mountain and Snow Summit ski areas both fall between roughly 2,100 and 2,600 m, making them vulnerable to increased temperatures.

While there is general consensus for a projected decrease in snowpack, it is also important to note that there is significant variability between climate projections. For example, the low sensitivity, low emissions scenario in Figure 24 projects only a 20% decrease in snowpack by 2070, while the other scenarios as well as the median, shown in Figure 23, project a greater than 70% decrease. Also, the grid resolution for both methodologies is 1/8° which is much larger than either ski area. As such, results include surrounding areas that are at lower elevations and beyond ski area itself. However, the overall findings in Figures 23 and 24 are consistent.

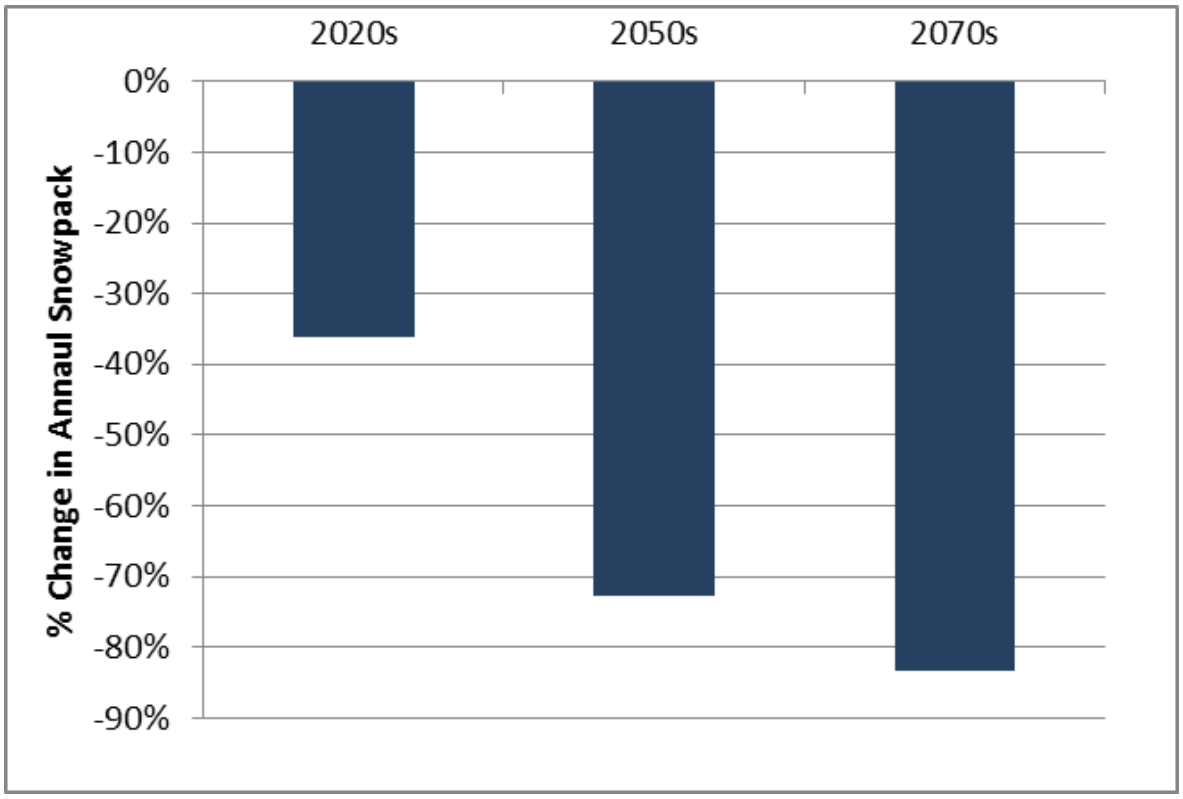


Figure 23: Median percent change (from 112 climate projections) in April 1st SWE for the grid cells containing the Bear Mountain and Snow Summit ski areas

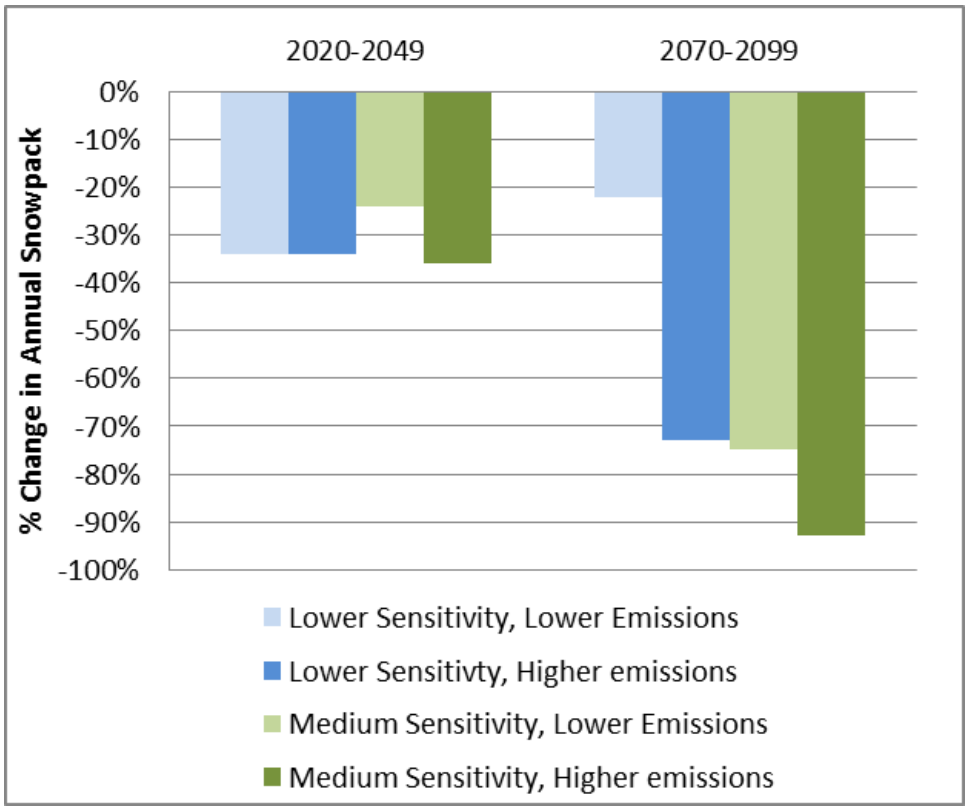


Figure 24: Percent change in April 1st SWE from Hayhoe et al. (2004) for areas of 2,000 to 3,000 m elevation

Jeffrey Pine Ecosystem

Predicting climate change impacts on ecosystems is very difficult because of the interconnections and dependencies among the large numbers of species present in any system. This is further complicated by uncertainty about future climate. For example, there is significant uncertainty about the role of increased carbon dioxide levels on forest productivity. In general, predictions about forest productivity are uncertain and will rely mainly on future precipitation. While there is variability among climate change scenarios, especially with respect to precipitation, all projections include increased temperature and increased levels of atmospheric carbon dioxide.

Based on projected climate, it is expected that warmer temperatures will cause trees to move northward and to higher elevations. Lenihan et al. (2008) project changes in total forest cover for the state of California will range from a 25% decrease to a 23% increase by 2100. Species with the smallest geographical and climate ranges are expected to be the most vulnerable to change because they will have limited ability to migrate. Alpine ecosystems are particularly vulnerable to increased temperatures because their habitat is already limited with little opportunities to shift to higher elevations. Lenihan et al. (2008) project that Alpine and subalpine forests will decrease in area by 50-70% by 2100, as shown in Figure 25.

Consistent with other tree species, it is likely that the Jeffery Pines (found at elevations of 2000-3100 m) will migrate to higher elevation and some lower elevation forest area will be lost. Several studies predict that warming temperatures will result in the displacement of evergreen conifer forests by mixed evergreen forests across California (Hayhoe et al., 2004; California, 2010). This trend is also shown by the decrease in conifer forests in Figure 25.

Figures 26 and 27 show projected change in viable Jeffery Pine habitat in southern California for three emissions scenarios looking out to 2030 and 2090, respectively (Crookston, 2009). The plots, generated using the Moscow Forestry Sciences Laboratory website http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Jeffrey-pine/, show significant decrease in viable Jeffery Pine habitat for many scenarios, and some of the most severe (e.g. A2 emission scenario) show no Jeffrey Pine habitat within the Watershed by 2090.

In addition to changes in forest area, warmer temperatures may also impact forest health. For example, extended droughts and earlier snowmelt could cause fire seasons to start earlier and last longer (California, 2010). Also, temperature increases may change the frequency and magnitude of infestations by pests, such as the pine beetle.

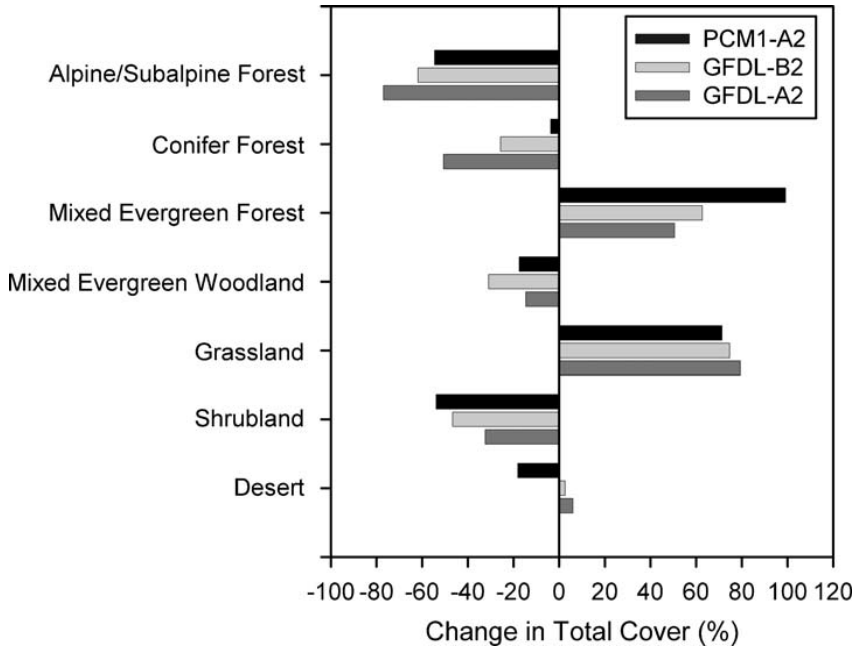


Figure 25: Fig. 4 from Lenihan et al., (2008). Percent change in total land cover for vegetation classes by 2100 for three climate change scenarios predicted using the MC1 Dynamic Vegetation Model

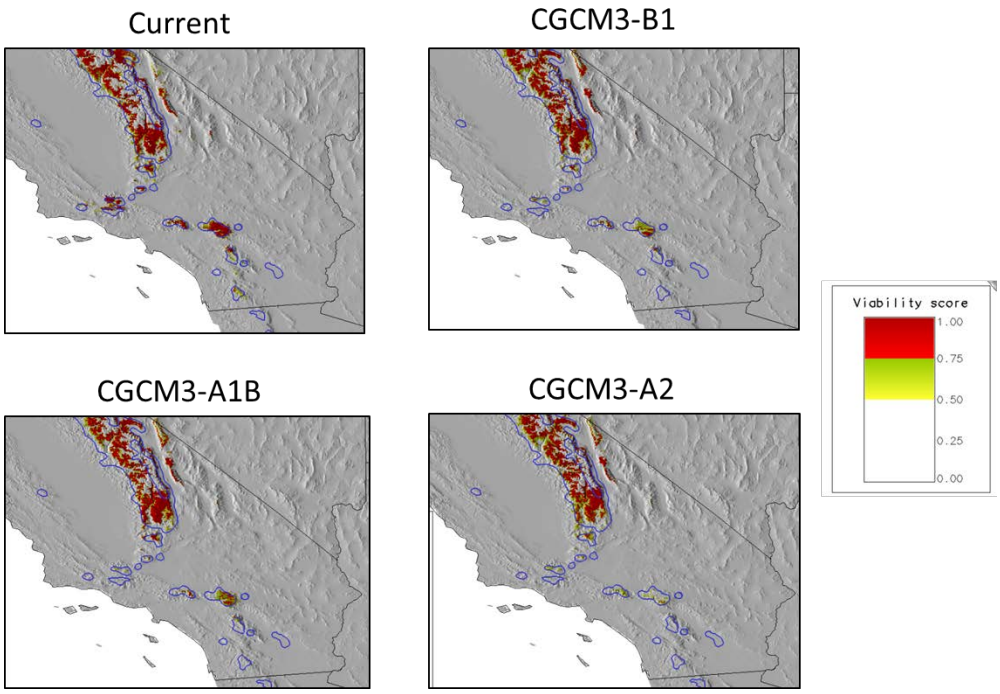


Figure 26: Viability scores for Jeffery Pine currently and for three future projections for 2030

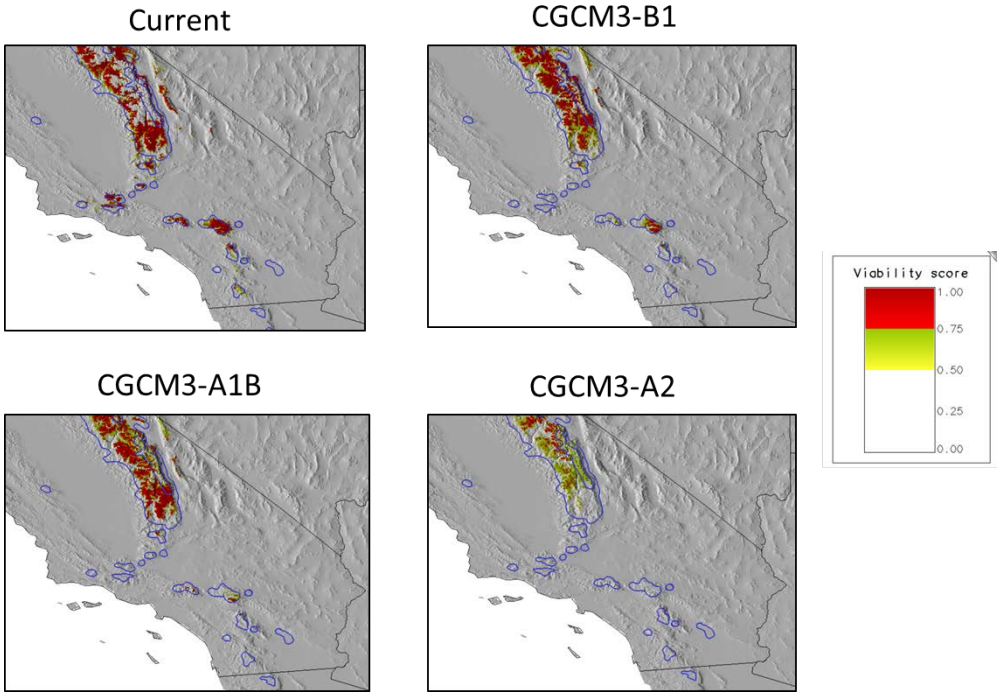


Figure 27: Viability scores for Jeffery Pine currently and for three future projections for 2090

Source: http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Jeffrey-pine/

4.3 Extreme Temperature Impacts

4.3.1 Background

There is no standard definition of an extreme heat event, commonly known as a "heat wave." It is most commonly defined as a period with more than three consecutive days of maximum temperatures at or above 90°F. However, temperature is only one component of heat, which also depends on humidity, wind speed and radiant load. Climate change is resulting in more frequent and severe heat waves (Dia, 2011). The increased heat could lead to additional air pollution in urban areas, bringing increased health risks.

In 2007, the IPCC concluded that "hot extremes" and "heat waves" are very likely (>90% probability of occurrence) to increase as our climate continues to change. This predicted temperature increase is particularly pronounced for night temperatures, resulting in reduced night-time relief from the heat. These changing weather conditions are a growing concern for individuals and communities in the Watershed.

4.3.2 Methodology

Daily maximum temperature values came from the BCSD-CMIP3 archive for 112 climate projections. Each projection has 1/8° x 1/8° (~12 km x 12 km) grid cell daily forcings that start on January 1, 1950 and run through December 31, 2099. For this analysis, the location of each city was matched to the single VIC grid cell that contains it. The data was analyzed and days with maximum temperatures over 95°F were considered to contribute to the results, found in Section 4.3.3, which summarize temperature trends for all 112 projections from 1950 to 2099 for the selected grid cell.

4.3.3 Results

Figure 28 shows the distribution of the annual number of days above 95°F from 1950-2099 for each of the cities (Anaheim, Riverside, and Big Bear City) for all 112 climate projections. As shown here, there is a clear, increasing trend in the number of days above 95°F for all three locations, with Riverside in the lead, followed by Anaheim. Big Bear City has the least number of days with a median of zero for all years prior to about 2030. The shaded area in Figure 28 shows the range of the 112 climate projections and demonstrates a large spread in projected results. Table 6 summarizes the median number of days above 95°F for each location for the historical time period (1951-1999) and three 30-year future time periods centered around 2020, 2050 and 2070. As shown in Table 6, the number of days increases for all stations advancing into the future. Changes are quite significant; for example, the median value for Anaheim quadrupled from 4 to 16 days between the historical time period and 2070. Similarly, the median value for Riverside nearly doubled between the historical time period and 2070 going from 43 to 82 days.

A study of warming trends in and around the city of Los Angeles also had similar findings (Hall et al., 2012). For this study they statistically and dynamically downscaled GCMs outputs for two emission scenarios ("Business as usual" RCP8.5 and "mitigation" RCP2.6) and compared results between a baseline period of 1981-2000 and future a future period from 2041-2060. Overall, they reported two to three times as many extreme days (i.e. greater than 95 °F) in coastal areas and within the Los Angeles Basin. Inland areas were noted to have three to five times the number of extremely hot days. Although the trends are the same, there are some differences between this report and the results presented in Table 6.

For example, in the Los Angeles study, they report that Riverside had a historical average of 9.6 day extreme heat days per year, while Table 6 reports 43 days. This difference is likely a result of differences in historical time periods (1981-2000 vs. 1950-1999), as well as differences in downscaling methodology. For example, the methodology used for this analysis did not include any bias correcting to match downscaled results to observed temperature gages. Similarly the future estimates provided in the Los Angeles report for Riverside range from 17 to 59 which is less than the 72 days reported in Table 6. Results for Big Bear are very similar between the reports because temperatures are much lower in Big Bear so the number of extreme days remains close to zero in all cases. However, in the Los Angeles report, they also repeated the extreme day analysis with locally derived temperature thresholds. For Big Bear, the local temperature threshold was set to 76.8 °F. Given this lower threshold, it was found that the number of extreme days increased from 7.3 days historically up to a range of 9 to 78 days by 2050. Anaheim was not covered in the Los Angeles report and so cannot be directly compared.

Table 6: Median annual number of days above 95°F for one historical (1951-1999), and three future (2005-2034, 2035-2064, 2055-2084) time periods

	Historical	2020	2050	2070
Anaheim	4	7	12	16
Riverside	43	58	72	82
Big Bear City	0	0	2	4

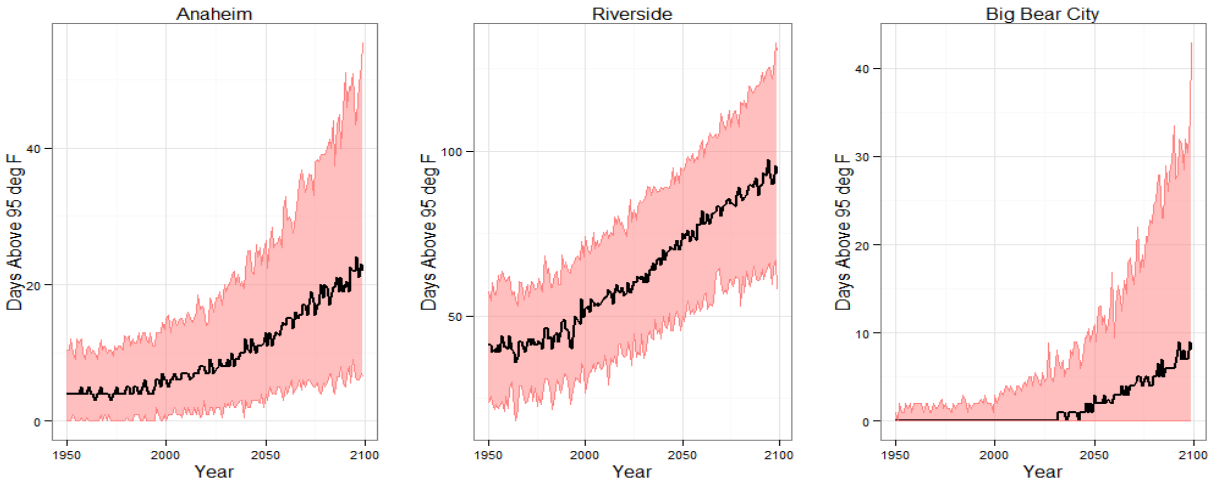


Figure 28: Projected annual number of days above 95°F. Solid black line is the median and the red shading denotes the 5th and 95th percentile bounds

4.4 Flood Impacts

4.4.1 Background

The Santa Ana River has a long history of flooding. In 1862, more than 30 days of rain resulted in flooding across California and destroyed the state capital (Hiltner, 2010). During this flood, it is estimated that the Santa Ana River flowed at roughly 320,000 cfs, about half the flow of the Mississippi River (Hiltner, 2010). Subsequently in 1916, flooding occurred along the Santa Ana River and Santiago Creek, washing out bridges and causing other damages (City of Santa Ana, 2006). In 1938 a flash flood inundated 68,400 acres, resulting in 19 fatalities and leaving 2,000 homeless (City of Santa Ana, 2006). This event led the U.S. Army Corps of Engineers to declare the Santa Ana River the biggest flood hazard west of the Mississippi (Hiltner, 2010). It also helped motivate the construction of Prado Dam and paved the way for a post-World War II construction boom that developed large agricultural areas (City of Santa Ana, 2006). Subsequently, another flood in 1969 caused extensive damage along tributaries. Most recently in 2005, an extended wet period put stress on Prado Dam. No flooding occurred, but the dam began to crack and downstream residents were temporarily evacuated.

As a result of historical floods, there have been a number of efforts to improve flood safety in the basin. In 1964, the Santa Ana River Mainstem Project (SARP) was initiated with a goal of providing flood protection to communities along 75 miles of the Santa Ana River in Orange, Riverside and San Bernardino counties. Today it provides increased flood protection to about 3.35 million people through improvement projects such as channel lining and dam construction (SARP, 2013). Although the flood control system has greatly improved safety, it's important to

note that increased development in the area has also increased impervious area and decreased the effectiveness of existing infrastructure.

Generally, the goal of flood frequency analysis is to determine the probability of occurrence for a range of flood values. Often this is expressed in terms of return periods (equal to the inverse of the threshold exceedance probability). If the probability of a given flood magnitude occurring in a given year is 1%, then the return interval is equal to 100-years (assuming every year is an independent sample from all years and that events are equally likely). There are two main approaches to flood frequency analysis. The extreme value approach uses historical flood data to generate a probability distribution that can be used to predict the flood magnitude for any number of return intervals. Alternatively, flood process can be modeled directly using physically-based hydrodynamic models driven by meteorological forcings. For this analysis we combine both approaches; first we simulate floods using a physically based hydrologic model, then we fit an extreme value distribution to the results.

Extreme value functions are designed to capture the distribution of extremes drawn from other distributions. Pearson Type III and Generalized Extreme Value (GEV) are two of the most commonly used distributions. The Gumbel and Weibul distributions are special cases of the GEV distribution that are commonly applied in hydrology. For this work we use the Log Pearson Type III distribution following the standard United States Government methodology presented in Bulletin 17B, "Guidelines for Determining Flood Flow Frequency" (Bulletin 17B, 1982).

Once an extreme value function has been chosen, the next task is to fit it to the observed data. There are three main approaches: plotting positions, method of moments, and maximum likelihood. Plotting positions is the simplest approach; it's based on visualizing the observed data and fitting a distribution visually or by minimizing errors (e.g. using least squares fitting). Although this method is very straightforward, it is not very commonly used because it is problematic when dealing with limited data. Also, when using least squares to fit, the errors are minimized between sample values and distribution values, but the error that should in fact be considered is frequency not value (FEMA, 2007).

To improve upon this, the method of moments fits distributions using the various moments of the observed data (e.g. mean, variance, skew, kurtosis) rather than the values themselves. For example, one can simply compute sample moments and distribution moments and solve for distribution parameters. This approach can also be difficult, because simple moments may not exist for a given distribution and higher order moments may be limited by sample size (FEMA, 2007). Probability-weighted moments and linear moments (L-Moments) can address these issues (Hosking and Wallis, 1997). Finally, the maximum likelihood approach calculates the likelihood of a sample given the assumed distribution. Parameters are determined by trying to maximize the likelihood or often (log

likelihood) for a chosen distribution. Once again following the standard methodology recommended in Bulletin 17B, we will fit distributions using the methods of moments for this analysis.

Before applying flood frequency analysis, it is important to understand key underlying assumptions. All extreme value distributions assume that annual max floods are independent samples from a population. Also the distribution approach assumes point data. If data is available from multiple sites, regional frequency analysis can be used to improve parameter estimation. Finally, most extreme value approaches, including the methodology used here, assume that the distribution that is fit to the observed data remains stationary throughout time. This assumption can be problematic in the face of changing climate in which we might expect increased frequency of extreme events. To address this issue, a number of studies have explored the use of non-stationary extreme value distributions in which distribution parameters are allowed to vary as a function of covariates such as time, precipitation or temperature (Katz and Naveau, 2002; Graffis and Stedinger, 2007). For this study, we fit the traditional stationary models. However, we do account for climate change through the physical modeling step by applying non-stationary climate forcings to simulate future floods.

4.4.2 Methodology

As previously noted, for this analysis we used a combined physical and statistical modeling approach. First, floods are modeled using the VIC physical model forced with climate data from 112 climate simulations. Next, Log Pearson distributions are fit to the annual maximum flood values for each simulation for a range of historical and future time periods. We consider three locations along the Santa Ana: Prado Dam, Seven Oaks Dam, and the Adams Street gage near the river outlet. Three 30-year periods are considered centered around: 2020, 2050 and 2070. The historical period spans 50 years from 1950 to 1999.

Annual maximum one-day flood values are calculated from the VIC outputs for each of the 112 150-year simulations. Flood frequencies are estimated following the standard United States Government method outlined in Bulletin 17-B. For each analysis time period (one historical and three 30-year futures) and climate scenario, a Log Pearson III distribution is fit to the annual maximum values using the L-moments approach. Note that each time period is treated separately. For example, each future period will have 30 values with which to fit the distribution. Using the parameters for the Log-Pearson III distributions, the 200-year return period flow values are estimated for every climate simulation and analysis period. The 200-year storm was used in order to fill the requirements set forth in the California Department of Water Resources' Climate Change Handbook for Regional Water Planning (Appendix B). The distribution is also used to calculate the return period for the median historical 200-year flood for each climate simulation and future time period.

4.4.3 Results

Figures 29 through 31 show results for the three analysis locations: Prado Dam, Seven Oaks Dam, and the Adams Street gage. The boxplots on the left show the distribution of 200-year flood flows estimated using the distributions fit to the 112 scenarios for each time period. The boxplots on the right show the simulated return period of the historical median 200-year flood flow. Tables 7 and 8 summarize the data presented in the boxplots. Table 7 provides the median and interquartile range of 200-year flood flow values. Table 8 provides similar information for the future return periods of the historical median flood flows.

For all stations, there is a clear trend of increasing median 200-year flood flow for each subsequent future analysis period. However, there is also large variability in the future flood projections. Still, in all cases, the bottom of the historical interquartile range (designated by the shaded box) falls below the projected future interquartile range. As would be expected, this results in a decreased return interval for the median historical 200-year flood (as shown in the figures on the right). On average, projections indicate that what was historically the 200-year flood may be closer to a 70-year flood.

Comparing results from station to station, the trends are very similar, increasing flood volumes and decreasing return intervals. This trend is most pronounced for the Seven Oaks Dam site where there is a clear increasing trend in 200-year flood volumes and dramatic decrease in return periods. Seven Oaks Dam also shows a clear decrease in the upper interquartile range for return periods in later future periods.

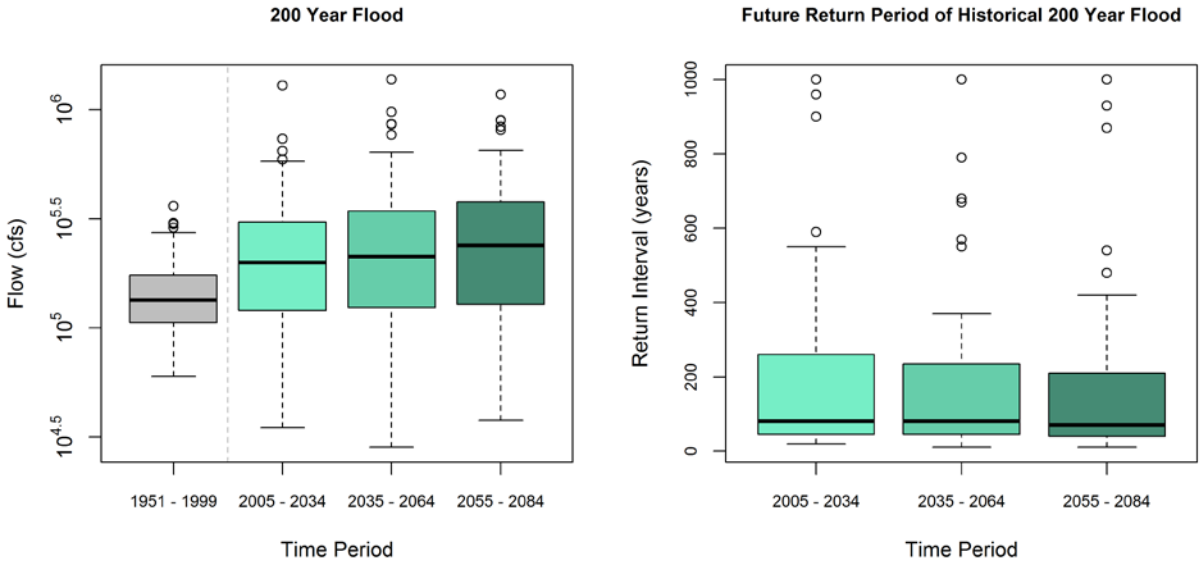


Figure 29: Station 8 Prado Dam - boxplots of 200-year flood volumes and future return periods for the median historical 200-year flood

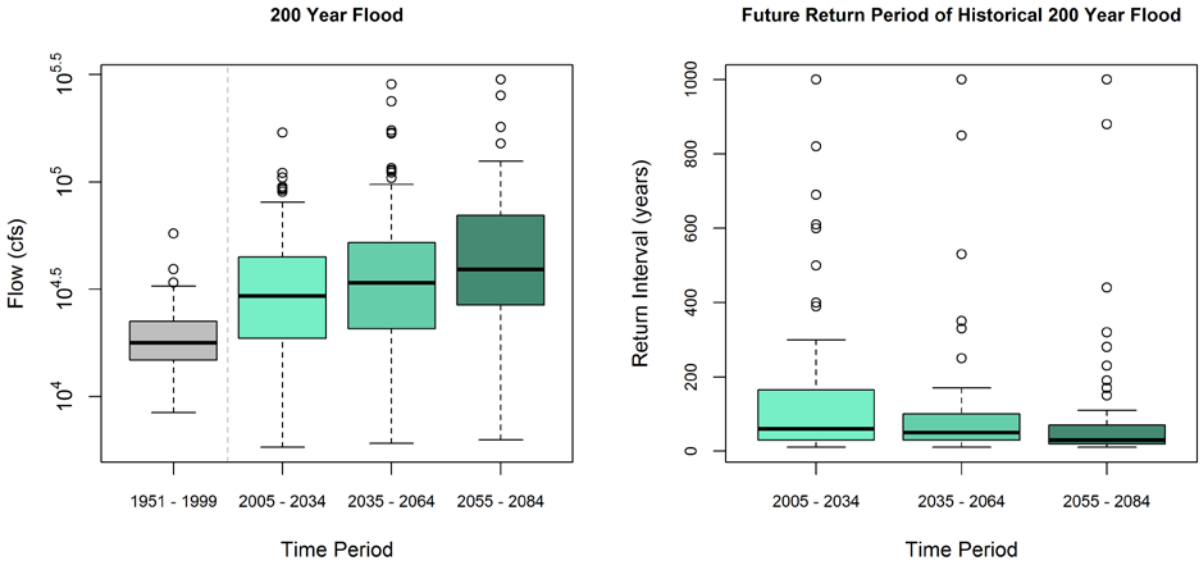


Figure 30: Station 34 Seven Oaks Dam - boxplots of 200-year flood volumes and future return periods for the median historical 200-year flood

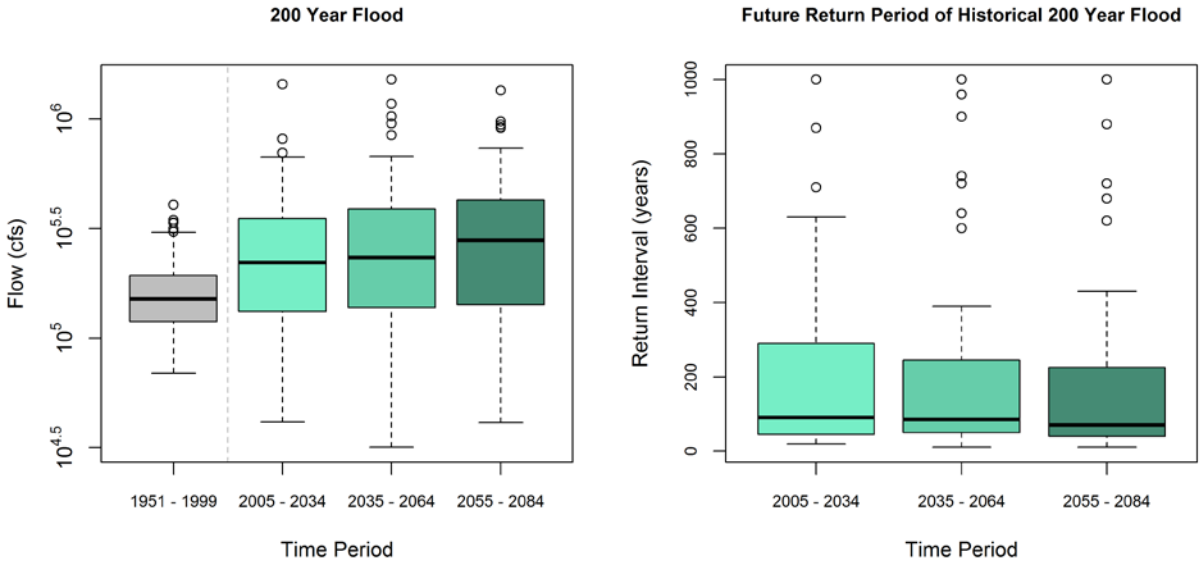


Figure 31: Station 21 Adams Street Gage - boxplots of 200-year flood volumes and future return periods for the median historical 200-year flood

Table 7: Summary of 200-year flood flows (cfs)

Station	Time Period	Percentile		
		25%	50%	75%
Prado Dam	Historical	106,289	134,170	174,018
	2020	120,616	199,623	302,401
	2050	124,369	212,392	335,621
	2070	129,706	239,359	377,660
Seven Oaks Dam	Historical	14,805	17,786	22,428
	2020	18,821	29,394	44,474
	2050	20,730	33,813	52,073
	2070	26,765	39,099	69,724
Adams Street Gage	Historical	119,084	151,084	192,357
	2020	132,923	221,375	347,943
	2050	137,749	232,974	385,438
	2070	142,980	279,004	424,881

Table 8: Summary of return periods, in years, for the median 200-year historical flood

Station	Time Period	Percentile		
		25%	50%	75%
Prado Dam	2020	48	80	260
	2050	48	80	233
	2070	40	70	205
Seven Oaks Dam	2020	30	60	163
	2050	30	50	100
	2070	20	30	70
Adam Street Gage	2020	48	90	285
	2050	50	85	243
	2070	40	70	223

Results from this analysis indicate increased risk of flooding in the future. This is demonstrated by increased 200-year flood magnitudes as well as decreased recurrence intervals for what was historically considered a 200-year flood. While these results show clear trends, it is also important to note that there is large variability between climate simulations. For the purposes of this analysis, it is assumed that all future scenarios are equally likely. Variability in the results reflects large underlying uncertainties with GCM outputs and downscaling methodologies. Additionally, the quality of results is necessarily limited by the ability of the VIC model to accurately generate flood flows from forcing data. While these constraints are acknowledged, it should be noted that this analysis follows standard methodologies and utilizes the best available input data.

4.5 Sea Level Rise Impacts

4.5.1 Background

Climate change will contribute to global sea level rise (SLR) through melting of glaciers and ice caps and thermal expansion of ocean waters, both of which increase the volume of water in the oceans. Regional SLR may be higher or lower than global SLR due to effects of regional ocean and atmospheric circulation.

California's 2,000 miles of coastline has experienced just under eight inches of sea level rise over the past decade (Cayan et al., 2009), a number that is likely to increase drastically as the climate continues to change. Critical infrastructure, such as roads, hospitals, schools, emergency facilities, wastewater treatment plants, power plants, and more will also be at increased risk of inundation, as are vast areas of wetlands and other natural ecosystems.

Flooding and erosion already pose a threat to communities along the California coast and there is compelling evidence that these risks will increase in the future. In areas where the coast erodes easily, sea level rise will likely accelerate shoreline recession due to erosion. Erosion of some barrier dunes may expose previously protected areas to flooding.

4.5.2 Methodology

Orange County Water District (OCWD) conducted a study to evaluate the potential effects of projected sea level rise on coastal Orange County groundwater conditions. Two locations were selected near the Talbert and Alamitos injection barriers, shown in Figure 32.

Projected sea level rise scenarios were developed by the California Climate Change Center (Cayan et al., 2009). For this analysis, the moderate projected sea level rise along the California coast was used. The projected time horizon or year is not critical for the model runs (described below), but rather just the sea level rise amount. Therefore, to bracket the entire range of projected moderate case sea

level rise values, OCWD chose to model a low end of 0.5 feet and an upper end of 3 feet. Separate model runs were conducted for these two sea level rise cases, both for the Talbert Barrier area using the basin model and for the Alamitos Barrier area using the Alamitos Barrier flow model.

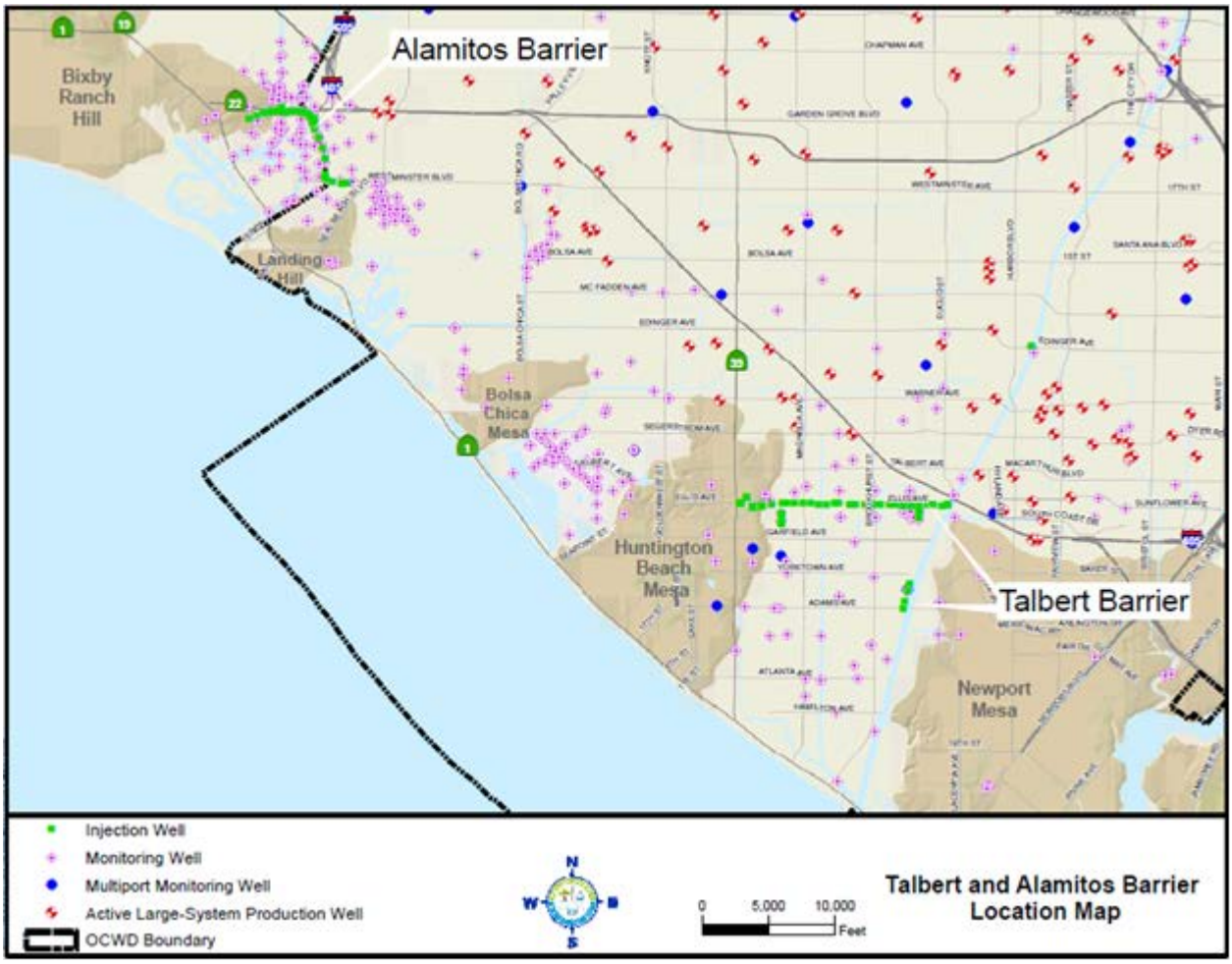


Figure 32: Locations selected for OCWD analysis

The model encompasses the entire basin and extends approximately three miles west into the Central Basin of Los Angeles County. The model grid cells are 500 by 500 feet and have vertical dimensions ranging from approximately 50 to 1,800 feet, depending on the thickness of each model layer at that grid cell location. The model accounts for time varying specified head boundaries, pumping rates, and recharge rates.

Model input data were obtained from well logs, aquifer pump tests, groundwater elevation measurements, hand-drawn contour maps, geologic cross sections, water budget spreadsheets, and other data stored in the OCWD Water Resources Management System (WRMS) database. The basin model was calibrated to transient conditions to achieve an acceptable match between simulated and actual observed conditions using monthly flow and water level data for the period 1990-1999.

4.5.3 Results

Increasing temperatures will melt ice sheets and glaciers and cause thermal expansion of ocean water, both of which will increase the volume of water in the oceans and thus contribute to global mean SLR. Regional SLR may be higher or lower than global mean SLR due to regional changes in atmospheric and ocean circulation patterns. Figure 33 shows the range of projected global mean SLR by 2100. Regional mean sea level along the Southern California coast is projected to rise by 40-300 mm (1.5-12 in) by 2030, 125-610mm (5-24 in) by 2050, and 405-1675 mm (16-66 in) by 2100.

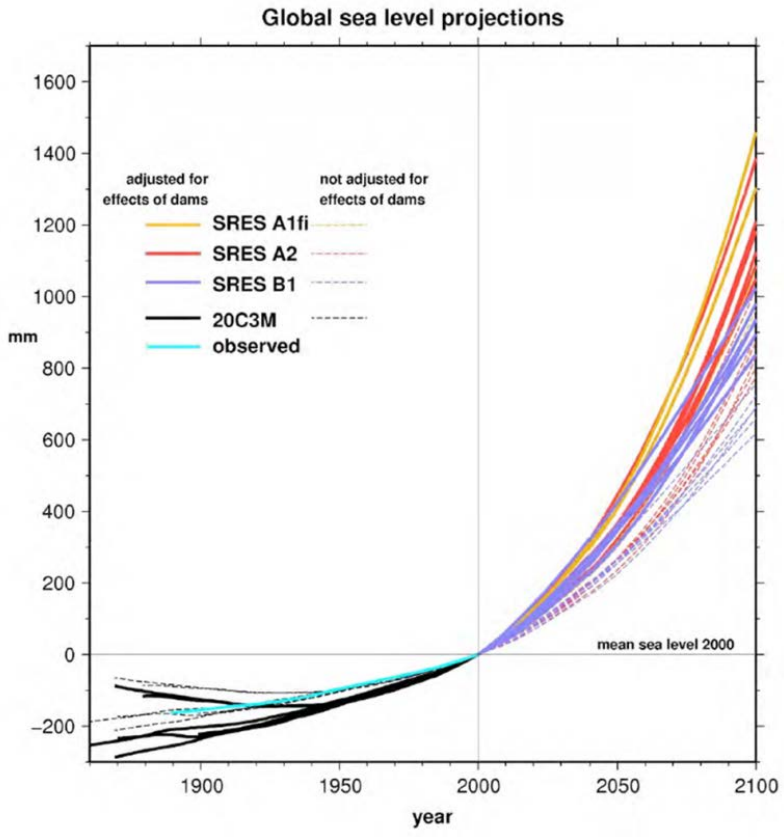
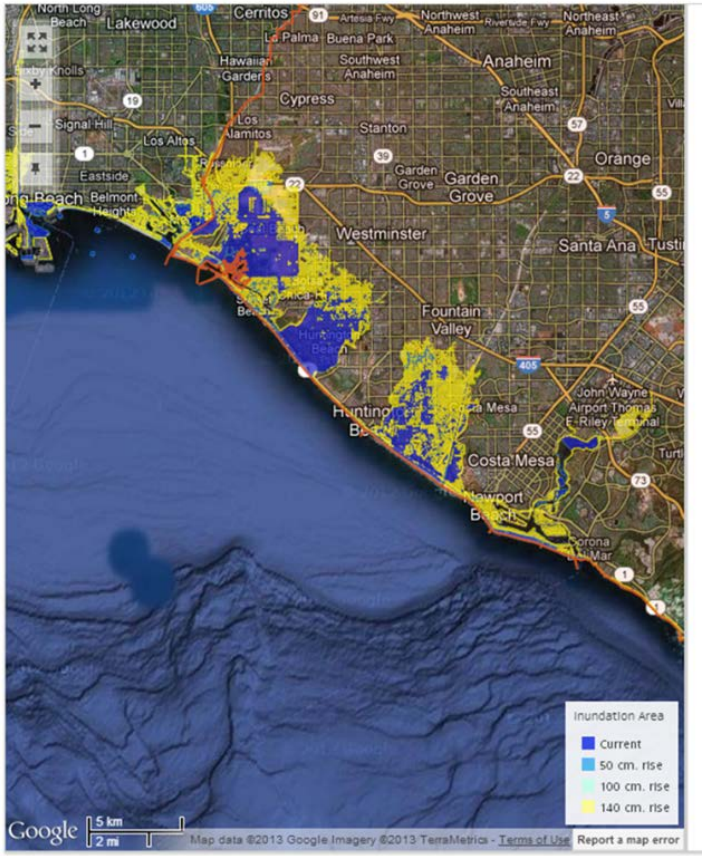


Figure 33: Projections of global mean sea level rise

Inundation due to SLR is likely to reduce the area of beaches and wetlands along the Southern California coast. In addition, SLR is likely to increase erosion of sea cliffs, bluffs, sand bars, dunes, and beaches along the California coast. However, the overall effects of climate change on local beaches will depend on changes in coastal ocean currents and storm intensities, which are less certain at this time. SLR is likely to increase the coastal area vulnerable to flooding during storm events. Figure 34 shows the areas of Orange County that are currently vulnerable to inundation due to a 100-year flood event (blue) and areas that will be vulnerable to inundation with a 1400 mm (55 in) rise in mean sea level (source: http://cal-adapt.org/sealevel/).

Detailed analysis carried out by Orange County Water District found that the Talbert Barrier would be effective at preventing seawater intrusions through the Tablert Gap under a 3-foot sea level rise. In the case of the Alamitos Barrier, seawater intrusion through the Alamitos Gap would likely be prevented once current plans to construct additional injection wells are implemented. At both barriers, however, shallow groundwater concerns could limit injection rates and thus reduce the effectiveness of barriers at preventing seawater intrusion under rising sea levels.



Source: http://cal-adapt.org/sealevel

Figure 34: Area at risk of inundation from 100-year flood event under current conditions (blue) and under 1400 mm sea level rise (yellow)

Average sea levels along the Southern California coast are projected to rise by 5 to 24 inches by 2050 and 16 to 66 inches by 2100. SLR is likely to inundate beaches and coastal wetlands and may increase coastal erosion. Effects on local beaches depend on changes in coastal ocean currents and storm intensity, which are highly uncertain at this time.

SLR will increase the area at risk of inundation due to a 100-year flood event. Existing barriers are sufficient to deter seawater intrusion at Talbert and Alamitos gaps under a 3-foot rise in sea levels. However, operation of barriers under SLR may be constrained by shallow groundwater concerns.

4.6 Decision Support and Impact Assessment Summary

A set of frequently asked questions (FAQs) were answered using the previous analyses. Those questions and the key findings are summarized below.

Will surface water supply decrease?

- Annual surface water is likely to decrease over future periods.
- Precipitation shows somewhat long-term decreasing trends.
- Temperature will increase, which is likely to cause increased water demand and reservoir evaporation.
- April 1st SWE will decrease.

Will groundwater availability be reduced?

- Groundwater currently provides approximately 54% of total water supply in an average year, and groundwater use is projected to increase over the next 20 years.
- Projected decreases in precipitation and increases in temperature will decrease natural recharge throughout the basin.
- Management actions such as reducing municipal and industrial water demands or increasing trans-basin water imports and recharge will be required in order to maintain current groundwater levels.
- A basin-scale groundwater screening tool was developed to facilitate analysis of basin-scale effects of conservation, increasing imported supply, changing agricultural land use, and other factors on basin-scale groundwater conditions.

Is Lake Elsinore in danger of drying up?

- Lake Elsinore has less than a 10% chance of drying up (2000-2099).
- In the 2000-2049 period, Lake Elsinore has a greater than 75% chance of meeting the minimum elevation goal of 1,240 ft.
- In the future period 2050-2099, Lake Elsinore has less than a 50% chance of meeting the minimum elevation goal of 1,240 ft.
- There is less than a 25% chance that Lake Elsinore will drop below low lake levels (1,234 ft) in either period.
- The Elsinore Valley Municipal Water District (EVMWD) project does aid in stabilizing lake levels; however, for the period 2050-2099 additional measures will likely be required to meet the minimum elevation goal of 1,240 ft.

Will the region continue to support an alpine climate and how will the Jeffrey Pine ecosystem be impacted?

- Warmer temperatures will likely cause Jeffrey pines to move to higher elevations and may decrease their total habitat.
- Forest health may also be influenced by changes in the magnitude and frequency of wildfires or infestations.
- Alpine ecosystems are vulnerable to climate change because they have little ability to expand to higher elevations.
- Across the State it is projected that alpine forests will decrease in area by 50-70% by 2100.

Will skiing at Big Bear Mountain Resorts be sustained?

- Simulations indicate significant decreases in April 1st snowpack that amplify throughout the 21st century.
- Warmer temperatures will also result in a delayed onset and shortened ski season.
- Lower elevations are most vulnerable to increasing temperatures.
- Both Big Bear Mountain Resorts lie below 3,000 m and are projected to experience declining snowpack that could exceed 70% by 2070.

How many additional days over 95°F are expected in Anaheim, Riverside and Big Bear City?

- All the climate projections demonstrate clear increasing temperature trends.
- Increasing temperatures will result in a greater number of days above 95°F in the future.
- The number of days above 95°F gets progressively larger for all cities advancing into the future.
- By 2070 it is projected that the number of days above 95°F will quadruple in Anaheim (4 to 16 days) and nearly double in Riverside (43 to 82 days). The number of days above 95°F at Big Bear City is projected to increase from 0 days historically to 4 days in 2070.

Will floods become more severe and threaten flood infrastructure?

- Simulations indicate a significant increase in flow for 200-year storm events in the future.
- The likelihood of experiencing what was historically a 200-year event will nearly double (i.e. the 200-year historical event is likely to be closer to a 100-year event in the future).
- Findings indicate an increased risk of severe floods in the future, though there is large variability between climate simulations.

How will climate change and sea level rise affect coastal communities and beaches?

- Climate change will contribute to global sea level rise (SLR) through melting of glaciers and ice caps and thermal expansion of ocean waters, both of which increase the volume of water in the oceans.
- Regional SLR may be higher or lower than global SLR due to effects of regional ocean and atmospheric circulation.
- Average sea levels along the Southern California coast are projected to rise by 5 to 24 inches by 2050 and 16 to 66 inches by 2100.
- SLR is likely to inundate beaches and coastal wetlands and may increase coastal erosion. Effects on local beaches depend on changes in coastal ocean currents and storm intensity, which are highly uncertain at this time.
- SLR will increase the area at risk of inundation due to a 100-year flood event.
- Existing barriers are sufficient to deter seawater intrusion at Talbert and Alamitos gaps under a 3-foot rise in sea levels. However, operation of barriers under SLR may be constrained by shallow groundwater concerns.

In order to adapt to the impacts of climate change described in this chapter, water managers need tools that enable them to make informed decisions. Reclamation has developed a tool, the Greenhouse Gas (GHG) Emissions Calculator, which can be used to inform adaptive strategies. This tool was used to conduct a demand management case study for Orange County. The tool and case study are presented in Chapter 5.

5.0 Demand Management to Inform Adaptive Strategies

5.1 Background

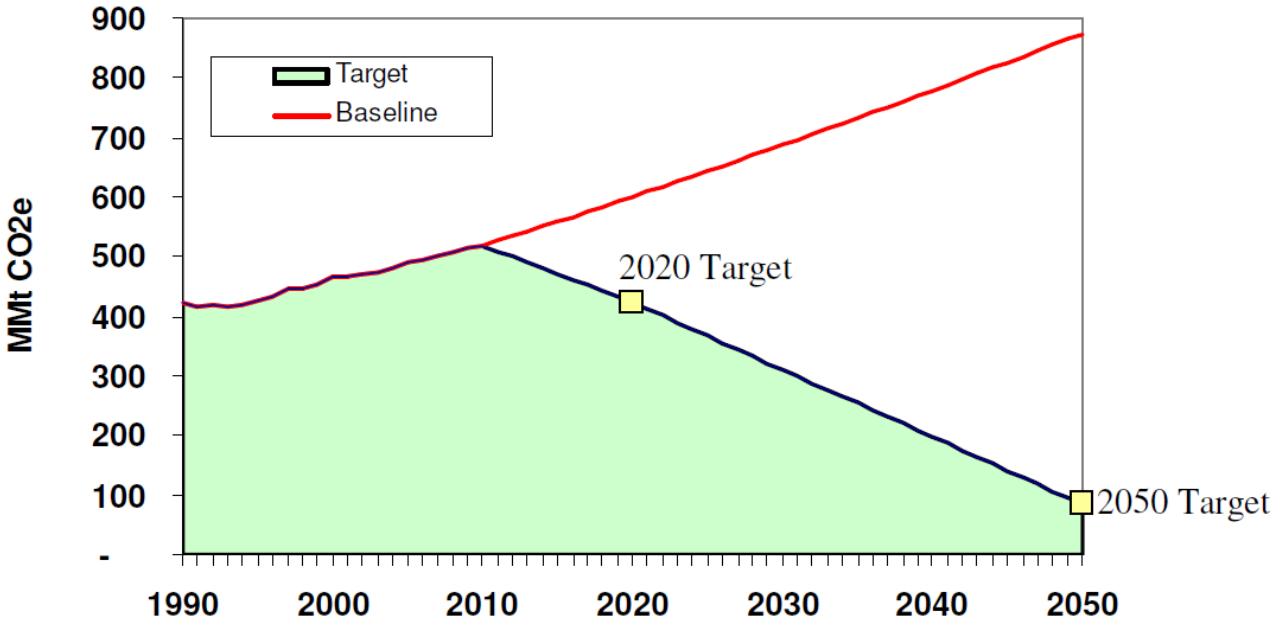
Water resource managers are currently being challenged to develop sustainable methods for adaptation and mitigation to climate change. Demands for treatment and transportation of water are increasing globally due to developments in industrial, agricultural and domestic water use, and water quality regulation (King and Webber, 2008). Large increases in energy use in the water sector are being driven by rising demand for food and bio-fuels, and their international trade, driving up irrigated cropland and cropping intensity (DOE, 2006). This estimate excludes the effects of climate change, which in many cases will put further pressure on water resources (IPCC, 2008). With increased irrigation, further development of ground water is highly likely. Declining ground water will compound energy use, as deeper wells require more carbon-intensive electric-driven pumps.

Growing populations are creating a higher water demand. In areas where water is already scarce, accelerated research will be required in order to develop sustainable mitigation and adaptation scenarios to climate change, while still meeting the demand. Consideration of alternative water supply systems, treatment technologies, or water allocation may have a tendency to overlook the carbon cost. This is particularly the case in the absence of regulatory pressure. The passing of California's Assembly Bill 32: The Global Warming Solutions Act (AB 32) is the first in a series of legislation forcing this issue to be addressed.

Climate change threatens California's natural environment, economic prosperity, public health, and quality of life (California Energy Commission, 2005; AB 32, 2006). Recognizing the need for action, California has put in place ambitious emission reduction goals in the form of AB 32. By requiring in law a reduction in GHG emissions, California has set the stage to transition to a sustainable, clean energy future, and put climate change mitigation on the national agenda, spurring action by many other states. AB 32 directly links anthropogenic GHG emissions and climate change, provides a timeline for statewide GHG emissions reduction, requires quantitative accounting of GHG emissions, and enforces disclosure of GHG emissions from ever major sector in the state.

AB 32 requires that every major sector in California reduce its GHG emissions to the 1990 levels by 2020, and to 80% below the 1990 levels by 2050, shown in Figure 35. These targets were developed from the levels of reduction climate

scientists agree is required to stabilize our climate (IPCC, 2008). The red line in Figure 35 represents the projected GHG emissions out to 2050, if no action is taken. In order to reach the GHG emissions target set by AB 32 for 2020, a reduction of approximately 30% is required from the no action scenario.



Source: http://ethree.com/documents/GHG6.10/CA_2050_GHG_Goals.pdf

Figure 35: AB 32 GHG Emission Reduction Targets

5.2 Methods

The methods used account for embodied energy and the subsequent GHG emissions of water consumption in a study area. Figure 36 illustrates the different energy consuming processes involved in the delivery and treatment of water. End-use of water is not considered in this analysis; for example, energy used for heating water in the home. The energy intensity of each of these processes, and the volume of water passing through each, will need to be known in order to accurately inventory emissions associated with water consumption. The degree to which each of the processes used to deliver water is identified, and the energy intensity of each of those processes is known, will define the accuracy of the methods for determining the GHG emissions from water consumption. Water conveyance can be the most impactful element in California. Communities in the south draw significant amounts of water from vast distances over elevated terrain.

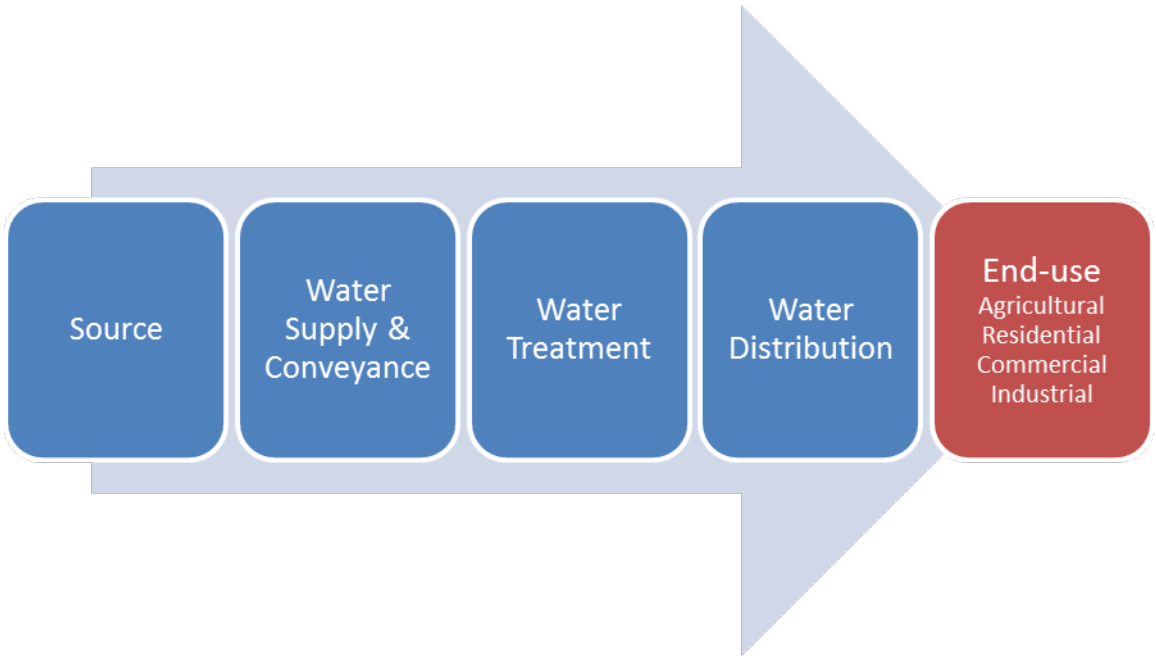


Figure 36: Energy Consuming Process in the Delivery and Treatment of Water (red not included in analysis)

Study area specific energy consumed per unit of water for each process of the water system is utilized. If site specific information is not available, southern California defaults are used. Default utility specific emission factors were obtained from the California Climate Action Registry Power/Utility Protocol reports. Annual average electricity emission factors came from the California Air Resources Board Greenhouse Gas Inventory (2007), and eGRID (2009).

Equation 2 depicts how total annual CO_2e emissions are calculated:

Annual CO_2e emissions = Extraction + Conveyance + Treatment + Distribution…….**Eq. 2**

Where:

Extraction =

$$\Sigma\,(\text{Source Percentage} * \text{Population} * \text{per capita Use} * \text{Process Energy Intensity}_{\text{GW Extraction}}) * \text{Energy Emissions Factor} * \text{Unit Conversions}$$

$$\text{Conveyance} = \Sigma\left(\text{Source Percentage} * \text{Population} * \text{per capita Use} * \text{Process Energy Intensity}_{\text{Conveyance}}\right) * \text{Energy Emissions Factor} * \text{Unit Conversions}$$

$$\text{Treatment} = \Sigma\left(\text{Source Percentage} * \text{Population} * \text{per capita Use} * \text{Process Energy Intensity}_{\text{Treatment}}\right) * \text{Energy Emissions Factor} * \text{Unit Conversions}$$

$$\text{Distribution} = \Sigma\left(\text{Source Percentage} * \text{Population} * \text{per capita Use} * \text{Process Energy Intensity}_{\text{Distribution}}\right) * \text{Energy Emissions Factor} * \text{Unit Conversions}$$

A GHG Emissions Calculator was developed by Reclamation to allow users to implement this method in order to easily and quickly evaluate how their water management decisions affect their water demand, energy use, and GHG emissions. A full technical report on the GHG Emissions Calculator will be published by fall 2013.

5.3 Application

In February 2008, California Governor Schwarzenegger directed state agencies to develop a plan to reduce statewide per capita urban water use by 20% by the year 2020. The GHG Emissions Calculator was used to evaluate whether this conservation measure alone would be enough to meet AB 32 targets (shown in Figure 35) in Orange County. The results show that a 20% reduction by the year 2020 allows Orange County to meet the 2020 target (back to 1990 levels), but do not meet the 2050 target of 80% below 1990 levels, as shown in Figure 37.

A 20% reduction in per capita water use every 10 years from 2020 to 2050 was evaluated in the GHG Emissions Calculator. These additional conservation measures only reach 50% below the 1990 GHG emission levels, as shown in Figure 38. In order to reach the AB 32 2050 target of 80% below the 1990 levels of GHG emissions through conservation alone, a per capita water use reduction of an additional 10% each decade would need to be achieved, results of which are shown in Figure 39. This level of conservation, shown in Table 9, may not be feasible for the area. In Figure 40, the three conservation scenarios described above are compared to the no action scenario, a task easily accomplished by the GHG Emissions Calculator. The GHG Emissions Calculator can also be used to

evaluate additional measures to reduce GHG emissions including changes to water supply portfolio, graywater reuse, and rainwater harvesting among many others. It is likely that a combination of measures will be required to meet the GHG emission reduction targets laid out in AB 32.

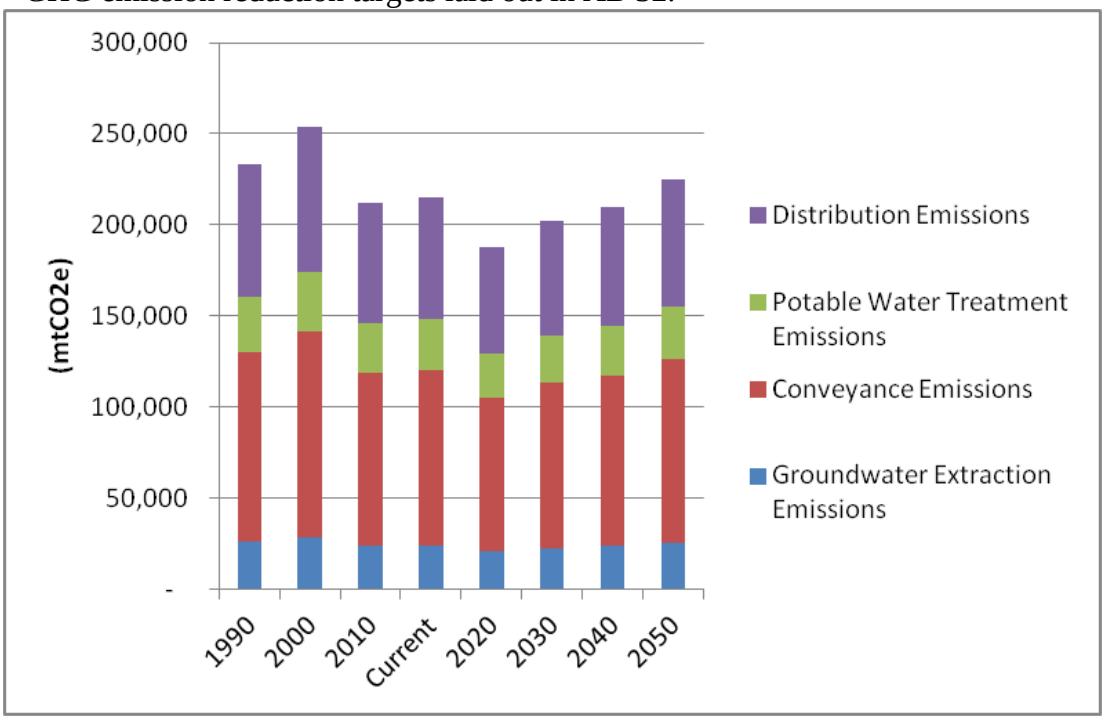


Figure 36: Conservation for Orange County to meet a 20% reduction in GHG emissions by 2020 (also referred to as 20x2020)

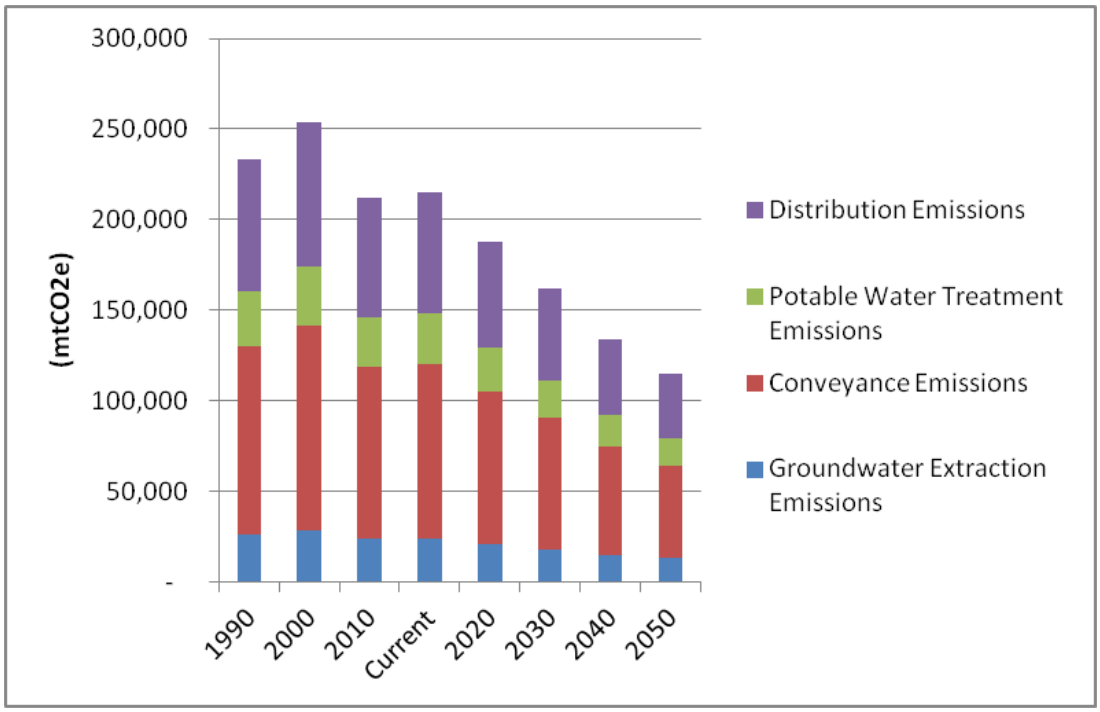


Figure 37: GHG emissions resulting from a 20% reduction in per capita water use every 10 years from 2020 to 2030 for Orange County

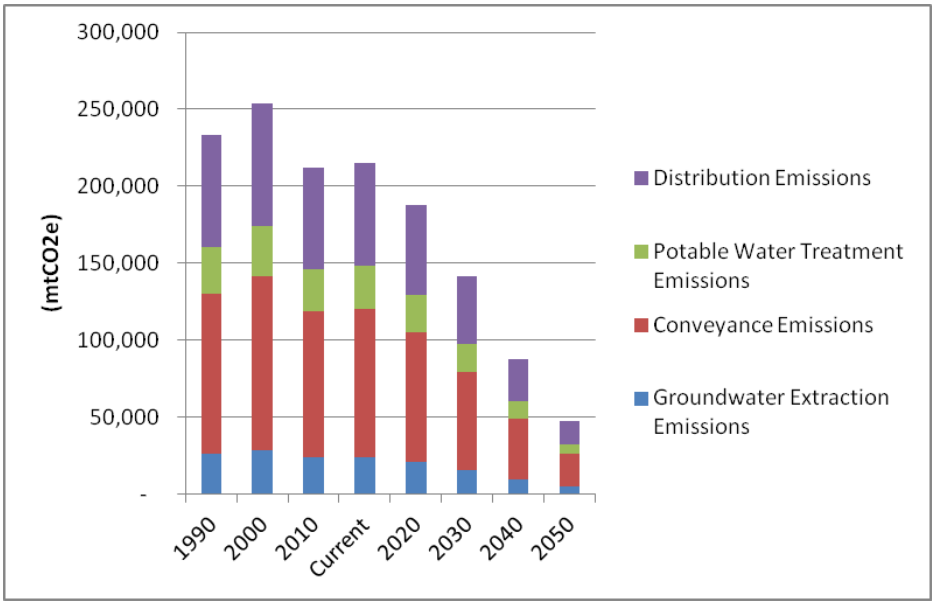


Figure 38: GHG emissions resulting from reductions in per capita water use shown in Table 9 for Orange County

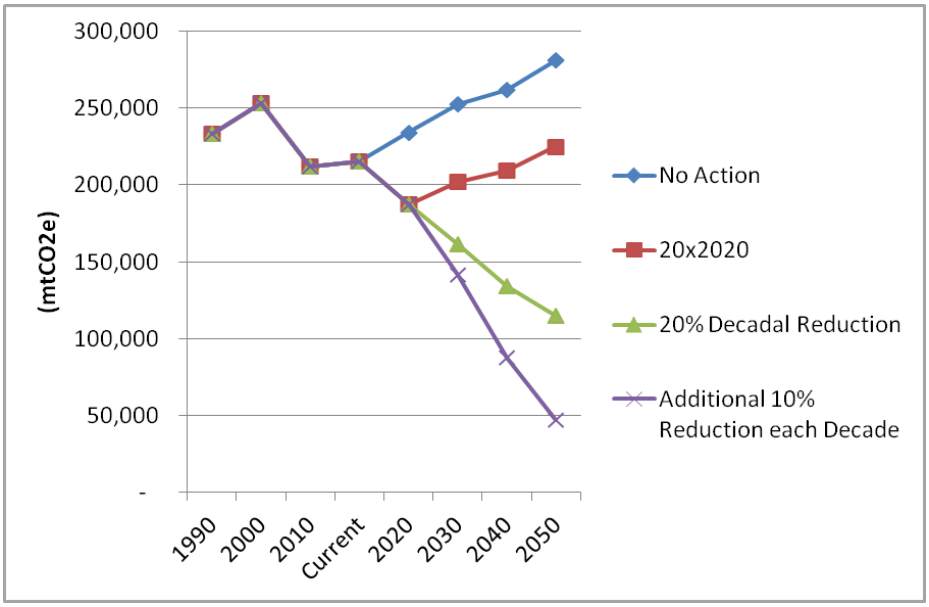


Figure 39: Comparison of GHG emissions resulting from conservation scenarios

Table 9: Conservation measures required to meet AB 32 2050 target

Historical and Projected Per Capita Water Use							
	1990	2000	2010	2020	2030	2040	2050
Per Capita Water Use (gpd)	240	221	175	140	98	59	29
Decadal Conservation Rate		-8%	-21%	-20%	-30%	-40%	-50%

6.0 Uncertainties

This analysis was designed to take advantage of best available datasets and modeling tools and to follow methodologies documented in peer-reviewed literature. However, there are a number of analytical uncertainties that are not reflected in study results, including uncertainties associated with the following analytical areas that can be grouped under two categories: climate projection information and assessing hydrologic impacts that inform many of the Basin Study FAQs.

6.1 Climate Projection Information

6.1.1 Global Climate Forcing

Although surface water hydrologic projections often consider future climate projections representing a range of future greenhouse emission paths, the uncertainties associated with these pathways are often not explored. Such uncertainties include those introduced by assumptions about technological and

economic developments, globally and regionally; how those assumptions translate into global energy use involving GHG emissions; and biogeochemical analysis to determine the fate of GHG emissions in the oceans, land, and atmosphere. Also, not all the uncertainties associated with climate forgings are associated with GHG assumptions. Considerable uncertainty remains associated with natural forcings, with the cooling influence of aerosols being regarded as the most uncertain on a global scale (e.g., figure SPM-2 in IPCC 2007).

6.1.2 Global Climate Simulations

While the activity presented in this report considers climate projections produced by state-of-the-art coupled ocean-atmosphere climate models, there are still uncertainties about the scientific understanding of physical processes that affect climate. For example, how to represent such processes in GCMs (e.g., atmospheric circulation, clouds, ocean circulation, deep ocean heat update, ice sheet dynamics, sea level, land cover effects from water cycle, vegetative, and other biological changes); and how to do so in a mathematically efficiently manner, given computational limitations. Still, these models have shown an ability to simulate the influence of increasing GHG emissions on global climate (IPCC 2007).

6.1.3 Climate Projection Bias Correction

Surface water hydrologic projections inherit GCM biases toward being too wet, too dry, too warm, or too cool. Such systematic biases in GCMs should be identified and accounted for through bias-correction of climate projections, prior to use in impacts studies. Bias correction of climate projections data affects results on incremental runoff and water supply response.

6.1.4 Climate Projection Spatial Downscaling

The Basin Study uses projections that have been spatially disaggregated on a monthly time step (following GCM bias correction on a monthly time step). Although this technique has been used to support numerous water resources impacts studies (e.g., Van Rheenan et al., 2004; Maurer, 2007; Anderson et al., 2008; Reclamation, 2008; Reclamation, 2010; Elsner et al., 2010), uncertainties remain about the limitations of empirical downscaling methodologies. One potential limitation relates to how empirical methodologies require historical reference information use on spatial climatic patterns at the downscaled spatial resolution. These finer-grid patterns are implicitly related to historical large-scale atmospheric circulation patterns, which presumably would change somewhat with global climate change. Application of the historical finer-grid spatial patterns to guide downscaling of future climate projections implies an assumption that the historical relationship between finer-grid surface climate patterns and large-scale atmospheric circulation is still valid under the future climate. In other words, the relationship is assumed to have statistical stationarity, meaning the joint probability distribution does not change when shifted in time or space. In actuality, it is possible that such stationarity will not hold at various space and time scales, over various locations, and for various climate variables. However,

the significance of potential non-stationarity in empirical downscaling methods, and the need to utilize alternative downscaling methodologies remains not well understood.

6.2 Assessing Hydrologic Impacts

6.2.1 Generating Weather Sequences Consistent with Climate Projections

The temporal disaggregation method developed first by Wood et al., (2002), was used in this Basin Study to translate monthly BCSD climate projections into daily VIC weather forcings. However, other techniques might have been considered. Choice of weather generation technique depends on aspects of climate change that are being targeted in a given study. Preference among available techniques remains to be established. Various characteristics, such as that the resampling approach, does not allow daily temperature ranges to vary from those selected with the sample, make the disaggregation approach unsuitable for studies focusing on potential changes in the diurnal range of temperature. In contrast, it may be sufficient for monthly time step hydrological assessments if the disaggregation is performed with thoughtful sampling constraints.

6.2.2 Natural Runoff Response

This Basin Study analyzes natural runoff response to changes in precipitation, temperature, and change in natural vegetation PET while holding other watershed features constant. Other watershed features might be expected to change as climate changes and affects runoff (e.g., vegetation affecting evapotranspiration and infiltration, etc.). On the matter of land cover response to climate change, the runoff models' calibrations would have to change if land cover changed, because the models were calibrated to represent the historical relationship between weather and runoff as mediated by historical land cover. Adjustment to watershed land cover and model parameterizations are difficult to consider due to lack of available information to guide such an adjustment. Eco-hydrological frameworks, perhaps involving dynamic vegetation response, may be suitable to represent such land surface changes for studies in which such sensitivities are important.

6.2.3 Hydrologic Modeling

The hydrology model used in the Basin Study excludes ground water interaction with surface water systems. The fate of precipitation is modeled as loss only to runoff and evapotranspiration; and loss of precipitation to deep percolation and return flows to stream channel networks are not considered in the VIC hydrology model. The groundwater impacts in the basin are simulated using a simplified tool.

6.2.4 Bias and Calibration

Where the VIC applications have been calibrated, they can reproduce historical natural streamflow with little bias. Where the VIC applications have not been

calibrated, they can exhibit significant bias. The location-specific implications of calibration, or lack thereof, on the conclusions of the study have not been quantified.

6.2.5 Time Resolution of the Applications

Simulations were conducted at daily time steps, while the applications were calibrated to reproduce monthly and annual runoff characteristics at a subset of locations in the basin. For this reason, users should cautiously interpret the daily hydrologic information coming from these simulations. The daily runoff information is physically consistent with assumed weather forcings and hydrologic model structure; however, there could be significant simulation biases at the submonthly level.

7.0 References

Anderson, J., F. Chung, M. Anderson, L. Brekke, D. Easton, M. Ejeta, R. Peterson, and R. Snyder. 2008. "Progress on Incorporating Climate Change into Management of California's Water Resources." Climatic Change, Springer, Netherlands, Volume 89, Supplement 1, pp. 91–108. Published online December 22, 2007. ISSN: 0165-0009 (Print) 1573–1480 (Online) DOI: 10.1007/s10584-007-9353-1.

Anning, David W., 2011. "Modeled Sources, Transport, and Accumulation of Dissolved Solids in Water Resources of the Southwestern United States." Journal of the American Water Resources Association (JAWRA) 1-23. DOI: 10.1111/j.1752-1688.2011.00579.x

Baldocchi, D., and S. Wong. 2006. An Assessment of the Impacts of Future CO2 and Climate on California Agriculture. Prepared for California Energy Commission Public Interest Energy Research Program, Project Report CEC-500-2005-187-SF.

Page Intentionally Left Blank

Barnett, T.P., D.W. Pierce, H.G. Hidalgo, C. Bonfils, B.D. Santer, T. Das, G. Bala, A. Wood, T. Nazawa, A. Mirin, D. Cayan, and M. Dettinger. 2008. "Human-induced changes in the hydrology of the Western United States." Science, 319(5866), 1080–1083, doi:10.1126/science.1152538.

Bonfils, C., P.B. Duffy, B.D. Santer, T.M.L. Wigley, D.B. Lobell, T.J. Phillips, and C. Doutriaux. 2007. "Identification of External Influences on Temperatures in California," Prepared for California Energy Commission Public Interest Energy Research Program, Project Report CEC-500-2007-047.

Bonfils, C., D.W. Pierce, B.D. Santer, H. Hidalgo, G. Bala, T. Das, T. Barnett, C. Doutriaux, A.W. Wood, A, Mirin, and T. Nazawa. 2008. "Detection and attribution of temperature changes in the mountainous Western United States." Journal of Climate 21(23): 6404–6424, doi:10.1175/ 2008JCLI2397.1.

Brekke, L.D., E.P. Maurer, J.D. Anderson, M.D. Dettinger, E.S. Townsley, A. Harrison, and T. Pruitt. 2009b. "Assessing Reservoir Operations Risk under Climate Change." Water Resour. Res., doi:10.1029/ 2008WR006941

Bromirski, Miller, Flick, Auad, "Dynamical Suppression of Coastal Sea Level Rise." JGRC, sub. Oct. 2010, rev. 1 Jan. 2011, rev. 2 Mar. 2011.

Burkett, V., and J. Kusler. 2000. Climate Change: "Potential Impacts and Interactions in Wetlands of the United States." Journal of the American Water Resources Association. Vol. 36, No. 2, p.313–320, 10.1111/j.1752-1688.2000.tb04270.x.

California Department of Water Resources (2009). "California State Water Project Overview." California Department of Water Resources, <http://www.water.ca.gov/swp/>, (October 21, 2009).

California Energy Commission (2003). " California Agricultural Water Electrical Energy Requirements." California Energy Commission, Sacramento, Ca.

California Energy Commission (2005). "California's Water-Energy Relationship." California Energy Commission, Sacramento, Ca.

California Energy Commission (2006). "Refining Estimates of Water-Related Energy in California." California Energy Commission, Sacramento, Ca.

California Department of Forestry and Fire Protection, Fire and Resource Assessment Program. 2010. California's Forests and Rangelands: 2010 Assessment. Chapter 3.7. http://frap.fire.ca.gov/assessment2010.html.

Cayan, D.R., S.A. Kammerdiener, M.D. Dettinger, J.M. Caprio, and D.H. Peterson. 2001. "Changes in the Onset of Spring in the Western United States." Bulletin of the American Meteorology Society 82(3): 399–415.

Cayan D, M Tyree, M Dettinger, H Hidalgo, T Das, E Maurer, P Bromirski, N Graham, R Flick (2009). Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment. California Climate Change Center, California Energy Commission Paper No. CEC-500-2009-014-D.

CCSP (Climate Change Science Program). 2009. Thresholds of Climate Change in Ecosystems. A report by the U.S. Climate Change Science Program and the subcommittee on Global Change Research. Fagre, D.B., C.W.

Christensen, N.S. and D.P. Lettenmaier. 2007. "A multimodel ensemble approach to assessment of climate change impacts on the hydrology and water resources of the Colorado River basin," *Hydrology and Earth System Sciences*, 11, 1417-1434.

Christensen, N.S., A.W. Wood, D.P. Lettenmaier, and R.N. Palmer. 2004. "Effects of climate change on the hydrology and water resources of the Colorado river basin," *Climate Change*, 62(1-3), 337-363

City of Santa Ana. 2006. "Santa Ana River Vision Plan: History of the Santa Ana River," Adopted June 13, 2006.

Crookston, N. L. 2009. “Species-Climate Profile for Jeffrey Pine.” Tree Species Climate Profiles. Moscow Forestry Sciences Laboratory. http://forest.moscowfsl.wsu.edu/climate/species/index.php.

Crookston, N. L. G.E. Rehfeldt, G.E. Dixon, A.R. Weiskittel. 2010. “Addressing Climate Change in the Forest Vegetation Simulator to Assess Impacts on Landscape Forest Dynamics.” Forest Ecology and Management. Moscow Forestry Sciences Laboratory http://www.fs.fed.us/rm/pubs_other/rmrs_2010_crookston_n001.pdf

Dai,"A."(2011)."Drought"under"global"warming:"a"review."Wiley"Interdisciplinary"Reviews:"Climate"Change,"2: 45–65." doi: 10.1002/wcc.81

Das, T., H.G. Hidalgo, M.D. Dettinger, D.R. Cayan, D.W. Pierce, C. Bonfils, T.P. Barnett, G. Bala, and A. Mirin. 2009. “Structure and Detectability of Trends in Hydrological Measures over the Western United States.” Journal of Hydrometeorology, Vol. 10, doi:10.1175/2009JHM1095.1.

Dettinger, M.D., and D.R. Cayan. 1995. “Large-scale Atmospheric Forcing of Recent Trends toward Early Snowmelt Runoff in California.” Journal of Climate, Vol. 8(3).

DOE (2006). “Energy Demands on Water Resources: Report to Congress on the Interdependency of Energy and Water.” United States Department of Energy.

Federal Emergency Management Agency (FEMA). 2007. “Guidelines and specifications for flood hazard mapping partners: Atlantic Ocean and Gulf of Mexico coastal guidelines update,” FEMA Region VI, FEMA Headquarters.

Ficke, A.D., C.A. Myrick, and L.J.Hansen. 2007. “Potential impacts of global climate change fisheries.” Reviews in Fish Biology and Fisheries, 17(4): 581–613, 10.1007/s11160-007-9059-5.

Gershunov, A., D.R. Cayan, and S.F. Iacobellis. 2009. “The Great 2006 heat wave over California and Nevada: Signal of an Increasing Trend.” J. Climate., 22(23), 6181–6203.

Gershunov, A., and K. Guirguis (2012), California heat waves in the present and future, Geophys. Res. Lett.,39, L18710, doi:10.1029/2012GL052979.

Griffis, V. W. and Stedinger, J. R. 2007. “Incorporating Climate Change and Variability into Bulletin 17B LP3 Model,” World Environmental and Water Resources Congress 2007: Restoring Our Natural Habitat, American Society of Civil Engineers, 8 pp.

Haak, A.L., J.E. Williams, D. Isaak, A. Todd, C. C. Muhlfeld, J.L. Kershner, R. Gresswell, S. Hostetler, and H. Neville. 2010In review. "The potential influence of changing climate on the persistence of western trout and grayling." USGS Open File Report, Reston, Virginia, USA.

Hall, Alex; Sun, Fengpeng; Walton, Daniel; Capps, Scott; Qu, Xin; Huang, Hsin-Yuan; et al.(2012). Mid-Century Warming in the Los Angeles Region - Part I of the "Climate Change in the Los Angeles Region" projec. UC Los Angeles: Institute of the Environment and Sustainability. http://www.escholarship.org/uc/item/6v88k76b

Hamlet, A.F., and D.P. Lettenmaier. 2007. "Effects of 20th century warming and climate variability on flood risk in the Western United States." Water Resources Research 43, W06427, doi:10.1029/2006WR005099.

Harou, J.J., J. Medellín-Azuara, T. Zhu, S.K. Tanaka, J.R. Lund, S. Stine, M.A. Olivares, and M.W. Jenkins. 2010. "Economic consequences of optimized water management for a prolonged, severe drought in California." Journal of Water Resources Research, Vol. 46, W05522, doi:10.1029/2008WR007681.

Hayhoe, K. et al., 2004. Emissions pathways, climate change, and impacts on California. PNAS, 101:34, pp 12422-12427.

Hidalgo,H., D. Cayan, and M. Dettinger. 2005. "Sources of Variability of Evapotranspiration in California." Journal of Hydrometeorology 6: 3–19.

Hidalgo H.G., T. Das, M.D. Dettinger, D.R. Cayan, D.W. Pierce, T.P. Barnett, G. Bala, A. Mirin, A.W. Wood, and C. Bonfils. 2009. "Detection and Attribution of Streamflow Timing Changes to Climate Change in the Western United States." Journal of Climate 22(13): 3838, doi:10.1175/ 2008JCLI2470.1.

Hiltner, N. 2010. "Santa Ana River was wests greatest flood hazard," The press Enterprise, August 21, 2010.

Hoerling, M., and J. Eischeid. 2007. "Past Peak Water in the Southwest." Southwest Hydrology, 6(1):18–19: 35.

Hoerling M., J. Eischeid, and J. Perlwitz. 2010. "Regional Precipitation Trends: Distinguishing Natural Variability from Anthropogenic Forcing." Journal of Climate (in press).

Hosking, J.R.M. and J.R. and Wallis. 1997. "Regional Frequency Analysis: An Approach Based on L-moments," Cambridge University Press. ISBN 0-521-43045-3.

Interagency Committee on Water Data (IACWD). (1982). "Guidelines for determining flood flow frequency." Bulletin No. 17B (revised and corrected), Hydrology Subcommittee, Washington, D.C. Read More: http://ascelibrary.org/doi/ref/10.1061/%28ASCE%291084-0699%282007%2912%3A3%28283%29

[IPCC] Intergovernmental Panel on Climate Change, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia

[IPCC] Intergovernmental Panel on Climate Change, The Physical Science Basis, Fourth Assessment, Working Group I Report (2007).

[ICLEI] ICLEI-Local Governments for Sustainability, Draft International Local Government GHG Emissions Analysis Protocol (April 21, 2008).

L., Miwa K., Ngara T. and Tanabe K. (eds) (2006). Katz, R. and Naveau, P. 2002. "Statistics of extremes in hydrology," *Advances in water Resource*s, 25, 1287-1304.

King C W and Webber M E 2008 Water intensity of transportation Environ. Sci. Technol. 42 7866-72

Knowles, N., M. Dettinger, and D. Cayan. 2007. Trends in Snowfall Versus Rainfall for the Western United States, 1949–2001. Prepared for California Energy Commission Public Interest Energy Research Program, Project Report CEC-500-2007-032.

Knowles, N. 2010. "Potential Inundation Due to Rising Sea Levels in the San Francisco Bay Region." California Climate Change Center. San Francisco Estuary and Watershed Science, 8(1).

Kunkel, K.E., D.R. Easterling, K. Redmond, and K. Hubbard. 2003. "Temporal variations of estreme precipitation events in the United States: 1895–2000." Geophysical Research Letters, Vol. 30, No. 17, 1900, doi:10.1029/2003GLO18052, 2003.

Lenihan, J. M., D. Bahelet, D. P. Nielson, R. Drapek. 2008. *Response of vegetation distribution, ecosystem productivity, and fire to climate change scenarios for California.* Climate Change, 87 (supply 1), pp. S215-S230. Doi 10.1007/s10584-007-9362-0.

Liang, X., D.P. Lettenmaier, E.F. Wood, and S.J. Burges. 1994. "A simple hydrologically based model of land surface water and energy fluxes for general circulation models," *Journal of Geophysical Research,* 99(D7), 14415-14428.

Liang, X., E.F. Wood, and D.P. Lettenmaier. 1996. "Surface soil moisture parameterization of the VIC-2L model: Evaluation and modifications," *Glob Planet Change*, 13" 195-206.

Lohmann, D., E. Raschke, B. Nijssen, and D.P. Lettenmaier, 1998: Regional scale hydrology: I. Formulation of the VIC-2L model coupled to a routing model. Hydrol. Sci. J., 43, 131-141.

Lundquist, J.D., M.D. Dettinger, I.T. Stewart, and D.R. Cayan. 2009. "Variability and Trends in Spring Runoff in the Western United States." Climate warming in western North America—Evidence and environmental effects, University of Utah Press. pp. 63-76.

Madsen, T., and E. Figdor. 2007. "When It Rains It Pours - Global Warming and the Rising Frequency of Extreme Precipitation in the United States." Environment America Research and Policy Center. Available online at http://www.environmentamerica.org/uploads/oy/ws/oywshWAwZy-EXPsabQKd4A/When-It-Rains-It-Pours----US---WEB.pdf.

Maurer, E.P., L. Brekke, T. Pruitt, and P.B. Duffy. 2007. "Fine-resolution climate projections enhance regional climate change impact studies," Eos Trans. AGU, 88(47), 504.

Maurer, E.P., L.D. Brekke, and T. Pruitt. 2010. "Contrasting lumped and distributed hydrology models for estimating climate change impacts on California watersheds," *Journal of the American Water Resources Association* (JAWRA) 46(5):1024–1035. DOI: 10.1111/j.1752-1688.2010.00473.x.

Elsner, M., L. Cuo, N. Voisin, J.S. Deems, A.F. Hamlet, J.A. Vano, K.E.B. Mickelson, S.Y. Lee, and D.P. Lettenmaier. 2010. "Implications of 21st century climate change for the hydrology of Washington State," *Climatic Change*, DOI:10.1007/s10584-010-9855-0.

Moore, L. M. 2006. Jeffrey Pine Plant Guide. United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS)

Moser, S., G. Franco, S. Pittiglio, W. Chou, and D. Cayan. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy-Related Environmental Research Program, CEC-500-2008-071.

Mote, P.W., A.F. Hamlet, and E.P. Salathé. 2008. "Has spring snowpack declined in the Washington Cascades?" Hydrology and Earth System Sciences 12: 193–206.

Nijssen, B., D.P. Lettenmaier, X. Liang, S.W. Wetzel, and E.F. Wood. 1997. "Streamflow simulation for continental-scale river basins," *Water Resour. Res.,* 33, 711-724.

Null, S.E., J.H. Viers, and J.F. Mount. 2010. "Hydrologic Response and Watershed Sensitivity to Climate Warming in California's Sierra Nevada." PLoS One. Vol. 5(4): e9932, doi:10.1371/journalpone.0009932.

Payne, J.T., A.W. Wood, A.F. Hamlet, R.N. Palmer, and D.P. Lettenmaier. 2004. "Mitigating the effects of climate change on the water resources of the Columbia River basin," *Climate Change*, 62(1-3):233-256.

Peterson, D.H., I. Stewart, and F. Murphy. 2008. "Principal Hydrologic Responses to Climatic and Geologic Variability in the Sierra Nevada, California." San Francisco Estuary and Watershed Science 6(1): Article 3.

Pierce, D.W., T. Barnett, H. Hidalgo, T. Das, C. Bonfils, B.D. Santer, G. Bala, M. Dettinger, D. Cayan, A. Mirin, A.W. Wood, and T. Nazawa. 2008. "Attribution of declining Western U.S. snowpack to human effects." Journal of Climate 21(23): 6425–6444, doi:10.1175/2008JCLI2405.1.

Pierce D., Das T., Cayan D., Maurer., Miller M., Bao Y., Kanamitsu M., Yoshimura K., Snder M., Sloan M., Franco G., Tyree M. 2011. "Probabilistic estimates of California climate change by the 2060s using statistical and dynamical downscaling." California Energy Commission, Contract Number: 500-07-042.

Rahmstorf, S. 2007. "A Semi-Empirical Approach to Projecting Future Sea-Level Rise." Science, 315: 368–370.

Rauscher, S.A., J.S. Pal, N.S. Diffenbaugh, and M.M. Benedetti. 2008. "Future Changes in Snowmelt-driven Runoff Timing Over the Western United States." Geophysical Research Letters, Vol. 35, L16703, doi:10.1029/ 2008GL034424.

Reclamation. 2008. "Sensitivity of Future CVP/SWP Operations to Potential Climate Change and Associated Sea Level Rise," Appendix R in Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project. Prepared by the U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, Central Valley Operations Office, Sacramento, California. August 2008. 134 pp.

Reclamation. 2010. Climate Change and Hydrology Scenarios for Oklahoma Yield Studies, prepared by the U.S. Department of the Interior, Bureau of Reclamation, Technical Services Center, Denver Colorado. April 2010. 71 pp.

Reclamation. 2011. West-wide climate risk assessments: Bias-corrected and spatially downscaled surface water projections, Tech. Memo., 86-68210-2011-01, 138 pp., Tech. Serv. Cent., U.S. Dep. of the Inter., Denver Colo., March.

Regonda, S.K., B. Rajagopalan, M. Clark, and J. Pitlick. 2005. "Seasonal Cycle Shifts in Hydroclimatology Over the Western United States." Journal of Climate 18(2): 372–384.

Santa Ana River Mainstem Project (SARP). Web. 2013. "SARP History," ocflood.com.

Seager R., M.Ting, I. Held, Y. Kushnir, J. Lu, and G. Vecchi. 2007. "Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America." Science 316(5828): 1181–1184.

Shin, S., and P.D. Sardeshmukh. 2010. "Critical influence of the pattern of Tropical ocean warming on remote climate trends." Climate Dynamics, DOI 10.1007/s00382-009-0732-3.

Sun, Y., S.Solomon, A.Dai, and R.W. Portmann. 2007. "How Often Will It Rain?" J. Climate, 20, 4801–4818, doi: 10.1175/JCLI4263.1.

Taylor, K.E., R.J. Stouffer, and G.A. Meehl, 2011. A Summary of the CMIP5 Experiment Design. January 22, 2011, 33 p., available at: http://cmip-pcmdi.llnl.gov/cmip5/docs/Taylor_CMIP5_design.pdf.

U.S. Interagency Advisory Committee on Water Data. 1982. "Guidelines for determining flood flow frequency, Bulletin 17-B of the Hydrology Subcommittee." Reston, Virginia, U.S. Geological Survey, Office of Water Data Coordination.

Van Rheenen, N.T., A.W. Wood, R.N. Palmer, D.P. Lettenmaier. 2004. "Potential implications of PCM climate change scenarios for Sacramento-San Joaquin River Basin hydrology and water resources," *Climatic Change,* 62, 257-281

Vermeera, M., and S. Rahmstorf. 2009. "Global sea level linked to global temperature." Proceedings of the National Academy of Sciences. Available online at www.pnas.org/cgi/doi/10.1073/pnas.0907765106.

Vicuna, S., and J.A. Dracup. 2007. "The Evolution of Climate Change Impact Studies on Hydrology and Water Resources in California." Climatic Change 82(3–4): 327–350.

Vicuna, S., E.P. Maurer, B. Joyce, J.A. Dracup, and D. Purkey, 2007. "The Sensitivity of California Water Resources to Climate Change Scenarios," Journal of the American Water Resources Association 43:482-498.

Vicuna, S., J.A. Dracup, J.R. Lund, L.L. Dale, and E.P. Maurer. 2010. "Basin-scale water system operations with uncertain future climate conditions: Methodology and case studies." Journal of Water Resources Research, Vol. 46, W04505, doi:10.1029/2009WR007838, 2010.

Villarini, G., F. Serinaldi, J.A. Smith, and W.F. Krajewski. 2009. "On the stationarity of annual flood peaks in the continental United States during the 20th century." Water Resources Research, Vol. 45, W08417, doi:10.1029/2008WR007645.

Wood, A.W. , E.P. Maurer, A. Kumar, and D.P. Lettenmaier. 2002. "Long-range experimental hydrologic forecasting for the Eastern United States," J. Geophysical Research-Atmospheres, 107(D20), 4429, doi:10.1029/2001JD000659.

Wood, A.W., L.R. Leung, V. Sridhar, and D.P. Lettenmaier. 2004. "Hydrologic implications of dynamical and statistical approaches to downscaling climate model outputs," *Climate Change*, 15, 189-216.

F

Appendix F Climate Change Vulnerability Assessment Technical Memorandum

WESTERN MUNICIPAL WATER DISTRICT
Securing Your Water Supply

Technical Memorandum

To: Drought Contingency Plan Task Force

From: Drought Contingency Plan Development Team

CC: Melissa Matlock, Western Municipal Water District

Date: 4/22/2021

Re: Western Drought Contingency Plan – Climate Change Vulnerability Assessment

---

Executive Summary

This technical memorandum (memo) describes the retrieval and analysis of climate data provided by the California Department of Water Resources (DWR) to project the impact of climate change on future water supplies and demands within Western Municipal Water District's (Western) service area. The DWR climate data is assembled from the results of 20 global climate models, which best represent California's climate processes. Biases in the climate model results have been adjusted using historical hydrologic data in the state. DWR projected climate change data is most appropriate for this analysis because it is the only climate projection dataset specifically developed to meet the requirements of water resources planners in California. Western is making this memo available to its retail agencies for their use in their respective water resource planning efforts to reduce the data processing burden on individual agencies. The results are intended for use by Western and its member agencies as they prepare the 2020 updates to their Urban Water Management Plan (UWMP) and a regional Drought Contingency Plan (DCP). This technical memo provides:

- A description of the area subject to the vulnerability assessment
- A description of the analysis approach and data sources chosen for the analysis
- Narrative discussions of the climate change factors calculated for local supply and demand conditions in multiple scenarios
- Discussion of the water supply and demand projections resulting from the vulnerability assessment

Summary of Findings

Projected changes in future water supplies and water demand are analyzed during a normal year, a single dry year and multi-year (5-year) droughts over the next 20 years, using climate projections developed for the water resources planning by DWR. This analysis of future climate impacts on water supplies and demands is based on the median projected change from the majority of the climate models selected for water resources planning in California. The results of this analysis show:

- Projected decreases in water supplies from Santa Ana and Santa Margarita River basins under normal and drought conditions relative to baseline conditions in 2020, due to projected decreases

in precipitation and projected increases in surface water evaporation caused by increasing temperatures.

- Smaller decreases in projected precipitation and natural recharge under normal and multi-year drought years. However, the single dry year was slightly wetter under future conditions compared to the baseline. Precipitation will occur during shorter rainy seasons with higher intensity.
- Outdoor water uses are projected to increase under normal, single dry, and multi-year drought conditions, caused by projected temperature increases, which lead to higher evapotranspiration (ET) rates for landscaping, irrigated crops, and native vegetation.

This technical memo also includes worksheets for using the vulnerability assessment results with Western's water supplies and growth-adjusted water demand forecasts for the Western's wholesale service area.

1. INTRODUCTION

The study of climate change impacts on water resources is continuously yielding new models and updated local and regional datasets. This continuous improvement makes it necessary to narrow the selection of data sources and methods of data analysis most applicable to local conditions. The scope of this vulnerability assessment is limited to improving our understanding of climate change impacts on future water demand in Western's wholesale service area and the sources of Western's water supplies during normal and drought periods.

The following section provides the background information for the requirements of both the DCP and the UWMP, a general description of the impacts analyzed in the vulnerability assessment, and information about Western's sources of information used in the assessment.

1.1 DCP and UWMP Requirements for Climate Change Analysis

In accordance with Sections 10610 to 10657 of the California Water Code, the UWMP requires the consideration of climate change impacts for drought planning because of the significant duration of recent droughts in California. This includes an analysis of projected future uses and the reliability of anticipated water supplies during a normal year, a single dry year and drought lasting 5 consecutive dry water years. This drought risk assessment (DRA) compares projected water supply sources with projected water use over the next 20-years, in 5-year increments.

A vulnerability assessment is required as part of the DCP to understand the characteristics and potential risk of future droughts and to develop appropriate mitigation and response actions. Since future droughts cannot be predicted by observed past drought information, the inclusion of a climate change analysis is needed to provide the incorporation of historic and future climate projections to assess the hydrological impacts of climate change on drought conditions, thereby creating a more effective plan. The DCP requires either a qualitative and/or quantitative assessment of a range of potential drought conditions derived from climate change information to determine potential the risk to critical resources.

Imported water projections are also required for preparing both the UWMP and DCP. However, the imported water projections for Western's service area are being developed by Metropolitan Water District (Metropolitan) as part of their 2020 UWMP Drought Risk Assessment and the 2020 Integrated Resources Plan (IRP). The current (November 2020) draft of Metropolitan's 2020 UMWP Drought Risk Assessment indicates that no service reliability concerns are projected for imported water during normal and drought periods before 2045. For purposes of the UWMP, imported water supplies to Western can be assumed to be unchanged during normal years, single dry years and 5-year droughts.

However, the 2020 IRP considered a range of more extreme potential future scenarios, which include: low demands with stable imported supplies, high demand with stable imported supplies, low demand with reduced imported supplies, and high demand with reduced imported supplies. The analysis found that service reliability issues could occur more frequently and generate increasingly more severe deficits of imported supplies under the high future demand scenarios. Options for managing these imported water supplies deficits will be explored more extensively as part of regional analysis for the DCP.

1.2 Prior Climate Studies

Climate change is primarily caused by increasing global concentrations of greenhouse gases which lead to increases in temperature, disruption of the hydrologic cycle, and increased variability of precipitation. The regional impacts of climate change analyzed in two previous studies for the region, California's Fourth Climate Change Assessment and the United States Bureau of Reclamation (USBR) Santa Ana Watershed Study, are summarized in this section.

The state of California produces periodic assessments on the potential impacts of climate change in the state and reports on potential adaptation responses as required by Executive Order #S-03-05. California's Fourth Climate Change Assessment includes a Statewide Summary Report (Bedsworth et al., 2018), nine regional summary reports, a climate justice summary report, and over 40 technical reports which translate climate science into actionable adaptation and resilience policies and plans. The Los Angeles Regional Report (Hall et al., 2018) summarizes climate science, impacts, and adaptation information for Ventura, Los Angeles, Orange, and the western parts of San Bernardino and Riverside Counties. This study projects regional increases in average maximum temperatures of around four to five degrees Fahrenheit (° F) by the mid-21st century, and five to eight ° F by the late 21st century. The hottest days of the year could become up to 10° F warmer for many locations in the region by the late 21st century.

California's report also projects small changes in average annual precipitation, and in the recurrence of extreme dry and wet years. However, rainfall intensification could result in more severe atmospheric river events and rainfall increases of up to 25 to 30% on the wettest days of the year. While these assessments provide information on the magnitude of regional climate impacts, they do not provide information about climate change impacts at a scale that is directly applicable to local watersheds, water supplies, and demands.

The USBR conducted a study of local climate change impacts in the Santa Ana River Watershed (USBR, 2013). The study used a groundwater screening tool to simulate monthly water balance changes in the Orange County, Upper Santa Ana Valley, and Elsinore/San Jacinto groundwater basins. Historical monthly time series of precipitation over the groundwater basin as well as municipal and industrial

water demand were analyzed for the period 1990-2009. Future water supply was analyzed for the Santa Ana River Watershed using a hydrologic model to simulate streamflow using 112 different future climate conditions. The results show future increases in water demand and reservoir evaporation due to increased temperature. Smaller, long-term decreases in precipitation are also projected. The combined impacts of these changes include decreases in annual available surface water and increased reliance on groundwater. In the 2013 USBR study, groundwater was estimated to provide approximately 54% of total water supply.

The 2013 USBR study does not account for analysis methods instituted for studying and avoiding adverse impacts under California's Sustainable Groundwater Management Act (SGMA) which was passed by the state legislature in 2014. In particular, the 2013 USBR study used a transient climate change analysis method to generate a continuous future projection from the present through end of century. The results of a such a transient climate analysis cannot be used to analyze extreme events such as a single dry year or a multi-year drought as required under the UWMP regulations.

In summary, prior studies which include statewide and regional climate assessments provide relevant background information. However, they do not provide information on climate change impacts on local water supplies and demands within the Santa Margarita basin and other service areas outside of the Santa Ana basin or on the changing severity of future drought periods. This climate change vulnerability assessment aims to provide a uniform analysis of climate impacts for all areas of Western's service area for use in regional water supply and drought planning.

1.3 Study Objectives

The objectives of this vulnerability study are to:

1. Identify the appropriate datasets for use in this analysis,
2. Project the magnitude of climate-driven changes in water supply and demand for Western's service area, and
3. Estimate the projected future impacts using the climate change factors applied to the water supply sources and water demands in the service area.

Temperatures increases and changes in precipitation patterns with climate change are expected to shift the balance between local water supply and demand within Western's service area and other parts of the state. Increases in temperature lead to increases in consumptive water use for irrigated agriculture and to maintain landscaping for residential, commercial, and recreational use. This increase in consumptive water use is compounded by increases in the portion of rainfall that is evaporated back into the atmosphere from open spaces and water bodies and consumed by native vegetation outside of urban areas. In addition, population growth within the plan area could also lead to expansion of demand.

Annual precipitation in southern California is highly variable and a significant portion of the regional rainfall is concentrated in winter months from November to April. There are typically years with much greater than average precipitation and years with much less than average precipitation. During wet years, seasonal precipitation replenishes aquifers, streams, rivers, and reservoirs which are the sources of water supply. During dry years, there is increased extraction of groundwater reserves to make up the

deficit. Climate change is expected to increase the year-to-year variability in precipitation within the region as well as in other parts of the state from which imported water is sourced. The second objective of this vulnerability study is to estimate the severity of future water supply and demand changes during drought years for use in drought management and mitigation planning for Western's service area.

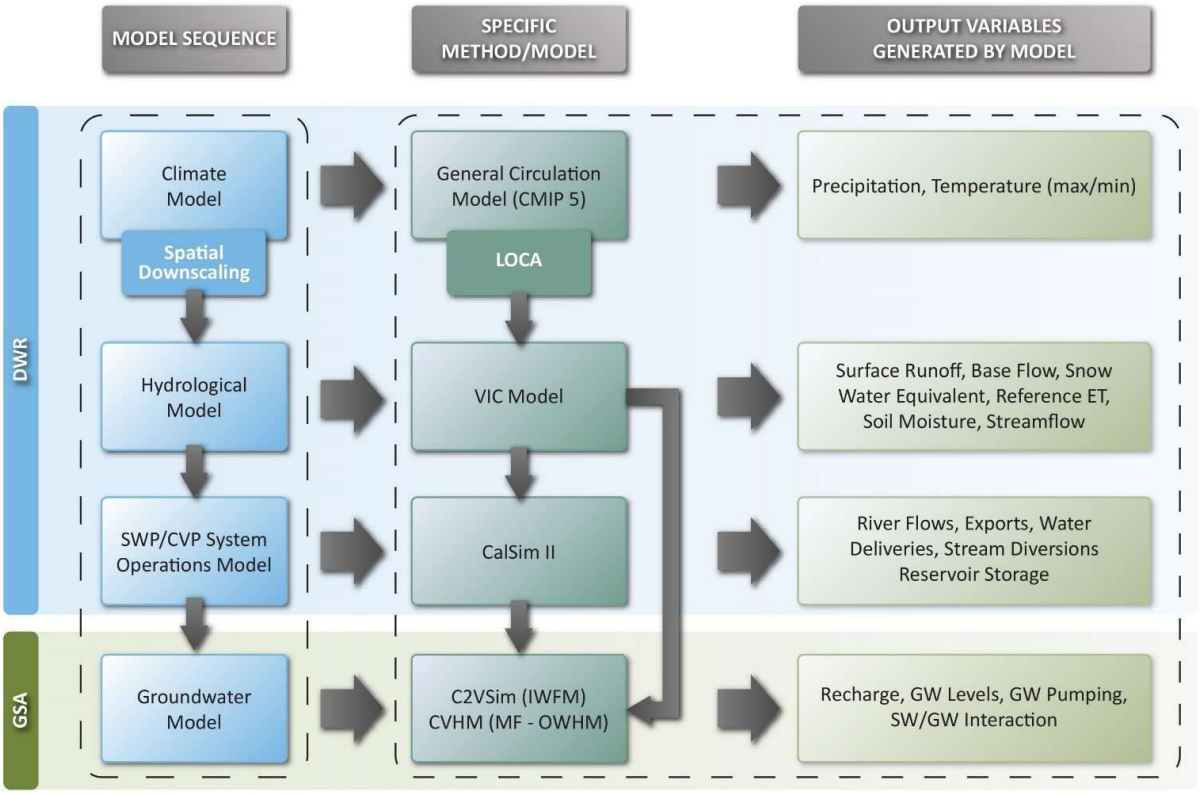
1.4 Description of Data Sources

DWR has developed statewide climate change datasets to for use in the water resource planning. The datasets depict climate conditions in California under historical and future climate conditions which are defined as follows:

- Year 2030 future condition with projected climate and sea level conditions for a 30-year period, centered at 2030
- Year 2070 future condition with projected climate and sea level conditions for a 30-year period, centered at 2070
- Year 1995 historical condition with climate and sea level conditions for a 30-year period, centered at 1995

The 2030 and 2070 climate projections are based on an ensemble of 20 global climate projections selected by the DWR Climate Change Technical Advisory Group (CCTAG) as the most appropriate projections for California water resources evaluation and planning (DWR CCTAG, 2015). The datasets are provided at a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells) over California for each calendar month from 1915 through 2011.

Figure 1 shows an overview of the modeling processes used by DWR (highlighted with a blue background) in creating the statewide climate datasets which are used in this study. The lower section of the image (highlighted with a green background) shows how individual groundwater sustainability agencies are expected to use the data in groundwater models to model groundwater conditions as they collaborate to attain sustainability objectives.



DWR: Department of Water Resources; GSA: Groundwater Sustainability Agency; SWP: State Water Project; CVP: Central Valley Project; LOCA: Localized Constructed Analogs; VIC: Variable Infiltration Capacity; CalSim: SWP & CVP Operations Model; C2VSim: California Central Valley Groundwater - Surface Water Simulation Model; IWFM: Integrated Water Flow Model; CVHM: Central Valley Hydrologic Model; MF - OWHM: MODFLOW One Water Hydrologic Flow Model; ET: Evapotranspiration, SW: Surface Water; GW: Groundwater; CMIP 5: Coupled Model Intercomparison Project

Figure 1: Overview of Modeling Processes Used by DWR in Creating the Statewide Climate Datasets (SOURCE: DWR, 2018).

DWR has also run the climate datasets run through a hydrologic model called the Variable Infiltration Capacity (VIC) model to simulate future hydrologic conditions and route runoff to the outlet of subbasins defined by each eight-digit Hydrologic Unit Code (HUC) in California. Streamflow change projections from the VIC model are provided as monthly time series from 1915 through 2011 for each eight-digit HUC subbasin. As illustrated in Figure 2, the VIC model takes input climate variables such as precipitation and temperature, and it performs a series of hydrologic computations within each cell to output variables such as soil moisture, evapotranspiration, and surface runoff within each cell. The RVIC routing algorithm is then used to route runoff from each cell to its associated subbasin outlet.

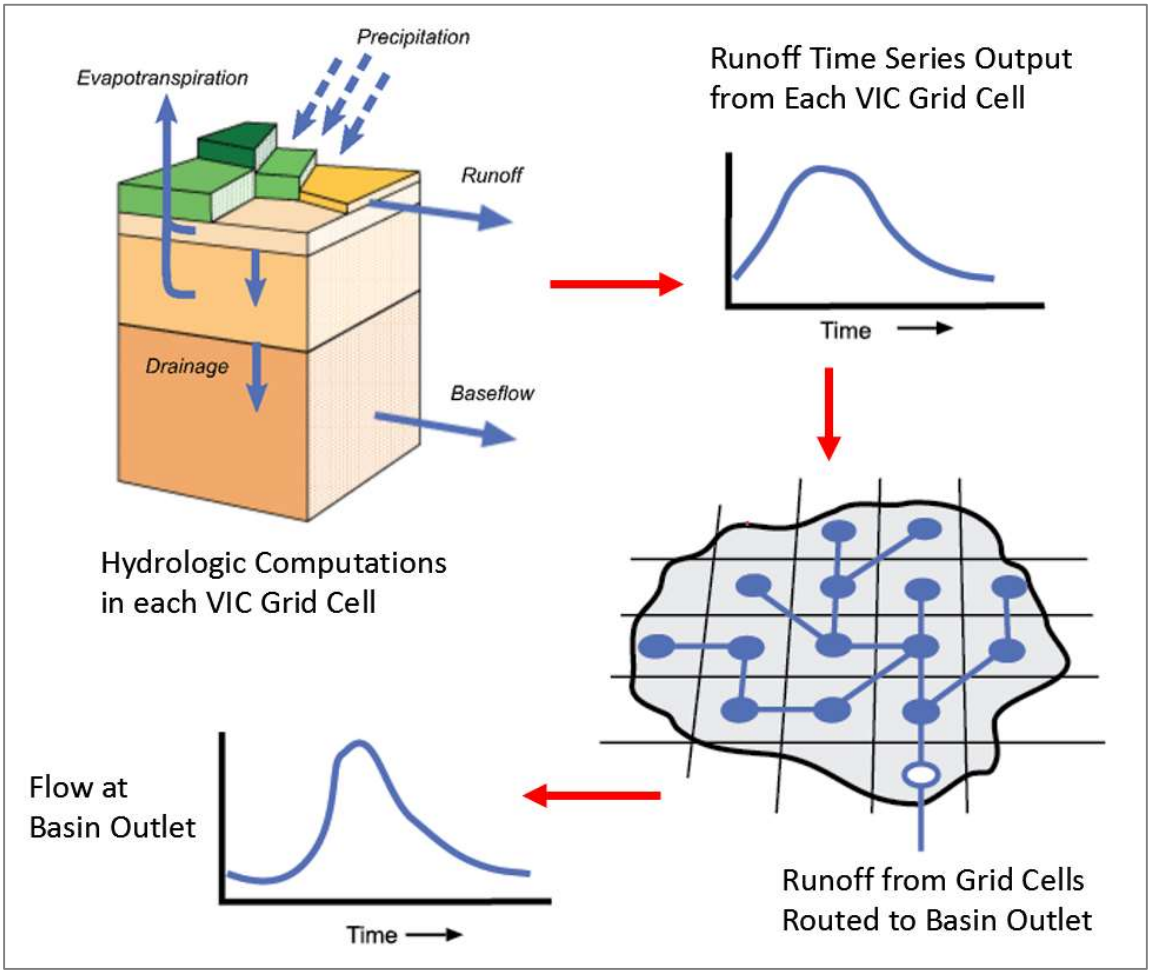


Figure 2: Schematic of the VIC Model Showing Hydrologic Computations Within Each Grid Cell and Runoff Routing

DWR has applied the VIC model to perform hydrologic simulations under historical climate conditions and under projected future climate conditions in 2030 and 2070 over 8,000 grid cells statewide. Runoff from these grid cells have also been routed to the outlet of each eight-digit HUC watersheds in the state for use in the water resource planning.

As previously shown in Figure 1, climate assessments are performed with a chain of models, each of which introduces some biases in the modeling process and derived products. To minimize the impact of such biases in decision processes, DWR presents the simulated climate projections in terms of relative change from historical conditions rather than as absolute values. For example, each monthly precipitation value simulated under 2030 conditions is divided by the precipitation value simulated for the same month under historical conditions, using the same chain of models. The resulting ratio of a simulated future value to the corresponding simulated historical value is referred to as a change factor. DWR has computed monthly time series of change factors for precipitation and evapotranspiration in each VIC grid cell and the streamflow for each HUC-8 watershed. The resulting change factor datasets are available for retrieval and use in water resources planning from the publicly accessible SGMA Data Viewer (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer). A more complete description

of methods used in computing the climate datasets is provided in a publication entitled "Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development" (California DWR, 2018).

2. CLIMATE ANALYSIS APPROACH

2.1. Preprocessing Data for Western's Service Area

The statewide climate datasets include 57 grid cells each with a spatial resolution of 1/16th degree (approximately 3.75-mile) for Western's service area are shown in Figure 3.

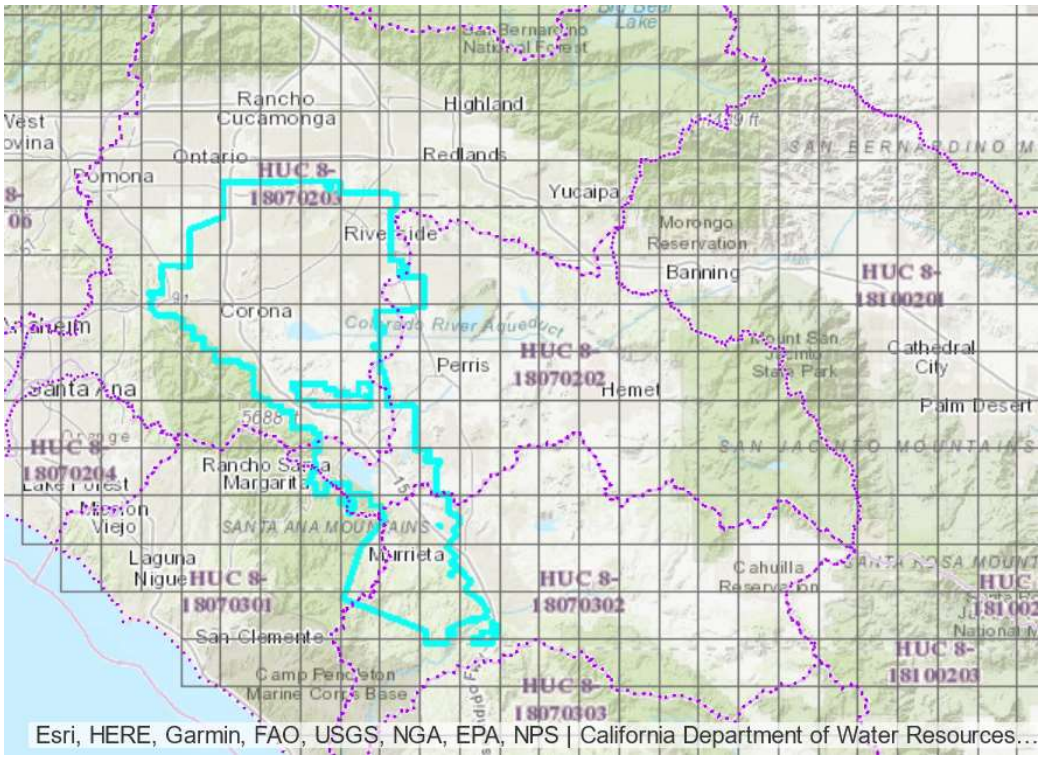


Figure 3: Climate Grid Cells and Watersheds Covering Western's service area.

Each grid cell contains 97 years of monthly time series (1915 to 2011) showing projected precipitation and evapotranspiration changes under 2030 and 2070 climate conditions relative to 1995 conditions. The area of each grid cell which falls within the service area is estimated by spatially intersecting feature layers of the climate grid and Western's service area boundary. Regional time series of projected precipitation and evapotranspiration changes are computed from the cell time series by using an area-weighted average of data from grid cells which fall wholly or partially within the service area. Projections of future streamflow change were also retrieved for the Santa Ana River (HUC- 18070203) and the Santa Margarita River (HUC- 18070302) basins which provide surface water supplies to portions of the service area.

2.2. Analysis of Normal, Single, and Multi-Year Drought Periods

Every urban water supplier is required to assess water service reliability in normal year, single-dry year, and multiple-dry years lasting 5-years. For imported water supplies, the normal and dry years used by Metropolitan are adopted for Western since it is the largest source of imported water. For local water supplies, year types are selected by reviewing time series data at two local precipitation gauges with long time historical records. The monthly time series for the gauge at Riverside Fire Station 3 are available online in the California DWR Bulletin 195 from back as far back as 1882 but were last updated in 2007. The CIMIS #44 gauge has more current data available from 1986 to present. For this analysis, the Riverside FS3 gauge is used because it has full coverage of the normal period of record (1922 to 2004) used in the imported water analysis.

Table 1: Analysis Periods for Normal, Single and Multi-Year Droughts

Year Type	Imported Supplies	Riverside FS3 Gauge	CIMIS #44 Gauge
Normal	1922 - 2004	1922 - 2004	1986 - 2020
Single Dry-Year	1977	1989	2007
Five-Year Drought	1988 - 1992	1971 - 1975	2005 - 2009

The results shown in Table 1 indicate that 1989 was the single driest year locally, while 1977 was the driest year for imported water. The driest 5-year period for local supplies was from 1971 to 1975, while imported water supplies were lowest from 1988 to 1992. Year types for the CIMIS #44 gauge are also provided in the table for reference.

2.3. Computing Water Supply Change Factors

Local water sources used within Western's service area include local groundwater from 12 different groundwater basins, surface water supplies from Santa Ana River and the Santa Margarita River basins, recycled water from indoor water use, and reclaimed groundwater. Groundwater systems are recharged through a variety of water sources. These sources of recharge can be described as:

- Natural recharge is the portion of precipitation that infiltrates to the underlying aquifer within the same grid cell in which precipitation occurs. Changes in natural recharge are directly related to changes in precipitation in the grid cell.
- Artificial recharge (including injection systems)) is water that is diverted from rivers and streams for the purpose of replenishing the underlying aquifer. Since artificial recharge relies on surface water and other remotely sourced water supplies, it is influenced by accumulative flow changes in the source watersheds.

Supplies of recycled water and reclaimed water which are sourced from indoor uses are largely insensitive to changes in climate. For this analysis, three different sets of climate change results are

computed for use with natural recharge, the Santa Ana River, and the Santa Margarita River sources, respectively.

For characterization of future changes in natural recharge, precipitation change projections from the DWR-provided climate change dataset is used. The 97-year monthly time series of precipitation for Western's service area is used to compute Water Supply Change Factors which show percentage changes in mean monthly and mean annual precipitation under future 2030 and 2070 climate conditions relative to historical conditions under 1995 conditions. The 2030 and 2070 Water Supply Change Factors for natural recharge are computed for normal year, single dry year, and 5-year drought periods.

Characterization of future changes in the Santa Ana and Santa Margarita River basins are based on streamflow projections from the VIC model under 2030 and 2070 climate conditions. The streamflow projections are used to compute Water Supply Change Factors which show percentage changes in mean monthly and mean streamflow under future 2030 and 2070 climate conditions relative to historical conditions under 1995 conditions. Change factors are similarly computed for normal year, single dry year, and 5-year drought periods.

Each set of Water Supply Change Factors is interpolated at 5-year intervals from 2020 to 2045. The 1995 to 2011 conditions are used to project climate change conditions out to 2030. Linear interpolation is used to determine the climate change factors between 2020 and 2030, based on the historic conditions from 2011 and the projected conditions for 2030. Different climate change conditions are anticipated between 2030 and 2070 because of the implementation of policies and practices that are expected to influence the rate of climate change further out in time. For the years between 2030 and 2070, linear interpolation is used for the 5-year increments based on the difference in projected conditions at 2030 and the projected conditions at 2070. Time series of Water Supply Change Factors are similarly interpolated at 5-year intervals for normal year, single dry year, and 5-year drought periods for application to local water sources for 2020 to 2045.

2.4 Computing Water Demand Change Factors

Indoor and outdoor water uses are computed separately when considering climate impacts. Outdoor water use, particularly landscape irrigation, is sensitive to changes in climate while indoor water use is generally not sensitive. Plants require more water to sustain growth in a warmer climate, and users respond to increases in temperature by increasing landscape irrigation to keep their plants alive and flourishing. This increase in water requirement is characterized in climate models using the rate of evapotranspiration which represents total amount of water released from soil, plants, and water bodies from the land surface to the atmosphere through evaporation and transpiration.

The DWR datasets includes 57 grid cells each with a spatial resolution of 1/16th degree (approximately 3.75-mile) for Western's service area. Each grid cell contains 96 years of monthly time series (1915 to 2011) showing projected evapotranspiration changes under 2030 and 2070 climate conditions. An area-weighted average of the evapotranspiration data from the 57 cells is first computed to generate a single time series for Western's service area. The regional time series is used to compute Water Demand Change Factors which show percentage changes in mean monthly and mean annual evapotranspiration under future 2030 and 2070 climate conditions relative to historical conditions under 1995 conditions.

Similar values of 2030 and 2070 Water Demand Change Factors are computed for normal year, single dry year, and 5-year drought periods.

The Water Demand Change Factors are computed for 5-year intervals from 2020 to 2045 by interpolation. The 1995 to 2011 conditions are used to project climate change conditions out to 2030. Linear interpolation is used to determine the climate change factors between 2020 and 2030, based on the historic conditions from 2011 and the projected conditions for 2030. Different climate change conditions are anticipated between 2030 and 2070 because of the implementation of policies and practices that are expected to influence the rate of climate change further out in time. For the years between 2030 and 2070, linear interpolation is used for the 5-year increments based on the difference in projected conditions at 2030 and the projected conditions at 2070. The 5-year time series of Water Demand Change Factors are similarly interpolated for normal year, single dry year, and 5-year drought periods for application to growth adjusted indoor water use projections for 2020 to 2045.

3. LOCAL CLIMATE CHANGE RESULTS

3.1. Water Supply Change Factor Results

The water supply change factors for precipitation and natural recharge are shown in Table 2. For normal years, precipitation and natural recharge are initially projected to decrease during the first decade before stabilizing during the second decade. The maximum projected range of decrease for normal year values is 1.7 percent. However, the projections show that droughts will initially be less severe from the perspective of local rainfall and recharge for the single dry year with increases of up to 1 percent. Recharge during 5-year droughts is projected to decrease by up to 2.3 percent by 2045.

Table 2: Water Supply Change Factors for Precipitation and Natural Recharge with 2020 as the Baseline Year

Year	Normal	Dry	5-year Dry
2020	100.0%	100.0%	100.0%
2025	99.1%	100.5%	99.5%
2030	98.3%	101.0%	98.9%
2035	98.5%	100.8%	98.5%
2040	98.7%	100.7%	98.1%
2045	98.9%	100.5%	97.7%

Table 3 shows the effects climate change on water supply change factors for use with the Santa Ana River basin water supplies using 2020 as the baseline year. Flows are projected to decrease for normal,

single dry, and multi-year periods. Normal year flows are projected to gradually decrease by up to 3.1 percent by 2045. Flow decreases of up to 7.2 percent during single dry years and 5.5 percent during multi-year droughts are projected by 2045.

Table 3: Water Supply Change Factors for the Santa Ana River Flows with 2020 as the Baseline Year

Year	Normal	Dry	5-year Dry
2020	100.0%	100.0%	100.0%
2025	99.6%	99.6%	99.0%
2030	99.1%	99.2%	98.1%
2035	98.4%	97.1%	96.9%
2040	97.6%	94.9%	95.7%
2045	96.9%	92.8%	94.5%

Table 4 shows the effects climate change on water supply change factors for the Santa Margarita River basin supplies using 2020 as the baseline year. The projected changes in normal year flows are very similar to those in the Santa Ana River basin with decreases reaching 3.6 percent by 2045. Flow decreases of up to 5 percent during single dry years and 5-year droughts are projected by 2045.

Table 4: Water Supply Change Factors for the Santa Margarita River Flows with 2020 as the Baseline Year

Year	Normal	Dry	5-year Dry
2020	100.0%	100.0%	100.0%
2025	99.7%	99.9%	99.5%
2030	99.3%	99.8%	98.9%
2035	98.4%	98.2%	97.6%
2040	97.4%	96.6%	96.3%
2045	96.4%	95.0%	95.0%

These water supply change projections indicate that as climate change progresses, local water systems which rely on natural recharge are likely to become more reliable water supply sources, while river supplies that are water sources for artificial recharge are likely to become less reliable. Natural groundwater recharge will still occur in normal and dry year, but the timing of available water will change as precipitation will increasingly fall during a shorter rainy season with a longer dry season each year. Furthermore, the increase in temperatures over time will also lead to increases in evaporation from surface water bodies and land surface which will decrease the volume of water available for diversion from rivers. diversions from rivers. Increased attention should be paid to understanding the adequacy and operational constraints of natural and artificial recharge systems in the service area.

3.2 Water Demand Change Factors Results

Table 5 shows water demand change factors for outdoor water uses for Western's service area. The impacts of climate change on outdoor water demand are projected to be similar during normal and drought years over the next two decades. This is because climate change datasets show that temperatures are projected to increase over time, regardless of hydrologic conditions. These projected increases in temperature are estimated to increase ET rates for landscaping, irrigated agriculture, and native vegetation. For all year types, outdoor water use is projected to increase by about 3 percent during the next two decades.

Table 5: Water Demand Change Factors for Outdoor Water Uses with 2020 as the Baseline Year

Year	Normal	Dry	5-year Dry
2020	100.0%	100.0%	100.0%
2025	100.6%	100.6%	99.8%
2030	101.2%	101.3%	101.2%
2035	101.8%	101.9%	101.8%
2040	102.4%	102.5%	102.4%
2045	103.1%	103.2%	103.0%

The water demand change factors are applied to outdoor water uses, which have been adjusted for future population growth and conservation measures. Indoor water uses are assumed to respond to future population growth and conservation as well but are not sensitive to climate change.

4. APPLYING RESULTS TO LOCAL WATER ANALYSIS

4.1. Computing Future Water Supply and Demand

Climate change impacts on future water supplies and demands must be considered by Western and its retail agencies when preparing the 2020 updates to their respective UWMPs, in accordance with California Water Code requirements, and will also inform development of the DCP.

This technical memo provides Western and its retail agencies with the ability to utilize the data in the DWR climate change projections and methods of climate change analysis for Western's service area to evaluate the impacts of climate change either qualitatively or quantitatively. If quantitative methods are used, computations needed to convert the percent change results presented in this memo into quantitative estimates of future water supply and demand are provided as worksheets included as Appendix A of this report. The worksheets consist of the following six tables:

- Table A1: Normal Year Water Supply Projections
- Table A2: Single Dry Year Water Supply Projections
- Table A3: Multi-Year Drought Water Supply Projections
- Table A4: Normal Year Water Demand Projections
- Table A5: Single Dry Year Water Demand Projections
- Table A6: Multi-Year Drought Water Demand Projections

If an agency desires to use these worksheets, an agency would enter its baseline water supply and demand values in Section 1 of each table. Section 2 of each table is prepopulated with the regional water supply and demand change factor results. Instruction for finalizing future water supply and demand values by multiplying values from section 1 with corresponding values from Section 2 of each table are includes in the "Notes" column of each table.

While not required for preparing the UWMPs, monthly change factors are useful for understanding how seasonal changes are contributing to the annual changes discussed in Section 3 of this report. Monthly values are also useful for planning management actions and mitigation actions in the DCP. Monthly water supply and demand change factors computed for the service area are presented in Appendix B which consists of the following six tables:

- Table B1: Monthly Water Supply Change Factors for Normal Year
- Table B2: Monthly Water Supply Change Factors for Single Dry Year
- Table B3: Monthly Water Supply Change Factors for Multi-Year Drought
- Table B4: Monthly Water Demand Change Factors for Normal Year
- Table B5: Monthly Water Demand Change Factors for Single Dry Year
- Table B6: Monthly Water Demand Change Factors for Multi-Year Drought

4.2. Constraints and Limitations

This technical memo presents planning-level projections of climate impacts on water supplies and demand for Western's service area during normal and drought periods. The results are intended for

use by Western in preparing climate-impacted water supply and demand projections for its wholesale UWMP and the regional DCP. This memo is also available for Western's retail agencies to use in their respective 2020 UWMPs if they choose to use the DWR climate change factors rather than another method of estimating projected climate change impacts to supply and demand. These agencies are required to develop adaptive management actions and projects as part of their 2020 UWMPs to address any deficits in future supply relative to future demand.

This analysis of future climate impacts on water supplies and demands is based on the median projected change from the majority of the climate models selected for water resources planning in California. DWR has also developed two more extreme climate scenarios for 2070, which were not used in the analysis presented in this technical memo. The first extreme scenario uses future projections from the 10 global climate models with least warming and least precipitation while the second extreme scenario using the 10 global models with the most warming and highest precipitation. These extreme scenarios have not been used in this round of planning. However, it would be prudent to analyze the extreme scenarios when preparing longer range plans and projects beyond mid-century.

The results are not intended for use in other applications such as flood resilience planning, infrastructure design, or for making decisions about operating any specific structure. Flood resilience planning requires analysis of daily or finer temporal resolution using statistical methods to fit frequency distributions to extreme values. Infrastructure design and operations applications require more detailed analysis and ground-truthing of site-specific characteristics, operations and regulations that are not considered in this report.

Climate change can also impact water resources indirectly. For example, wildfire hazards are projected to increase in southern California with climate change. Wildfires can impact water resources by increasing water requirements for firefighting, changing surface vegetation and runoff patterns in burn areas, causing debris flows, and increasing siltation of reservoirs and hydraulic structures. Such secondary impacts of climate change on water resource are not captured in this study.

Future water supplies and demands can also be impacted by policy and regulatory decisions made at the local, state, and federal level. It is difficult to anticipate and quantify the impacts of policy and regulatory considerations that have not yet been made. Therefore, it is not the intention of this report to anticipate future policy or regulatory decisions and their impacts to future water supplies or demands.

4.3. Next Steps

The next step in the planning process is for Western and its member agencies to use the change factors and analysis provided in this technical memorandum, if desired, to compute quantitative estimates of future supplies and demands during normal and drought years, incorporating the effects of climate change. The net change in future water supply for each member agency will depend on the percentage of their local water supply that is sourced from the direct precipitation and natural recharge, Santa Margarita, or Santa Ana basins. Similarly, the net change in future water demand will depend on the percentage of outdoor water use and projections of future growth within each member agency's service area. The difference between net future water supply and net future water demand, if any, is the net water deficit that the agency will need to address by developing new management actions and

projects. A calculated deficit, if any, would represent the minimum gap that would need to be addressed; however, it is prudent for water managers to consider additional management actions and projects to prepare for uncertain future conditions.

This technical memo provides Western and its retail agencies with the ability to utilize the data in the DWR climate change projections and methods of climate change analysis for Western's service area to evaluate the impacts of climate change either qualitatively or quantitatively. Should a retail agency choose to use the analysis presented in this technical memo, the agency may use the forms provided in Appendices A and B to compute quantitative estimates of their future water supplies, demands and deficits. For use in the DCP, the projections used in each agency's UWMP will be aggregated and quantitative estimations of the magnitude and location of regional water supplies, demands and deficits. The aggregated regional quantitative results would be discussed during future workshops to inform development of the DCP, regional project planning, and estimation of import requirements.

References

Bedsworth, Louise, Dan Cayan, Guido Franco, Leah Fisher, and Sonya Ziaja, 2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-013.

California DWR, 2018, Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development, Sustainable Groundwater Management Program.

Hall, Alex, Neil Berg, and Katharine Reich, 2018. Los Angeles Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-007.

US Bureau of Reclamation, 2013, Climate Change Analysis for the Santa Ana River Watershed, Santa Ana Watershed Basin Study, California. Technical Memorandum No. 86-68210-2013-02.

Appendix A: Projection Worksheets

Table A1: Normal Year Water Supply Projections

Agency: _____

Notes: _____

Row	Year Type	Variable	2025	2030	2035	2040	2045	Notes
1a	Normal Year	Current Water Supply from Natural Recharge (AFY)						Repeat 2020 Value for All Years
1b	Normal Year	Current Water Supply from Santa Ana River (AFY)						Repeat 2020 Value for All Years
1c	Normal Year	Current Water Supply from Santa Margarita River (AFY)						Repeat 2020 Value for All Years
2a	Normal Year	Water Supply Change Factor for Natural Recharge	99.1%	98.3%	98.5%	98.7%	98.9%	From Memo Results
2b	Normal Year	Water Supply Change Factor for Santa Ana River	99.6%	99.1%	98.4%	97.6%	96.9%	From Memo Results
2c	Normal Year	Water Supply Change Factor for Santa Margarita River	99.7%	99.3%	98.4%	97.4%	96.4%	From Memo Results
3a	Normal Year	Future Water Supply from Natural Recharge						Multiply Row 1a by Row 2a
3b	Normal Year	Future Water Supply from Santa Ana River (AFY)						Multiply Row 1b by Row 2b
3c	Normal Year	Future Water Supply from Santa Margarita River (AFY)						Multiply Row 1c by Row 2c
4	**Normal Year**	**Total Future Water Supply from Local Sources**						**Sum of Rows 3a, 3b and 3c**

Table A2: Single Dry Year Water Supply Projections

Agency: _____

Notes: _____

Row	Year Type	Variable	2025	2030	2035	2040	2045	Notes
1a	Single Dry Year	Current Water Supply from Natural Recharge (AFY)						Repeat 2020 Value for All Years
1b	Single Dry Year	Current Water Supply from Santa Ana River (AFY)						Repeat 2020 Value for All Years
1c	Single Dry Year	Current Water Supply from Santa Margarita River (AFY)						Repeat 2020 Value for All Years
2a	Single Dry Year	Water Supply Change Factor for Natural Recharge						From Memo Results
2b	Single Dry Year	Water Supply Change Factor for Santa Ana River						From Memo Results
2c	Single Dry Year	Water Supply Change Factor for Santa Margarita River						From Memo Results
3a	Single Dry Year	Future Water Supply from Natural Recharge (AFY)	100.5%	101.0 %	100.8%	100.7%	100.5%	Multiply Row 1a by Row 2a
3b	Single Dry Year	Future Water Supply from Santa Ana River (AFY)	99.6%	99.2%	97.1%	94.9%	92.8%	Multiply Row 1b by Row 2b
3c	Single Dry Year	Future Water Supply from Santa Margarita River (AFY)	99.9%	99.8%	98.2%	96.6%	95.0%	Multiply Row 1c by Row 2c
4	**Single Dry Year**	**Total Future Water Supply from Local Sources (AFY)**						**Sum of Rows 3a, 3b and 3c**

Table A3: Multi-Year Drought Water Supply Projections

Agency: _____

Notes: _____

Row	Year Type	Variable	2025	2030	2035	2040	2045	Notes
1a	5-Year Drought	Current Water Supply from Natural Recharge (AFY)						Repeat 2020 Value for all Years
1b	5-Year Drought	Current Water Supply from Santa Ana River (AFY)						Repeat 2020 Value for all Years
1c	5-Year Drought	Current Water Supply from Santa Margarita River (AFY)						Repeat 2020 Value for all Years
2a	5-Year Drought	Water Supply Change Factor for Natural Recharge	99.5%	98.9%	98.5%	98.1%	97.7%	From Memo Results
2b	5-Year Drought	Water Supply Change Factor for Santa Ana River	99.0%	98.1%	96.9%	95.7%	94.5%	From Memo Results
2c	5-Year Drought	Water Supply Change Factor for Santa Margarita River	99.5%	98.9%	97.6%	96.3%	95.0%	From Memo Results
3a	5-Year Drought	Future Water Supply from Natural Recharge (AFY)						Multiply Row 1a by Row 2a
3b	5-Year Drought	Future Water Supply from Santa Ana River (AFY)						Multiply Row 1b by Row 2b
3c	5-Year Drought	Future Water Supply from Santa Margarita River (AFY)						Multiply Row 1c by Row 2c
4	**5-Year Drought**	**Total Future Water Supply from Local Sources (AFY)**						**Sum of Rows 3a, 3b and 3c**

Table A4: Normal Year Water Demand Projections

Agency: _____

Notes: _____

Row	Year Type	Variable	2025	2030	2035	2040	2045	Notes
1a	Normal Year	Growth-Adjusted Outdoor Water Demand (AFY)						Different for Each Year
1b	Normal Year	Growth-Adjusted Indoor Water Demand (AFY)						Different for Each Year
2a	Normal Year	Water Demand Change Factor for Outdoor Use	100.6%	101.2%	101.8%	102.4%	103.1%	From Memo Results
3a	Normal Year	Climate-Adjusted Future Water Demand (AFY)						(Row 1a * Row 2a) + Row1b
3b	Normal Year	Climate-Adjusted Future Water Demand (AFY)						(Row 1a * Row 2a) + Row1b
4	**Normal Year**	**Total Climate-Adjusted Water Demand**						**Sum of Rows 3a, 3b and 3c**

Table A5: Single Dry Year Water Demand Projections

Agency: _____

Notes: _____

Row	Year Type	Variable	2025	2030	2035	2040	2045	Notes
1a	Single Dry Year	Growth-Adjusted Outdoor Water Demand (AFY)						Different for Each Year
1b	Single Dry Year	Growth-Adjusted Indoor Water Demand (AFY)						Different for Each Year
2a	Single Dry Year	Water Demand Change Factor for Outdoor Use	100.6%	101.3%	101.9%	102.5%	103.2%	From Memo Results
3a	Single Dry Year	Climate-Adjusted Future Water Demand (AFY)						(Row 1a * Row 2a) + Row1b
3b	Single Dry Year	Climate-Adjusted Future Water Demand (AFY)						(Row 1a * Row 2a) + Row1b
4	**Single Dry Year**	**Total Climate-Adjusted Water Demand**						**Sum of Rows 3a, 3b and 3c**

Table A6: Multi-Year Drought Water Demand Projections

Agency: _____

Notes: _____

Row	Year Type	Variable	2025	2030	2035	2040	2045	Notes
1a	Multi-Year Drought Year 1	Growth-Adjusted Outdoor Water Demand (AFY)						Enter Future Demand
1b	Multi-Year Drought Year 2	Growth-Adjusted Outdoor Water Demand (AFY)						Enter if Different from 1a
1c	Multi-Year Drought Year 3	Growth-Adjusted Outdoor Water Demand (AFY)						Enter if Different from 1a
1d	Multi-Year Drought Year 4	Growth-Adjusted Outdoor Water Demand (AFY)						Enter if Different from 1a
1e	Multi-Year Drought Year 5	Growth-Adjusted Outdoor Water Demand (AFY)						Enter if Different from 1a
1f	Normal Year	Growth-Adjusted Indoor Water Demand (AFY)						Enter Future Demand
2a	5-Year Drought	Water Demand Change Factor	99.8%	101.2%	101.8%	102.4%	103.0%	From Memo Results
3a	Multi-Year Drought Year 1	Climate-Adjusted Future Water Demand (AFY)						(Row 1a * Row 2a) + Row 1f
3b	Multi-Year Drought Year 2	Growth-Adjusted Outdoor Water Demand (AFY)						(Row 1b * Row 2a) + Row 1f
3c	Multi-Year Drought Year 2	Growth-Adjusted Outdoor Water Demand (AFY)						(Row 1c * Row 2a) + Row 1f
3d	Multi-Year Drought Year 2	Growth-Adjusted Outdoor Water Demand (AFY)						(Row 1d * Row 2a) + Row 1f
3e	Multi-Year Drought Year 2	Growth-Adjusted Outdoor Water Demand (AFY)						(Row 1e * Row 2a) + Row 1f

Appendix B: Monthly Change Factors

Table B1: Monthly Water Supply Change Factors for Normal Year

Precipitation and Natural Recharge

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.5%	99.4%	100.0%	100.4%	96.2%	99.5%	99.3%	100.8%	100.6%	96.4%	97.9%	99.0%
2030	101.0%	98.9%	100.0%	100.8%	92.3%	99.0%	98.7%	101.6%	101.2%	92.8%	95.8%	98.0%
2035	101.9%	99.2%	99.3%	97.7%	90.7%	98.3%	100.7%	102.6%	103.7%	91.5%	93.3%	97.3%
2040	102.7%	99.5%	98.5%	94.6%	89.0%	97.6%	102.8%	103.6%	106.1%	90.3%	90.9%	96.6%
2045	103.5%	99.7%	97.8%	91.5%	87.3%	97.0%	104.8%	104.5%	108.6%	89.0%	88.4%	95.9%

Santa Ana River Basin

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.6%	100.1%	99.3%	97.7%	96.2%	98.0%	99.4%	100.2%	100.5%	99.4%	98.9%	99.6%
2030	101.1%	100.3%	98.5%	95.4%	92.3%	95.9%	98.7%	100.4%	100.9%	98.9%	97.8%	99.2%
2035	101.2%	100.2%	97.3%	92.7%	89.8%	94.9%	98.4%	100.3%	101.8%	98.6%	96.9%	97.9%
2040	101.2%	100.2%	96.2%	90.0%	87.3%	93.9%	98.1%	100.1%	102.7%	98.3%	96.0%	96.6%
2045	101.3%	100.2%	95.0%	87.2%	84.7%	92.9%	97.8%	100.0%	103.6%	97.9%	95.1%	95.4%

Santa Margarita River Basin

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.3%	99.8%	99.5%	99.1%	98.8%	99.5%	99.6%	100.3%	100.3%	99.4%	98.9%	99.5%
2030	100.6%	99.6%	99.0%	98.2%	97.6%	99.0%	99.2%	100.6%	100.5%	98.9%	97.9%	98.9%
2035	100.4%	99.0%	97.5%	96.1%	96.2%	98.2%	99.0%	100.3%	101.4%	98.6%	96.9%	97.3%
2040	100.1%	98.4%	96.0%	94.0%	94.9%	97.5%	98.8%	99.9%	102.2%	98.3%	95.9%	95.7%
2045	99.9%	97.8%	94.5%	91.8%	93.6%	96.8%	98.5%	99.6%	103.0%	98.0%	94.9%	94.1%

Table B2: Monthly Water Supply Change Factors for Single Dry Year

Precipitation and Natural Recharge

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.9%	98.5%	100.7%	105.5%	98.1%	99.9%	100.0%	100.4%	100.0%	99.1%	99.8%	100.1%
2030	101.9%	97.1%	101.5%	111.1%	96.1%	99.8%	100.0%	100.8%	100.0%	98.2%	99.6%	100.2%
2035	102.8%	97.0%	100.9%	104.8%	95.2%	100.1%	100.0%	99.2%	100.0%	98.9%	94.4%	98.3%
2040	103.7%	96.9%	100.4%	98.6%	94.4%	100.4%	100.0%	97.6%	100.0%	99.5%	89.1%	96.5%
2045	104.6%	96.8%	99.8%	92.3%	93.5%	100.7%	100.0%	96.1%	100.0%	100.2%	83.9%	94.6%

Santa Ana River Basin

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	101.4%	98.1%	100.2%	98.1%	96.0%	96.5%	99.2%	100.5%	98.0%	98.9%	99.1%	98.4%
2030	102.8%	96.2%	100.4%	96.1%	91.9%	93.0%	98.4%	101.1%	96.0%	97.7%	98.3%	96.8%
2035	105.4%	95.8%	99.9%	94.3%	90.2%	91.9%	98.2%	99.9%	96.0%	97.6%	97.9%	94.4%
2040	108.0%	95.5%	99.5%	92.5%	88.4%	90.9%	98.0%	98.7%	95.9%	97.4%	97.5%	91.9%
2045	110.6%	95.1%	99.0%	90.7%	86.7%	89.8%	97.8%	97.6%	95.9%	97.3%	97.0%	89.4%

Santa Margarita River Basin

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	99.0%	98.8%	100.2%	99.7%	96.1%	99.0%	99.5%	104.8%	100.3%	100.1%	100.1%	100.5%
2030	98.0%	97.5%	100.4%	99.3%	92.3%	98.1%	99.0%	109.6%	100.7%	100.2%	100.3%	101.0%
2035	99.5%	97.8%	99.0%	98.7%	90.4%	97.6%	98.8%	104.0%	100.2%	99.9%	100.0%	97.6%
2040	100.9%	98.0%	97.7%	98.1%	88.5%	97.1%	98.6%	98.3%	99.6%	99.6%	99.7%	94.2%
2045	102.4%	98.3%	96.4%	97.4%	86.6%	96.7%	98.3%	92.7%	99.1%	99.3%	99.4%	90.9%

Table B3: Monthly Water Supply Change Factors for Multi-Year Drought

Precipitation and Natural Recharge

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.8%	100.2%	99.5%	100.8%	95.5%	100.1%	99.4%	100.2%	101.3%	96.1%	98.9%	98.1%
2030	101.6%	100.4%	98.9%	101.6%	91.0%	100.1%	98.7%	100.3%	102.7%	92.2%	97.8%	96.3%
2035	102.2%	100.5%	98.8%	98.7%	89.6%	99.0%	101.0%	100.6%	106.5%	90.4%	94.8%	96.3%
2040	102.7%	100.7%	98.6%	95.8%	88.1%	97.9%	103.3%	100.8%	110.4%	88.6%	91.8%	96.4%
2045	103.3%	100.9%	98.5%	92.9%	86.7%	96.7%	105.6%	101.1%	114.2%	86.8%	88.8%	96.4%

Santa Ana River Basin

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.8%	99.9%	99.2%	97.6%	96.5%	98.5%	99.5%	100.0%	100.0%	99.1%	99.3%	100.4%
2030	101.6%	99.8%	98.3%	95.2%	93.0%	96.9%	99.1%	100.1%	99.9%	98.3%	98.6%	100.7%
2035	102.2%	100.2%	97.6%	93.0%	90.9%	96.3%	98.9%	100.0%	100.3%	97.7%	97.8%	99.6%
2040	102.9%	100.5%	96.9%	90.7%	88.8%	95.7%	98.8%	99.9%	100.7%	97.2%	96.9%	98.4%
2045	103.5%	100.9%	96.2%	88.5%	86.6%	95.1%	98.6%	99.8%	101.1%	96.7%	96.1%	97.3%

Santa Margarita River Basin

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	100.4%	99.6%	99.1%	98.2%	98.7%	99.3%	99.6%	100.4%	99.9%	99.7%	99.6%	99.8%
2030	100.8%	99.2%	98.2%	96.3%	97.5%	98.6%	99.2%	100.8%	99.9%	99.3%	99.2%	99.7%
2035	101.2%	98.7%	97.1%	94.5%	96.4%	98.0%	99.0%	100.3%	100.1%	99.0%	98.7%	98.0%
2040	101.5%	98.2%	96.0%	92.7%	95.4%	97.4%	98.8%	99.8%	100.3%	98.7%	98.2%	96.3%
2045	101.9%	97.7%	95.0%	90.9%	94.4%	96.8%	98.6%	99.3%	100.5%	98.5%	97.7%	94.6%

Table B4: Monthly Water Demand Change Factors for Normal Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	101.0%	100.7%	100.4%	100.5%	100.8%	100.5%	100.5%	100.5%	100.6%	100.7%	100.9%	101.0%
2030	102.1%	101.3%	100.9%	101.1%	101.7%	101.1%	100.9%	101.1%	101.2%	101.4%	101.8%	102.0%
2035	102.8%	102.1%	101.6%	101.8%	102.4%	101.7%	101.3%	101.5%	101.6%	102.0%	102.7%	103.1%
2040	103.6%	102.9%	102.2%	102.5%	103.0%	102.3%	101.6%	101.9%	101.9%	102.6%	103.6%	104.2%
2045	104.4%	103.6%	102.9%	103.3%	103.7%	102.9%	102.0%	102.3%	102.3%	103.2%	104.5%	105.3%

Table B5: Monthly Water Demand Change Factors for Single Dry Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	101.0%	100.7%	100.6%	100.5%	101.0%	100.6%	100.5%	100.6%	100.6%	100.6%	100.6%	100.7%
2030	102.0%	101.5%	101.1%	100.9%	102.1%	101.3%	101.1%	101.1%	101.2%	101.3%	101.2%	101.4%
2035	102.5%	101.9%	101.7%	101.7%	103.1%	101.8%	101.5%	101.6%	101.8%	102.0%	102.2%	102.3%
2040	103.0%	102.3%	102.2%	102.4%	104.0%	102.4%	101.9%	102.1%	102.4%	102.8%	103.2%	103.3%
2045	103.5%	102.7%	102.8%	103.2%	105.0%	103.0%	102.3%	102.6%	103.0%	103.5%	104.2%	104.2%

Table B6: Monthly Water Demand Change Factors for Multi-Year Drought

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2025	101.0%	100.6%	100.4%	100.5%	100.9%	100.6%	100.5%	100.5%	100.6%	100.7%	100.8%	101.0%
2030	102.0%	101.3%	100.8%	101.1%	101.8%	101.1%	101.0%	101.0%	101.2%	101.4%	101.6%	101.9%
2035	102.8%	101.9%	101.4%	101.8%	102.5%	101.7%	101.3%	101.4%	101.6%	102.0%	102.4%	103.0%
2040	103.6%	102.6%	102.1%	102.5%	103.2%	102.3%	101.7%	101.8%	102.0%	102.6%	103.3%	104.0%
2045	104.4%	103.3%	102.7%	103.1%	103.9%	102.9%	102.1%	102.2%	102.4%	103.2%	104.1%	105.0%

G

Appendix G Metropolitan Purchase Order

PURCHASE ORDER FOR SYSTEM WATER TO BE PROVIDED BY THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

PURCHASER: WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY	**TERM** 10 years: January 1, 2015 – December 31, 2024
INITIAL BASE PERIOD DEMAND: 117,537 acre-feet	**EFFECTIVE DATE:** January 1, 2015
INITIAL TIER 1 MAXIMUM—Annual Average: 105,783 acre-feet	**INITIAL TIER 1 MAXIMUM—Cumulative:** 1,057,830 acre-feet
PURCHASE ORDER COMMITMENT—Annual Average: 70,522 acre-feet	**PURCHASE ORDER COMMITMENT—Cumulative:** 705,220 acre-feet

Definitions of capitalized terms used in this Purchase Order are provided in Attachment 1. Terms used in this Purchase Order and not defined in Attachment 1 are defined in Metropolitan's Administrative Code.

COMMITMENT TO PURCHASE:

In consideration of Purchaser's commitment to purchase System Water pursuant to this Purchase Order, Metropolitan agrees to sell such System Water to Purchaser during the Term at the Tier 1 Supply Rate in an amount up to the Tier 1 Maximum—Cumulative. All System Water sold to Purchaser during the Term in an amount greater than the Tier 1 Maximum—Cumulative shall be sold to the Purchaser at the Tier 2 Supply Rate. In connection with the purchase of System Water, the Purchaser also agrees to pay all other applicable rates and charges, as established by Metropolitan from time to time. The rates and charges applicable to System Water as of the Effective Date are shown in Attachment 2.

If Purchaser's applicable System Water purchases during the Term exceed Purchaser's Tier 1 Maximum, Purchaser may elect to:

a.) Subject to the provisions of paragraph c) below, pay any Tier 2 Supply Rate obligations at the end of the Term, in an amount equal to the difference between the Purchaser's applicable System Water purchases and the Tier 1 Maximum—Cumulative during the Term times the average of the Tier 2 Supply Rate in effect during the Term; or,

b.) Pay any Tier 2 Supply Rate obligations annually as purchases are incurred, in an amount equal to the difference between the Purchaser's applicable annual System Water purchases and the Tier 1 Maximum—Annual times the Tier 2 Supply Rate in effect during the calendar year. A true-up at the end of the Term will be performed to ensure that the Purchaser has received all Tier 1 Maximum—Cumulative purchases allowed by the Purchase Order.

c.) If, after the end of the first five years, Purchaser has accrued a cumulative Tier 2 Supply Rate obligation, Purchaser may elect to pay the initial five year cumulative Tier 2 Supply Rate obligation (i) in full at the end of year five of the Term, (ii) amortize it in five equal installments over the remaining five calendar years of the Term, or (iii) pay it at the end of the Term. Commencing in year 6 of the Term, Purchaser shall pay any additional Tier 2 Supply Rate obligation annually.

Purchaser agrees to purchase System Water from Metropolitan during the Term in an amount not less than the Purchase Order Commitment. If Purchaser's applicable System Water purchases during the Term are less than the Purchase Order Commitment, each acre-foot of unmet commitment will be reduced by the amount of production from a local resource project, measured in acre-feet, that commences operation on or after January 1, 2014. A local resource project includes any project type as approved by the Board.

Purchaser agrees to pay Metropolitan an amount equal to the difference between the sum total in acre-feet of water of the Purchase Order Commitment (minus the amount reduced by the amount of production from a local resource project) and the sum total in acre-feet of water of Purchaser's applicable System Water purchases during the Term, times the average of the Tier 1 Supply Rate in effect during the Term.

Purchaser agrees to pay all amounts owing to Metropolitan, whether to satisfy a Purchase Order Commitment or a Tier 2 Supply Rate obligation, within the next regular billing cycle following the reconciliation of all certifications for special programs that the Purchaser may participate in. The Purchaser may elect to pay such amount in twelve equal monthly payments over the course of the next twelve months beginning with the first regular billing cycle following the reconciliation of all outstanding certifications for special programs. If the Purchaser elects to pay such amount over the course of the next twelve months following the regular billing cycle any outstanding balance shall bear interest at Metropolitan's then current investment portfolio average yield. All other amounts payable under this Purchase Order shall be billed and paid in accordance with the Administrative Code.

WATER SERVICE:

Conditions of water service by Metropolitan to the Purchaser, including but not limited to (i) delivery points, (ii) water delivery schedules, and (iii) water quality, will be determined in accordance with Chapter 5 (Section 4500 through 4514, inclusive, as applicable) of Metropolitan's Administrative Code.

In accordance with its Administrative Code, Metropolitan shall use its reasonable best efforts to supply System Water in the quantities requested by the Purchaser, but is not obligated to dedicate any portion of System capacity for the conveyance, distribution, storage or treatment of System Water for the benefit of the Purchaser or any other member agency. Metropolitan shall use its reasonable best efforts to deliver the System Water when needed by the Purchaser during the Term; provided however, there shall be no default under this Purchase Order if Metropolitan fails to deliver water to the Purchaser in accordance with any such schedule of deliveries during the Term.

By execution of this Purchase Order, the Purchaser recognizes and agrees that it acquires no interest in or to any portion of the System or any other Metropolitan facilities or supplies, or any right to receive water delivered through the System, excepting the right to purchase up to Purchaser's Tier 1 Maximum—Cumulative at the Tier 1 Supply Rate provided that System Water is available. This Purchase Order governs pricing of the System Water delivered to the Purchaser pursuant to this Purchase Order and does not confer any entitlement to receive System Water.

System Water provided to the Purchaser under the terms of this Purchase Order shall be subject to reduction in accordance with the shortage allocation provisions of the Water Surplus and Drought Management Plan (the “WSDM Plan”) or other such policies and principles governing the allocation of System Water as adopted by the Board.

In the event that Metropolitan's Board or General Manager determines to reduce, interrupt or suspend deliveries of System Water, any outstanding balance of the Purchase Order Commitment at the end of the Term shall be reduced by the Purchase Order Commitment—Annual Average for each and every fiscal or calendar year that a reduction, interruption or suspension occurred.

MISCELLANEOUS:

This Purchase Order will be interpreted, governed and enforced in accordance with the laws of the State of California.

This Purchase Order will apply to and bind the successors and assigns of the Purchaser and Metropolitan.

No assignment or transfer of the rights of the Purchaser under this Purchase Order will be valid and effective against Metropolitan or the Purchaser without the prior written consent of Metropolitan and the Purchaser.

If at any time during the Term, by reason of error in computation or other causes, there is an overpayment or underpayment to Metropolitan by the Purchaser of the charges provided for under this Purchase Order, which overpayment or underpayment is not accounted for and corrected in the annual re-determination or reconciliation of said charges, the amount of such overpayment or underpayment shall be credited or debited, as the case may be, to the Purchaser. Metropolitan will notify the Purchaser in writing regarding the amount of such credit or debit, as the case may be. In no case will credits or debits for charges provided for under this Purchase Order be administered beyond the limit for billing adjustments as specified in Metropolitan's Administrative Code.

IN WITNESS WHEREOF, this Purchase Order is executed by the duly authorized officers of the Metropolitan Water District of Southern California and Western Municipal Water District of Riverside County, as of December __, 2014.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____
Jeffrey Kightlinger
General Manager

WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY

By: _____

[Title] _____

APPROVED AS TO FORM AND CONTENT:

_____
General Counsel

By: _____

_____
General Counsel

By: _____

Attachment 1
Purchase Order for System Water
DEFINITIONS

"Act" means the Metropolitan Water District Act, California Statutes 1969, Chapter 209, as amended and supplemented from time to time.

"**Demand**" means the Purchaser's purchases of System Water supplies, including full service, seasonal shift, Conjunctive Use Program, Surface Storage Operating Agreement water, Recharge and Recovery Operating Agreement water, or any other water program deemed to be a purchase of System Water.

"**Effective Date**" means the effective date of this Purchase Order as specified above.

"Metropolitan" means The Metropolitan Water District of Southern California.

"Purchase Order Commitment" means:

i). if the Purchaser elects option a) under the Base Period Demand as defined in section 4122 of the Administrative Code, then 60% of the Purchaser's Initial Base Firm Demand times 10; or

ii). if the Purchaser elects option b) under the Base Period Demand, then 60% of the Purchaser's highest fiscal year Demand during the period from fiscal year 2002/03 through fiscal year 2013/14, times 10.

"Purchase Order" means this Purchase Order for System Water.

"Purchaser" means the member public agency specified above, a duly organized [city/water district/county water authority] of the State of California.

"System" means the properties, works and facilities operated and/or financed by Metropolitan necessary for the supply, development, storage, conveyance, distribution, treatment or sale of water.

"System Water" means water supplies developed by Metropolitan and delivered to the Purchaser through the System or other means (e.g. conjunctive use storage).

"Term" means the term of this Purchase Order as specified above.

"Tier 1 Maximum—Annual" means an amount equal to 90% of the Base Period Demand.

"Tier 1 Maximum—Cumulative" means an amount equal to the sum of the Tier 1 Maximum—Annual amounts during the Term.

"Tier 1 Supply Rate" means Metropolitan's per-acre-foot Tier 1 Supply Rate, as determined from time to time by Metropolitan's Board of Directors. The Tier 1 Rate effective January 1, 2015, is $158/AF.

"Tier 2 Supply Rate" means Metropolitan's per-acre-foot Tier 2 Supply Rate, as determined from time to time by Metropolitan's Board of Directors. The Tier 2 Rate effective January 1, 2015, is $290/AF.

"Water Surplus and Drought Management Plan (WSDM)" means Metropolitan's policy and procedures for managing supplies and drought conditions as adopted by the Board from time to time.

Attachment 2
Purchase Order for System Water
RATES AND CHARGES

	Effective January 1, 2015	Effective January 1, 2016
Tier 1 Supply Rate ($/AF)	$158	$156
Tier 2 Supply Rate ($/AF)	$290	$290
System Access Rate ($/AF)	$257	$259
System Power Rate ($/AF)	$126	$138
Water Stewardship Rate ($/AF)	$41	$41
Full Service Untreated Rate ($/AF):		
Tier 1	$582	$594
Tier 2	$714	$728
Treatment Surcharge ($/AF)	$341	$348
Full Service Treated Rate ($/AF):		
Tier 1	$923	$942
Tier 2	$1,055	$1,076
Readiness-to-Serve Charge ($ millions)	$158	$153
Capacity Charge ($/cfs)	$11,100	$10,900

H

Appendix H City of Riverside Surplus and Wheeling Agreement

2017 COOPERATIVE AGREEMENT
FOR LONG-TERM WHEELING AND SURPLUS WATER SALES

BETWEEN

CITY OF RIVERSIDE
AND
WESTERN MUNICIPAL WATER DISTRICT

RIVERSIDE – WESTERN
2017 COOPERATIVE AGREEMENT FOR
LONG-TERM WHEELING AND SURPLUS WATER SALES

TABLE OF CONTENTS

SECTION	PAGE
1. PARTIES	1
2. RECITALS	1
3. AGREEMENT	3
4. DEFINITIONS	3
5. EFFECTIVE DATE AND TERM	8
6. PRODUCTION AND CONVEYANCE SERVICES	8
7. MEASUREMENT OF WATER PRODUCED OR CONVEYED	12
8. [RESERVED]	13
9. CONTINUITY OF SERVICE	13
10. RATES AND CHARGES	14
11. BILLING AND PAYMENT	17
12. AUTHORIZED REPRESENTATIVES	18
13. LIABILITY AND INDEMNIFICATION	18
14. RELATIONSHIP OF THE PARTIES	20
15. UNCONTROLLABLE FORCES	20
16. AUDITS	21
17. THIRD PARTY BENEFICIARIES	21
18. DISPUTE RESOLUTION	21
19. ASSIGNMENT OF INTERESTS	22

20. NO DEDICATION OF FACILITIES 23
21. COMPLETE AGREEMENT 23
22. CONSTRUCTION OF AGREEMENT 23
23. NONDISCRIMINATION 23
24. EVENTS OF DEFAULT 23
25. AMENDMENTS 24
26. WAIVERS 24
27. SECTION HEADINGS 24
28. GOVERNING LAW 25
29. NOTICES 25
30. SIGNATURE CLAUSE 25

EXHIBIT A – EXAMPLE OF OPERATING PLAN
EXHIBIT B – ELECTRICITY, O&M AND CAPITAL RECOVERY COMPONENTS
EXHIBIT C – FLOW PATH SCHEMATIC
EXHIBIT D – WHEELING, SHARED SAVINGS AND SHARED BENEFIT METHODOLOGY

//

//

//

//

//

//

//

//

RIVERSIDE – WESTERN

2017 COOPERATIVE AGREEMENT FOR

LONG-TERM WHEELING AND SURPLUS WATER SALES

1. **PARTIES:** This Cooperative Agreement for Long-Term Wheeling and Surplus Water Sales ("Agreement") is made and entered into this _____ day of _____, 2017, by and between the **City of Riverside** ("Riverside"), a California charter city and municipal corporation, and the **Western Municipal Water District** ("Western"), a public agency. Both parties are organized and existing under the laws of the State of California and are hereinafter sometimes referred to jointly as the "Parties" or individually as a "Party."

2. **RECITALS:**

2.1 Riverside operates a municipal utility providing wholesale water and electric services to entities located within and outside of its service territory, and retail water and electric service to its customers located within its service territory.

2.2 Western operates a municipal water district providing wholesale and retail water and wastewater services to entities located within its service territory.

2.3 Each Party is subject to the terms of the judgment in *Western Municipal Water District v. East San Bernardino County Water District* (Riverside County Superior Court No. 78426) governing, among other things, the Parties' respective rights and obligations related to the beneficial use and maintenance of the Bunker Hill Basin, Rialto/Colton Basin, Riverside North Basin, and Riverside South Basin (collectively, the "Water Basins").

2.4 Pursuant to periodic agreement between Western and the Riverside Highland Water Company, Western has from time to time in the recent past secured the right to produce and export groundwater annually from the Bunker Hill Basin. Western is seeking to secure a long-term agreement and to make said supply available for the production, treatment, and conveyance services under this Agreement.

2.5 Pursuant to an August 23, 2001 "Reciprocal Use Agreement" between Western and the Elsinore Valley Municipal Water District, Western has the right to produce and export groundwater annually from the Bunker Hill Basin.

2.6 Western, from time to time, may have access to additional water which may or may not be stored or conserved groundwater in the Water Basins and would be subject to the production, treatment and/or conveyance services under this Agreement.

2.7 Riverside, from time to time, may have unused capacity in its groundwater production, treatment, water transmission, and/or water distribution facilities.

2.8 On March 30, 2009, the Parties entered into that certain Cooperative Agreement for Water Production and Conveyance ("2009 Agreement"), wherein Riverside agreed to operate its unused capacity in its groundwater production, treatment, water transmission, and/or water distribution facilities to produce and convey Western's annually allocated, stored, or conserved groundwater in the Water Basins to points of interconnection between the Parties' water utility systems. The Parties hereby agree that except for provisions in the 2009 Agreement, as amended, which apply to non-potable water, the balance of the provisions of the 2009 Agreement are amended and restated by this Agreement, meaning that the potable water provisions in the 2009 Agreement, as amended, shall be of no further force or effect.

2.9 Western, from time to time, may request that Riverside provide Production Services, Treatment Services and/or Conveyance Services, and Riverside shall provide such services using its water extraction, treatment and conveyance facilities to the extent that the provision of such services will not, in Riverside's sole judgment which shall not be unreasonably exercised, (i) adversely affect the quality, reliability or cost of service related to water deliveries by Riverside to its retail or wholesale customers and/or (ii) cause Riverside to violate the terms of any binding obligations existing as of the date of this Agreement with respect to the production, treatment or delivery of water.

2.10 The Parties desire to enter into this Agreement in order to: (a) provide for a new long-term wheeling agreement for the production, treatment and conveyance of a firm annual volume of Western-acquired water by Riverside (referred to herein as "wheeling"); (b) develop the pricing of Riverside's adjusted annual water right from the San Bernardino Basin Area ("SBBA") which is determined to be surplus to Riverside's retail needs (referred to herein as "Surplus Water Sales"); and (c) obtain system capacity to move local groundwater to Western customers.

2.11 The Parties agree to begin investigating ways to develop and deliver supplies from the Riverside Basin, as provided for in the 1969 Judgment, to maximize the benefit for users within Western while ensuring all provisions of the 1969 Judgment are up-held.

2.12 The Parties agree to meet and confer, in good faith, as to the provision of recycled water and non-potable water by Riverside to Western.

3. AGREEMENT: In consideration of the foregoing Recitals that are incorporated herein by this reference and the mutual terms and conditions herein, the Parties agree as follows:

4. DEFINITIONS: Terms used herein with initial capitalization, whether in singular or plural, shall have the following meanings:

4.1 1969 Judgment: The judgment rendered by the court in *Western Municipal Water District v. East San Bernardino County Water District* (Riverside County Superior Court No. 78426) and governing, among other things, the Parties' respective rights and obligations related to the beneficial use and maintenance of the Bunker Hill Basin, Rialto/Colton Basin, Riverside North Basin and Riverside South Basin.

4.2 AFY: Acre-feet per year.

4.3 Authorized Representative: The representative or their designee identified by each Party, in accordance with Section 12, to act on such Party's behalf with respect to those matters specified herein to be the functions of such Authorized Representative.

4.4 Bunker Hill Basin: The groundwater basin so defined and described in the 1969 Judgment.

4.5 Bunker Hill Export Allocation: Riverside's annual volumetric export right of groundwater from the Bunker Hill Basin as defined in the 1969 Judgment as amended from time to time.

4.6 Capital Recovery Component: The component of the Service Rate intended to recover Riverside's capital cost of providing Production, Treatment, and/or Conveyance Services along the flow path to Western.

4.7 Conveyance Services: Riverside's use of its water treatment, transmission and distribution systems to convey water from a Point of Receipt to a Point of Delivery.

4.8 Commodity Price: This term shall have the meaning set forth in Section 10.2.

4.9 Curtailment: Any shortage of water delivery relative to the Operating Plan as defined in Section 4.18. Curtailment is measured on a monthly basis and is assigned to Riverside (if unable to deliver water) or Western (if unable to receive water). The Curtailments for both Parties are summed at the end of the calendar year. Western's annual obligation to receive water is reduced by Riverside's Curtailment, and vice-versa. In any given month, where feasible and practical, Riverside may deliver more water and Western may receive more water than what is specified in the Operating Plan. These excesses are summed and will reduce any applicable Curtailment. If Riverside and Western agree to Make-Up water as defined in Section 4.38, any applicable Curtailment will be reduced by that amount.

4.10 Curtailment Payment: If Western has a Curtailment for any given year, Western shall make payment to Riverside as set forth in Sections 6.1.2 and 6.2.2.

4.11 Delivery Month: A month for which Western has requested Production, Treatment, Conveyance and/or Services in the Operating Plan.

4.12 Fiscal Year: The twelve (12) month period commencing each July 1 during the term of this Agreement and ending the following June 30.

4.13 Make-Up Water: By mutual consent of the Operating Committee, up to 500 AFY of Western Water and/or Riverside Water that is not delivered in the current calendar year may be eligible to be delivered the following calendar year. Make-up water is intended to be used during the following calendar year. Make-up water shall not be available in consecutive years unless approved by Riverside. Make-up water is not subject to Curtailment Payment. Non-delivered Western water shall be used for Make-Up Water before non-delivered Riverside Water, unless the Parties mutually agree otherwise for any given year.

4.14 MWD: The Metropolitan Water District of Southern California.

4.15 MWD Tier 1 cost: The published volumetric rate charged by MWD for full-service potable water supply. If MWD amends its rates such that the MWD Tier 1 cost is no longer applicable to the pricing under this Agreement, the parties agree to meet and confer and amend this Agreement to include an appropriate pricing reference.

4.16 Operation & Maintenance Component: The component of the Service Rate intended to recover Riverside's operating and maintenance cost of providing Production, Treatment, and/or Conveyance Services.

4.17 Operating Committee Meeting: The work group referenced in Section 6.4.

4.18 Operating Plan: The written plan, developed collaboratively by Western and Riverside, as set forth in Section 6.3. Attached hereto as Exhibit A and incorporated herein by reference is an example Operating Plan.

4.19 Point of Delivery: The Point of Interconnection where water is delivered to Western by Riverside in connection with Conveyance Services provided hereunder.

4.20 Point of Interconnection: A point where the water transmission and/or distribution systems of Riverside and Western interconnect.

4.21 Point of Receipt: The Point of Interconnection where water is delivered to Riverside by Western, or on Western's behalf, in connection with Conveyance Services provided hereunder. With respect to Riverside's simultaneous provision of both Production

Services and Conveyance Services, the well head discharge block valve shall be deemed to be the Point of Receipt.

4.22 Production Services: Riverside's extraction of groundwater for the benefit of Western using Riverside's water well(s) in the Water Basins.

4.23 Prudent Utility Practice: Any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts (including but not limited to the practices, methods, and acts engaged in or approved by a significant portion of the water utility industry prior thereto) known at the time the decision was made, which would have been expected to accomplish the desired result at the lowest reasonable cost consistent with good business practices, reliability, safety, and expedition, taking into account the fact that Prudent Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be a spectrum of possible practices, methods, or acts which could have been expected to accomplish the desired result. Prudent Utility Practice includes due regard for manufacturers' warranties and requirements of agencies of competent jurisdiction.

4.24 Rialto/Colton Basin: The groundwater basin so defined and described in the 1969 Judgment.

4.25 Riverside North Basin: The groundwater basin so defined and described in the 1969 Judgment.

4.26 Riverside South Basin: The groundwater basin so defined and described in the 1969 Judgment.

4.27 Riverside Water: The portion of Riverside's Bunker Hill Basin Export Allocation under the 1969 Judgment that in Riverside's sole judgment, which shall not be unreasonably exercised, is surplus to Riverside's retail and wholesale customer demand which is made available for purchase by Western.

4.28 SBBA: The groundwater basin defined and described in the 1969 Judgment.

4.29 Service Rate: The rate, expressed in dollars per acre-foot and rounded to nearest cent, to be paid by Western to Riverside in connection with Riverside's provision of Production, Treatment, and/or Conveyance Services.

4.30 Shared Benefit Methodology: This methodology shall have the meaning set forth in Exhibit D, attached hereto and incorporated by reference.

4.31 Storage Services: The retention and storage of water using Riverside's reservoir capability for later delivery of such water to Western.

4.32 Surplus Water Sales: This term shall have the meaning set forth in Section 2.12 herein.

4.33 Treatment Services: The use and operation of water treatment such as, but not limited to, ion exchange, granular activated carbon, membrane filtration, and/or blending to achieve compliance with State drinking water standards.

4.34 Uncontrollable Force: Any cause or event which is beyond the control of the Party affected, including, but not restricted to, failure of or threat of failure of facilities, flood, earthquake, storm, fire, lightning, epidemic, war, riot, civil disturbance or disobedience, labor dispute or strike, labor or material shortage, sabotage, restraint by court order or public authority and action or non-action by or failure to obtain the necessary authorizations or approvals from any governmental agency or authority which by exercise of due diligence such Party could not reasonably have been expected to avoid and which by exercise of due diligence it shall be unable to overcome.

4.35 Water Basins: This term shall have the meaning set forth in Section 2.3 herein.

4.36 Western Water: Any water secured by Western through separate agreement that is intended to be produced, treated and/or conveyed through Riverside's system.

4.37 Willful Misconduct: This term shall have the meaning set forth in Section 13.4 herein.

5. EFFECTIVE DATE AND TERM:

5.1 This Agreement shall be effective July 1, 2017. The terms of this Agreement pertaining to the production, treatment and/or conveyance of Western Water shall remain in effect until June 30, 2037, and the terms of this Agreement pertaining to Riverside Water shall remain in effect until June 30, 2027, unless earlier terminated as follows:

5.1.1 Upon advance written notice by either Party at least two (2) years prior to the specified date of termination; or

5.1.2 Upon ten (10) days advance written notice by the non-defaulting Party to the defaulting Party following a material breach of this Agreement.

5.2 Obligations incurred hereunder but not satisfied prior to termination of this Agreement shall survive such termination until fully discharged, including any payments due by one Party to the other Party hereunder.

5.3 Beginning upon expiration/termination of the terms of this Agreement pertaining to Riverside Water, Riverside shall make a reasonable good faith effort, subject to governing body approvals, to deliver up to 2,000 AFY of Riverside Water to Western in times of emergency shortage that may be caused by drought or infrastructure outage that negatively impacts Western's imported water supply. The price of this water will be based on the "Shared Benefit Methodology" described in this Agreement.

6. PRODUCTION, TREATMENT AND CONVEYANCE SERVICES:

6.1 Western Water:

6.1.1 Riverside shall utilize its water production, treatment and conveyance facilities during each Delivery Month as required to deliver Western Water to Western in accord with the duly approved Operating Plan established pursuant to Section 6.3. Riverside shall provide up to 5,408 AFY of Western Water over the next 20 years. For each acre-foot of Western Water so delivered by Riverside to Western, Western shall pay Riverside at the rate calculated in Section 10.

6.1.2 Western shall have the right to curtail delivery of the Western Water at any time and of the duration specified by Western by providing 30-days' notice for non-emergency curtailments and notice as soon as practically possible for emergency curtailments. However, Western agrees that if delivery is curtailed by Western, Western shall pay Riverside a Curtailment Payment equal to the Capital Recovery Component, as defined in 10.1.3, multiplied by the acre-feet of curtailed Western Water as compensation to Riverside for Riverside's commitment to annually provide to Western up to 5,408 AFY of production, treatment and conveyance capacity. Make-Up Water may be applied towards the amount of deliveries curtailed by Western in order to reduce or eliminate the amount of the Curtailment Payment. Should Riverside be unable to deliver any portion of the 5,408 AFY of Western Water during any year of this Agreement, Western shall not be obligated to such curtailment payment for that portion of the Western Water that Riverside is not able to deliver for that year.

6.1.3 Western is working to secure long-term arrangements for 5,408 AFY of Western Water. Should Western be unable to secure Western Water equal to 5,408 AFY for the term of this Agreement, Western agrees to notify Riverside in advance of an annual Operating Committee Meeting and the applicable Operating Plan shall reflect the actual volume of secured Western Water. Riverside agrees to modify the Curtailment Payment provision to match the actual volume of secured Western Water for the following calendar year and beyond.

6.1.4 In any calendar year, all Western Water shall be conveyed prior to any Riverside Water.

6.2 <u>Riverside Water:</u>

6.2.1 Riverside shall deliver a minimum of 2,000 AFY of Riverside Water to Western, over the next ten-years. If, in its sole judgment, Riverside has additional water in excess of the 2,000 AFY in a given year, Riverside will notify Western prior to the development of the Operating Plan. If Western is interested in purchasing some or all of the excess supplies and has the ability to receive it, those excess supplies will be incorporated

into the Operating Plan. The Western Water to be delivered to Western under this Agreement shall take delivery priority over Riverside Water, as set forth in the applicable Operating Plan. Supplies in excess of 2,000 AFY will not be subject to the curtailment payment set forth in Section 6.2.2. Delivery of Riverside Water in excess of 2,000 AFY will not require modification or amendment of this Agreement. For each acre-foot of Riverside Water extracted by Riverside on Western's behalf, Western shall pay Riverside the rate determined in accordance with Section 10.

6.2.2 Western shall have the right to curtail delivery of the Riverside Water at any time and of the duration specified by Western by providing 30-days' notice for non-emergency curtailments and notice as soon as practically possible for emergency curtailments. However, Western agrees that if delivery is curtailed, Curtailment Payment shall be equal to the Commodity Price, as defined in Section 10.2, multiplied by acre-feet of Curtailed Riverside Water, as compensation for Riverside's commitment to annually provide to Western a minimum of 2,000 AFY of production, treatment and conveyance capacity. Make-Up Water may be applied towards the amount of deliveries curtailed by Western in order to reduce or eliminate the amount of the Curtailment Payment. Should Riverside be unable to deliver any portion of the 2,000 AFY of Riverside Water during any year of this Agreement, Western shall not be obligated to such curtailment payment for that portion of the Western Water that Riverside is not able to deliver for that year.

6.2.3 Riverside Water shall not be subject to Curtailment Payment until January 1, 2018.

6.3 Operating Plan:

6.3.1 Western and Riverside will work collaboratively to develop a mutually agreeable Operating Plan, in the format of the example in Exhibit A. Two (2) original copies of the initial Operating Plan setting forth the services requested, signed by Western's Authorized Representative, shall be submitted to Riverside's Authorized Representative no

later than November 1 of each year for the following calendar year and shall specify the services requested by Western, including, but not limited to, the date(s) of service, the quantities of water involved, the origin of any water to be conveyed by Riverside, the groundwater basin of origin in the case of Production Services, and the Points of Receipt and Points of Delivery. The Operating Plan can be adjusted monthly by mutual agreement.

6.3.2 If Riverside's Authorized Representative reasonably determines that Western's initial proposed Operating Plan is feasible and consistent with Prudent Utility Practice and the operation of Riverside's water extraction, transmission, distribution and treatment systems, Riverside's Authorized Representative shall countersign both copies of the proposed Operating Plan and return one (1) fully executed copy to Western. Unless otherwise communicated in writing to Western, Riverside shall provide the Production, Treatment and Conveyance Services specified in the fully executed Operating Plan, subject to the terms of this Agreement. In the event Riverside reasonably determines that an Operating Plan is not feasible and/or is not consistent with Prudent Utility Practice, Riverside shall provide such notice to Western within 30 days and the Parties shall then engage in good faith negotiations to resolve said issues and to develop a mutually agreeable Operating Plan. The failure of Riverside to provide an executed copy of the Plan, or to provide notice within 30 days that a Plan is infeasible, shall constitute Riverside's approval of the Plan.

6.3.3 If an Operating Plan has not been countersigned by Riverside in accordance with Section 6.3.2, and Riverside has sent the notice in accordance with section 6.3.2, the General Managers from Western and Riverside will meet and confer to forge a compromise by January 1. Should the General Managers be unable to reach a resolution by January 1, both Parties agree to mediation and shall share the expense of mediation equally. Such mediation shall be completed by March 1, unless the Parties mutually agree to an extension.

6.3.4 Riverside shall provide Production, Treatment and Conveyance Services from October 1 through May 31 and shall make diligent good faith efforts to provide such services every month of the year.

6.4 Operating Committee Meetings: The Authorized Representatives shall annually conduct at least one coordination meeting during the term of this Agreement. It is anticipated that said meeting will take place in the fall of each year prior to November 1 and may include, for example and not by way of limitation, the following agenda items:

(a) Actual energy and Operations and Maintenance costs as well as reconciliation of payments for the previous year;

(b) Calculation of the Commodity Charge for Riverside Water;

(c) Operational challenges of the past year;

(d) Projected costs for the upcoming year;

(e) Operational planning for the upcoming year;

(f) A 5-year projection of capital improvements that may be necessary to fulfill deliveries to Western;

(f) Review components of and the cost calculation of the Capital Recovery Component; and

(g) Other items necessary to ensure successful fulfilment of the terms of this Agreement as determined in the discretion of each Party.

7. MEASUREMENT OF WATER PRODUCED OR CONVEYED:

7.1 Any metering devices used to measure the delivery of water under this Agreement at a Point of Interconnection shall be owned by Riverside and shall be installed, operated, calibrated, and maintained in accordance with Riverside's standard requirements. Any such metering devices shall be maintained directly by Riverside or by agents or subcontractors directly under Riverside's control.

7.2 Riverside shall inspect and test the metering devices at least once per calendar year, unless more frequent testing and inspection is appropriate as a result of repairs to or replacements of a metering device. Riverside shall provide reasonable advance notice to Western of any such testing or inspection in order to permit a representative of Western to witness such activities, and shall provide Western with copies of any periodic or special inspection or testing reports relating to the metering devices upon request by Western. Western, at its own expense, may request in writing that Riverside initiate additional testing and inspection of the metering devices, and Riverside shall comply with any such request as soon as practical after the request is made.

7.3 As part of this agreement, Riverside shall recalibrate or replace all existing metering devices prior to December 1, 2017.

8. [RESERVED]

9. <u>CONTINUITY OF SERVICE:</u>

9.1 Riverside reserves the right to curtail Production, Treatment and Conveyance Services hereunder; (i) upon reasonable advance notice to Western to make repairs, replacements, modifications, or to perform maintenance work, all for the purpose of maintaining continuity of Production, Treatment and Conveyance Services, or (ii) without notice to Western because of an existing or impending Uncontrollable Force, as determined in Riverside's sole judgment which shall not be unreasonably exercised.

9.2 Notwithstanding the provisions of Section 9.1, Riverside may interrupt or curtail Production, Treatment, and Conveyance Services to the extent that the continued provision of such services could, in Riverside's sole judgment which shall not be unreasonably exercised, (i) adversely affect the quality, reliability or cost of service related to water deliveries by Riverside to its retail customers, (ii) cause Riverside to violate the terms of any rule, regulation, or binding obligation it may otherwise have with respect to the production, treatment or delivery of water, (iii) Riverside experiences a significant loss of extraction capacity, export rights,

treatment capacity, and/or conveyance capacity in any portion of its water system, or (iv) in accordance with Prudent Utility Practice.

10. RATES AND CHARGES:

10.1 Western Water: For Western Water Production, Treatment and Conveyance Services rendered by Riverside to Western hereunder, Western shall pay the following rate(s) per acre-foot of water, or portion thereof, applicable to the service provided.

10.1.1 Energy Component: The Energy Component of the rates for Western Water Services shall be in accord with the pricing sheets referenced in Section 10.6 below. For fiscal year 2017-18, a single average energy unit cost of $115 per acre-foot will be used for the monthly energy costs. Prior to each November 1 of the Agreement term, the actual costs per Section 10 shall be reconciled against the prior invoiced costs and the difference shall be invoiced or credited in accordance with Section 10.4. Each subsequent year, the prior year's actual average unit costs for energy will be used in the monthly billing for the following 12-months until a new reconciliation occurs.

10.1.2 O&M Component: The O&M Component of the rates for Western Water shall be in accord with the pricing sheets referenced in Section 10.6 below. For fiscal year 2017-18, a single average O&M unit cost of $142 per acre foot will be used for the monthly O&M costs. Prior to each November 1 of the Agreement term, the actual costs per Section 10 shall be reconciled against the prior invoiced costs and the difference shall be invoiced or credited in accordance with Section 10.4. Each subsequent year, the prior year's actual average unit costs for O&M will be used in the monthly billing for the following 12-months until a new reconciliation occurs.

10.1.3 Capital Recovery Component: The Capital Recovery Component of the rates for Western Water shall be in accord with the pricing sheets referenced in Section 10.6 below. The Capital Recovery Component will be comprised of costs for the conveyance of Western Water, including but not limited to Riverside's Waterman Wells,

Waterman Supply Transmission Pipeline, Distribution System Transmission Lines, and Booster Stations, as further described and identified on the schematic illustration included in Exhibit C and incorporated herein by reference. For fiscal year 2017-18, an average blended rate of $260 per acre-foot will be used. The Capital Recovery Component shall be annually adjusted to reflect the percentage increase, if any, in the Consumer Price Index for all Urban Consumers for the Los Angeles-Anaheim-Riverside area published by the United States Department of Labor, Bureau of Labor Statistics (1982/84=100) ("CPI"). The Parties agree to annually review the cost elements and, if warranted by mutual consent of the Parties, reset the Capital Recovery Component to reflect then current costs. New or upgraded facilities that are constructed after the date of this agreement, which are clearly shown to benefit the Production, Treatment and Conveyance Services provided to Western, will be added to and incorporated into the Capital Recovery Component. Riverside shall only include costs for new or upgraded facilities which are used to convey water to Western.

10.2 Riverside Water: Western agrees to pay Riverside the Energy, O&M, and Capital Recovery Component charges, as described in Section 10.1, and a Commodity Price. Both Parties agree to use a "Shared Benefit Methodology" to calculate the Commodity Price of the Riverside Water and the savings to Western in relation to the MWD Tier 1 cost. The Shared Benefit Methodology is intended to establish an all-inclusive price that equally splits the difference between Riverside's rate to deliver Western Water, less Western's weighted average transmission and delivery costs at all current and future interconnections, and the MWD Tier 1 cost for that applicable year. The difference between the calculated all-inclusive price and Riverside's rate to deliver Western Water will be deemed to be the commodity price ("Commodity Price"). An example of said calculation and escalation is set forth below:

10.2.1 Example - If Riverside's cost to deliver Western Water is $517 per acre-foot, Western's pumping cost is $60 per acre-foot and the MWD Tier 1 cost is $979 per acre-foot, then the total cost to deliver Riverside Water to Western would be ($517 - $60 +

$979) / 2) = $718. MWD Tier 1 cost for the applicable year is _____.

10.2.2 The price would be set for fiscal year 2017-18 and calculated annually prior to November 1, through 2026 based on the cost structure described above.

10.2.3 Reconciliation: Prior to each November 1 of the Agreement term, the actual Commodity Price will be determined based on actual costs per Section 10.2 and the costs shall be reconciled against the prior invoiced costs and the difference shall be invoiced or credited in accordance, with Section 10.4. Each subsequent year, the prior year's actual average unit costs for energy and O&M, along with the Capital Recovery Component and the published MWD Tier 1 costs for the coming year will be used in the monthly billing for the following 12-months; or, until a new reconciliation occurs.

10.3 Basis of Billing: All costs shall be accrued based on the reading of Riverside's meter(s); all water produced and conveyed through Riverside's water system shall be billed based on the meter reading at the Point of Interconnection.

10.4 Invoicing and Reconciliation of Costs: For each monthly billing cycle, Riverside shall invoice Western in accordance with Section 11 of this Agreement for the costs detailed in this Section 10. Prior to each November 1 of the Agreement term, the actual costs per Section 10 shall be reconciled against the prior invoiced costs and the difference shall be invoiced or credited. Each subsequent year, the prior year's actual average unit costs for energy and O&M will be used in the monthly billing for the following 12-months; or, until a new reconciliation occurs.

10.5 Pricing Sheets: The pricing sheet for the Energy, Operations & Maintenance ("O&M") and Capital Recovery components to be charged by Riverside are set forth in Exhibit "B" attached hereto and incorporated herein by reference. The pricing sheet for the Western Water and the Riverside Water, including the Shared Benefit Methodology to be charged by Riverside, are set forth in Exhibit "D" attached hereto and incorporated herein by reference.

11. BILLING AND PAYMENT:

11.1 Riverside shall bill Western for charges due hereunder by the fifteenth (15^{th}) day of each month for services rendered during the prior month, including any required adjustments to bills previously paid by Western. Western shall pay such bills not later than the fifth (5^{th}) day of the month following the month in which bill is issued, or on the first business day thereafter if the fifth (5^{th}) day falls on a Saturday, Sunday, or holiday. Payments which are not made in full by said due dates shall thereafter accrue interest at the lesser of (i) one percent (1%) per month of the unpaid balance, or (ii) the maximum rate otherwise permitted by law applicable to this Agreement, prorated by days until payment is sent by Western.

11.2 In the event any portion of any bill is disputed, Western shall pay the bill, including the disputed amount, under protest when due. If the protested portion of the payment is found to be incorrect, Riverside shall promptly refund the protested portion, including interest at the lesser of (i) one percent (1%) per month, or (ii) the maximum rate otherwise permitted by law applicable to this Agreement, prorated by days from the date of payment by Western to the date the refund check is sent or the refund payment is otherwise made by Riverside.

11.3 If Western does not dispute in writing any billing within one hundred eighty (180) days after the bill was rendered by Riverside, Western shall be deemed to have waived any further or continuing right to dispute such bill.

11.4 Unless otherwise agreed by the Authorized Representatives, bills shall be rendered and remittances made by their submission to the following addresses:

Bills rendered by Riverside to Western:

Western Municipal Water District
14205 Meridian Parkway
Riverside, CA 92518

Payments made by Western to Riverside:

City of Riverside
Accounts Receivable
3900 Main Street
Riverside, CA 92522

11.5 If the Parties are each required to pay an amount to each other in the same calendar month under this Agreement, then such amounts with respect to each Party may be aggregated and the Parties may discharge their obligations to pay through netting of the respective amounts due, in which case the Party, if any, owing the greater aggregate amount may pay to the other Party the difference between the amounts owed.

11.6 The Parties shall conduct an audit at least once every five (5) years during the term of this Agreement in order to determine the accuracy of the calculations required to be performed for the costs and cost escalators under this Agreement. The Parties shall each pay one-half of the cost of said audits.

12. **AUTHORIZED REPRESENTATIVES:** The Parties warrant that their Authorized Representatives have the authority to bind the respective Party to all relevant commitments under this Agreement. Initially, the Parties' Authorized Representatives shall be the individuals holding the positions set forth in the notice provisions of Section 29. Any Party may at any time change the designation of its Authorized Representative by written notice to the Authorized Representatives of the other Party. Each Party's Authorized Representative is authorized to act on its behalf in the implementation of this Agreement and with respect to those matters contained herein which are the functions and responsibilities of the Authorized Representatives. Each Authorized Representative may delegate actual performance of such functions and responsibilities; provided, that any agreement of the Authorized Representatives required to be in writing shall be signed by the Authorized Representatives.

13. **LIABILITY AND INDEMNIFICATION:**

13.1 Limitation of Liability: Except as to the gross negligence or Willful

Misconduct of a Party, each Party shall release and hold harmless the other Party from and against any and all liability, loss, damage, and expense arising from, alleged to arise from, in connection with, or incident to the services rendered under this Agreement.

13.2 Limitation on Damages: No Party shall be liable for any consequential, incidental, punitive, special, or exemplary damages or lost opportunity costs, lost profit, or other business interruption damages, by statute or in tort or contract, under any provision of this Agreement.

13.3 Indemnification: Notwithstanding Section 13.1, each Party shall indemnify, defend, and hold harmless the other Party, its directors, members, officers, employees, and agents from and against any and all third-party claims, suits, or actions instituted on account of personal injuries or death of any person (including but not limited to workers and the public) or physical damage to property resulting from or arising out of the indemnitor's Willful Misconduct or grossly negligent act or omission while engaged in the performance of obligations or exercise of rights under this Agreement.

13.4 Definition of Willful Misconduct: For purposes of this Agreement, Willful Misconduct shall be defined as:

13.4.1 Action taken or not taken by a Party at the direction of its directors or other governing body, officers, or employees having management or administrative responsibility affecting its performance under this Agreement, which:

13.4.1.1 Is knowingly or intentionally taken or not taken with conscious indifference to the consequences thereof or with intent that injury or damage would result or would probably result therefrom;

13.4.1.2 Has been determined by final arbitration award or judgment or judicial decree to be a material default under this Agreement, and which action occurs or continues beyond the time specified in such arbitration award or judgment or judicial decree for curing such default, or, if no time to cure is specified therein, occurs or continues

thereafter beyond a reasonable time to cure such default; or

13.4.1.3 Is knowingly or intentionally taken or not taken with the knowledge that such action taken or not taken is a material default under this Agreement.

13.4.2 As used in this definition:

13.4.2.1 Willful Misconduct does not include any act or failure to act which is merely involuntary, accidental, or negligent.

13.4.2.2 The phrase "employees having management or administrative responsibility" means those employees of a Party who are responsible for one or more of the executive functions of planning, organizing, coordinating, directing, controlling, and supervising such Party's performance under this Agreement, with responsibility for results.

14. **RELATIONSHIP OF THE PARTIES:** The covenants, obligations, and liabilities of the Parties are intended to be several and not joint or collective, and nothing herein contained shall ever be construed to create an association, joint venture, trust, or partnership, or to impose a trust or partnership covenant, obligation, or liability on or with regard to any Party. Each Party shall be individually responsible for its own covenants, obligations, and liabilities as herein provided. No Party shall be under the control of or shall be deemed to control the other Party. Neither Party shall be the agent of or have a right or power to bind the other Party without such other Party's express written consent, except as provided in this Agreement.

15. **UNCONTROLLABLE FORCES:** If the existence of an Uncontrollable Force disables a Party from performing its obligations under this Agreement (except for such Party’s obligations to make payments hereunder), such Party shall not be considered to be in default in the performance of any such obligations while such disability of performance exists. A Party rendered unable to fulfill any of its obligations under this Agreement by reason of an Uncontrollable Force shall exercise due diligence to remove such inability with all reasonable dispatch. Nothing contained herein shall be construed so as to require a Party

to settle any strike or labor dispute in which it may be involved.

16. **AUDITS:** Each Party shall have the right to audit any costs, payments, settlements, or other supporting information pertaining to this Agreement. Any such audit shall be undertaken by the requesting Party or its representative at reasonable times and in conformance with generally accepted auditing standards. The audited Party shall fully cooperate with any such audit, the cost of which shall be paid by the requesting Party. The right to audit a billing shall extend for a period of three (3) years following the rendering of the bill. Each Party shall retain all necessary records or documentation for the entire length of such three (3) year period and shall, to the extent permitted by law, take all steps reasonably available to assure the confidentiality of the audited Party's accounting records and supporting documents.

17. **THIRD PARTY BENEFICIARIES:** Unless otherwise specified in this Agreement, there are no third party beneficiaries to this Agreement. This Agreement shall not confer any right or remedy upon any person or entity other than the Parties and their respective successors and assigns permitted under Section 19. This Agreement shall not release or discharge any obligation or liability of any third party to any Party or give any third party any right of subrogation or action over or against any Party.

18. **DISPUTE RESOLUTION:**

18.1 The Parties' Authorized Representatives shall attempt to amicably and promptly resolve any dispute arising between the Parties under this Agreement. Nothing in this Agreement shall preclude either Party from taking any lawful action it deems appropriate to enforce its rights under this Agreement.

18.2 Any action at law or in equity brought by either of the parties hereto for the purpose of enforcing a right or rights provided for by this Agreement shall be tried in the Superior Court of the County of Riverside, State of California, and the parties hereby waive all provisions of law providing for a change of venue in such proceedings to any other

county. This agreement shall be governed, construed, and enforced in accordance with the laws of the State of California, without regard to its conflict of laws rules.

18.3 In the event either party hereto shall bring suit to enforce any term of this Agreement or to recover any damages for and on account of the breach of any term or condition of this Agreement, it is mutually agreed that each party will bear their own attorneys' fees and costs.

19. **ASSIGNMENT OF INTERESTS:**

19.1 Neither Party shall assign this Agreement without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. Western expressly understands and agrees that it shall not be unreasonable for Riverside to withhold or delay its consent to any proposed or purported assignment by Western to any person or entity ("Assignee") that has not demonstrated to Riverside's reasonable satisfaction that Riverside's interests as contemplated herein will not be adversely effected thereby.

19.2 Any assignment by a Party of its interest in this Agreement which is made without the prior written consent of the other Party shall not relieve the assigning Party from primary liability for any of its duties and obligations under this Agreement, and in the event of any such assignment, the assigning Party shall continue to remain primarily liable for payment of any and all money due the other Party as provided under this Agreement, and for the performance and observance of all covenants, duties, and obligations to be performed and observed under this Agreement by the Party to the same extent as though no assignment had been made.

19.3 Whenever an assignment of a Party's interest in this Agreement is made with the written consent of the other Party, the assigning Party's assignee shall expressly assume in writing the duties and obligations under this Agreement of the assigning Party and, within thirty (30) days after any such assignment and assumption of duties and obligations, the assigning Party shall furnish, or cause to be furnished, to the other Party a true and correct

copy of such assignment and assumption of duties and obligations. Upon the effective date of such assignment, the assigning Party shall be relieved of its obligations and duties under this Agreement.

19.4 Subject to the foregoing restrictions on assignment, this Agreement shall be binding upon, inure to the benefit of and be enforceable by the Parties and their respective successors and assigns.

20. **NO DEDICATION OF FACILITIES:** Any undertaking by a Party to the other Party under this Agreement shall not constitute the dedication of the system, or any portion thereof, of that Party to the public or to the other Party, nor affect the status of that Party as an independent system.

21. **COMPLETE AGREEMENT:** This Agreement contains the entire agreement and understanding between the Parties as to the subject matter of this Agreement and supersedes all prior commitments, representations, and discussions between the Parties.

22. **CONSTRUCTION OF AGREEMENT:** Ambiguities or uncertainties in the wording of this Agreement shall not be construed for or against either Party, but shall be construed in a manner that most accurately reflects the intent of the Parties when this Agreement was executed and is consistent with the nature of the rights and obligations of the Parties with respect to the matter being construed.

23. **NONDISCRIMINATION:** During the performance of this Agreement, neither Party shall deny the Agreement's benefits to any person, nor shall either Party discriminate unlawfully against any employee or applicant for employment, on the ground or because of race, color, creed, national origin, ancestry, age, sex, sexual orientation, marital status, or disability including the medical condition of Acquired Immune Deficiency Syndrome (AIDS) or any condition related thereto. Each Party shall insure that the evaluation and treatment of employees and applicants for employment are free of such discrimination.

24. **EVENTS OF DEFAULT:** In the event that a Party shall materially default in the

performance of its obligations under this Agreement, the Authorized Representative of the non-defaulting Party may give written notice of the default to the Authorized Representative of the defaulting Party. If within thirty (30) days after the non-defaulting Party's Authorized Representative shall have given such written notice to the defaulting Party's Authorized Representative, the defaulting Party shall have failed to cure the default in its performance of this Agreement, or if such default requires more than thirty (30) days to cure and the defaulting Party fails to commence such cure and diligently prosecute such cure to completion, in addition to any other remedies provided by law, the non-defaulting Party may terminate this Agreement by written notice of termination as provided for in Section 5.2.2. In addition to any other cause of default arising hereunder, a Party shall be in default if:

24.1 It becomes insolvent; or

24.2 It makes a general assignment of substantially all of its assets for the benefit of its creditors, files a petition for bankruptcy or reorganization or seeks other relief under any applicable insolvency laws; or

24.3 It has filed against it a petition for bankruptcy, reorganization or other relief under any applicable insolvency laws and such petition is not dismissed within sixty (60) days after it is filed.

25. **AMENDMENTS:** This Agreement may be modified, supplemented or amended only by a writing duly executed by the Parties.

26. **WAIVERS:** Any waiver at any time by any Party of its rights with respect to a default under this Agreement, or with respect to any other matter arising in connection with this Agreement, shall not be deemed a waiver with respect to any subsequent default or other matter arising in connection therewith. Any delay, short of the statutory period of limitation in asserting or enforcing any right, shall not be deemed a waiver of such right.

27. **SECTION HEADINGS:** All captions and headings appearing in this Agreement are inserted to facilitate reference and shall not govern, except where logically necessary, the

interpretations of the provisions hereof.

28. **GOVERNING LAW:** This Agreement shall be interpreted, governed by, and construed under the laws of the State of California or the laws of the United States as applicable, as if executed and to be performed wholly within the state of California.

29. **NOTICES:**

29.1 Any notice, demand or request provided for in this Agreement, or served, given or made in connection with it, shall be in writing and shall be deemed properly served, given or made if delivered in person or sent by United States mail, postage prepaid, to the persons specified below, unless otherwise provided for in this Agreement:

To City of Riverside:	**To Western:**
City of Riverside Public Utilities Department 3750 University Ave., 3rd floor Riverside, CA 92501 Attn: General Manager	Western Municipal Water District 14205 Meridian Parkway Riverside, CA 92518 Attn: General Manager

29.2 Either Party may at any time, by written notice to the other Party, change the designation or address of the person so specified as the one to receive notices pursuant to this Agreement.

30. **SIGNATURE CLAUSE:** The signatories hereto represent that they have been appropriately authorized to enter into this Cooperative Agreement for Water Production and Conveyance on behalf of the Party for whom they sign.

(signatures on following page)

CITY OF RIVERSIDE,
A California Charter City and
Municipal Corporation

By: _____
John A. Russo
City Manager

Date: _____

WESTERN MUNICIPAL WATER DISTRICT

By: _____
John V. Rossi
General Manager

Date: _____

Attest:

By: _____
Colleen J. Nicol
City Clerk

Date: _____

APPROVED AS TO FORM
CITY ATTORNEY'S OFFICE

BY _____
Deputy City Attorney

RIVERSIDE – WESTERN
2017 COOPERATIVE AGREEMENT FOR
LONG-TERM WHEELING AND SURPLUS WATER SALES

EXHIBIT A

EXAMPLE OPERATING PLAN

CALENDAR YEAR 2018 OPERATING PLAN

FOR

COOPERATIVE AGREEMENT FOR LONG-TERM WHEELING AND SURPLUS WATER SALES

BETWEEN THE CITY OF RIVERSIDE AND WESTERN MUNICIPAL WATER DISTRICT

The Operating Committee, comprised of representatives from the City of Riverside (Riverside) and Western Municipal Water District (Western) agree to the delivery schedule in Table 1 for Calendar Year 2018.

Table 1. Calendar Year 2018 Delivery Schedule (acre-feet)

Source Water	Jan	Feb	Mar	Apr	May	Jun*	Jul*	Aug*	Sep*	Oct	Nov	Dec	TOTAL
Western Water	925	925	925	925	925	*No guaranteed deliveries.				775	-	-	5400
Riverside Water	-	-	-	-	-	*If capacity exists, deliveries may occur.				150	925	925	2000
TOTAL	**925**	**925**	**925**	**925**	**925**					**925**	**925**	**925**	**7408**

Per the Cooperative Agreement, if the delivery schedule above is unattainable, the Operating Committee has the ability to, upon mutual agreement to adjust monthly delivery targets and/or make-up up to 500 acre-feet of deliveries in the next calendar year.

City of Riverside Authorized Designee

Signature: _____

Title: _____

Western Municipal Water District Authorized Designee

Signature: _____

Title: _____

RIVERSIDE – WESTERN
2017 COOPERATIVE AGREEMENT FOR
LONG-TERM WHEELING AND SURPLUS WATER SALES

EXHIBIT B

PRICING SHEETS FOR ELECTRICITY, O&M AND CAPITAL RECOVERY COMPONENTS

EXHIBIT 'B'

EXAMPLE PRICING SHEET FOR THE RIVERSIDE -WESTERN WHEELING & SURPLUS WATER SALES AGREEMENT

(Electricity, O&M, and Capital Recovery Components)

Not Part of the Agreement. For Example Only.

	Escalator	Mockingbird PS (Van Buren Highline)	Whitegates (Green Orchard BS)	Blended Rate
Electricity		$/AF	$/AF	$/AF
Average Electrical Pumping Cost Estimate[1]	Based on Actuals	$94	$157	$115
Operations & Maintenance (O&M)				
Supply Operations Cost[2]		$62	$62	$62
Distribution Operations Cost[3]	Based on	$42	$42	$42
Supply & Distribution Maintenance Cost[4]	Actuals	$2	$2	$2
Average Capitalized Pump & Well Maintenance Cost[5]		$36	$36	$36
O&M Subtotal:		$142	$142	$142
Capital Recovery				
Waterman Wells[6]		$44	$44	$44
Waterman Supply Transmission Pipeline[7]		$105	$105	$105
Distribution System Transmission Lines[8]	ENR LA Metro CCI	$66	$133	$89
Reservoir Storage[9]		$0	$0	$0
Booster Stations[10]		$12	$42	$22
Capital Recovery Subtotal:		$227	$324	$260
Total ($/AF):		$463	$623	$517
AFY to Deliver:		4,908	2,500	

Notes: (Capital Recovery & Maintenance costs related only to RPU Water Facilities along hydraulic path to Western Delivery Points.)

1. Average annual electrical unit cost for water delivery to Mockingbird & Whitegates Western Delivery Points based on actual electrical billings in 2015. Used average electrical cost from Amendment 1 as presented in Energy Cost Sheet.
   Electrical Charge, will be trued up at the end of each year. The previous years information will be used to establish a baseline for the coming year.
   At the end of each year, the costs will be trued-up based on actuals and a debit/credit will be issued.

2. Operations $/AF Unit Cost for Bunker Hill Basin (Waterman Supply Transmission Pipeline) Water Production. Calculated in Operations & Maint. Sheet, under Exhibit C.
   Water Fund Cost Center total spending proportional to share of power cost for water production of Waterman wells for FY 2013-2014.
   FY 2013-2014 Water Fund Cost Center 6200000 (Water Production & Operations) [41, 42, & 88 Only] Less Line Item Accounts:
   a. Settlement Reimbursements b. 422200 (Power Costs) c. 422923 (Capacity/Standby Charges) d. 447100 (Taxes and Assessments)
   The sum of the cost components divided by the total production of Waterman wells (including production associated with Western acquired supplies) will be the basis for the Supply Operations Cost.

3. Operations $/AF Unit Cost for Linden/Evans Reservoir (Potable Water System) Water Distribution. Calculated in Operations & Maint. Sheet, under Exhibit C.
   Water Fund Cost Center total spending proportional to share of power cost for water distribution for FY 2013-2014.
   FY 2013-2014 Water Fund Cost Center 6200000 (Water Production & Operations) [41, 42, & 88 Only] Less Line Item Accounts:
   a. 422200 (Power Costs) b. 422923 (Capacity/Standby Charges) c. 447100 (Taxes and Assessments)
   The sum of the cost components divided by the total potable water sales (including Western acquired supplies) will be the basis for the distribution Operations Cost.

4. Maintenance $/AF Unit Cost for Bunker Hill Basin (Waterman Supply Transmission Pipeline) Production and Linden/Evans Reservoir (Potable Water System) Distribution. Calculated in Operations & Maint. Sheet, under Exhibit C.
   Water Fund Cost Center total spending proportional to RPU retail water sales for FY 2013-2014.
   1a. Total capital replacement cost of Bunker Hill Basin (Waterman Supply Transmission Pipeline) production system divided by total water production from Waterman Wells (including Western acquired supplies)
   2a. Total capital replacement cost of Linden/Evans Reservoirs to 1200 Zone Mockingbird and 1700 Zone Whitegates Deliveries divided by total potable water sales (including Western acquired supplies)
   FY 2013-2014 Water Fund Cost Center 6205000 (PU Water Field Operations/Maintenance) divided by total RPU Water System capital replacement cost, equated to 0.58%
   1b. Resulting capital replacement cost ($/AF) multiplied by 0.58% for apportioned production system maintenance cost
   2b. Resulting capital replacement cost ($/AF) multiplied by 0.58% for apportioned distribution system maintenance cost
   Western's wheeled water flow weighted proportional unit cost obtained from resulting apportioned production & distribution system maintenance cos
   O&M, will be trued up at the end of each year. The previous years information will be used to establish a baseline for the coming year.
   At the end of each year, the costs will be trued-up based on actuals and a debit/credit will be issued.

5. Average Capitalized Maintenance Unit Cost for all RPU Pumps & Wells. Calculated in Operations & Maint. Sheet, under Exhibit C.
   FY 2013-2014 Water Fund Cost Center 6200000 (Facility Rehabilitation, 470803).
   Total Facility Rehab cost for FY 2013-2014 divided by the total potable water sales will be the basis for the Pump & Well Maintenance Cost.

6. $/AF Unit cost for replacement of existing RPU wells over 100 year life cycle at 5% interest. Calculated in Capital Recovery Sheets, under Waterman Wells.

7. $/AF Unit cost for replacement of existing RPU Waterman Supply Transmission Pipeline over 120 year life cycle at 5% interest. Calculated in Capital Recovery Sheets, under Waterman Supply Line.

8. $/AF unit cost for replacement of existing RPU Distribution System Transmission waterlines over 120 year life cycle at 5% interest. Calculated in Capital Recovery Sheets, under Distribution System Transmission Lines.

9. Reservoir usage not critical during non-firm deliveries. During high demands, reservoir capacity reserved for RPU Customers. During high demands, reservoir capacity reserved for RPU Customers.

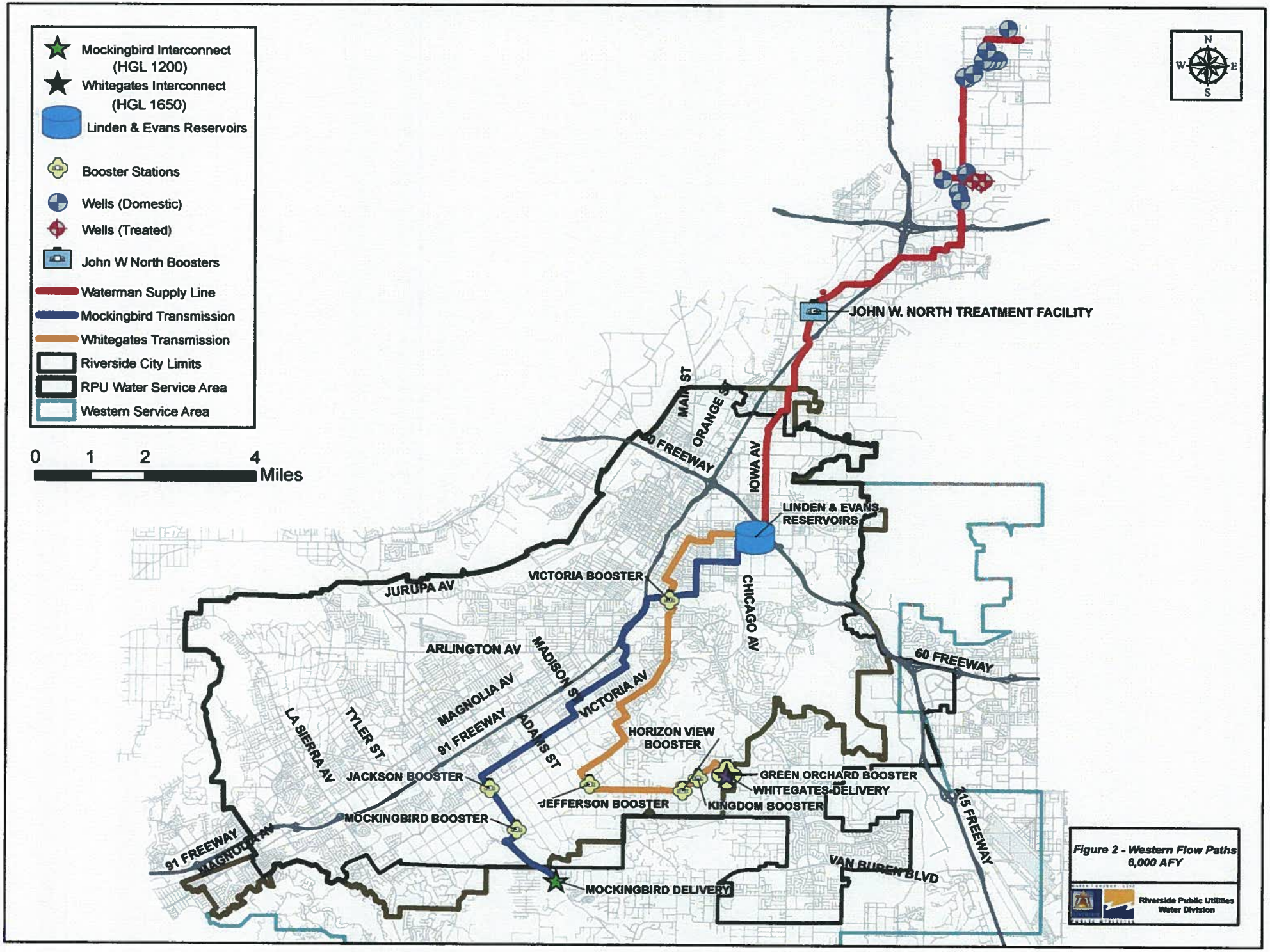
10. $/AF unit cost for replacement of existing RPU Booster Stations over 60 year life cycle at 5% interest. Calculated in Capital Recovery Sheets, under Pump Stations.

RIVERSIDE – WESTERN
2017 COOPERATIVE AGREEMENT FOR
WATER PRODUCTION AND CONVEYANCE

EXHIBIT C

FLOW PATH SCHEMATIC

Exhibit C – Flow Path Schematic



RIVERSIDE – WESTERN
2017 COOPERATIVE AGREEMENT FOR
WATER PRODUCTION AND CONVEYANCE

EXHIBIT D

WHEELING, SHARED SAVINGS AND SHARED BENEFIT METHODOLOGY

EXHIBIT 'D'

EXAMPLE PRICING SHEET FOR THE RIVERSIDE - WHEELING, SURPLUS WATER SALES, SHARED BENEFIT METHODOLOGY

Not Part of the Agreement. For Example Only.

	Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
WHEELING PRICE											
Volume (AF):		5,408									
Assumed inflation:		4%									
A	RPU Capital Recovery	$ 259	$ 269	$ 280	$ 291	$ 303	$ 315	$ 328	$ 341	$ 354	$ 369
B	Energy	$ 115	$ 120	$ 124	$ 129	$ 135	$ 140	$ 146	$ 151	$ 157	$ 164
C	O&M	$ 142	$ 148	$ 154	$ 160	$ 166	$ 173	$ 180	$ 187	$ 194	$ 202
D	Wheeling Unit Price	$ 516	$ 537	$ 558	$ 580	$ 604	$ 628	$ 653	$ 679	$ 706	$ 734
E	**Wheeling Revenue**	**$ 2,790,528**	**$ 2,902,149**	**$ 3,018,235**	**$ 3,138,964**	**$ 3,264,523**	**$ 3,395,104**	**$ 3,530,908**	**$ 3,672,144**	**$ 3,819,030**	**$ 3,971,791**

* Capital Recovery will be escalated at CPI. Energy and O&M charges are based on actual costs calculated annually.

		2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	
WHEELING PRICE - Continued												
A	RPU Capital Recovery	$ 383	$ 399	$ 415	$ 431	$ 449	$ 466	$ 485	$ 505	$ 525	$ 546	
B	Energy	$ 170	$ 177	$ 184	$ 191	$ 199	$ 207	$ 215	$ 224	$ 233	$ 242	
C	O&M	$ 210	$ 219	$ 227	$ 236	$ 246	$ 256	$ 266	$ 277	$ 288	$ 299	
D	Wheeling Unit Price	$ 764	$ 794	$ 826	$ 859	$ 894	$ 929	$ 966	$ 1,005	$ 1,045	$ 1,087	**20-YR Revenue**
E	**Wheeling Revenue**	**$ 4,130,663**	**$ 4,295,890**	**$ 4,467,725**	**$ 4,646,434**	**$ 4,832,292**	**$ 5,025,583**	**$ 5,226,607**	**$ 5,435,671**	**$ 5,653,098**	**$ 5,879,222**	**$ 83,096,562**

* Capital Recovery will be escalated at CPI. Energy and O&M charges are based on actual costs calculated annually.

SURPLUS WATER PRICE (SHARED SAVINGS)

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
Volume (AF):		2,000										
Assumed inflation:		4%	In 2017, MWD has a published escalation rate of 4% over the next 10-yrs.									
F	MWD Projected Unit Price	$ 979	$ 1,015	$ 1,053	$ 1,092	$ 1,123	$ 1,164	$ 1,205	$ 1,249	$ 1,296	$ 1,344	
G	WMWD Additional Transmission Costs	$ 60	$ 62	$ 65	$ 67	$ 70	$ 73	$ 76	$ 79	$ 82	$ 85	
H	RPU Commodity Charge	$ 202	$ 208	$ 215	$ 222	$ 225	$ 232	$ 238	$ 246	$ 254	$ 262	
I	RPU Capital Recovery	$ 259	$ 269	$ 280	$ 291	$ 303	$ 315	$ 328	$ 341	$ 354	$ 369	
J	Energy	$ 115	$ 120	$ 124	$ 129	$ 135	$ 140	$ 146	$ 151	$ 157	$ 164	
K	O&M	$ 142	$ 148	$ 154	$ 160	$ 166	$ 173	$ 180	$ 187	$ 194	$ 202	
L	Surplus Water Sales Unit Price	$ 718	$ 745	$ 773	$ 802	$ 828	$ 859	$ 891	$ 925	$ 960	$ 997	**10-YR Revenue**
M	**Surplus Water Sales Revenue**	**$ 1,435,000**	**$ 1,489,240**	**$ 1,546,210**	**$ 1,604,938**	**$ 1,656,456**	**$ 1,718,794**	**$ 1,781,985**	**$ 1,849,065**	**$ 1,920,067**	**$ 1,993,030**	**$ 16,994,785**

* RPU Commodity Charge will be calculated annually based on splitting the difference between Riverside's wheeling cost (Capital Recovery, Energy, and O&M), less Western's weighted average transmission and delivery costs at all current and future interconnections, and MWD's Tier 1 costs.

SHARED BENEFIT METHODOLOGY

N	**Western's Savings**	**$ 403,000**	**$ 415,960**	**$ 429,998**	**$ 444,078**	**$ 449,161**	**$ 463,208**	**$ 476,176**	**$ 491,023**	**$ 507,704**	**$ 524,172**	**$ 4,604,482**
O	**RPU Commodity**	**$ 403,000**	**$ 415,960**	**$ 429,998**	**$ 444,078**	**$ 449,161**	**$ 463,208**	**$ 476,176**	**$ 491,023**	**$ 507,704**	**$ 524,172**	**$ 4,604,482**

Appendix I Meeks and Daley/EVMWD Lease Agreement

AGREEMENT BETWEEN THE ELSINORE VALLEY MUNICIPAL WATER DISTRICT AND THE WESTERN MUNICIPAL WATER DISTRICT REGARDING THE LEASE OF GROUNDWATER RIGHTS EXPORTABLE FROM THE SAN BERNARDINO BASIN AREA

THIS LEASE OF GROUNDWATER RIGHTS ("Lease") is entered into as of the latest date of signatory execution shown in Section 8.8, by and between ELSINORE VALLEY MUNICIPAL WATER DISTRICT ("EVMWD" or "Lessor"), a municipal water district and WESTERN MUNICIPAL WATER DISTRICT ("WESTERN" or "Lessee"), a municipal water district, each a "Party" and collectively referred to herein as "Party" or "Parties." This Lease shall take effect on January 1, 2021 (the "Effective Date").

RECITALS

A. Meeks & Daley Water Company ("MDWC"), a mutual water company and California corporation, or its predecessors in interest, is a party to the judgment known as Western Municipal Water District of Riverside County v. East San Bernardino County Water District. et al., Riverside County Superior Court Case No. 78426 (1969), as amended on February 28, 1992 (the "Judgment").

B. Pursuant to the Judgment, MDWC has 7,833 Acre Feet (AF) of water rights (the "Water Rights") to extract groundwater from the Bunker Hill Basin of the San Bernardino Basin Area (the "SBBA") as the SBBA is defined therein.

C. In 1989, EVMWD purchased the Temescal Water Company, which owned an interest and entitlement to water from MDWC. As a result of that purchase, EVMWD now owns a controlling interest in MDWC's right to produce and export 4,680.6 AF of groundwater (the "Lease Water") each year from the Bunker Hill Basin of the SBBA. Pursuant to the Judgment, the Lease Water shall increase or decrease in quantity as necessary to satisfy the "New Conservation" provision as that term is defined in the Judgment.

D. On August 23, 2001, Lessee and Lessor entered into the agreement entitled *Agreement Between the Western Municipal Water District of Riverside County and the Elsinore Valley Municipal Water District for the Reciprocal Use of Certain Assets Related to the Production and/or Conveyance of Water* (hereinafter "Reciprocal Use Agreement"), whereby Lessee may utilize Lessor's Lease Water in exchange for Lessor's utilization of Lessee's owned capacity in the Mills Gravity Pipeline. From 2001 to 2020, WESTERN received water from the Bunker Hill Basin of the SBBA pursuant to the Reciprocal Use Agreement and EVMWD's rights to MDWC water under the Judgment.

E. Lessee desires to lease the Lease Water from Lessor and Lessor desires to lease the Lease Water to Lessee pursuant to the terms of this Lease.

F. In 2017, Lessee entered into the Water Production, Conveyance and Surplus Sales Agreement (the "Wheeling Agreement") with the City of Riverside ("Riverside") whereby Riverside extracts and conveys to WESTERN both MDWC water and Riverside surplus water that it obtains from the SBBA. Pursuant to the Wheeling Agreement, Riverside will deliver Lease Water to WESTERN until 2037, unless extended.

OPERATIVE PROVISIONS

NOW, THEREFORE, in consideration of the facts set forth above and the covenants, conditions and promises set forth below, the Parties hereto agree as follows:

Section 1. Terms.

1.1 Incorporation of Recitals. The Parties hereby affirm the truth of the facts set forth in the Recitals and incorporate the Recitals as if set forth in full herein.

1.2 Lease of Lease Water. Lessor agrees to lease the Lease Water to Lessee and Lessee agrees to lease the Lease Water from Lessor pursuant to the terms herein.

Section 2. Lease Term.

2.1 Term of Lease. Subject to the early termination provisions in Section 8 below, this Lease shall have a term of twenty (20) years (the "Term") commencing on the Effective Date and terminating automatically on December 31, 2041, unless extended pursuant to Section 2.2.

2.2 Extensions. The Term in Section 2.1 may be extended in five (5) year increments up to four (4) times for an additional twenty (20) years if agreed to in writing by the Parties. Should WESTERN desire to extend the Term, it shall notify EVMWD in writing at least one hundred and eighty (180) days prior to the then applicable expiration date. Upon WESTERN providing written notification to EVMWD requesting a lease extension, EVMWD shall respond to WESTERN within ninety (90) days confirming approval or denial of the request for lease extension.

2.3 No Continuing Obligation to Provide Water Upon Expiration of Term. Lessor shall have no continuing obligation to Lessee: (i) to extend or renew the Term of this Lease, (ii) to lease the Lease Water following the expiration or early termination of this Lease, or (iii) pertaining to the Water Rights whatsoever following the expiration or early termination of this Lease.

Section 3. Rate, Guarantee and Payment.

3.1 Base Rate. In year one of this Lease, Lessee shall pay Lessor one hundred ninety-eight dollars and ninety one cents ($198.91) per acre foot (the "Base Rate") multiplied by 4,680.6 AF (the "Lease Water").

3.2 Guarantee. Unless one of the Payment Exceptions in section 3.5 applies, Lessee shall purchase the entire amount of "Lease Water" from Lessor every year.

3.3 Escalator. Beginning one (1) year after the Effective Date and continuing every year during the Term of this Lease, the Base Rate shall increase according to the non-seasonally adjusted, average Consumer Price Index (CPI-U) for all items and for all urban consumers in Los Angeles-Long Beach-Anaheim, CA, plus one (1) percent (the "Escalator"). However, the Escalator shall not be less than two and one quarter (2.25) percent or greater than four and one quarter (4.25) percent.

3.4 Yearly Escalation of Lease Rate. In the first year of the lease, EVMWD shall increase the Base Rate by the Escalator to determine the lease rate ("Lease Rate"). Every year thereafter, EVMWD shall increase the then current Lease Rate by the Escalator to determine the then current Lease Rate for the following year. Lessor shall calculate the Escalator annually, after the Effective Date, utilizing the August CPI-U. On or before October 1st, during the Term of the Lease, Lessor shall provide written notice to Lessee of the Escalator for the next calendar year based on Section 3.3 and the new Lease Rate

3.5 Payment Exceptions. Payment for Lease Water shall be reduced by the amount of water not delivered or available for delivery as a result of the following limited circumstances (the "Payment Exceptions") only:

3.5.1 Riverside, through no fault of Lessee, is unable or unwilling to deliver all of the Lease Water;

3.5.2 The Safe Yield of the SBBA, as that term is defined in the Judgment, is recalculated or otherwise revised by the Watermaster or a Court of competent jurisdiction, reducing the amount of Lease Water that may be extracted;

3.5.3 The parties to the Judgment agree to reduce extractions and/or exports from the SBBA, or WESTERN and EVMWD agree in writing to reduce extractions from the SBBA;

3.5.4 A court of competent jurisdiction or a regulatory agency with legal authority over the matter directs that the export of Lease Water by Lessee from the SBBA be reduced or curtailed; or

3.5.5 SBBA water quality prevents delivery of some or all of the Lease Water.

The payment for Lease Water shall not be reduced where all of the Lease Water is legally available for export under the Judgment.

3.5.6 Force Majeure

(a). The nonperformance of any of its obligations under the Lease was due to an unforeseen Force Majeure Event as defined in paragraph (b) of this subsection that prevents WESTERN from receiving Lease Water, on condition that the party complies with the conditions in paragraph (c) below.

(b). A Force Majeure Event shall mean an unforeseen act of God; war; riot; act of terrorism, domestic or foreign; embargo; governmental rule, regulation or decree; flood, fire, hurricane, tornado, or other casualty; earthquake; strike, lockout, or other labor disturbance; the unavailability of labor or materials to the extent beyond Lessee's control; pandemics, epidemics, local disease outbreaks, public health emergencies, and quarantines; or any other events or circumstances not within Lessee's reasonable control, whether similar or dissimilar to any of the foregoing.

(c). Upon occurrence of a Force Majeure Event, Lessee shall promptly notify Lessor that a Force Majeure Event has occurred, its anticipated effect on performance, including its expected duration and shall furnish Lessor with periodic reports regarding the progress of the Force Majeure Event. Lessee shall use reasonable diligence to minimize damages and resume performance. Disagreements over the applicability of this section shall be resolved per the Dispute Resolution provision in Section 9.4.

3.6 Payment of Lease Consideration. Lessee shall pay Lessor the Base Rate or the escalated Lease Rate in twelve equal monthly payments on or before the 15th day of the month (the "Due Date") starting in January 2021. It is Lessee's sole obligation to inform Lessor of any applicable Payment Exception pursuant to Section 3.5 above, should one exist, within 60 days of Lessee learning or receiving actual notice that the Payment Exception applies, or such Exception shall be deemed waived. Within 30 days of Lessor receiving notice of a valid Payment Exception, Lessor shall recalculate the amount of lease water to account for the Payment Exception and modify Lessee's monthly payment beginning on the date the Payment Exception was identified to account for the change.

3.7 Late Payment. Payments not submitted in full by said Due Date shall accrue interest at 1% per month multiplied by the unpaid balance applicable to this Agreement, prorated by the number of days between the Due Date and the date EVMWD receives the payment.

3.8 San Bernardino Water Conservation District Assessments. Lessor shall pay the groundwater extraction fee (also referred to as the Groundwater Charge Assessment or "pump tax") of $13.19 per AF of groundwater actually extracted to the San Bernardino Water Conservation District. Lessor acknowledges that the amount of this fee and the entity to which the fee is paid may change from time to time. Lessor and Lessee agree that should the Groundwater Charge Assessment exceed $20.00 per AF, Lessor and Lessee shall split equally the portion of the charge that exceeds $20.00 per AF.

Section 4. Production and Delivery of Lease Water.

4.1 Production and Delivery of Lease Water. Lessee shall be solely responsible for the production, treatment and delivery of the Lease Water.

4.2 Lessor Obligations. Lessor shall have no responsibilities or obligations whatsoever in regard to the extraction, production, treatment, or delivery of the Lease Water.

Section 5. No Warranties or Representations by Lessor.

5.1 Lease Water Leased As Is. Lessee acknowledges that Sections 3.5.5 and 7.6.2 shall be Lessee's only recourse should the quality, potability or fitness of the Lease Water be unacceptable. The Lease Water is being leased to Lessee on an "as is" basis, and Lessee leases such Lease Water from Lessor without reliance upon any representation, promise or inducement by Lessor, or any of its employees, agents or representative, or any other person, concerning the quality, potability, or fitness of the Lease Water, for Lessee's intended use.

5.2 No Representation or Warranty Concerning Lease Water. Lessee acknowledges that neither Lessor, nor any of its employees, agents or representatives, has made any written or oral representation, promise, warranty or statement, whether express or implied, concerning the Lease Water, its availability, its quality or potability, its fitness for Lessee's intended use or any other purpose or use, its value, or any other promise, representation or inducement not expressly set forth in this Lease.

Section 6. Indemnities.

6.1 Lessor and Lessee shall not be liable or accountable at any time or in any manner for any loss, damage, or injury whatsoever to the person or the property of any person or entity whatsoever, including but not limited to any employee, agent or contractor of Lessee, from any cause whatsoever arising out of or in connection with this Lease or the Lease Water, the quality of the Lease Water, the lack of availability of Lease Water, the inability to extract, produce or deliver the Lease Water, or directly or indirectly from any condition of the Lease Water.

6.2 Indemnity by Lessor. Lessor hereby indemnifies and agrees to defend and hold harmless Lessee and its affiliates, officers, employees and directors, from and against any and all demands, claims, actions, proceedings, damages, liabilities, losses, fees, costs or expenses (including without limitation reasonable attorneys' fees and the costs of any investigation) directly or indirectly arising from any lawsuit challenging Lessor's ownership right to the Lease Water including the right to obtain, pump, and control the Lease Water.

6.3 Indemnity by Lessee. Lessee hereby indemnifies and agrees to defend and hold harmless Lessor and its affiliates, officers, employees and directors, from and against any and all demands, claims, actions, proceedings, damages, liabilities, losses, fees, costs or expenses (including without limitation reasonable attorneys' fees and the costs of any investigation) directly or indirectly arising from the production of the Lease Water and the delivery of such water to Lessee's customers pursuant to this Agreement.

6.4 Ownership of Water Rights and Reporting. As part of the material consideration for this Lease, Lessor warrants that it has right, title, and ownership to and in the Water Rights and Lessee hereby covenants and promises never to assail or contest same. Lessor shall report WESTERN's lease of the Lease Water to the Watermaster as attributable to EVMWD's Meeks and Daley Water Rights as identified in the Judgment.

6.5 Compliance with Laws. Lessee shall keep itself fully informed of all existing and future state and federal laws and all county and city ordinances and regulations which in any manner affect the activities or rights of Lessee under this Lease, the storage and delivery of the Lease Water, and of all such orders and decrees of bodies or tribunals having jurisdiction or authority over same. Lessee shall at all times observe and comply with all applicable existing and future laws, ordinances, regulations, orders and decrees, and shall defend, protect and indemnify Lessor and its affiliates, officers, employees and directors from and against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by Lessee or any person or entity holding title under Lessee.

6.6 Assignment and Sublease. Lessee shall not, without the prior written consent of Lessor (which shall not be unreasonably withheld) either voluntarily or by operation of law, assign, mortgage, hypothecate, sublease or otherwise transfer this Lease, or any portion of or interest in this Lease.

Section 7 Default and Termination.

7.1 Notice of Non-Compliance. Each Party shall have a reasonable opportunity to assert matters which it believes have not been undertaken in accordance with this Lease, to explain the basis for such assertion, and to receive from the other Party a justification of its position on such matters. If either Party concludes that the other Party has not complied in good faith with the terms of the Lease then such Party may issue a written "Notice of Non-Compliance" ("Notice of Non-Compliance") mailed to the non-complying Party, specifying the grounds therefore and all facts demonstrating such non-compliance. The Party receiving a Notice shall have thirty (30) days to cure or remedy the non-compliance identified in the Notice, or if such cure or remedy is not reasonably capable of being carried out to completion within such thirty (30) day period, to commence to cure or remedy the noncompliance and to diligently and in good faith prosecute such cure or remedy to completion. If the Party receiving the Notice does not believe it is out of compliance, it may contest the Notice of Non-Compliance by responding in writing within thirty (30) days after receipt. If a response to the Notice of Non-Compliance has not been received in the offices of the Party alleging the non-compliance within the prescribed time period, the Notice shall be conclusively presumed to be valid. If a Notice of Non-Compliance is contested, the Parties shall, for a period of not less than fifteen (15) days after receipt of the response, seek to arrive at a mutually acceptable resolution of the matter(s) occasioning such Notice. In the event a cure or remedy is not timely effected or, if the Notice of Non-Compliance is contested and the parties are not able to arrive at a mutually acceptable resolution of the matter(s) by the end of the fifteen (15) day period, the Party alleging the non-compliance may thereupon pursue the remedies provided in Section 7.2. After complying with this Section 7.1, either Party may seek termination of this Lease as set forth herein, and in the event this Lease is appropriately terminated, neither Party shall have any further obligation hereunder.

7.2 Remedies on Default. Should either Party breach this Lease, after complying with the provisions in Section 7.1, the other Party may terminate this Lease in addition to any other remedy provided for by law or in equity.

7.3 Waiver of Breach. The waiver of any breach of any term, covenant, or condition of this Lease shall not be deemed a continuing waiver of such term, covenant or condition, or a waiver of any subsequent breach of the same or any other term, covenant or condition contained in this Lease, unless such waiver is in writing signed by the waiving Party.

7.4 Cumulative Remedies. The remedies in Sections 7.1 and 7.2 above shall not be exclusive, but shall be cumulative and in addition to any and all other remedies now or hereafter allowed by law and the exercise of one or more of said rights, powers, elections or remedies shall not impair a Parties right to exercise any other right, power, election or remedy.

7.5 Right to Terminate Without Cause. Notwithstanding any other provision of this Lease, either Party shall have the right, in its sole and absolute discretion, for any reason, with or without cause, to terminate this Lease prior to its expiration, by giving eighteen (18) months written notice of termination to the other Party.

7.6 Lessee's Right to Terminate For Specified Occurrences. Notwithstanding any other provision of this Lease, Lessee shall have the right to terminate this Lease prior to its expiration, by giving twelve (12) months written notice of termination to Lessor, for any of the following reasons:

7.6.1 The Wheeling Agreement between WESTERN and Riverside is terminated for any reason or WESTERN is not otherwise able to take delivery of the Lease Water through no fault of its own; or

7.6.2 The water quality of the SBBA does not meet Lessee's quality objectives and such water quality deficiencies cannot be cured with reasonably available treatment technologies at a reasonable cost to the Lessee.

Section 8. Miscellaneous.

8.1 Notices. Any notice, payment or instrument required or permitted to be given or delivered by this Lease may be given or delivered by personal delivery, by email, or by depositing same in any reputable overnight mail carrier, postage prepaid, and addressed as follows:

To Lessor: Elsinore Valley Municipal Water District
Attn: General Manager
P.O. Box 3000
31315 Chaney Street
Lake Elsinore, CA 92531
Email: generalmanager@evmwd.net

If to Lessee: Western Municipal Water District
Attn: General Manager
14205 Meridian Parkway
Riverside, CA 92518
Email: generalmanager@wmwd.com

Notice may also be provided to such other person or address as either Party may direct in writing. Except where service is by personal delivery or by registered or certified mail, return receipt requested, service of any instrument or writing shall be deemed completed twenty-four (24) hours after deposit with a reputable overnight mail carrier. The Parties may agree in writing to other acceptable methods of providing notice per this Section, to include delivery of notice by email.

8.2 Warranty of Authority. Each representative of Lessor and Lessee affixing his or her signature to this Lease warrants and represents by such signature that he or she has the full legal authority to bind his or her respective party to all of the terms, conditions and provisions therein, that his or her respective party has the full legal right, power, capacity and authority to enter into

this Lease and perform all of its provisions and obligations, and that no other approvals or consents are necessary in connection therewith.

8.3 Headings. The titles and headings of Sections of this Lease, as herein set forth, have been inserted for the sake of convenience only, and are not to be taken, deemed or construed to be any part of the terms, covenants or conditions of this Lease, or to control, limit or modify any of the terms, covenants or conditions hereof.

8.4 Disputes. The Parties desire to informally resolve all disputes related to this Lease whenever possible, at the lowest possible level, and triggering of the dispute resolution procedures described herein shall only occur where the Parties after complying with the Notice of Non-Compliance provisions in Section 7.1, are unable to resolve matters without invoking formal dispute resolution procedures. Should compliance with Section 7.1 prove unsuccessful, the Parties agree to neutral facilitation/mediation of the dispute as a next step prior to filing a lawsuit or otherwise seeking judicial intervention. Where facilitation/mediation is unable to successfully resolve the dispute, then either Party, upon providing 30 days-notice to the other Party, may initiate judicial proceedings in the Superior Court for the County of Riverside.

In the event that any action is commenced by a Party to this Lease against the other to enforce its rights or obligations arising from this Lease or seeking to interpret this Lease, venue for such action shall be in Riverside County, California, and the prevailing party in such action (whether or not it is prosecuted to judgment), in addition to any other relief and recovery ordered by the court, shall be entitled to recover any applicable statutory costs, plus reasonable attorneys' fees and expert witness fees.

8.5 Integration, Construction and Amendment. This Lease represents the entire understanding of Lessor and Lessee as to those matters contained therein, and no prior oral or written understanding shall be of any force or effect with respect to those matters covered thereby. This Lease shall be governed by the laws of the State of California and construed as if drafted by both Lessor and Lessee. This Lease may not be modified, altered or amended except in writing signed by both Lessor and Lessee.

8.6 Successors. Subject to Section 7.5, all terms, conditions and provisions of this Lease shall inure to the benefit of and be binding on, Lessor, Lessee, and their respective successors and assigns.

8.7 Partial Invalidity. If any term, covenant, condition or provision of this Lease is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions hereof shall remain in full force and effect and shall in no way be affected, impaired, or invalidated thereby.

8.8 Counterparts. This Lease may be signed in counterparts, each of which shall constitute an original and which collectively shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Lease to take effect on the Effective Date defined above.

"LESSOR"
Elsinore Valley Municipal Water District

Greg Thomas, General Manager

NOV 19, 2020
Date

"LESSEE"
Western Municipal Water District

Craig D. Miller, P.E., General Manager

11/18/2020
Date

J

Appendix J City of Riverside and Western 2021 Operating Plan

CALENDAR YEAR 2021 OPERATING PLAN

FOR

COOPERATIVE AGREEMENT FOR LONG-TERM WHEELING AND SURPLUS WATER SALES BETWEEN CITY OF RIVERSIDE AND WESTERN MUNICIPAL WATER DISTRICT

The Operating Committee, comprised of representatives from the City of Riverside (Riverside) and Western Municipal Water District (Western) agree to the estimated delivery targets in Table 1 for Calendar Year 2021. Monthly numbers are intended to be a guide. Actual monthly deliveries will be subject to capacity, system operability, and customer demand. Both Riverside and Western are interested in maximizing the delivery of local supplies and strive to exceed the monthly estimated targets, and thus the Annual Objective in Table 1, below.

Table 1. Calendar Year 2021 Delivery Schedule (acre-feet)

Source Water	Jan	Feb	Mar	Apr	May	Jun*	Jul*	Aug*	Sep*	Oct	Nov	Dec	Annual Objective
Western – M&D LLC	226.52												226.52
Western – M&D/EVMWD	263	525	625	700	700	600	600	600.6					4,680.6
Western – RHWC/Storage									300.88				300.88
Riverside – Surplus									232	625	600	543	2,000
TOTAL	**489.52**	**525**	**625**	**700**	**700**	**600**	**600**	**600.6**	**532.88**	**625**	**600**	**543**	**7,208**

*Riverside cannot guarantee deliveries June through September. IF capacity in RPU's system is available in these months, deliveries will occur.

**The Annual Objective is not intended to be a maximum cap. If more water and capacity are available, and demands exist, more water can be delivered.

Per the Cooperative Agreement, if the delivery schedule above is unattainable, the Operating Committee has the ability to, upon mutual agreement, to adjust delivery targets and/or make up to 500 acre-feet of deliveries in the next calendar year.

City of Riverside Authorized Designee

12/3/20

Signature and Date

Western Municipal Water District Authorized Designee

11/16/2020

Signature and Date

General Manager

K

Appendix K Santa Margarita Watershed Adjudication

The Santa Margarita Watershed Adjudication

IN THE UNITED STATES DISTRICT COURT

FOR THE SOUTHERN DISTRICT OF CALIFORNIA

SOUTHERN DIVISION

FILED
ENTERED
LODGED
RECEIVED
MAR 13 1989
CLERK, U.S. DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
BY DEPUTY

UNITED STATES OF AMERICA,

Plaintiff,

vs.

FALLBROOK PUBLIC UTILITY DISTRICT, et al.,

Defendants

Civ. No. 1247-SD-T

ORDER FOR THE APPOINTMENT OF A WATERMASTER; POWERS AND DUTIES.

In 1951, the United States of America brought this case to seek a judicial determination of all respective water rights within the Santa Margarita River watershed. That litigation culminated in this Court's decision United States v. Fallbrook Public Utility District, et al., 193 F.Supp. 342 (S.D.Cal. 1961), aff'd in part and reversed in part 347 F.2d 48 (9th Cir. 1965) and finally in the Modified Final Judgment and Decree, entered April 6, 1966.

During the course of this litigation the Court appointed Lieutenant Colonel A. C. Bowen to collect water consumption data from substantial users within the watershed and to report to the Court on his findings. By Order of January 19, 1975, Colonel Bowen was appointed as Watermaster with broad powers to administer and enforce the provisions of the Court's Modified

MAR 17 1989

Final Judgment and Decree. Colonel Bowen served in this capacity until his death in 1981. No replacement has been appointed.

In June of 1988 the United States of America, Rancho California Water District and Fallbrook Utility District requested that this Court act to appoint a replacement for Colonel Bowen. After a hearing on June 13, 1988, this Court ordered the three parties to advertise for and interview prospective candidates for the position of Watermaster. That process having been completed, notice was given of this hearing for any party[1/] to show cause why this Court should not appoint the candidate recommended by the United States, Rancho California Water District and the Fallbrook Public Utility District. Having received no substantial objection to this candidate it is hereby Ordered, Adjudged and Decreed:

I

APPOINTMENT OF A WATERMASTER

James Jenks is hereby designated by this Court to act as Watermaster for the Santa Margarita River watershed, to administer and enforce the provisions of the Modified Final Judgment and Decree and subsequent instructions and orders of this Court.

1/ For the purpose of this Order, party shall mean any party to the original adjudication and their successors in interest.

FORM OBD-183
MAR. 83

II

REPORTING DUTIES

Promptly after the end of each water year,[2] the Watermaster shall report to the Court, in writing, a summary of his findings and conclusions in accordance with paragraph V of this Order and as follows:

1. A summary of water availability within the Santa Margarita River watershed for the previous water year and, to the extent feasible, a forecast of the same for the upcoming water year. The summary shall include a compilation, by hydrologic sub-unit, of the following water quantities:

a. Surface Water:

1) Surface flow of the Santa Margarita River and its tributaries, with identification by quantity of the specific sources of such surface flow, including water from natural runoff, water imported from outside the watershed, and water from each of the subsurface sources identified in the applicable interlocutory judgments.

2) Diversions of surface water, with identification by quantity of the related consumptive uses, losses, and returns.

3) Water in surface storage on the last day of the previous water year.

b. Subsurface Water:

1) Extractions from each of the subsurface sources identified in the applicable interlocutory judgments, with identification by quantity of the related consumptive uses, losses, and returns.

2) For each such subsurface source, (i) the quantity of water in subsurface storage at the

---

[2] For the purposes of this Order a "water year" shall be defined as that twelve-month period beginning on October 1 and ending September 30.

FORM OUD-183
MAR. 83

end of the previous water year, (ii) the source and quantity of recharge.

c. The source and quantity of water imported for use within the Santa Margarita River watershed.

d. The source and quantity of water exported from the Santa Margarita River watershed.

2. A list of all water users within the Santa Margarita River watershed, including for each a description of vested rights and appropriative priority dates if any.

3. A report on the use of water by each substantial user[3/] within the Santa Margarita River watershed for the previous water year showing for each such user the amount of water diverted, extracted, impounded, or imported and the amount used according to category of use, including: domestic, irrigation, other agricultural, industrial, commercial, public and such other types of uses as the Watermaster may deem appropriate.

4. A list of all unauthorized water use within the Santa Margarita River watershed, along with an explanation of actions taken or recommended to be taken with respect to such use.

5. A statement of conditions and activities which, if continued, may pose a threat to the long-term water supply of the Santa Margarita River watershed.

6. Report on the water quality within the Santa Margarita River watershed by hydrologic sub-unit during the previous water year.

7. An update of the Watermaster's projected tasks, expenditures and requirements over the next five years.

3/ For the purposes of this Order, "substantial user" means any person that claims a right to use water under the orders, judgments or decrees of this Court in the above entitled action, and any person previously designated by this Court or the Watermaster to be a substantial user; any person using water or who claims a right to use water in an amount equal to or greater than or in a manner similar to the uses designated in Exhibit A to this Order; or any person using water within the Santa Margarita River watershed and designated by the Watermaster to be a substantial user.

FORM OBD-183
MAR. 83

8. A proposed budget for the following water year, as more fully described in paragraph III, below.

A copy of the Watermaster's written report shall be mailed to each party listed on the Court approved mailing list, as attached to this Order, and to any party requesting a copy. In addition, five copies of the report will be made available for inspection by the public, during regular business hours, at the Fallbrook Public Utility District, 990 E. Mission Road, Fallbrook, California; at Rancho California Water District, 28061 Diaz Road, Temecula, California and at Anza, California.

Any party that objects to a portion of the Watermaster's report, including the Watermaster's designation of substantial users, may do so by filing written notice of his objection within thirty days of service of the Watermaster's report. Objections filed with this Court must refer to that portion of the Watermaster's report that is objectionable and state specifically the grounds for the objection. Thereafter, the Court may determine a date for hearing the noticed objection. Any party wishing to intervene on behalf of the objecting party or on behalf of the Watermaster may do so within the discretion of the Court.

III

OPERATING BUDGET

The Watermaster shall, within sixty days from the date of this Order, submit for approval by this Court a proposed operating budget for the 1989 water year. The Watermaster shall set forth the estimated expense for discharging his duties as described

FORM OBD-183
MAR. 83

herein, including his recommendations for necessary staff, equipment and supplies. A copy of the proposed budget shall be mailed to each of the parties listed on the Court's approved mailing list and to any party that requests a copy of the proposed budget in writing. Any party may file objections to the proposed budget within thirty days of service. Thereafter the Court will set a date for hearing any objections filed.
If objections to the proposed budget are heard by the Court, then the final budget may be confirmed or adjusted in whole or part as the Court may deem proper.

Within 120 days of this Order the Watermaster shall submit for approval by this Court a proposed operating budget for the 1990 water year. Parties shall be served in accordance with paragraph II, above. Objections shall be filed and a hearing held in accordance with paragraph III, above. Thereafter, the Master shall submit his proposed budget for the following water year as a part of his annual report to the Court.

IV

FEES AND EXPENSES

The fees, compensation and expenses of the Watermaster hereunder initially shall be borne by the parties in the following proportions: One third by the United States; one third by the Fallbrook Public Utility District; and one third by Rancho California Water District. For the 1989 Water Year, the total assessment against the three parties shall not exceed $150,000.00. The Court shall retain the right upon its own

FORM OBD-183
MAR. 83

☆ U.S. GPO: 1988-202-041/84933

motion or the motion of any party to assess any other party using water under the provisions of the applicable judgments, decrees and Orders for the Santa Margarita River watershed for the costs, fees and expenditures of the Watermaster.

Payment of the amount assessed to a party shall be paid 30 days prior to the beginning of the Water Year to which the final budget is applicable.

The Watermaster is directed to use the fund control and payroll services that shall be provided by Fallbrook Public Utility District, and as fully set forth in Exhibit B, for administration of the Watermaster Budget. An interest-bearing account shall be established at a local bank to maintain funds that may be contributed from time to time by the parties. An audit will be conducted annually by an independent auditor and copies of the report will be made available to the parties and provided to the Court.

The Watermaster may apply for appropriate relief from this Court for failure of any party to pay the amount assessed for a particular water year.

V

POWERS AND DUTIES OF THE WATERMASTER

The Watermaster shall have the following powers and duties:

1. To update the list of substantial users contained in Sections A, B and C of Exhibit A to this Order.

2. To collect water consumption data and require monthly reports from the substantial users including, for each such user, the amount of water diverted, extracted, impounded or imported and the amount of water used, as follows:

FORM OBD-183
MAR. 83

☆ U.S. GPO: 1988—202-041/84933

a. To require every water user designated in Section A of Exhibit A to supply in writing the following factual data for each well owned or operated within the watershed:

1. The well owner;

2. The location of the well;

3. The quantity in acre-feet of water pumped during that month and the use by quantity to which the water was put; and

4. The depth in feet to water on or about the last day of that month and designate the zone(s) or aquifer(s) from which well casing perforations permit the production of water.

b. To require every water user designated in Section B of Exhibit A that diverts surface water to supply in writing the following factual data for each designated point of diversion within the watershed:

1. The diverter's name;

2. The location of the point of diversion;

3. The quantity in acre-feet of water diverted for the preceding month; and

c. To require every water user designated in Section C of Exhibit A to supply in writing the following factual data for each designated surface storage reservoir:

1. The reservoir owner;

2. The location of the storage facility;

3. The quantity, in acre-feet of water held in storage in such facility on the last day of the preceding month.

4. The purpose for which such water was stored.

FORM OBD-183
MAR. 83

☆ U.S. GPO: 1988—202-041/84933

d. To require every water importer subject to this Order that imports water to supply in writing the following factual data:

1. The importer's name;

2. The discharge point or point of connection of such imported water;

3. The quantity in acre-feet, of water imported for the preceding month; and

e. To require every water user designated in Section A and B of Exhibit A and every importer of water within the Santa Margarita River Watershed to supply in writing the following factual data:

1. The user's name;

2. The quantity of water devoted to the uses listed below in each hydrologic sub-unit or area designated by the Watermaster:

A. Domestic

B. Agricultural irrigation

C. Other agriculture

D. Industrial

E. Commercial

F. Public

G. Others as Watermaster may deem appropriate.

f. To require every producer of reclaimed waster water subject to this Order to supply in writing the following factual data:

1. the producers' name;

2. The location of use or discharge of reclaimed water;

3. The quantity in acre-feet of reclaimed water produced, delivered and discharged for the preceding month.

FORM OBD-183
MAR. 83
☆ U.S. GPO: 1988—202-041/84933

3. To make all reasonable efforts to collect and reconstruct water consumption data for the periods 1966 to date.

4. To obtain necessary pump efficiency data.

5. To operate and maintain gaging stations, investigate water availability and hydrology, and conduct water quality testing.

6. To perform such duties as are required under the Memorandum of Understanding and Agreement on Operation of Lake Skinner.

7. To take custody of existing records and reports, maintain proper records, and prepare periodic written reports as required by this Court.

8. To locate and investigate unauthorized water appropriations within the Santa Margarita River watershed.

9. To assist in locating, investigating and enjoining water quality violations within the Santa Margarita River Watershed.

10. The Watermaster shall have the authority to enter, upon reasonable notice and at reasonable times, upon the lands of any party to conduct such tests and measurements as he deems necessary to carry out the provisions of this, or any other order of the Court with respect to the duties enumerated above.

11. To the extent not superceded herein, this Order incorporates by reference the powers and duties granted by the Court in its Order filed January 27, 1966, as modified on April 6, 1966.

12. To design, print and distribute the forms necessary to convey the information required by this or any other applicable Order of the Court.

13. To report to the Steering Committee, established pursuant to Court Order, on a quarterly basis regarding the status of the Watermaster's investigation, proposed budget items for the upcoming water year and to respond to questions regarding the progress of any programs established by the Watermaster in implementing this Order.

14. To prepare a written plan within 120 days of the date of this Order stating the methodology and procedures for accomplishing the duties described above, including:

FORM OBD-183
MAR. 83

☆ U.S. GPO: 1988-202-041/84933

a. A timetable for identifying substantial users and characterizing their use;

b. A list of locations, numbers and descriptions of existing and proposed gaging stations;

c. A detailed plan for the conduct of water quality testing to include collecting existing hydrological information and conducting additional tests of both surface and ground water;

The Watermaster shall serve the above-described plan to the parties in accordance with paragraph II, above.

VI

FAILURE TO COMPLY

Failure to comply with this Order in furnishing information and reports required herein may lead to an Order that the party is in default and whatever sanctions are appropriate.

VII

JURISDICTION

This Court retains jurisdiction, upon the application of any party or of the Watermaster or upon its own motion to make such further or supplemental orders or directions as may be necessary or appropriate for interpretation, enforcement or carrying out of this Court's judgments, decrees and orders with respect to the Santa Margarita River watershed.

13 MAR 1989

GORDON THOMPSON, JR.
UNITED STATES DISTRICT JUDGE

FORM OBD-183
MAR. 83

☆ U.S. GPO: 1988-202-041/84933

FILED

APR 6 - 1966

CLERK, U.S. DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
By DEPUTY

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF CALIFORNIA
SOUTHERN DIVISION

UNITED STATES OF AMERICA,
Plaintiff,
v.
FALLBROOK PUBLIC UTILITY DISTRICT, a public service corporation of the State of California, et al.,
Defendants.

No. 1247-SD-C Civil

MODIFICATION OF ORDER REQUIRING SUBMISSION OF FACTUAL DATA TO COLONEL BOWEN

It appearing that on January 27, 1966, this Court entered its "ORDER REQUIRING SUBMISSION OF FACTUAL DATA TO COLONEL BOWEN" to which was attached an exhibit entitled "Substantial Water Users in Santa Margarita River System," in which order this Court retained jurisdiction to modify the aforesaid exhibit and to designate additional water users not then set forth in the exhibit or to delete water users then set forth in the exhibit, and it further appearing from information presented to the Court by Colonel Bowen that some parties so designated should be deleted from that exhibit, and that additional parties should be designated as substantial water users in that exhibit; NOW, THEREFORE, IT IS HEREBY ORDERED THAT:

I

The exhibit attached to this Court's order of January 27,

EXHIBIT A 1 - 18

EXHIBIT A

1966, be and the same is hereby withdrawn, and exhibit "A" attache to this order be and the same is hereby substituted in place there as the current list of substantial water users in the Santa Margarita River stream system who are subject to the aforesaid order of January 27, 1966.

II

A copy of this order, including the exhibit hereto, ~~and a~~ copy of the aforesaid order of January 27, 1966, shall be forthwit served by certified mail on each of the parties hereby added to th list of substantial water users. Each party hereby deleted from that list shall also be notified of such action by mailing to him by certified mail a notice in substantially the following form:

(Case heading)

To _____:

You are hereby notified that by order of this Court dated _____, you are no longer required to furnish to the undersigned the information required to be so furnished by the order of the Court dated January 27, 1965, a copy of which was heretofore served upon you.

_____
Col. A. C. Bowen
Officer in Charge
Office of Ground Water Resource
Marine Corps Base
Camp Pendleton, California 920

DATED: This 6 day of April, 1966.

/s/ JAMES M. CARTER
JAMES M. CARTER, Judge
United States District Court

EXHIBIT A 1-13

SUBSTANTIAL WATER USERS IN SANTA MARGARITA RIVER SYSTEM

SECTION A - WELLS

Santa Margarita River

Name	Location
Henderson, M.	8S/3W 33Q1
Naval Enclave	9S/4W 14M1
	9S/4W 26M1
	9S/4W 29L1
	10S/4W 5D1
	10S/4W 7A2
	10S/4W 7E2
	10S/4W 7R2
	10S/4W 18E3
	10S/4W 18M4
	10S/5W 13R2
	10S/5W 23J1
	10S/5W 23K1
	10S/5W 26C1
	10S/5W 26F1
	11S/5W 2A1

Murrieta - Temecula Area

Name	Location
Armfield, Fronn	7S/3W 29A
	7S/3W 29A
Aub-Bren Construction Co.	7S/3W 28J
Barr, T. O.	7S/3W 28R
Bloemsma, A.	7S/3W 21Q
	7S/3W 28B
	7S/3W 28H
Cain, C.	7S/3W 21K
Cantarini, D.	7S/3W 27J
Chillingworth, S. C.	7S/3W 18L
	7S/3W 18L
	7S/3W 18Q

4/6/66

EXHIBIT A

EXHIBIT A 1-14

EXHIBIT A

Murrieta - Temecula Area

Name	Location
Clave, Ralph A. & Mickel, Paul E.	7S/3W 20Q
Contreras, G.	7S/3W 20R
Cox, T. A.	7S/3W 6D
	7S/3W 6E
	7S/3W 6K
	7S/4W 1A
	7S/4W 1A
	7S/4W 1E
	7S/4W 1E
Denny, F.	7S/3W 17M
Dillon, Ted	7S/3W 17J
Draucker, C. D.	7S/3W 27E
Dwyer, A.	7S/3W 27J
	7S/3W 27Q
El Rancho Trebol	7S/3W 18Q
	7S/3W 18Q
Gierson, E. W.	7S/3W 20E
Guenther's Murrieta Hot Springs	7S/3W 23A
	7S/3W 23A
	7S/3W 24D
Gwinn, W. A.	7S/3W 20L
	7S/3W 20L
Hasnault, W. J.	7S/3W 17M
	7S/3W 18J
Howell, G.	7S/3W 28C
Kidder, R. C.	7S/3W 18B
King, C.	7S/3W 27M
K & L Properties	7S/4W 2G
Lovelady, A. L. & F.	7S/4W 2E
Mardley Company	7S/3W 20E
Mayer, B. L.	7S/3W 17D
	7S/3W 17D

EXHIBIT A 4/15

Murrieta-Temecula Area

Name	Location	
Mayo, F.	7S/3W 21M	
McDaniel, R.	7S/3W 20Q	
	7S/3W 20Q	
	7S/3W 29B	
Mejia, A.	6S/4W 35F	
Morrow, H.	7S/3W 7R	
Morton, R. G.	7S/3W 28B	
Murrieta Mutual Water Company, Inc.	7S/3W 17R	Leasing, L. O. Lynch
	7S/3W 20C	Buying, C. W. Holliday
Murrieta Stud	7S/3W 20E	
	7S/3W 20Q	
Nelson, Leslie B. & Morton, Robert G.	7S/3W 21K	
Pascoe, W. T.	7S/3W 27Q	
	7S/3W 33B	
Querry, F.	8S/2W 19J	
Ramgren, D. A.	6S/4W 35L	

EXHIBIT A - 16

Murrieta - Temecula Area

Name	Location
Rancho California	7S/2W 25D (#6)
	7S/2W 26B (#4)
	7S/2W 27J (#1)
	7S/2W 30D1
	7S/2W 30D3
	7S/2W 33E1
	7S/2W 36J (#2)
	7S/3W 25R1
	7S/3W 35P1 (MV 93)
	7S/3W 35P2 (MV 132)
	7S/3W 36D (#5)
	8S/1W 6G (#3)
	8S/2W 7A1 (MV 131 Shrode Well)
	8S/2W 11H1
	8S/2W 11J1 (P.R. 30)
	8S/2W 11J2 (30-A)
	8S/2W 11J4 (Diesel)
	8S/2W 11J5 (P.R. 26)
	8S/2W 11L1 (No. 40)
	8S/2W 11P1 (P.R.U.C. well)
	8S/2W 11P2 (New C.C.C. well)
	8S/2W 12H1 (Windmill well)
	8S/2W 12J1 (No. 10)
	8S/2W 12K1 (J.K. well)
	8S/2W 14B (#7)
	8S/2W 15C1 (China Garden well)

EXHIBIT A-17

Murrieta - Temecula Area

Name	Location
Rancho California	8S/2W 15D1 (No. 50)
	8S/2W 16A1 (Dairy artesian)
	8S/2W 16G1 (Main Camp artesian)
	8S/2W 17F1 (Cantarini D)
	8S/2W 17G1 (Studley artesian)
	8S/2W 17N1 (Navy well)
	8S/2W 17Q1 (Cantarini A)
	8S/2W 18M1 (TF 3)
	8S/2W 18N1 (TF 2)
	8S/2W 18R2 (TF 4)
	8S/2W 18R1 (McSweeney Domestic)
	8S/2W 20B1 (P.R. 27)
	8S/2W 20B2 (P.R. 28)
	8S/2W 20B3 (P.R. 29)
	8S/2W 20B4 (Cantarini)
	8S/2W 20C1 (Cat)
	8S/2W 20C2
	8S/2W 20K1 (Cantarini Camp of Cant. Wm.)
	8S/2W 20L1 (Pen well)
	8S/2W 28C1 (Lody)
	8S/3W 1P2 (Cantarini - Murrieta)
	8S/3W 1P3 (O'Kell 14)
	8S/3W 1Q1 (MV 96)
	8S/3W 12B1 (MV 100)
	8S/3W 12C1 (MV 98)
	8S/3W 12C2 (MV 98A)
Reeves, G. H.	7S/3W 28D
Ribaudo, J.	6S/4W 35Q3 10

EXHIBIT A - 18

Murrieta - Temecula Area

Name	Location
Roripaugh, Leo	7S/3W 25E
	7S/3W 25E
	7S/3W 26Q
	7S/3W 34G
	7S/3W 35C
~~Shamel, J. B.~~	7S/3W 25M
	7S/3W 26R
	7S/3W 35B
Schirmer, L. B. Jr.	7S/3W 20F
Sykes, H. H.	7S/3W 17R
Talbert, T. V. & Romano, A. A.	6S/4W 35P
	6S/4W 35P
Thompson, W.	7S/3W 7R
	7S/3W 18A
Thralls, W. A., et al	7S/4W 1E
Turner, C. W.	7S/4W 28Z
	7S/3W 28G
	7S/3W 28G
	7S/3W 28G
	7S/3W 28K
Venable, W. E.	7S/3W 21G
Vessels, M.	7S/3W 18A
Weinstein, A.	7S/3W 7E
Wilks, T. E.	7S/4W 2A
	7S/4W 2B
Winter, H. C.	7S/3W 21P
Withrow, C. B.	6S/4W 35D
Yoder, M. J.	7S/3W 15Q
	7S/3W 15Q

EXHIBIT A-19

Murrieta - Temecula Area

Name	Location
Younger, H. C.	6S/4W 36N
	6S/4W 36P

Aguanga Area

Allen, W. H.	8S/1E 8Q
	8S/1E 17A
	8S/1E 17H
Cottle, W. H.	8S/1E 19K
	8S/1E 19K
Gibbon, Katherine C.	8S/1E 19Q
Marana, John L.	8S/1W 13K
Oviatt, J.	8S/1E 7J
	8S/1E 7N
	8S/1E 18B
	8S/1E 18B
Reed, John E.	8S/1E 33G
Trumbell, D.	8S/1E 28P
Yerkes, Virginia C	8S/1E 29K
	8S/1E 29K

Cahuilla Area

Minor, J.	7S/2E 32G
	7S/2E 32F
	7S/2E 32L
	7S/2E 32C
	7S/2E 32D

EXHIBIT A #20

SECTION B - SURFACE DIVERSIONS

Name	Location
Naval Enclave	
Weir Dam	9S/4W/5E
Naval Weapons Station	9S/4W/14N
Fallbrook Public Utility District	9S/3W/7D
Rancho California	8S/1W/10D
Cottle-Gibbon	8S/1E/29L
Yerkes, Virginia C.	8S/1E/29K

XIEX

EXHIBIT A #21

SECTION C - SURFACE IMPOUNDMENTS

Naval Enclave	Lake O'Neill
Rancho California	Vail Lake

EXHIBIT A #22

FALLBROOK
PUBLIC UTILITY DISTRICT

990 E. Mission Road, P.O. Box 932 — (619) 728-1125
FALLBROOK, CALIFORNIA 92028-2299

January 24, 1989

Mr. ~~Stanley T. Mills, Manager~~
Rancho California Water District
P. O. Box 174
Temecula, CA 92390-0174

Dear Stan:

The Fallbrook Public Utility District agrees to provide the following services to the Watermaster for the Santa Margarita River watershed commencing on or about April 1, 1989.

1. Office Space. 384 square feet, unfurnished 1 room building located on the District's Red Mountain Reservoir facility approximately 1 mile west of I-15 off East Mission Road. The building has electric service and an installed heat pump for heating and air conditioning. No water or toilet facilities are available. Water can be made available at the desire of the Watermaster and rental of a portable toilet facility by the Watermaster can be arranged. Electric and telephone service would be put in the name of the Watermaster.

Monthly Rental $200.00

2. Accounting, Payroll, and Financial Management. A Watermaster bank account will be established at a local bank. Initial working capital will be provided on or about April 1, 1989, by Fallbrook Public Utility District, Rancho California Water District and U.S. Marine Corps Base, Camp Pendleton, in the amount of $10,000 each. Disbursements will be made by the Fallbrook Public Utility District Treasurer upon request of the Watermaster based upon budgets approved by the U.S. District Court within guidelines to be established by the Court appointed Steering Committee. Quarterly financial statements will be provided to the Steering Committee and the Court. Additional capital funds will be requested of the three parties by the Fallbrook Public Utility District Treasurer based on quarterly requirements established by the Watermaster. An annual audit will be performed by a

EXHIBIT B — 1

BOARD OF DIRECTORS
Merritt S. Dunlap, *President*
A. Spencer Lehmann, *Vice President*
Directors Elwin Fuller
W.A. Morgan
C.J. Wolk, Jr.
Gordon W. Tinker, *General Manager and Chief Engineer*
Robert James, *General Counsel*

qualified independent accounting firm selected by the Steering Committee and approved by the Court.

Monthly Service Charge $200.00

Sincerely,

Gordon W. Tinker
General Manager
and Chief Engineer

GWT/am

EXHIBIT B + 2

Robert H. James
Counsel for F.P.U.D.
P. O. Box 427
Fallbrook, CA 92028

Mr. Art Kruegr
Riverside Co. Flood Control
P. O. Box 1033
Riverside, CA 92502

Mr. Jim Laughlin
Eastern MWD
P. O. Box 858
Hemet, CA 92343

Gene Madrigal
P. O. Box 2457
Escondido, CA 92025

Richard & Christine McMillan
Gary & Patricia McMillan
c/o McMillan Farm Management
29379 Rancho California Road
Suite 201
Temecula, CA 92390

Larry Minor
P. O. Box 38
San Jacinto, CA 92383

Murrieta County Water District
P. O. Box 949
Murrieta, CA 92362

Mr. John Perry
Rainbow MWD
4555 Highway 76
Fallbrook, CA 92028

Mr. Ben Price
Fallbrook Sanitary District
431 S. Main Street
Fallbrook, CA 92028

Randall B. Pyles, Esq.
United States of America
Counsel Western Bases
Camp Pendleton, CA 92055

Rancho California Water District
28061 Diaz Road
Temecula, CA 92390

Agri-Empire
P. O. Box 398
San Jacinto, CA 92383

Mr. George Buchanan
Metropolitan Water District
33740 Borel Road
Winchester, CA 92396

Thomas G. Cottle
42551 Highway 79
Aguanga, CA 92302

President, Board of
Directors
De Luz Heights MWD
990 E. Mission Road
Fallbrook, CA 92028

Elsinore Valley MWD
P. O. Box 3000
Lake Elsinore, CA 92330

Mr. David Hansen
Western MWD
P. O. Box 5286
Riverside, CA 92517

Mr. Leland Henderson
Margarita Land & Development
P. O. Box 584
Fallbrook, CA 92028

Myra Henderson
Riverside Co. Planning
4080 Lemon St., 9th Fl.
Riverside, CA 92501

Caroline Salvatierra
704 Third Street
Oceanside, CA 92054

James M. Seabourn
President, C.A.R.E. of
Anza Valley
H.C.2, Box 310
Anza, CA 92306

Mr. William D. Taylor
1650 San Luis Rey Avenue
Vista, CA 92083

Temecula Ranchos
c/o Milo Rowell
405 Rowell Building
Fresno, CA 93721

Thousand Trails
c/o James J. Jaeger
15325 S.E. 30th Place
Bellevue, Washington 98007-6595

L

Appendix L Western Judgment

Western Judgment

FILED
RIV. RECK COUNTY

APR 17 1969

DONALD D. [illegible], Clerk
By [illegible] Deputy

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF RIVERSIDE

WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY, a municipal water district; CITY OF RIVERSIDE, a municipal corporation; THE GAGE CANAL COMPANY, a corporation; AGUA MANSA WATER COMPANY, a corporation, MEEKS & DALEY WATER COMPANY, a corporation; RIVERSIDE HIGHLAND WATER COMPANY, a corporation, and THE REGENTS OF THE UNIVERSITY OF CALIFORNIA,

Plaintiffs,

-vs-

(A) EAST SAN BERNARDINO COUNTY WATER DISTRICT, et al.,

Defendants

No. 74/26 4726 4/7/69

JUDGMENT

TABLE OF CONTENTS

		Page
RECITALS		
I	Active Parties	5
II	Dismissed Parties	5
III	Prior Judgments	6
IV	Definitions	7
V	Extractions from the San Bernardino Basin Area	10
VI	San Bernardino Basin Area Rights and Replenishment	10
VII	Water Discharged Across the Bunker Hill Dike	16
VIII	Extractions from Colton Basin Area and Riverside Basin Area in San Bernardino County	16
IX	Extractions from the Portion of Riverside Basin Area in Riverside County which is tributary to Riverside Narrows.	20
X	Replenishment to Offset New Exports of Water to Areas not Tributary to Riverside Narrows.	21
XI	Replenishment Credits and Adjustment for Quality	22
XII	Conveyance of Water by San Bernardino Valley to Riverside Narrows.	24
XIII	Watermaster	25
XIV	Continuing Jurisdiction of the Court	27
XV	Saving Clauses	29
XVI	Effective Date	31
XVII	Costs	31

APPENDIX A -- Map showing San Bernardino Basin Area, Colton Basin Area, and Riverside Basin Area situated within San Bernardino County; Riverside Basin Area within Riverside County; Bunker Hill Dike; Riverside Narrows; and

04/08/2003 14:37 9494981712 WE INC PAGE 03

Boundaries of San Bernardino Valley Municipal Water District & Western Municipal Water District of Riverside County

APPENDIX B -- Extractions by Plaintiffs from San Bernardino Basin Area.

APPENDIX C -- Exports for Use on Lands not Tributary to Riverside Narrows

APPENDIX D -- Miscellaneous Data

04/08/2003 14:37 9494981712 WE INC PAGE 04

RECITALS

(a) Complaint. The complaint in this action was filed by certain parties exporting water from the area defined herein as the San Bernardino Basin Area for use within Western, and sought a general adjudication of water rights.

(b) Orange County Water District Action. Subsequently the Orange County Water District filed an action for the adjudication of the water rights of substantially all water users in the area tributary to Prado Dam in the Santa Ana River Watershed. A decree of physical solution has been entered in such action whereby individual water users were dismissed, and San Bernardino Valley and Western assumed responsibility for the deliveries of certain flows at Riverside Narrows and Prado respectively.

(c) Physical Solution. The Judgment herein will further implement the physical solution in the Orange County Water District action, as well as determine the rights of the hereinafter named Plaintiffs to extract water from the San Bernardino Basin Area, and provide for replenishment of the area above Riverside Narrows. Such Judgment is fair and equitable, in the best interests of the parties, and in furtherance of the water policy of the State. San Bernardino Valley has the statutory power and resources to effectuate this Judgment and accordingly the other defendants may be dismissed.

(d) Stipulation. The parties named herein through their respective counsel have proposed and filed a written stipulation agreeing to the making and entry of this Judgment. By reason of such stipulation, and good cause appearing

04/08/2003 14:37 9494981712 WE INC PAGE 05

therefor,

IT IS HEREBY ORDERED, ADJUDGED AND DECREED as follows:

I

ACTIVE PARTIES

(a) The parties to this Judgment are as follows:

(1) Plaintiff Western Municipal Water District of Riverside County, a California municipal water district, herein often called "Western", appearing and acting pursuant to Section 71751 of the Water Code;

(2) Plaintiff City of Riverside, a municipal corporation;

(3) Plaintiffs Riverside Highland Water Company, Agua Mansa Water Company and Meeks & Daley Water Company, each of which is a mutual water company and a California corporation;

(4) Plaintiff The Regents of the University of California, a California public corporation;

(5) Defendant San Bernardino Valley Municipal Water District, a California municipal water district, herein often called "San Bernardino Valley", appearing and acting pursuant to Section 71751 of the Water Code;

(b) This Judgment shall inure to the benefit of, and be binding upon, the successors and assigns of the parties.

II

DISMISSED PARTIES

All parties other than those named in the preceding Paragraph I are dismissed without prejudice.

04/08/2003 14:37 9494981712 WE INC PAGE 06

III

PRIOR JUDGMENTS

(a) The Judgment dated and entered on May 13, 1959, in that certain action filed in the Superior Court of the State of California in and for the County of San Bernardino, entitled and numbered "San Bernardino Valley Water Conservation District, a State Agency, Plaintiff v. Riverside Water Company, a corporation, et al., Defendants", No. 97031, is superseded effective January 1, 1971, and for so long as this Judgment remains in effect as to any party hereto that was a party to that action, and as to any party hereto that is a successor in interest to the rights determined in that action.

(b) The Judgment dated June 23, 1965, and entered on April 21, 1966, in that certain action filed in the Superior Court of the State of California in and for the County of San Bernardino entitled and numbered "San Bernardino Valley Water Conservation District, a State Agency, Plaintiff, v. Riverside Water Company, a corporation, et al., Defendants," No. 111614, is superseded effective January 1, 1971, and for so long as this Judgment remains in effect as to any party hereto that was a party to that action, and as to any party hereto that is a successor in interest to any rights determined in that action.

(c) As used in this Paragraph III only, "party" includes any person or entity which stipulates with the parties hereto to accept this Judgment.

04/08/2003 14:37 9494981712 WE INC PAGE 07

IV

DEFINITIONS

The following ground water basins and tributary areas are situated within the Santa Ana River watershed upstream from Riverside Narrows and are tributary thereto, and their approximate locations and boundaries for purposes of this Judgment are shown upon the map attached hereto as Appendix "A": San Bernardino Basin Area (the area above Bunker Hill Dike, but excluding certain mountainous regions and the Yucaipa, San Timoteo, Oak Glen and Beaumont Basins); Colton Basin Area, Riverside Basin Area within San Bernardino County, and Riverside Basin Area within Riverside County.

As used herein the following terms shall have the meanings herein set forth:

(a) Bunker Hill Dike - The San Jacinto Fault, located approximately as shown on Appendix "A", and forming the principal downstream boundary of the San Bernardino Basin Area.

(b) Riverside Narrows - That bedrock narrows in the Santa Ana River indicated on Appendix "A".

(c) Extractions - Any form of the verb or noun shall include pumping, diverting, taking or withdrawing water, either surface or subsurface, by any means whatsoever, except extractions for hydroelectric generation to the extent that such flows are returned to the stream, and except for diversions for replenishment.

(d) Natural Precipitation - Precipitation which falls naturally in the Santa Ana River watershed.

(e) Imported Water - Water brought into the Santa Ana River watershed from sources of origin outside such watershed.

04/08/2003 14:37 9494981712 WE INC PAGE 32

(f) Replenishment - Artificial recharge of the ground water body achieved through the spreading or retention of water for the purpose of causing it to percolate and join the underlying ground water body, or injection of water into the ground water resources by means of wells; provided that as used with reference to any obligation of Western to replenish the Riverside Basin Area in Riverside County, the term replenishment shall include any water caused to be delivered by Western for which credit is received by San Bernardino Valley against its obligation under the Orange County Judgment to provide base flow at Riverside Narrows.

(g) Safe Yield - Safe yield is that maximum average annual amount of water that could be extracted from the surface and subsurface water resources of an area over a period of time sufficiently long to represent or approximate long-time mean climatological conditions, with a given areal pattern of extractions, under a particular set of physical conditions or structures as such affect the net recharge to the ground water body, and with a given amount of usable underground storage capacity, without resulting in long-term, progressive lowering of ground water levels or other undesirable result. In determining the operational criteria to avoid such adverse results, consideration shall be given to maintenance of adequate ground water quality, subsurface outflow, costs of pumping, and other relevant factors.

The amount of safe yield is dependent in part upon the amount of water which can be stored in and used from the ground water reservoir over a period of normal water supply under a given set of conditions. Safe yield is thus related to factors which influence or control ground water recharge, and

04/08/2003 14:37 9494981712 ME INC PAGE 08

to the amount of storage space available to carry over recharge occurring in years of above average supply to years of deficient supply. Recharge, in turn, depends on the available surface water supply and the factors influencing the percolation of that supply to the water table.

Safe yield shall be determined in part through the evaluation of the average net groundwater recharge which would occur if the culture of the safe yield year had existed over a period of normal native supply.

(h) Natural Safe Yield - That portion of the safe yield of the San Bernardino Basin Area which could be derived solely from natural precipitation in the absence of imported water and the return flows therefrom, and without contributions from new conservation. If in the future any natural runoff tributary to the San Bernardino Basin Area is diverted away from that Basin Area so that it is not included in the calculation of natural safe yield, any replacement made thereof by San Bernardino Valley or entities within it from imported water shall be included in such calculation.

(i) New Conservation - Any increase in replenishment from natural precipitation which results from operation of works and facilities not now in existence, other than those works installed and operations which may be initiated to offset losses caused by increased flood control channelization.

(j) Year - A calendar year from January 1 through December 31. The term "annual" shall refer to the same period of time.

(k) Orange County Judgment - The final judgment in Orange County Water District v. City of Chino, et al., Orange County Superior Court No. 117628, as it may from time to

04/08/2003 14:37 9494981712 WE INC PAGE 09

time be modified.

(l) Return Flow - That portion of the water applied for use in any particular ground water basin which subsequently reaches the ground water body in that basin.

(m) Five Year Period - a period of five consecutive years.

V

EXTRACTIONS FROM THE SAN BERNARDINO BASIN AREA

(a) For Use by Plaintiffs. The average annual extractions from the San Bernardino Basin Area delivered for use in each service area by each Plaintiff for the five year period ending with 1963 are hereby determined to be as set forth in Table B-1 of Appendix "B". The amount for each such Plaintiff delivered for use in each service area as set forth in Table B-1 shall be designated, for purposes of this Judgment, as its "base right" for such service area.

(b) For Use by Others. The total actual average annual extractions from the San Bernardino Basin Area by entities other than Plaintiffs for use within San Bernardino County for the five year period ending with 1963 are assumed to be 165,407 acre feet; the correct figure shall be determined by the Watermaster as herein provided.

VI

SAN BERNARDINO BASIN AREA RIGHTS AND REPLENISHMENT

(a) Determination of Natural Safe Yield. The natural safe yield of the San Bernardino Basin Area shall be computed by the Watermaster, reported to and determined initially by supplemental order of this Court, and thereafter

04/08/2003 14:37 9494981712 WE INC PAGE 10

shall be subject to the continuing jurisdiction thereof.

(b) Annual Adjusted Rights of Plaintiffs.

1. The annual "adjusted right" of each Plaintiff to extract water from the San Bernardino Basin Area for use in each service area designated in Table B-1 shall be equal to the sum of the following:

(a) its base right for such service area, until the natural safe yield of the San Bernardino Basin Area is determined, and thereafter its percentage of such natural safe yield determined by the methods used in Table B-2; and (b) an equal percentage for each service area of any new conservation, provided the conditions of the subparagraph 2 below have been met.

2. In order that the annual adjusted right of each such Plaintiff shall include its same respective percentage of any new conservation, such Plaintiff shall pay its proportionate share of the costs thereof. Each Plaintiff shall have the right to participate in new conservation projects, under procedures to be determined by the Watermaster for notice to Plaintiffs of the planned construction of such projects. With respect to any new conservation brought about by Federal installations, the term "costs" as used herein shall refer to any local share required to be paid in connection with such project. Each Plaintiff shall make its payment at times satisfactory to the constructing agency, and new conservation shall be credited to any participating Plaintiff as such conservation is effected.

04/08/2003 14:37 9494981712 WE INC PAGE 11

3. In any five year period, each Plaintiff shall have the right to extract from the San Bernardino Basin Area for use in each service area designated in Table B-1 an amount of water equal to five times its adjusted right for such service area; provided, however, that extractions by each Plaintiff in any year in any service area shall not exceed such Plaintiff's adjusted right for that service area by more than 30 percent.

4. If the natural safe yield of the San Bernardino Basin Area has not been determined by January 1, 1972, the initial determination thereof shall be retroactive to that date and the rights of the Plaintiffs, and the replenishment obligation of San Bernardino Valley as hereinafter set forth, shall be adjusted as of such date. Any excess extractions by Plaintiffs shall be charged against their respective adjusted rights over the next five year period, or in the alternative, Plaintiffs may pay to San Bernardino Valley the full cost of any replenishment which it has provided as replenishment for such excess extractions. Any obligation upon San Bernardino Valley to provide additional replenishment, by virtue of such retroactive determination of natural safe yield, may also be discharged over such next five year period.

5. Plaintiffs and each of them and their agents and assigns are enjoined from extracting any more water from the San Bernardino Basin Area than is permitted under this Judgment. Changes in place

04/08/2003 14:37 9494981712 WE INC PAGE 12

of use of any such water from one service area to another shall not be made without the prior approval of Court upon a finding of compliance with Paragraph XV(b) of this Judgment. So long as San Bernardino Valley is in compliance with all its obligations hereunder, and Plaintiffs are allowed to extract the water provided for in this Judgment, Plaintiffs are further enjoined from bringing any action to limit the water extracted from the San Bernardino Basin Area for use within San Bernardino Valley.

6. Nothing in this Judgment shall prevent future agreements between San Bernardino Valley and Western under which additional extractions may be made from the San Bernardino Basin Area, subject to the availability of imported water not required by San Bernardino Valley, and subject to payment satisfactory to San Bernardino Valley for replenishment required to compensate for such additional extractions.

(c) San Bernardino Valley Replenishment. San Bernardino Valley shall provide imported water for replenishment of the San Bernardino Basin Area at least equal to the amount by which extractions therefrom for use within San Bernardino County exceed during any five year period the sum of: (a) five times the total average annual extractions determined under Paragraph V(b) hereof, adjusted as may be required by the natural safe yield of the San Bernardino Basin Area; and (b) any new conservation to which users within San Bernardino Valley are entitled. Such replenishment shall be

04/08/2003 14:37 9494981712 WE INC PAGE 13

supplied in the year following any five year period; provided that during the first five year period, San Bernardino Valley shall supply annual amounts on account of its obligations hereunder, and such amounts shall be not less than fifty percent of the gross amount of excess extractions in the previous year.

1. Against its replenishment obligation over any five year period San Bernardino Valley shall receive credit for that portion of such excess extractions that returns to the ground water of the San Bernardino Basin Area.

2. San Bernardino Valley shall also receive credit against any future replenishment obligations for all replenishment which it provides in excess of that required herein, and for any amounts which may be extracted without replenishment obligation, which in fact are not extracted.

(d) In this subparagraph (d), "person" and "entity" mean only those persons and entities, and their successors in interest, which have stipulated with the parties to this Judgment within six months after its entry to accept this Judgment.

San Bernardino Valley agrees that the base rights of persons or entities other than Plaintiffs to extract water from the San Bernardino Basin Area for use within San Bernardino Valley will be determined by the average annual quantity extracted by such person or entity during the five year period ending with 1963. After the natural safe yield of the San Bernardino Basin Area is determined hereunder, such

04/08/2003 14:37 9494981712 WE INC PAGE 14

base rights will be adjusted to such natural safe yield; the adjusted right of each such person or entity shall be that percentage of natural safe yield as determined hereunder from time to time which the unadjusted right of such person or entity is of the amount determined under Paragraph V(b).

San Bernardino Valley further agrees that in the event the right to extract water of any of such persons or entities in the San Bernardino Basin Area is adjudicated and legal restrictions placed on such extractions which prevent extracting of water by said persons or entities in an amount equal to their base rights, or after natural safe yield is determined, their adjusted rights, San Bernardino Valley will furnish to such persons or entities or recharge the ground water resources in the area of extraction for their benefit with imported water, without direct charge to such persons or entities therefor, so that the base rights, or adjusted rights, as the case may be, may be taken by the person or entity.

Under the provisions hereof relating to furnishing of such water by San Bernardino Valley, such persons or entities shall be entitled to extract in addition to their base rights or adjusted rights any quantities of water spread for repumping in their area of extractions, which has been delivered to them by a mutual water company under base rights or adjusted base rights included by the Watermaster under the provisions of Paragraph V (b) hereof. Extractions must be made within three years of spreading to so qualify.

04/08/2003 14:37 9494981712 WE INC PAGE 15

VII

WATER DISCHARGED ACROSS THE BUNKER HILL DIKE

San Bernardino Valley shall keep in force an agreement with the City of San Bernardino that the present annual quantity of municipal sewage effluent discharged across Bunker Hill Dike, assumed for all purposes herein to be 16,000 acre feet annually, shall be committed to the discharge of the downstream obligations imposed on San Bernardino Valley under this Judgment or under the Orange County Judgment, and that such effluent shall comply with the requirements of the Santa Ana River Basin Regional Water Quality Control Board in effect December 31, 1968.

VIII

EXTRACTIONS FROM COLTON BASIN AREA AND RIVERSIDE BASIN AREA IN SAN BERNARDINO COUNTY.

(a) The average annual extractions from the Colton Basin Area and that portion of the Riverside Basin Area within San Bernardino County, for use outside San Bernardino Valley, for the five year period ending with 1963 are assumed to be 3,349 acre feet and 20,191 acre feet, respectively; the correct figures shall be determined by the Watermaster as herein provided.

(b) Over any five year period, there may be extracted from each such Basin Area for use outside San Bernardino Valley, without replenishment obligation, an amount equal to five times such annual average for the Basin Area; provided, however, that if extractions in any year exceed such average by more than 20 percent, Western shall provide replenishment in the following year equal to the excess

04/08/2003 14:37 9494981712 WE INC PAGE 16

extractions over such 20 percent peaking allowance.

(c). To the extent that extractions from each such Basin Area for use outside San Bernardino Valley exceed the amounts specified in the next preceding Paragraph (b), Western shall provide replenishment. Except for any extractions in excess of the 20 percent peaking allowance, such replenishment shall be supplied in the year following any five year period, and shall not be from reclaimed water produced within San Bernardino Valley. Such replenishment shall also be of a quality at least equal to the water extracted from the Basin Area being recharged; provided, that water from the State Water Project shall be deemed to be of acceptable quality. Replenishment shall be supplied to the Basin Area from which any excess extractions have occurred and in the vicinity of the place of the excess extractions to the extent required to preclude influence on the water level in the three wells below designated; provided that discharge of imported water into the Santa Ana River or Warm Creek from a connection on the State Aqueduct near the confluence thereof, if released in accordance with a schedule approved by the Watermaster to achieve compliance with the objectives of this Judgment, shall satisfy any obligation of Western to provide replenishment in the Colton Basin Area, or that portion of the Riverside Basin Area in San Bernardino County, or the Riverside Basin Area in Riverside County.

(d) Extractions from the Colton Basin Area and that portion of the Riverside Basin Area within San Bernardino County, for use within San Bernardino Valley, shall not be limited. However, except for any required replenishment by Western, San Bernardino Valley shall provide the water to maintain the static water levels in the area, as determined by wells numbered

04/08/2003 14:37 9494981712 WE INC PAGE 17

1S 4W 21 Q3, 1S 4W 29 H1, and 1S 4W 29 Q1 at an average level no lower than that which existed in the Fall season of 1963. Such 1963 average water level is hereby determined to be 822.04 feet above sea level. In future years, the level shall be computed by averaging the lowest static water levels in each of the three wells occurring at or about the same time of the year, provided that no measurements will be used which reflect the undue influence of pumping in nearby wells, or in the three wells, or pumping from the Riverside Basin in Riverside County in excess of that determined pursuant to Paragraph IX(a) hereof.

(e) Extractions by Plaintiffs from the Colton Basin Area and the portion of the Riverside Basin Area in San Bernardino County may be transferred to the San Bernardino Basin Area if the level specified in Paragraph (d) above is not maintained, but only to the extent necessary to restore such 1963 average water level, provided that Western is not in default in any of its replenishment obligations. San Bernardino Valley shall be required to replenish the San Bernardino Basin Area in an amount equal to any extractions so transferred. San Bernardino Valley shall be relieved of responsibility toward the maintenance of such 1963 average water level to the extent that Plaintiffs have physical facilities available to accommodate such transfers of extractions, and insofar as such transfers can be legally accomplished.

(f) The Colton Basin Area and the portion of the Riverside Basin Area in San Bernardino County constitute a major source of water supply for lands and inhabitants in both San Bernardino Valley and Western, and the parties hereto have a mutual interest in the maintenance of water quality in these Basin Areas and in the preservation of such supply. If

04/08/2003 14:37 9494981712 WE INC PAGE 18

the water quality in such Areas, as monitored by the City of Riverside wells along the river, falls below the Objectives set therefor by the Santa Ana River Basin Regional Water Quality Control Board, the Court shall have jurisdiction to modify the obligations of San Bernardino Valley to include, in addition to its obligation to maintain the average 1963 water level, reasonable provisions for the maintenance of such water quality.

(g) The primary objectives of Paragraph VIII and related provisions are to allow maximum flexibility to San Bernardino Valley in the operation of a coordinated replenishment and management program, both above and below Bunker Hill Dike; to protect San Bernardino Valley against increased extractions in the area between Bunker Hill Dike and Riverside Narrows, which without adequate provision for replenishment might adversely affect base flow at Riverside Narrows, for which it is responsible under the Orange County Judgment; and to protect the area as a major source of ground water supply available to satisfy the historic extractions therefrom for use within Western, without regard to the method of operation which may be adopted by San Bernardino Valley for the San Bernardino Basin Area, and without regard to the effect of such operation upon the historic supply to the area below Bunker Hill Dike.

If these provisions should prove either inequitable or unworkable, the Court upon the application of any party hereto shall retain jurisdiction to modify this Judgment so as to regulate the area between Bunker Hill Dike and Riverside Narrows on a safe yield basis; provided that under such method of operation, (1) base rights shall be determined on the basis of total average annual extractions for use within San Bernardino Valley and Western, respectively, for the five year period ending

04/08/2003 14:37 9494981712 WE INC PAGE 19

with 1963; (2) such base rights for use in both Districts shall be subject to whatever adjustment may be required by the safe yield of the area, and in the aggregate shall not be exceeded unless replenishment therefor is provided; (3) in calculating safe yield, the outflow from the area at Riverside Narrows shall be determined insofar as practical by the base flow obligations imposed on San Bernardino Valley under the Orange County Judgment; and (4) San Bernardino Valley shall be required to provide replenishment for any deficiency between the actual outflow and the outflow obligation across Bunker Hill Dike as established by safe yield analysis using the base period of 1934 through 1960.

IX

EXTRACTIONS FROM THE PORTION OF RIVERSIDE BASIN AREA IN RIVERSIDE COUNTY WHICH IS TRIBUTARY TO RIVERSIDE NARROWS.

(a) The average annual extractions from the portion of the Riverside Basin Area in Riverside County which is tributary to Riverside Narrows, for use in Riverside County, for the five year period ending with 1963 are assumed to be 30,044 acre feet; the correct figures shall be determined by the Watermaster as herein provided.

(b) Over any five year period, there may be extracted from such Basin Area, without replenishment obligation, an amount equal to five times such annual average for the Basin Area; provided, however, that if extractions in any year exceed such average by more than 20 percent, Western shall provide replenishment in the following year equal to the excess extractions over such 20 percent peaking allowance.

(c) To the extent that extractions from such Basin Area exceed the amounts specified in the next preceding

04/08/2003 14:37 9494981712 WE INC PAGE 20

Paragraph (b), Western shall provide replenishment. Except for any extractions in excess of the 20 percent peaking allowance, such replenishment shall be supplied in the year following any five year period, and shall be provided at or above Riverside Narrows.

(d) Western shall also provide such replenishment to offset any reduction in return flow now contributing to the base flow at Riverside Narrows, which reduction in return flow results from the conversion of agricultural uses of water within Western to domestic or other uses connected to sewage or waste disposal systems, the effluent from which is not tributary to the rising water at Riverside Narrows.

X

REPLENISHMENT TO OFFSET NEW EXPORTS OF WATER TO AREAS NOT TRIBUTARY TO RIVERSIDE NARROWS.

Certain average annual amounts of water extracted from the San Bernardino Basin Area and the area downstream therefrom to Riverside Narrows during the five year period ending in 1963 have been exported for use outside of the area tributary to Riverside Narrows and are assumed to be 50,667 acre feet annually as set forth in Table C-1 of Appendix "C"; the correct amount shall be determined by the Watermaster as herein provided. Western shall be obligated to provide replenishment at or above Riverside Narrows for any increase over such exports by Western or entities within it from such areas for use within areas not tributary to Riverside Narrows. San Bernardino Valley shall be obligated to provide replenishment for any increase over the exports from San Bernardino Valley for use in any area not within Western nor tributary to Riverside Narrows as set forth in Table C-2 of

04/08/2003 14:37 9494981712 WE INC PAGE 21

Appendix "C", such amounts being subject to correction by the Watermaster, or for any exports from the San Bernardino Basin Area for use in the Yucaipa, San Timoteo, Oak Glen and Beaumont Basins.

XI

REPLENISHMENT CREDITS AND ADJUSTMENT FOR QUALITY

(a) All replenishment provided by Western under Paragraph IX and all credits received against such replenishment obligation shall be subject to the same adjustments for water quality applicable to base flow at Riverside Narrows, as set forth in the Orange County Judgment.

(b) Western shall receive credit against its replenishment obligations incurred under this Judgment for the following:

1. As against its replenishment obligation under Paragraph VIII, any return flow to the Colton Basin Area or the portion of the Riverside Basin Area within San Bernardino County, respectively, resulting from any excess extractions therefrom; and as against its replenishment obligation under Paragraph IX, any return flow to the portion of the Riverside Basin Area in Riverside County, which contributes to the base flow at Riverside Narrows, resulting from any excess extractions therefrom, or from the Riverside Basin Area in San Bernardino County, or from the Colton Basin Area.

2. Subject to adjustment under Paragraph (a) hereof, any increase over the present amounts of sewage effluent discharged from

04/08/2003 14:37 9494981712 WE INC PAGE 22

treatment plants within Riverside County which are tributary to Riverside Narrows, and which results from the use of imported water.

3. Any replenishment which may be provided in excess of that required; any amounts which hereunder are allowed to be extracted from the Colton and Riverside Basin Areas without replenishment obligation by Western, and which in fact are not extracted; any storm flows conserved between Bunker Hill Dike and Riverside Narrows by works financed solely by Western, or entities within it, which would not otherwise contribute to base flow at Riverside Narrows; and any return flow from imported water used in Riverside County which contributes to base flow at Riverside Narrows; provided, however, that such use of the underground storage capacity in each of the above situations does not adversely affect San Bernardino Valley in the discharge of its obligations at Riverside Narrows under the Orange County Judgment, nor interfere with the accomplishment by San Bernardino Valley of the primary objectives of Paragraph VIII, as stated in Subdivision (g).

(c) The replenishment obligations of Western under this Judgment shall not apply during such times as amounts of base flow at Riverside Narrows and the amounts of water stored in the ground water resources below Bunker Hill Dike and tributary to the maintenance of such flow are found by Order of the Court to be sufficient to satisfy any obligation which San Bernardino Valley may have under this Judgment, or under the

04/08/2003 14:37 9494981712 WE INC PAGE 23

Orange County Judgment, and if the Court further finds by Order that during such times any such increase in pumping, changes in use or exports would not adversely affect San Bernardino Valley in the future.

(d) The replenishment obligations of San Bernardino Valley under Paragraph X of this Judgment for increase in exports from the Colton and Riverside Basin Areas within San Bernardino Valley below the Bunker Hill Dike shall not apply during such times as the amounts of water in the ground water resources of such area are found by Order of the Court to be sufficient to satisfy the obligations which San Bernardino Valley may have to Plaintiffs under this Judgment, and if the Court further finds by Order that during such times any such increases in exports would not adversely affect Plaintiffs in the future.

XII

CONVEYANCE OF WATER BY SAN BERNARDINO VALLEY TO RIVERSIDE NARROWS.

If San Bernardino Valley determines that it will convey reclaimed sewage effluent, or other water, to or near Riverside Narrows, to meet its obligations under this or the Orange County Judgment, the City of Riverside shall make available to San Bernardino Valley for that purpose any unused capacity in the former Riverside Water Company canal, and the Washington and Monroe Street storm drains, without cost except for any alterations or capital improvements which may be required, or any additional maintenance and operation costs which may result. The use of those facilities shall be subject to the requirements of the Santa Ana River Basin Regional Water Quality Control Board and of the State Health Department, and compliance

04/08/2003 14:37 9494981712 WE INC PAGE 24

therewith shall be San Bernardino Valley's responsibility.

XIII

WATERMASTER

(a) This Judgment and the instructions and subsequent orders of this Court shall be administered and enforced by a Watermaster. The parties hereto shall make such measurements and furnish such information as the Watermaster may reasonably require, and the Watermaster may verify such measurements and information and obtain additional measurements and information as the Watermaster may deem appropriate.

(b) The Watermaster shall consist of a committee of two persons. San Bernardino Valley and Western shall each have the right to nominate one of such persons. Each such nomination shall be made in writing, served upon the other parties to this Judgment, and filed in Court. Such person shall be appointed by and serve at the pleasure of and until further order of this Court. If either Western or San Bernardino Valley shall at any time nominate a substitute appointee in place of the last appointee to represent it, such appointee shall be appointed by the Court in place of such last appointee.

(c) Appendix "D" to this Judgment contains some of the data which have been used in preparation of this Judgment, and shall be utilized by the Watermaster in connection with any questions of interpretation.

(d) Each and every finding and determination of the Watermaster shall be made in writing certified to be by unanimous action of both members of the Watermaster committee. In the event of failure or inability of such Watermaster Committee to reach agreement, the Watermaster committee may determine to submit the dispute to a third person to be selected

04/08/2003 14:37 9494981712 WE INC PAGE 25

by them, or if they are unable to agree on a selection, to be selected by the Court, in which case the decision of the third person shall be binding on the parties; otherwise the fact, issue, or determination in question shall forthwith be certified to this Court by the Watermaster, and after due notice to the parties and opportunity for hearing, said matter shall be determined by order of this Court, which may refer the matter for prior recommendation to the State Water Resources Control Board. Such order of the Court shall be a determination by the Watermaster within the meaning of this Judgment.

(e) The Watermaster shall report to the Court and to each party hereto in writing not more than seven (7) months after the end of each year, or within such other time as the Court may fix, on each determination made by it pursuant to this Judgment, and such other items as the parties may mutually request or the Watermaster may deem to be appropriate. All of the books and records of the Watermaster which are used in the preparation of, or are relevant to, such reported data, determinations and reports shall be open to inspection by the parties hereto. At the request of any party this Court will establish a procedure for the filing and hearing of objections to the Watermaster's report.

(f) The fees, compensation and expenses of each person on the Watermaster shall be borne by the District which nominated such person. All other Watermaster service costs and expenses shall be borne by San Bernardino Valley and Western equally.

(g) The Watermaster shall initially compute and report to the Court the natural safe yield of the San Bernardino Basin Area, said computation to be based upon the cultural

04/08/2003 14:37 9494981712 WE INC PAGE 26

conditions equivalent to those existing during the five calendar year period ending with 1963.

(b) The Watermaster shall as soon as practical determine the correct figures for Paragraphs V(b), VI(b)1, VIII(a), IX(a) and X, as the basis for an appropriate supplemental order of this Court.

XIV

CONTINUING JURISDICTION OF THE COURT

(a) The Court hereby reserves continuing jurisdiction of the subject matter and parties to this Judgment, and upon application of any party, or upon its own motion, may review and redetermine, among other things, the following matters and any matters incident thereto:

1. The hydrologic condition of any one or all of the separate basins described in this Judgment in order to determine from time to time the safe yield of the San Bernardino Basin Area.

2. The desirability of appointing a different Watermaster or a permanent neutral member of the Watermaster, or of changing or more clearly defining the duties of the Watermaster.

3. The desirability of providing for increases or decreases in the extraction of any particular party because of emergency requirements or in order that such party may secure its proportionate share of its rights as determined herein.

4. The adjusted rights of the Plaintiffs as required to comply with the provisions hereof with respect to changes in the natural safe yield of the San Bernardino Basin

04/08/2003 14:37 9494981712 WE INC PAGE 27

Area. If such changes occur, the Court shall adjudge that the adjusted rights and replenishment obligations of each party shall be changed proportionately to the respective base rights.

5. Conforming the obligations of San Bernardino Valley under this Judgment to the terms of any new judgment hereafter entered adjudicating the water rights within San Bernardino Valley, if inconsistencies of the two judgments impose hardship on San Bernardino Valley.

6. Adjusting the figures in Paragraphs V(b), VI(b) 1, VIII(a) IX(a), and X, to conform to determination by the Watermaster.

7. Credit allowed for return flow in the San Bernardino Basin Area if water levels therein drop to the point of causing undue hardship upon any party.

8. Other matters not herein specifically set forth which might occur in the future and which would be of benefit to the parties in the utilization of the surface and ground water supply described in this Judgment, and not inconsistent with the respective rights of the parties as herein established and determined.

(b) Any party may apply to the Court under its continuing jurisdiction for any appropriate modification of this Judgment if its presently available sources of imported water are exhausted and it is unable to obtain additional supplies of imported water at a reasonable cost, or if there is any substantial delay in the delivery of imported water through the State Water Project.

04/08/2003 14:37 9494981712 WE INC PAGE 28

XV

SAVING CLAUSES

(a) Nothing in this Judgment precludes San Bernardino Valley, Western, or any other party from exercising such rights as it may have or obtain under law to spread, store underground and recapture imported water, provided that any such use of the underground storage capacity of the San Bernardino Basin Area by Western or any entity within it shall not interfere with any replenishment program of the Basin Area.

(b) Changes in the place and kind of water use, and in the transfer of rights to the use of water, may be made in the absence of injury to others or prejudice to the obligations of either San Bernardino Valley or Western under Judgment or the Orange County Judgment.

(c) If any Plaintiff shall desire to transfer all or any of its water rights to extract water within San Bernardino Valley to a person, firm, or corporation, public or private, who or which is not then bound by this Judgment, such Plaintiff shall as a condition to being discharged as hereinafter provided cause such transferee to appear in this action and file a valid and effective express assumption of the obligations imposed upon such Plaintiff under this Judgment as to such transferred water rights. Such appearance and assumption of obligation shall include the filing of a designation of the address to which shall be mailed all notices, requests, objections, reports and other papers permitted or required by the terms of this Judgment.

If any Plaintiff shall have transferred all of its said water rights and each transferee not theretofore bound by this Judgment as a Plaintiff shall have appeared in this action

04/08/2003 14:37 9494981712 WE INC PAGE 29

and filed a valid and effective express assumption of the obligations imposed upon such Plaintiff under this Judgment as to such transferred water rights, such transferring Plaintiff shall thereupon be discharged from all obligations hereunder. If any Plaintiff shall cease to own any rights in and to the wate: supply declared herein and shall have caused the appearance and assumption provided for in the third preceding sentence with respect to each voluntary transfer, then upon application to this Court and after notice and hearing such Plaintiff shall thereupon be relieved and discharged from all further obligations hereunder. Any such discharge of any Plaintiff hereunder shall not impair the aggregate rights of defendant San Bernardino Valley or the responsibility hereunder of the remaining Plaintiffs or any of the successors.

(d) Non-use of any right to take water as provided herein shall not result in any loss of the right. San Bernardino Valley does not guarantee any of the rights set out herein for Western and the other Plaintiffs as against the claims of third parties not bound hereby. If Western or the other Plaintiffs herein should be prevented by acts of third parties within San Bernardino County from extracting the amounts of water allowed them by this Judgment, they shall have the right to apply to this Court for any appropriate relief, including vacation of this Judgment, in which latter case all parties shall be restored to their status prior to this Judgment insofar as possible.

(e) Any replenishment obligation imposed hereunder on San Bernardino Valley may be deferred until imported water first is available to San Bernardino Valley under its contract with the California Department of Water Resources and the

04/08/2003 14:37 9494981712 WE INC PAGE 30

obligation so accumulated may be discharged in five approximately equal annual installments thereafter.

(f) No agreement has been reached concerning the method by which the cost of providing replenishment will be financed, and no provision of this Judgment, nor its failure to contain any provision, shall be construed to reflect any agreement relating to the taxation or assessment of extractions.

XVI

EFFECTIVE DATE

The provisions of Paragraphs III and V to XII of this Judgment shall be in effect from and after January 1, 1971; the remaining provisions are in effect immediately.

XVII

COSTS

No party shall recover its costs herein as against any other party.

THE CLERK WILL ENTER THIS JUDGMENT FORTHWITH.

DATED: April 17, 1969

ENTERED

APR 17 1969

JUDGMENT BOOK 124 PG 42

JUDGE OF THE SUPERIOR COURT

04/08/2003 14:37 9494981712 WE INC PAGE 31

M

Appendix M Eastern Perris North Agreement

EMWD/WMWD
NORTH PERRIS GROUNDWATER BASIN PROGRAM
INTERAGENCY AGREEMENT

This Agreement is made and entered into this 20th day of November, 2020, by and between **EASTERN MUNICIPAL WATER DISTRICT**, (hereinafter "Eastern") and **WESTERN MUNICIPAL WATER DISTRICT**, (hereinafter "Western") public agencies duly formed and operating under the Municipal Water District Law of the State of California. Eastern and Western are sometimes collectively referred to herein as the "Party" or "Parties".

RECITALS

WHEREAS, Eastern provides retail water, wastewater, and recycled water services to customers throughout its service area, as well as wholesale water supply to various districts and municipalities within or adjacent to its territory; and

WHEREAS, Western provides retail and wholesale water, wastewater, and recycled water services throughout its service area, and is the retail water and sewer service provider to the March Air Reserve Base cantonment area (hereinafter "MARB"), and to Department of Defense facilities within non-cantonment areas (hereinafter the "MARB Parcels"). For the purposes of this Agreement, MARB and MARB Parcels will be jointly referred to hereinafter as Western's North Perris Basin Service Area and is generally depicted on **Exhibit A**, attached hereto and incorporated herein; and

WHEREAS, rising groundwater levels in the North Perris Groundwater Basin area may impact long-term activities and the sustainable operation of MARB; and

WHEREAS, historical contamination of groundwater sources extends beyond MARB and affects the North Perris Groundwater Basin as generally depicted on **Exhibit B**, attached hereto and incorporated herein; and

WHEREAS, due to the aforementioned groundwater levels and contamination, Eastern has developed the North Perris Groundwater Basin Program (hereinafter "the Program") with the objectives of remediating contamination within the North Perris Groundwater Basin; protecting non-contaminated areas of the Basin; developing a local source of water supply, including a secure potable supply for Eastern and Western's North Perris Basin Service Area; and providing long-term remediation of rising groundwater levels in the North Perris Groundwater Basin area; and

WHEREAS, elements of the Program include, but are not limited to, the planning, design, financing, construction, and operation of facilities necessary to produce, convey, blend, and treat groundwater for purposes of addressing Program objectives; and

WHEREAS, the aforementioned facilities consisting of groundwater production wells, wellhead treatment, blending stations, conveyance pipelines, and monitoring wells (together the "Project Facilities") are anticipated to exist wholly within Eastern's service area, except for monitoring wells that may be located within Western's service area. Eastern shall design, build, own, and operate all such Project Facilities as further described herein; and

WHEREAS, Western may, at its discretion, purchase quantities of water from Eastern that reflect solely the demands of Western's North Perris Basin Service Area as more fully described in the allocation schedule herein; and

WHEREAS, Eastern has executed a funding agreement with the California State Water Resources Control Board (hereinafter the "State Board") for grant funding supporting construction of the Project Facilities; and

WHEREAS, the price of water produced from the Program by Eastern and purchased by Western shall include Eastern's costs for operation and maintenance of the Project Facilities, as well as the amortized capital construction costs of such Facilities, less any grant funding received by Eastern, as more fully described herein; and

WHEREAS, the purpose of this Agreement is to set forth financial and other arrangements between Eastern and Western for development of the North Perris Groundwater Program, and to define the roles, obligations, and responsibilities associated with construction, ownership, and operation of the Project Facilities and the subsequent sale of Program water to Western, by Eastern.

NOW, THEREFORE, in consideration of the promises and covenants herein contained, the Parties agree as follows:

AGREEMENT

1. Incorporation of Recitals. The Recitals set forth above are incorporated into and are made a part of this Interagency Agreement.

2. Term. This Agreement shall be effective upon the date it is fully executed by the Parties hereto and shall remain in effect for a period of twenty (20) years following the date Eastern notifies Western in writing of the availability of water supplies from the Project Facilities. This Agreement may, thereafter, be extended in ten (10) year increments only by mutual written agreement of the Parties through written amendment.

3. Eastern's Responsibilities.

   Eastern shall design, build, own, operate and maintain all Project Facilities, including ownership of all real property and rights-of-way associated with such Project Facilities. Such responsibilities shall include, but are not limited to:

   a) Technical Development and Review. Eastern shall lead and direct the preparation of all technical development and support materials, including, but not limited to planning studies, engineering, regulatory and environmental compliance, modeling, property acquisition, permitting, and the development of all construction related documentation for the Project Facilities. Eastern shall utilize its own means and methods in completing all such Program elements and will solicit input from, and provide periodic updates to Western.

   b) External Communications and Program Advocacy. Eastern shall coordinate with Western for all external Program and Project Facilities-related communications and meetings, including, but not limited to those with all federal, state, and local entities. All of Western's external communications for the Program shall be coordinated with Eastern.

Meetings and communications with MARB staff will be jointly coordinated by the Parties, with Eastern leading such communications pertaining to the Program and Western leading those with regard to providing retail services to MARB. Meetings with MARB regarding the design, implementation, and construction of the Program shall be conducted by Eastern with an invitation extended to Western for attendance. Such meetings may include, but are not limited to, those involving the Stakeholder Advisory Committee, Technical Advisory Committee, Groundwater Model Advisory Panel, technical review sessions, and Groundwater Sustainability Plan development.

c) External Funding: External funding secured by Eastern and/or Western that is directly related to the Project Facilities shall be applied as a credit toward capital costs incurred by Eastern in planning, designing, and constructing the Project Facilities. Such funding shall be proportionally applied to the cost of water sold by Eastern to Western as further described in Section 5, below. Any external funding secured by Western that is not directly related to the Project Facilities shall be for the sole benefit of Western.

d) Eastern shall make water produced by the Program available for sale to Western at agreed upon metered points of connection which shall be set forth in a separate Operational Agreement to be developed by the Parties. Said points of connection may include those already in existence or future connections to be constructed by Western. In addition, Program water may be supplied in the form of an in-lieu transfer at the Metropolitan Water District's Mills Water Treatment Plant as provided in the aforementioned Operational Agreement. Such water shall be supplied by Eastern on a constant flow basis with no flow peaking, or long-term storage, and shall meet all federal, state, and local regulatory requirements for the supply of potable drinking water.

4. Western's Responsibilities.

Western may, at its discretion, purchase Program water from Eastern in accordance with the following:

a) Program Water Allocation. Western may, at its discretion, purchase Program water from Eastern in accordance with, and limited to, the Maximum Allocation Schedule described below. However, Western shall have the option to increase its acquisition of water from the Program within the limits established within the Maximum Allocation Schedule based solely on additional demands within Western's North Perris Basin Service Area as evidenced through Western's metered billings. Such evidence shall be provided to Eastern upon request.

Upon completion, the Project Facilities are anticipated to produce a maximum quantity of 6,750 acre-feet of water per year. Such maximum quantity is consistent with that identified in Eastern's executed funding agreement with the State Board. If, for any reason, there is a reduction in such anticipated State Board funding that reduces the production capacity, or a reduction in scale of the proposed Project Facilities for some other reason; or in the event that Eastern, in any given fiscal year (July through June), is unable to produce at least eighty percent of the aforementioned maximum quantity (5,400 acre-feet per year) due to unanticipated water quality, regulatory, operational, or any similar circumstance whatsoever, the Maximum Allocation Schedule set forth in subsection (b) below shall be proportionally reduced for such year(s) in accordance with the following formula:

Actual Annual Acre-Feet Production ÷ 6,750 Acre-Feet = Western's Proportionally Adjusted Percentage of the Maximum Allocation Schedule

b) Western's Maximum Allocation Schedule.

Western may purchase Program water from Eastern equal to a maximum of 500 acre-feet of water in the first initial year following Eastern's completion of the Project Facilities. The maximum amount of purchased water allowable in the first year is subject to the proportion of the fiscal year remaining. The proportion shall be calculated by dividing the number of days remaining in that initial first year prior to June 30 into the total days in a year. Thereafter, on or before June 1st of each year, Western shall inform Eastern, in writing, of the amount of Program water it intends to purchase over the following fiscal year. Such total shall be based on, and evidenced by, Western's deliveries to Western's North Perris Basin Service Area over the previous calendar year and shall not exceed the following Maximum Allocation Schedule:

i. In years two (2) through five (5) following the date of Eastern's written notification to Western of the availability of Program water, a maximum of 750 acre-feet of water per year beginning with the date of July 1 following the first delivery of water to Western.

ii. In years six (6) through ten (10) following the date of Eastern's written notification to Western of the availability of Program water, a maximum of 1,000 acre-feet of water per year beginning with July 1 of the sixth year, as described above, and extending through June 30 of year ten (10).

iii. After year ten (10), a maximum of 1,500 acre-feet of water per year beginning with the completion of year ten (10) following the date of Eastern's written notification to Western of the availability of Program water, and extending through expiration of this Agreement.

c) Western shall not install groundwater production wells within the Program area that interfere, in any way, as determined by Eastern, with Eastern's operation of the Project Facilities or groundwater remediation functions.

5. Water Rates and Billing.

Eastern shall prepare monthly billings to Western for water deliveries made pursuant to this Agreement. Such billings shall be paid by Western within thirty (30) calendar days following the date of Eastern's invoice.

The unit cost (rate) for water billed by Eastern shall be calculated by Eastern and based on the following components:

a) Amortized Capital Cost Component of the Project Facilities: The amortized capital cost rate component for Program water purchased by Western shall consist of the annualized capital costs incurred by Eastern for the planning, permitting, design, and construction of the Project Facilities, including, but not limited to the acquisition of any real property and rights-of-way associated therewith, less any external funding actually received in accordance with Section 3(c), above. Such resulting total shall be

divided by the quantity of water produced by the Project Facilities in any given fiscal year to determine the per acre-foot capital cost component of Western's rate.

It is hereby understood and agreed that the annualized capital costs specified above shall be based on a thirty (30) year amortization schedule incorporating Eastern's combined cost of debt service for the prior fiscal year as the interest rate. Eastern's combined cost of debt service for fiscal year 2019-2020 was 2.137%.

b) Operation and Maintenance Component of the Project Facilities: The operation and maintenance cost rate component for Program water purchased by Western shall consist of all fixed and variable operational costs incurred by Eastern including, but not limited to those for Project Facility maintenance and repair, water purchased for blending, energy, labor, chemicals, treatment media, and other similar consumables. Such total shall be divided by the quantity of water produced over the fiscal year to determine the per unit operations and maintenance cost component of Western's rate.

In addition to the foregoing, in the event that Eastern incurs expenditures for the overhaul or capital replacement of any Project Facility or related component in excess of $50,000, an amortization schedule covering Western's reimbursement to Eastern for such costs shall be negotiated and agreed upon between the Parties.

On or before March 15 of each calendar year, Eastern shall provide Western a projection of the aforementioned rate components to be used by Eastern in calculating the unit cost of water to be charged to Western over the upcoming fiscal year.

Additionally, on or before October 1 of each calendar year, Eastern shall provide Western a detailed reconciliation of the aforementioned rate components based on actual costs realized by Eastern in operating the Project Facilities over the prior fiscal year. Any overage in charges will be credited to Western within thirty (30) calendar days following completion of Eastern's reconciliation. Any under payment, or balance due Eastern based on such reconciliation shall be invoiced to Western by Eastern. Western shall remit such balance to Eastern within thirty (30) calendar days of the date of Eastern's invoice.

For water sold to Western pursuant to this Agreement, it is hereby understood and agreed that Eastern shall not apply the volumetric delivery charge, monthly fixed rate charge, and monthly replacement and reserve contribution as defined in the November 9, 2015 Interagency Agreement (as Amended on October 19, 2016) for the Eastern/Western Intertie Connection to Serve Western's North Perris Basin Service Area.

6. Entire Understanding.

This Agreement is intended by the Parties as a complete and exclusive statement of the terms of their agreement and supersedes all prior agreements, written or oral, as to the subject matter herein contained.

7. Amendments.

This Agreement may be amended or modified only in writing signed by the Parties.

8. Hold Harmless and Indemnification.

Western and Eastern agree that each party shall be responsible for its own actions, and the actions of its officers, employees and agents, in performing services under this Agreement. Western and Eastern each agree to indemnify and hold the other Party and its officers and agents harmless and agree to defend the other Party against any claim or asserted liability arising out of its actions, either willful or negligent, or the actions of its officers, employees and agents, in performing services pursuant to this Agreement. Such indemnity includes any losses relating to any claim made, whether or not a court action is filed, and attorney fees and administrative and overhead costs related to or arising out of such claim or asserted liability.

Notwithstanding the foregoing, Eastern shall indemnify, defend, save and hold harmless Western and its Board of Directors, officers, agents and employees, of and from any liabilities, claims, demands, suits, action and cause of action made by the United States Air Force regarding Eastern's operation of the Project Facilities. Such indemnification for Western, however, is conditioned and shall only be effective upon the United States Air Force, or other appropriate branch of the United States Government, entering into an agreement with Eastern for coordinated operations and a mutual release of claims.

9. Termination.

This Agreement may be terminated with the written mutual consent of both Parties, or in the event of a breach, this Agreement may be terminated at the election of the non-defaulting party. Eastern may terminate this Agreement at any time prior to providing Western written notification of the availability of Program water in the event of limitations or loss of external sources of funding, or other similar circumstance.

10. Force Majeure.

Neither Party shall be in default or otherwise liable for any delay in or failure of its performance under this Agreement for a period equal to the duration of the force majeure event, if such delay or failure arises by any reason beyond the Party's reasonable control, including any act of God, any acts of the common enemy, earthquakes, floods, fires, epidemics, riots, labor disputes, failures or delay in transportation or communications, or any act or failure to act by the other Party or such other Party's employees, agents or contractors.

11. Disputes.

In the event that any dispute between the Parties arises under this Agreement, the Parties shall first attempt to resolve such dispute at the staff level. If the dispute is not resolved at this level within a mutually acceptable period of time (not to exceed 60 calendar days from the date written notice of such dispute is delivered by any Party), the Parties shall attempt to resolve the dispute at the executive management level. If this process and the involvement of executive management does not result in resolution of the dispute within 60 days from the date of referral to executive management, then the dispute shall be referred to mediation to be conducted by a mutually agreed upon mediator. The Parties shall engage in good faith efforts to resolve any dispute at each of the dispute resolution levels set forth herein. In the event the dispute is not resolved through the above-mentioned dispute resolution procedures, then either Party may pursue resolution of the dispute through legal proceedings. The use of the foregoing

procedure is a condition precedent to the commencement of any legal proceedings hereunder.

12. Partial Invalidity.
If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force and effect without being impaired or invalidated.

13. Governing Law and Venue:

This Agreement and the rights of the parties under hereto shall be governed by and enforced in accordance with the laws of the State of California. Venue of any action brought hereunder will be in Riverside County, California, and the parties hereto consent to the exercise of personal jurisdiction over them by any such courts for purposes of any such action or proceeding.

14. Agreement Enforcement.

In the event any action is commenced by a Party to this Agreement against the other to enforce its rights or obligations thereunder, the prevailing party in such action, in addition to any other relief and recovery ordered by the court, shall be entitled to recover all litigation and collection expenses, witness fees, court costs, plus reasonable attorneys' fees.

15. Preparation of this Agreement.

This Agreement shall not be construed against the Party preparing it but shall be construed as if both Parties prepared it.

16. Notices.

Any notice required by this Agreement to be given or delivered to any Party shall be deemed to have been received when personally delivered or mailed in the United States mail addressed as follows:

Eastern
Eastern Municipal Water District
Post Office Box 8300
Perris, CA 92572-8300
Attn: General Manager

Western
Western Municipal Water District
14205 Meridian Parkway
Riverside, CA 92518
Attn: General Manager

IN WITNESS WHEREOF, the Parties have executed this Interagency Agreement as of the day and year last executed.

WESTERN MUNICIPAL WATER DISTRICT

By: _____
Craig D. Miller, P.E., General Manager

Dated: 12/8/2020

EASTERN MUNICIPAL WATER DISTRICT

By: _____
Paul D. Jones II, P.E., General Manager

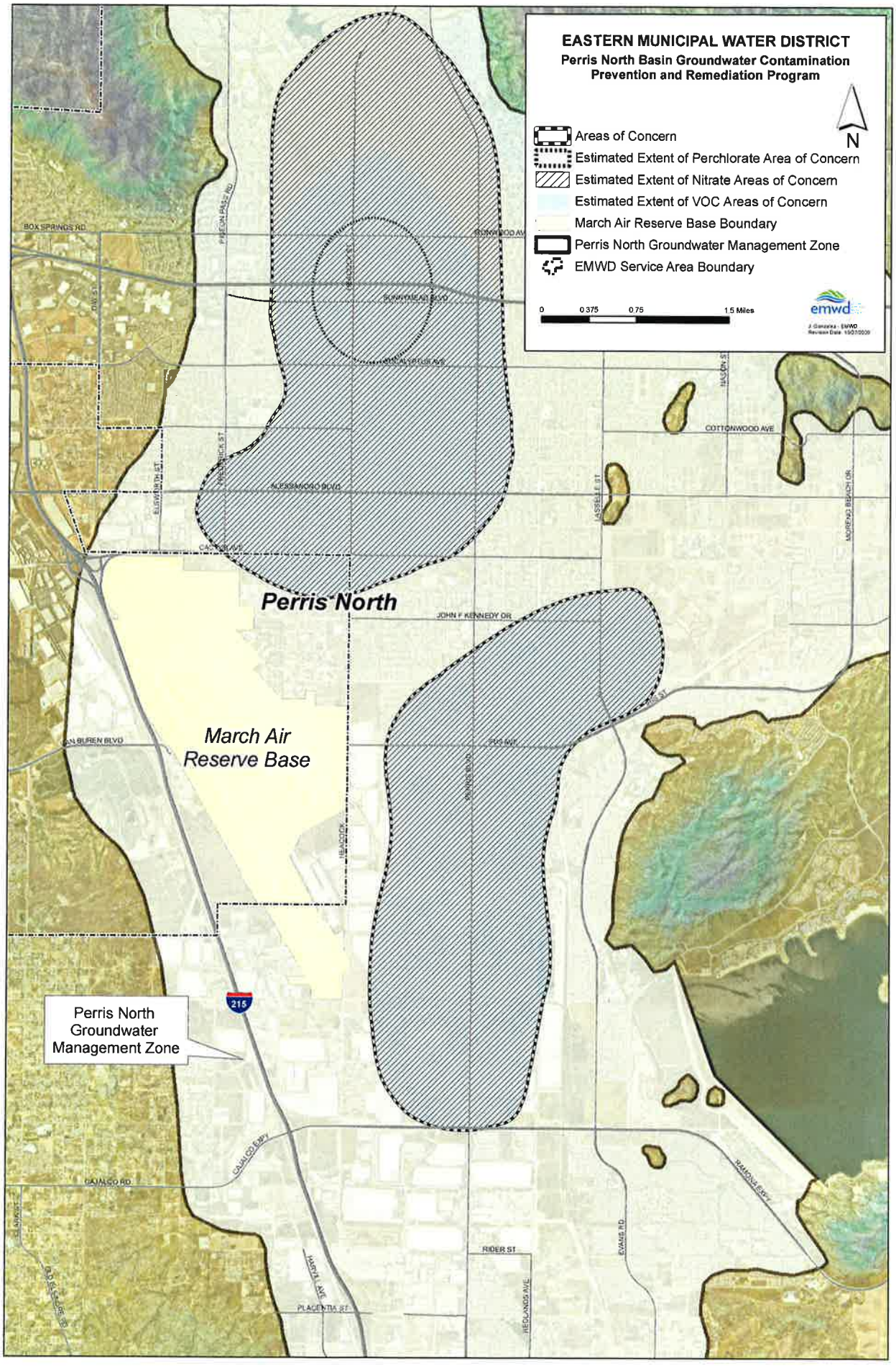
Dated: 12/17/20

Exhibit A:

Western Municipal Water District's North Perris Basin Service Area



EXHIBIT B: GROUNDWATER CONTAMINATION



N

Appendix N SBx7-7 Forms

SB X7-1 | Baseline Period Ranges

STATUS: Published

NOTES: -

Baseline	Parameter	Value	Units
10- to 15-year baseline period	**2008 total water deliveries**	31,300	Acre Feet (AF)
	2008 total volume of delivered recycled water	749	Acre Feet (AF)
	2008 recycled water as a percent of total deliveries	2.39%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range[3]	2004	
5-year baseline period	**Number of years in baseline period**	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1]If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.

[2]The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

[3]The ending year must be between December 31, 2004 and December 31, 2010.

[4]The ending year must be between December 31, 2007 and December 31, 2010.

SB X7-2 | Method for Population Estimates

STATUS:	Published
NOTES:	-

Method for Population Estimates	
No	**1. Department of Finance (DOF)** DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2010 - 2020) when available
No	**2. Persons-per-Connection Method**
Yes	**3. DWR Population Tool**
No	**4. Other** DWR recommends pre-review

SB X7-3 | Service Area Population

STATUS: Published

NOTES: -

Year		Population
10 to 15 Year Baseline Population		
Year 1	1995	40,327
Year 2	1996	41,400
Year 3	1997	42,474
Year 4	1998	43,547
Year 5	1999	44,621
Year 6	2000	45,694
Year 7	2001	48,874
Year 8	2002	52,054
Year 9	2003	55,234
Year 10	2004	58,414
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	55,234
Year 2	2004	58,414
Year 3	2005	61,595
Year 4	2006	73,158
Year 5	2007	77,101
2020 Compliance Year Population		
2020		94,898

SB X7-7 Table 4: 2020 Gross Water Use							
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**2020 Deductions**					**2020 Gross Water Use**
		Exported Water *	**Change in Dist. System Storage*** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	24,986			-		-	**24,986**

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water *Fm SB X7-7 Table 4*	**2020 Population** *Fm SB X7-7 Table 3*	**2020 GPCD**
24,986	94,898	**235**
NOTES:		

SB X7-7 | 2020 Target Method

STATUS: Published

NOTES: -

Select Only One	
No	**Method 1.** Complete SB X7-7A below.
No	**Method 2.** Complete SB X7-7B,SB X7-7C, and SB X7-7D below.
No	**Method 3.** Complete SB X7-E below.
Yes	**Method 4.** Complete Method 4 Calculator below.

SB X7-8 | 2015 Interim Target GPCD

STATUS: Published

NOTES: -

Confirmed 2020 Target From SB X7-7-F	**10-15 year Baseline GPCD** From SB X7-5	**2015 Interim Target GPCD**
352	**430**	**391**

SB X7-7 Table 9: 2020 Compliance							
Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD Enter "0" if Adjustment Not Used Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]	TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
235	-	-	-	-	235	352	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES:

O

Appendix O 2018 Water Efficiency Master Plan



Engaging + Empowering Customers

Water Efficiency Master Plan

OCTOBER 2018

WESTERN MUNICIPAL WATER DISTRICT

Table of Contents

Section 1: Western Today ***4***

DISTRICT GOALS **5**

JUST THE FACTS **6**

Annual Water Use 6
Residential Per Capita Water Use 6
Tier 3 – 5 Customers 8
Percentage of Tier 3-5 Customers - 2012 VS 2017 8
Tier 3-5 Acre-feet of Water Over Budget by Year 9
Landscape Water Use 9

Section 2: Market Conditions ***11***

THE PROBLEM **11**

What is It About Lawns? 11
Some Inroads Have Been Made 12

Section 3: Customer Solutions ***13***

THE SOLUTION – Landscape transformation **13**

How Western Can Engage Customers 13
Learn 14
Personalize 14
Engage/Assist 15
Appreciate 15
Create Advocates 15

Section 4: Engaging Customers ***16***

LEARNING MORE ABOUT WESTERN CUSTOMERS **16**

Why Big Data and Analytics **26**

SMART TARGETING **27**

PERSONALIZATION **29**

The Role of Emotion 29
Personalize the Message + the Outreach 30

ENGAGE + ASSIST **33**

Engagement Role 33
The Field Efficiency Evaluator 35
Using Videos as an Engagement Tool 36
Creating Your Own Landscape Style 37

Section 5: Creating Advocates ***39***

SHOWING APPRECIATION **39**

WHY SHOULD WESTERN DO ALL THIS? **40**

Partners as Advocates **41**

Wholesale Agencies 41
Local Businesses 43
Regional Utilities + Organizations 43
State + Federal Funding Agencies 44
Industry Associations 44

Section 6: Past Programs *46*
Selective Efficiency Evaluation Program 46
Large Landscape WBIC Installation Program 47
SmartYard Program 47
Turf Replacement Program 48
Regional Design Support Program 48
Multi-family + Hotel/Motel Toilet Installation Program 49
Drip Irrigation Pilot Program 49
SoCal Water$mart Rebate Program 50
SoCal Water$mart Water Savings Incentive Programs 50
FreeSprinklerNozzles.com 51
Urinal Upgrade Program 52
Section 7 – Proposed Programs *53*
Evaluations, Coaching, Design Support, Vouchers + Rebates 53
Efficiency Evaluation Program 54
Landscape Coaching 55
Design Support 55
Conservation Credit Program 56
Landscape Transformation Program 56
Any Way You Want Voucher 57
SoCal Water$mart Rebates 57
Smart Irrigation Package Pilot 58
New Technology Pilot Program 58
AMI 59
Customer Portal 59
Evaluation "Eval" App 60
FreeSprinklerNozzles.com Redesign 60
Section 8: The Details *61*
STATE MANDATES + COMPLIANCE 61
IMPLEMENTATION TIMELINE 62
PLAN UPDATES 63

Section 1: Western Today

WESTERN INNOVATIONS DRIVE EFFICIENCY

Known for a decade of groundbreaking innovation, Western Municipal Water District (Western) has been a leading light for advancement in the water efficiency marketplace. Western has achieved industry leadership through creative thinking and demonstration of bold action. By challenging customers as well as peer agencies to drive for change, a number of program initiatives that once seemed radical are now the yardstick for others.

Innovation is the fulfillment of an unmet need. It challenges the convention by offering a new, creative way to accomplish the goal.

> Today Western uses innovation as the primary tool to drive water efficiency.

Western's water budget-based rate structure is the program that provides the foundation for all other programs. Implemented in 2011, this rate structure creates an equitable water budget for each customer based on persons per household and amount of irrigated area. Budgets provide enough water for efficient use with increased costs to the customer for going over budget.

Drought Drives New Innovations

Western's customers were severely impacted by the recent drought. In order to protect customers from future droughts, Western will strive to create "**drought-proof**" or resilient customers and empower them with the knowledge and tools that will help them weather future droughts.

What are Empowered Customers?

- Customers with the knowledge and skills required to drought-proof their landscapes.
- Customers who have access to relevant information through a variety of platforms.
- Customers who are District partners and advocates for water-use efficiency efforts in their communities.

What are Drought-proof Customers?

- Customers that understand the unique conditions of their local and regional landscapes.
- Customers who have resilient landscapes that are minimally affected by drought conditions.
- Customers who are the most efficient users of water.

Western has achieved industry leadership through creative thinking and demonstration of bold actions. Moving forward, we will develop new innovations to accomplish our goals to **empower** and **drought-proof** our customers.

DISTRICT GOALS

With an understanding that the principal targets are **single-family customers (in Tiers 3, 4, 5)** as well as **all outdoor irrigation sites**, Western will do the following:

- ✓ Continue to increase the number of customers who are within their water budgets
- ✓ Drive customer landscape budget efficiency from 0.7 ET to 0.5 ET
- ✓ Comply with new California State Framework mandates

Additionally, Western has established three overarching goals for its customers:

1. Western customers will transition **from** consumers of water service, programs and incentives **to** empowered water-efficiency partners and advocates.

2. Customers will become resilient or “drought-proof” in order to protect the District and residents from the impact of future drought cycles.

3. All homes and businesses with large landscapes will use water efficiently.

JUST THE FACTS

Annual Water Use

In any given year, single-family water use makes up approximately 60% of total usage, providing opportunities for significant water savings.

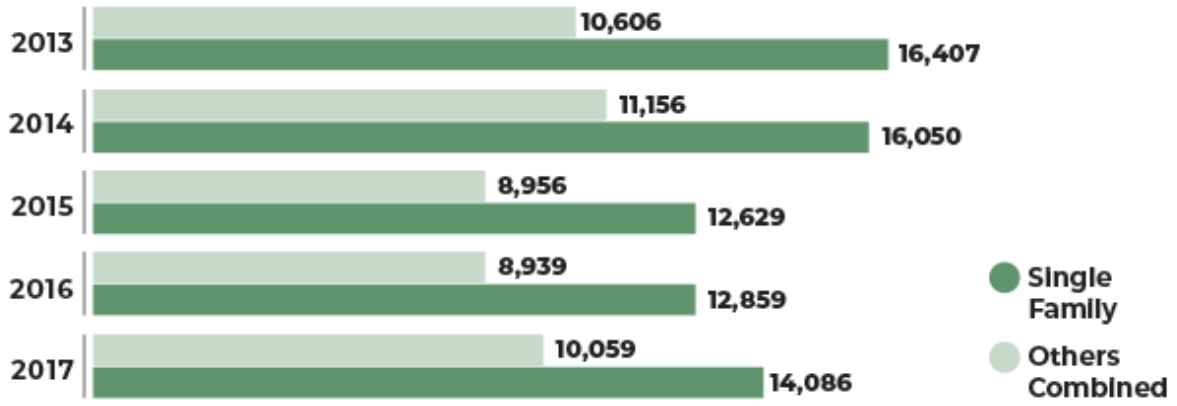


Figure 1: Annual Water Use in Acre-feet

Residential Per Capita Water Use

Western's residential per capita per day (R-GPCD) water use has decreased from 249 gallons per person per day (gpcd) in 2007 to 131 gpcd in 2017, a decrease of approximately 47%.

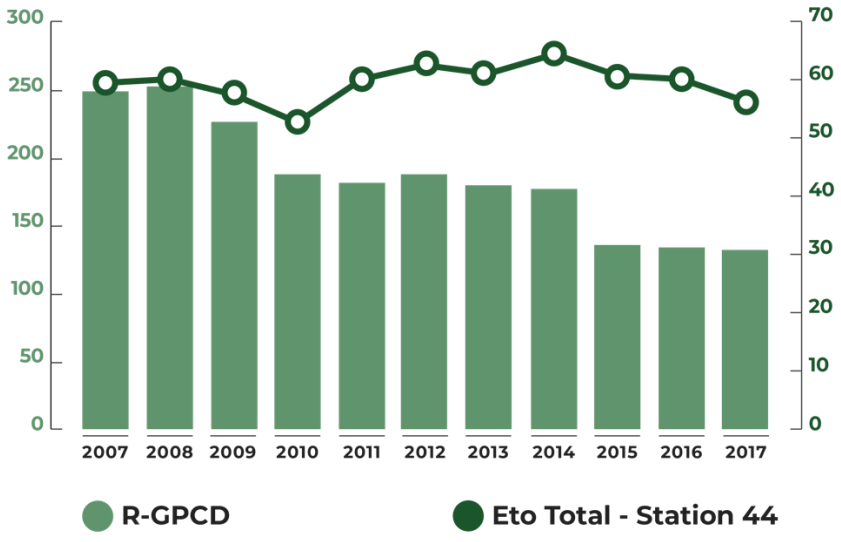


Figure 2: Single-family R-GPCD 2007-2017

Post drought, there has been a slight bounce back in R-GPCD as can be expected. People are no longer inundated with daily drought messaging and therefore have not been as diligent, causing usage to creep back up. The immediate urgency for water use reduction is gone. Moving forward, it is essential for Western to promote a **new** compelling reason for customers to use water efficiently as part of their daily lives, not just during times of drought.

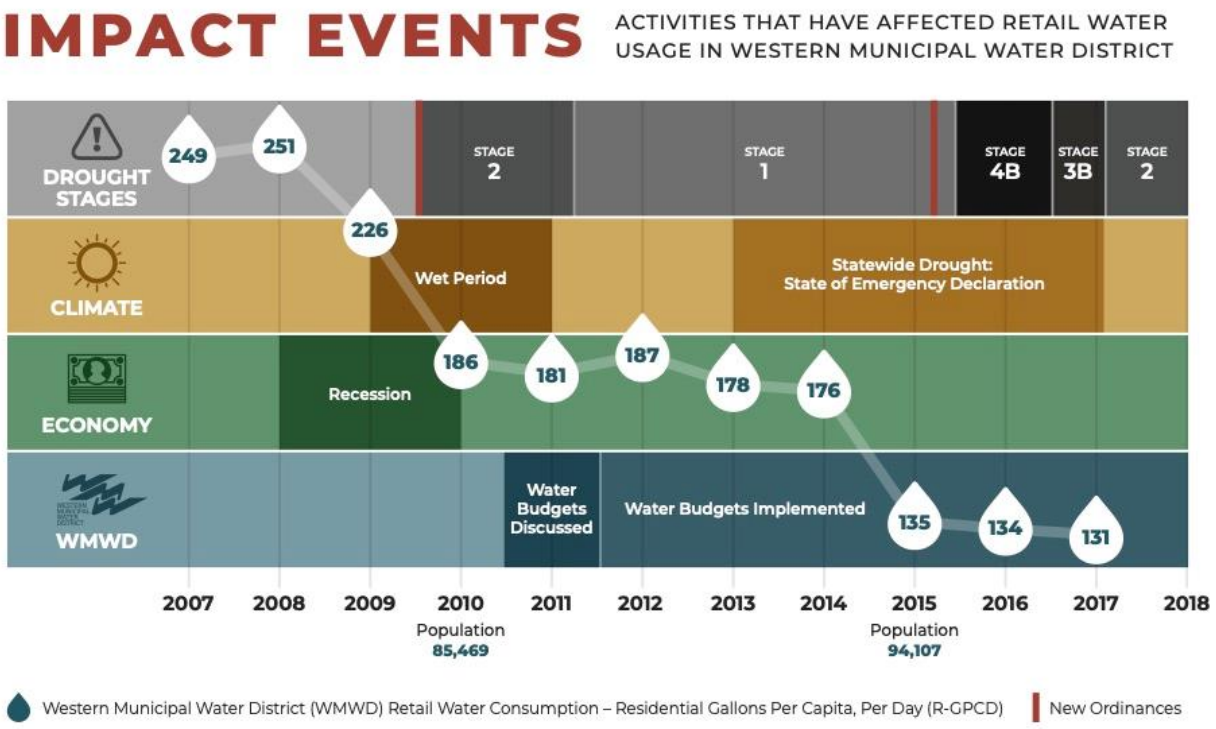


Figure 3: Events Affecting Water Use 2007-2018

The Impact Events chart, above, illustrates the effects of environmental, economic, and Western activities from 2007-2017, as it relates to Western's retail R-GPCD usage.

- From 2007 to 2011, R-GPCD fell from 249 GPCD to 181 R-GPCD, presumably due to the lingering effects of the national recession.
- In 2012, demand rose slightly to 187 R-GPCD, an observable occurrence that often takes place after times of shortage.
- Water usage in 2013 dropped down to 178 R-GPCD after Western's new rate structure, implemented in late 2011, took hold.
- As drought conditions worsened and State-mandated cutbacks were imposed, Western was able to modify its rate structure to significantly increase the price signal to further reduce demand by 23%, dropping R-GPCD to 131 in 2017.

As expected, the budget-based rates have managed to keep demand from rising further, despite population growth and higher-than-average evapotranspiration. The efficiency-based price signal has reduced usage from 176 gpcd in 2014 down to 131 gpcd in 2017.

Western's innovative rate structure provides an effective and flexible framework that encourages efficiency every day, but that can be modified to drive down demand during droughts or emergencies.

Tier 3 – 5 Customers

The major opportunity for additional R-GPCD water savings lies with Tier 3-5 customers. These households are operating above their budgeted allotment of water and Western's efficiency-based rate sends the pricing signal that more should be done to save. In Figure 4 below, the success of the pricing structure is demonstrated by the decrease in the percentage of Tier 3-5 customers in 2017, as compared to 2012.

Initially, approximately 65% of single-family customers were in budget. As customers adjusted to the water budget rate structure, the percentage of customers in budget rose to 80% in 2015 and has remained at that level.

To become budget compliant, the customer must reduce the amount of water over budget. Landscape changes offer the best opportunity. Turfgrass, specifically, is the highest water-using plant in most landscapes and, while the budget is enough to water turf, the rate structure incentivizes the customer to be more efficient if they want to pay lower rates.

This shows that with motivation, support, and programs, customers can, in fact, reduce areas of water waste and move to budget compliance.

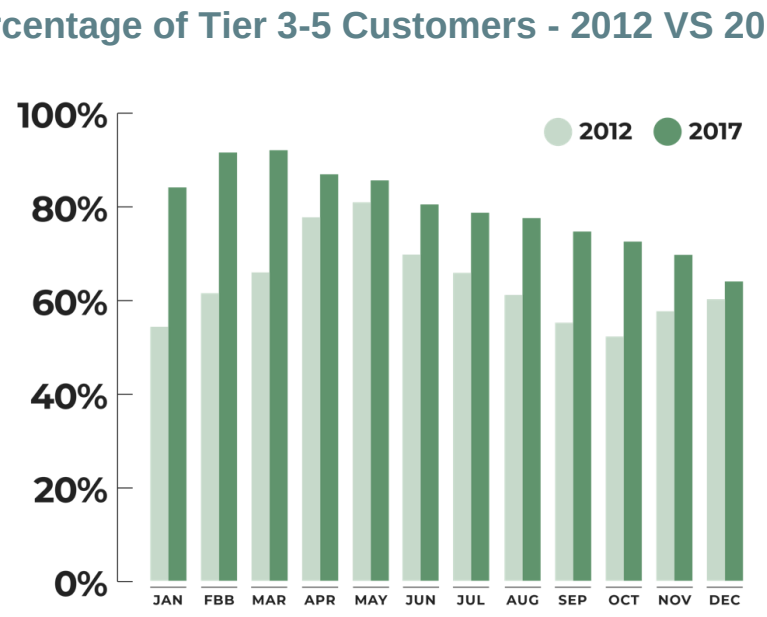


Figure 4: Percentage of Tier 3-5 Customers, 2012 VS 2017

Taking another look at water use reduction over the years, Figure 5, below, illustrates that customers are incrementally responding to lower their usage. As shown in Figure 5, the total amount of water from over budget customers declined from over 8,000 AF in 2013 to approximately 1,500 AF in 2017.

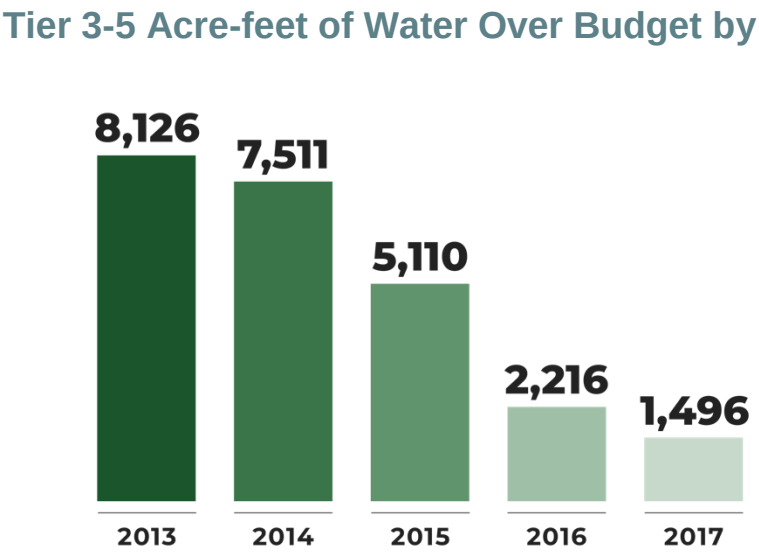


Figure 5: Tier 3-5 Acre-feet of Water Over Budget by Year 2013-2017

Landscape Water Use

Landscape water use represents 61% of total water use in Western's service area. For single-family customers, 63% of their use is for landscape watering. Irrigation meters obviously use 100% outdoors, while commercial customers use around 16% outdoors.

Total outdoor usage for all three of the customer classes equates to 11,675 acre-feet; a significant water use category.

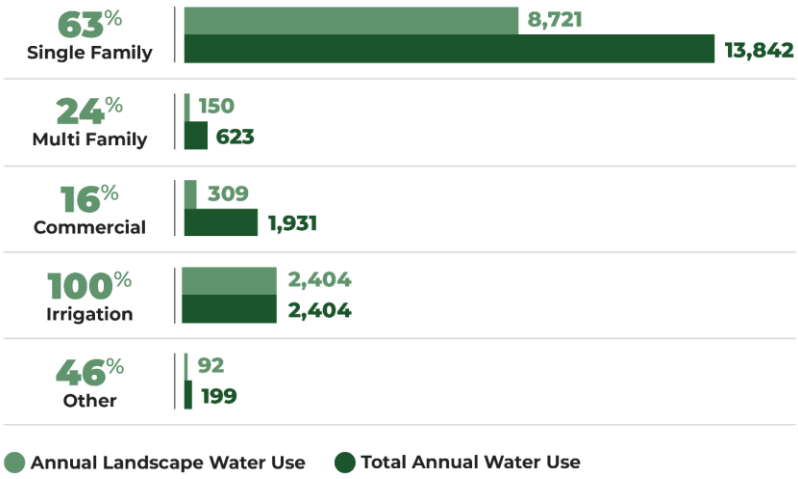


Figure 6: Landscape Water Use by Account Category

If Western **reduced landscape water use by just 10%** from current usage, that would bring about a reduction of 1,168 acre-feet annually. Twenty percent would deliver 2,335 acre-feet savings.



Figure 7: Landscape Acre-foot Reduction by Percent Reduced

It's clear, the major opportunity for water savings is landscape irrigation and within the landscape category, single-family tiers 3, 4 and 5 offer the prime opportunity for water savings.

To increase the number of efficient landscapes, Western will significantly increase communication and engagement with customers. Over-budget residential and commercial landscape customers, specifically, will be targeted by Western by an array of outreach mechanisms and offered a robust suite of programs and tools to assist them in creating water-efficient landscapes.

Section 2: Market Conditions

THE PROBLEM

Western has accomplished much to date, but the challenge ahead is to achieve **deeper** and **sustained** *per capita* water savings.

To achieve this, future strategies must surmount the persistent obstacles thwarting greater customer activity. We know that landscape efficiency is the key to goal achievement, but water agencies continue in their struggles to gain substantial headway in this difficult market.

Obstacles to deeper market penetration are:

- Customers lack motivation to reduce their water use.
- Most customers are unaware of, or overwhelmed by, landscape efficiency programs.
- Landscape efficiency solutions must be “customized” for each property.
- Water agencies do not currently have a deep understanding of their customers.
- Agencies do not possess the resources to uniquely target and engage their customers.

Perhaps most importantly, there is the foundational issue that customers have an emotional connection with their lawns.

What is It About Lawns?

The pride of single-family home ownership is deeply seated in the image of green yards and lush lawns. A lush green lawn is the envy of the neighborhood.

The reason for this ingrained landscape choice can be traced back more than three centuries; back to 18th century France and England. Wealthy Europeans desired to replicate the look of landscape paintings with expansive, verdant meadows. As a result, vast, sprawling lawns began to appear at the palaces and manor homes of the rich. Prosperous Colonialists took note of this au courant design trend and installed lush green lawns in the Colonies.

Throughout the following years, lawns were a luxury only for the rich. During the Post WWII era, government-financed mortgages allowed developers to construct large-scale tract house communities. The builders installed lawns as a sales feature, marketing this as a luxury item.

Today, lawns are still viewed by most people as a marker of success and beauty.

To accelerate landscape transformation, Western must market a new aesthetic to replace the old.

Some Inroads Have Been Made

Fortunately, Western is not starting at square one. Decades of landscape efficiency programs and education has had a modest, but progressive, impact on customer attitudes.

Resilient landscapes are beginning to be desirable and denote a modern version of success and beauty.

Based upon a **Western-UCR study** customers expressed the following views:

- Customers desire to have a beautiful landscape.
- Each customer has a different vision of what comprises landscape beauty.
- Most customers have considered converting their lawn, but they need help to do it.
- Customers confirmed that design support is the most important need.
- Incentives are necessary to pull the trigger on converting their lawn.
- There are a number of misperceptions that disconnect the customer from their actual water usage. They believe most water is used indoors; that they already have efficient equipment; and saving money is the main driver.

Section 3: Customer Solutions

THE SOLUTION – LANDSCAPE TRANSFORMATION

Western can increase the number of customers with resilient landscapes by promoting the installation of water-efficient plants. Landscape market transformation is a complex process. As such, it is necessary for Western to consider the incremental steps, emotional drivers, and individual pathways that influence a customer's decision to give up all, or part, of their lawn.

Much of the WUE plan will focus on single-family and landscape efficiency, specifically lawn removal; however, indoor and commercial programs will be offered as needed.

To impact single-family and landscape efficiency, it is imperative for Western customers to become fully **engaged** and **empowered**.

This necessitates Western to **develop the strategies and infrastructure** to target customers and motivate them to act.

Additionally, the emotional aspect of customer choices should be addressed and result in a focus on **beauty** when crafting messaging.

Western must help the customer along the way. Western will provide program participants with **easy access to help services** – a "live" customer support person, personalized messaging, web tutorials, and other assistance to answer a quick question or help solve a complicated problem.

Most importantly Western needs to create a heightened connection with all **customers by developing a customer continuum of engagement** to help them to connect better with the programs and ultimately **deepen their relationship** with Western.

This is Customer Engagement.

How Western Can Engage Customers

Customer-focused businesses understand that robust customer engagement tactics foster sales response, brand growth, and loyalty.

For Western, heightened customer engagement will translate to better program response, increased water savings, a more positive customer perception of Western, and advocacy and support for Western's endeavors.

There are specific tactics used to build an effective customer engagement strategy.

These are:



Learn

With today's data-rich world, companies are using information to learn and better understand their customer's preferences and needs. Western can learn about a customer's interests and ascertain their emotional drivers and the likelihood of program participation. This can be accomplished through the use of surveys, Big Data, analytics, feedback loops and other sources of information.

Personalize

Personalization is a means of meeting the customer's needs more effectively and efficiently and, consequently, increasing customer satisfaction and the likelihood of participation.

There are two means of personalization that Western will consider to improve water-use efficiency program response:

- The first is **personalized targeting**. Information harvested from surveys and data sources can be used to target program offers based on a customer's personalized characteristics. A "techie" responds favorably to product and technology program offers. An environmentalist is more likely to be interested in full turf replacement and watershed programs.

- The second is **personalized communication,** used to create strong customer ties. As we know, one of the most pleasing words to hear or see is one's own name. Personalized communication, via website, email, or phone call gets better receptivity when the customer's name is used.

Engage

Western can engage and build a close relationship with customers by creating compelling content, aiming to pique each customer's specific interests. A first-time homeowner would appreciate How-To video clips on various topics such as planting a tree or landscaping tips. These positive engagements will establish a favorable image of Western as a valuable resource and ally.

Assist

Western's customers want to know that they can get help when needed. Customer loyalty is the result of superior customer support. Western can build loyalty by providing easy access to program staff when they have a question or need assistance. Landscape programs, in particular, need to provide support services along the way. Western can reach out to customers when it seems that they might be abandoning a program. Assistance needs be an integral part of efficiency program design, woven into every major step in the program flow.

Appreciate

Western values their customers and is there to serve them. It's important that Western clearly communicate this. When customers feel appreciated, they will spread the efficiency message on Western's behalf. Affirmative gestures and small tokens of appreciation go a long way to solidify and maintain a positive relationship.

Create Advocates

Customers-as-advocates is the ultimate result of a successful customer engagement strategy. When you focus on BEING MORE for your customers, you gradually build a strong connection and a positive community of supporters. Western will accomplish this by employing the tactics described above.

Customer engagement is simply a strategy to show your customers that you CARE…

THIS IS THE BEST MARKETING STRATEGY

Section 4: Engaging Customers

LEARNING MORE ABOUT WESTERN CUSTOMERS

To cut *per capita* water use, it's necessary to drive more customers to take action. To accomplish this, Western needs to understand customers' likes and dislikes, patterns of behavior, and motivations to act.

Robust customer information will allow Western to:

- Target high-potential customers with a higher degree of success
- Match those customers with the appropriate level of program(s) and support
- Present compelling reasons to participate
- Deliver measurable water savings

Typically, water agencies cast a wide net and hope to secure the desired customer response rate. With today's data technologies Western can micro-target and optimize, not only the outreach, but the offer, and the motivations to participate.

One of the foundational methods to understand customer behaviors, drivers and barriers to efficiency is through customer surveys. Survey results provide deep insight about customer attitudes.

Western conducted a comprehensive customer attitudinal survey in partnership with the University of California, Riverside (UCR). The Western-UCR Residential Customer Survey was developed as an outcome of four focus groups (3 English, 1 Spanish language), ten in-depth interviews with Western customers, one pre-test, and extensive input from both Western staff and UCR researchers.

Although Western annually conducts a customer service survey, the Western-UCR Residential Customer Survey was designed to gain deeper knowledge and insight into customer attitudes and motivations as it pertains to water efficiency. All single-family residential customers with active Western accounts were informed about the survey and encouraged to participate.

First, emails were sent to all of the Western single-family residential active accounts, for which Western had email addresses. The emails were sent on June 19th and June 27th, 2018. A link to Western survey landing page was provided in the email, which also described—in both English and Spanish—the purpose of the survey. Second, on July 26th, 2018, a postcard in both English and Spanish was sent to all single-family residential customers.

Two issues surrounding the survey sample deserve attention:

First, all of the results presented in this section of the report are based on responses to the English version of the survey. There was just a single respondent who completed a Spanish version of the survey.

Second, as with any survey sample, one needs to be aware of sample selection issues and response bias. To address whether the responses were from a representative sample, UCR compared the sample irrigated area, water use, and number of people per household to the overall population of single-family residential accounts. The results showed that for each of these three measures, the sample is representative of the overall customer population.

The survey asked customers about the following topics:

1. What efficiency measures they implemented and why;
2. What are their specific interests;
3. What is holding them back from replacing their lawn and;
4. What help they need.

The survey resulted in 465 responses.

Here's what customers told Western….

Most Customers Take Care of their Landscape and Watering on their Own

Most customers perform their own landscape maintenance activities and watering schedules. Survey results stated that the majority of customers maintain their own landscaping and less than half (40%) utilize a gardener.



of respondents have **HIRED A GARDENER** to maintain their lawn or garden



of those with gardeners **HANDLE THE WATERING SCHEDULE ON THEIR OWN**

Nearly all customers manage the watering schedule for their properties. This corroborates Western's strategy to target the homeowner, and not landscape maintenance companies, with seasonal watering and landscape program messaging.

Survey results show that most customers live in homes independent of developments with HOA management of outdoor landscape areas. The response reinforces that residential housing stock appears to be predominantly traditional homes with owners as the water efficiency decision makers.



Customers are Confused about Outdoor Water Usage



About 1/3 of customers responded that they use more water indoors or that their usage is equal indoors versus outdoors.

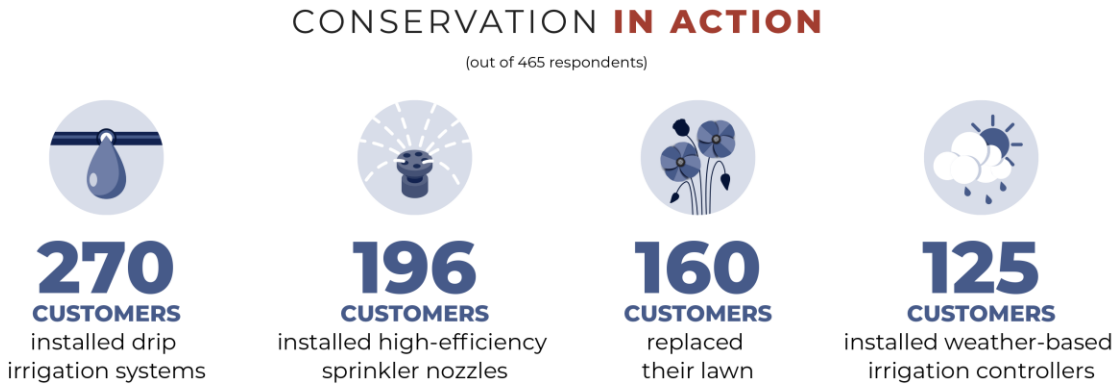
This response could be because, for decades, there was a singular focus on indoor water usage. This customer misperception impacts their view about the importance of outdoor water savings measures and, most certainly, diminishes the value of landscape transformation. While indoor water conservation has been ingrained in customers, the importance of outdoor water conservation remains a foreign concept to many.

The commitment to indoor water conservation practices stems from childhood lessons to turn off the water while brushing teeth and to take short showers. Additionally, indoor water usage is tactile—you turn the faucet at the sink and push the buttons on your dishwasher and clothes washer. We interact with it regularly.

Outdoor water use, on the other hand, is something more distant. Lawn watering happens, automatically, a few times a week, and often at night. Residents only fleetingly think about landscape water use and this may be why only 49% of survey respondents believed that outdoor conservation saves more water.

With these customer misconceptions comes an opportunity to educate customers about the magnitude of water used outdoors and the opportunity for savings.

Customers are Confused about their Property's Landscape & Irrigation Efficiency



Of the 465 survey respondents, just under 59% of survey-takers (270 customers) stated that they had a drip irrigation system installed at their property. It should be noted that the question does not specify whether a customer response is for a full drip irrigation system or a small area.

Survey responses showed 196 customers (46%) believe they have high-efficiency devices installed. Industry statistics, on the other hand, show that high-efficiency nozzle sales account for only 20% of all sprinkler nozzles sold. A high customer estimate was also seen in the Alliance for Water Efficiency's (AWE's) Landscape Transformation Study. A possible reason for this, is that the customer could have been told by a store representative or their contractor that they were buying "high-efficiency" nozzles when they were not. It is also possible that customers who purchased or received high-efficiency nozzles through a program could be more likely to respond to the survey.

Regarding turf replacement, just under 35% of homeowners (160 customers) say that they replaced their lawn. This number is much higher than saturation calculated by Western's analysts and studies done by Metropolitan where somewhere between 2%-11% of customers have taken out their lawn. Again, it is possible that customers who already took out their lawn were more likely to respond to the survey.

The survey results show that 27% of customers believe that they have weather-based irrigation controllers installed; this too is higher than the 20% cited as average industry sales. For the AWE Study, when customers were asked if they had a smart controller, 56% percent answered that they already have one, although industry numbers show this to be false.

The Western-UCR Residential Customer Survey and the AWE Study show that customers appear to have a misperception about the efficiency level of their existing irrigation equipment. These misunderstandings may be keeping otherwise-motivated customers from participating in landscape and irrigation efficiency programs.

Customers Replaced their Lawn Mainly for Potential Money Savings



Of customers who replaced their lawns, 44% took action with the primary motivation to save money, while 29% were looking foremost for the water savings. These same statistics cannot be applied to the non-respondents because it is quite possible that their motivations are not similarly aligned.

These response numbers conflict with responses from the AWE Landscape Transformation Study, where aesthetics was listed as the number one motivation for one question and water/energy saving was cited as the primary motivation for another question. This will require further analysis.

Relevant insight about customer motivation can be found in the *McKinsey study: Using a consumer segmentation approach to make energy efficiency gains in the residential marke*t. The study identifies five segments of customers, roughly equal in size, each with unique motivations for initiating efficiency measures. Savings, as the primary motivational driver, pertains to only a subset of customers.

Often the factors that motivate a customer come from specific hidden personal values. Behavioral psychologists state that people often don't truly understand what motivates them to act (www.insightsquared.com/2014/07/why-buyers-buy-the-psychology-of purchase-decisions). People make purchasing decisions rooted as much in emotional impulses as logical facts.

For the survey, customers likely answered what they thought was a pragmatic and factual response. They want to think that their decision is based upon pragmatism when, in actuality, decision making processes are much more complex and segmented.

Customers are Willing to do Their Part during Times of Shortages

Survey statistics show that customers are making efforts to conserve water in a variety of ways. It is particularly notable that 49% of customers state that they have let their lawn turn brown or die in order to conserve.

CONSERVATION **STRATEGIES**

Over the past 5 years...

83%
OF CUSTOMERS
avoided washing sidewalks or driveway

77%
OF CUSTOMERS
set irrigation timers to water less

71%
OF CUSTOMERS
changed their car washing habits

49%
OF CUSTOMERS
let their lawn die or get brown

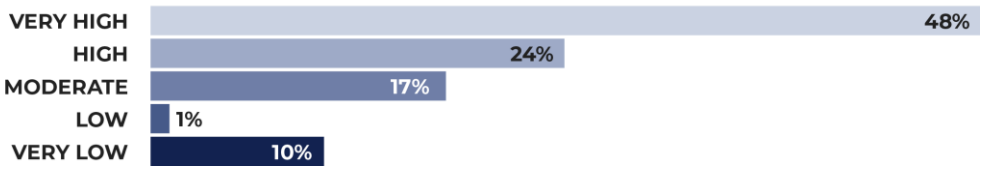
The long-term solution isn't to have neighborhoods with dead lawns, it is for all single-family sites to have attractive, resilient landscapes. Western wants customers not to feel deprived from their efforts, but to understand how to have a beautiful drought-proof and resilient landscape.

Customers Are Most Concerned About COST and Losing Their GREEN LAWNS

LAWN REPLACEMENT **FACTORS**

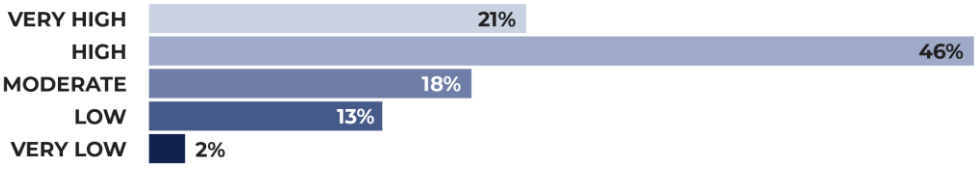
UPFRONT COST

Importance of upfront cost (after rebates):



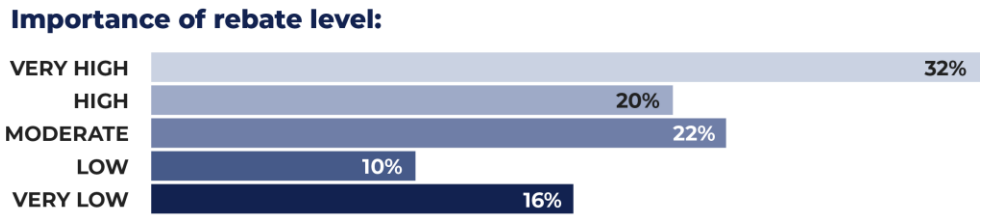
AESTHETICS

Importance of having a green front lawn:



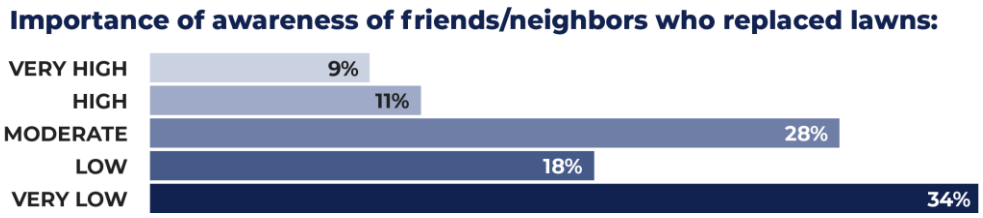


REBATE LEVEL





SOCIAL IMPACT



Customers identify cost as a major barrier to landscape transformation. They stated, overwhelmingly, that the upfront cost and rebate amount matter.

Nearly all water agency turf removal programs require a customer investment of several thousand dollars; a significant budget line item for most households. To increase program response, Western will need to increase cost coverage through higher incentives or convince customers that the outcome is worth the high price tag.

Finding and capitalizing on landscape change motivations is the key to deeper market penetration. There must be compelling reasons for customers to spend the required amount of money. For example, customers, who are not environmentalists, may have other reasons to make a change. An unhealthy lawn; a desire for a contemporary look; a desire for a bird friendly yard – these desires can drive changes to a customer's landscape.

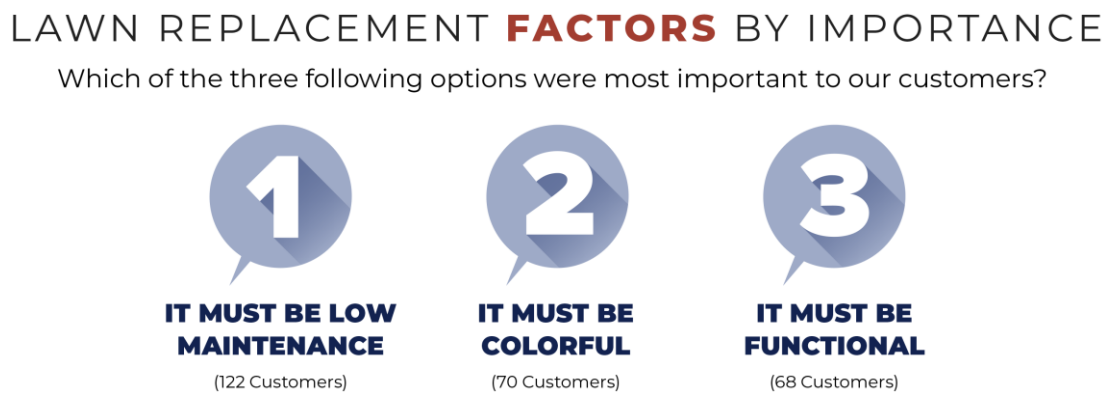
Customers Are Not Comfortable with Cutting Back on Lawn Watering



(17% - neither agree or disagree / 46% - disagree / 22% - strongly disagree)

Results show that people are not comfortable cutting back on their lawn watering and believe that less water will result in harm to their lawns.

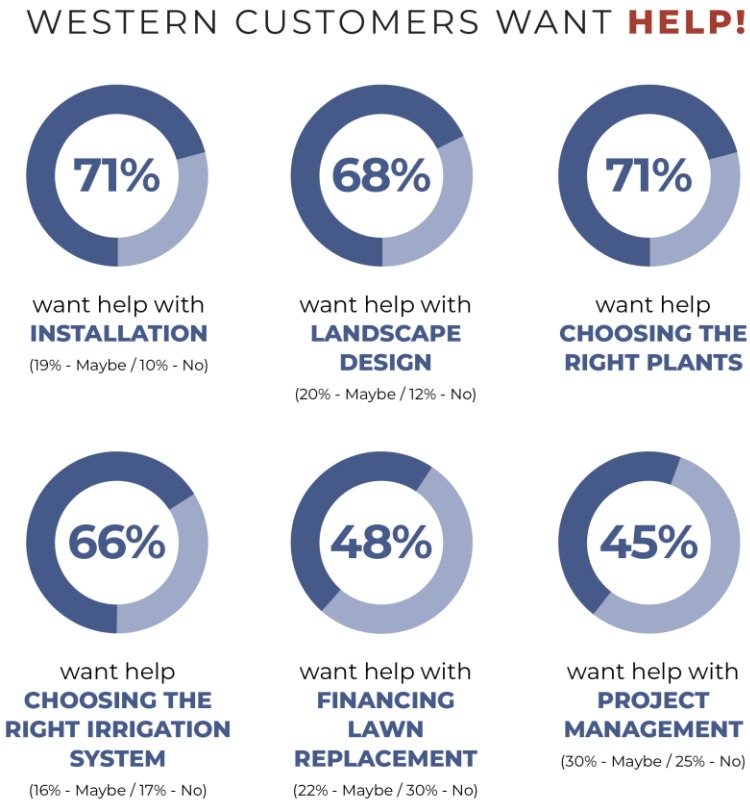
Customers Want Low Maintenance for their Landscapes



Results show that, when replacing their currents lawns, customers primarily desire little to no maintenance for their new landscape. They also would like it to be colorful and functional.

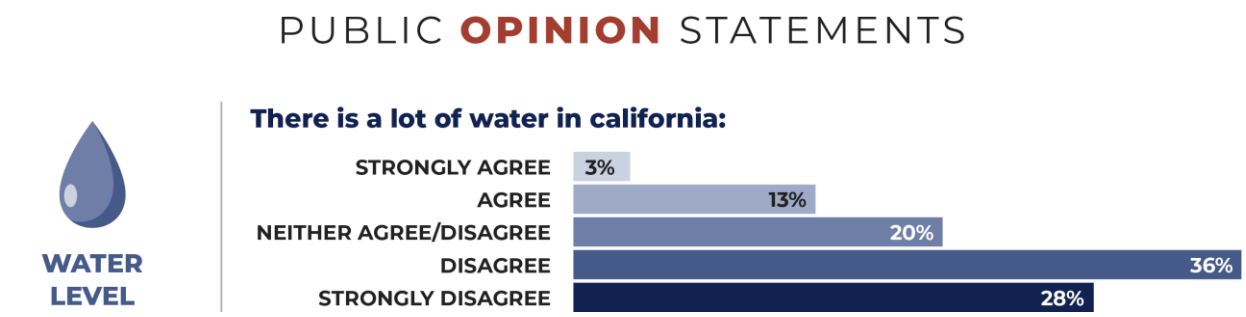
Customers Need Help When Considering Lawn Replacement

As illustrated by the responses in the chart below, the clear majority of customers believe they need assistance with a number of critical program tasks.



Water agencies recognize that there are many customer pitfalls along the path to program completion and, when unaddressed, lead to high program abandonment rates. Western strives to provide a higher level of customer assistance and communication in order to minimize these high numbers.

Customers Acknowledge Water Resource Limitations and Potential for Future Droughts



Sixty-four percent of Western customers surveyed disagree with that the statement: *There is a lot water in California.* Although the clear majority of customers recognize California's water resource limitations, the remaining 36% would benefit from additional water education.



Eighty-percent of surveyed customers believe that California will see severe droughts in the future. This should position Western well in leveraging the drought message in the outreach campaign.

Customers Believe Water Conservation is Good for the Environment

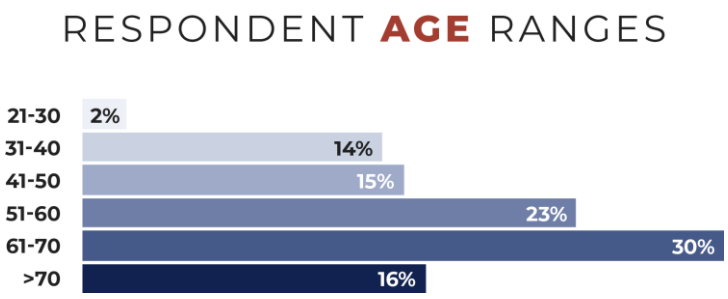


Customers overwhelmingly (88%) believe that water conservation is good for the environment. Again, this an opportunity for Western to connect customers with the conservation messaging.

Interesting Customers Responses

Interestingly, 78% of customers surveyed take walks around their neighborhood on a regular basis. Western may have an opportunity to promote water efficiency projects and programs through yard signs and neighborhood initiatives.





Almost 69% of survey respondents were over the age of 50. This age bias should be factored in when utilizing the results of the survey.

In summary, customer responses reveal issues that are imperative for Western to address:

1. Customers need water use education. They do not understand their water end uses and current landscape technology and therefore don't know how to effectively prioritize water efficiency options.
2. If Western wants to increase participation in the turf removal program, it will be necessary to provide a higher financial incentive. Many customers believe that the high cost is a major barrier to doing turf reduction or removal.
3. Most customers cannot execute turf removal activities on their own. Design and labor are major obstacles.
4. Customers care about beauty and low maintenance. Program marketing should focus more on this and less on just water savings.

The information garnered from the survey results is valuable in designing programs and marketing messages. It also can be merged with other available data to better learn about customer preferences and patterns. With the right IT systems, a robust database of customer information can aid Western in micro-targeting customers.

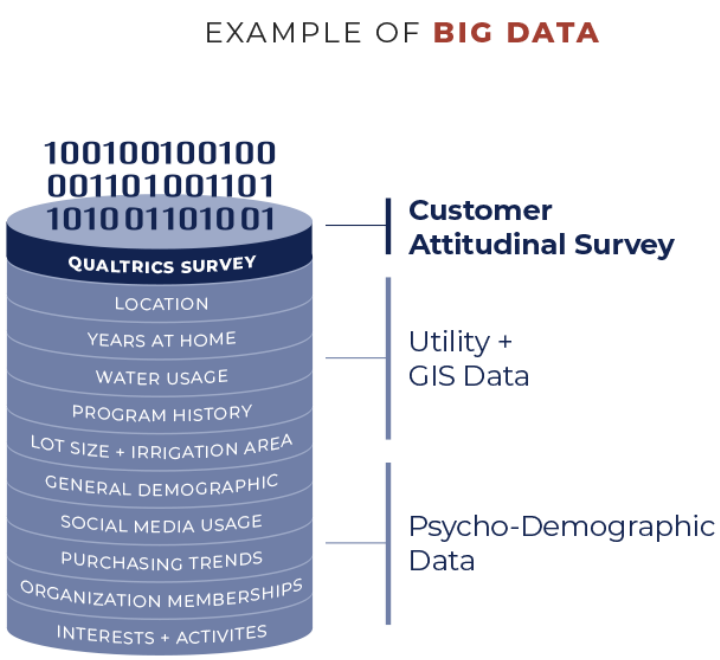
WHY BIG DATA AND ANALYTICS

Using the customer survey responses, along with other data sources, Western can do **what other successful businesses are doing--**using Big Data, analytics, customer segmentation, and personalization to increase response.

Big Data is a term used for **a collection of large datasets** that are integrated typically from both internal and external sources. The data sets are brought together and analyzed to discern patterns, trends, and associations, especially relating to human behavior and interactions.

Western can **pull together multiple data sources** from both internal and external sources. The data sets can then be **brought together and analyzed** to discern patterns, trends, and associations, especially relating to human behavior, preferred interactions, and motivations.

This is used to **understand customers on a deeper level**, create a profile, and predict and influence how customers make landscape and efficiency choices.



Western has information on property location, customer billing, water usage, program history, and other transactions as well as attitudes gained from customer surveys and focus groups. Western's databases can be cross-referenced with external information sources.

Examples of information sources include: social networks, government and GIS databases, real estate databases, usage patterns on mobile devices, and numerous specialized information sources.

The funding of analytics is an investment, however, over the next 10 years it will pay for itself through increased response and sustained savings.

These multiple sources can be overlaid to build a robust customer profile with the goal to move the homeowner from a landscape aesthetic involving excessive irrigation to one that requires little or no supplemental irrigation.

Big Data is valuable, but only with insight. **Data Analytics** provides information to help make educated choices as opposed to hypotheticals.

Predictive Analytics applies statistical models for predictive forecasting or classification. Using this methodology, Western can determine which customers are mostly likely to respond to an offer, what support they need, what water saving measures they might be interested in and how much they would be willing to spend.



SMART TARGETING

Moving forward, Western's residential customer base will be divided into three categories for program targeting:

- Out-of-budget (tiers 3, 4 and 5)
- New move-ins
- In-budget

As explained above, out-of-budget customers provide the biggest per-site water savings opportunity. Close behind are new-move-in customers. These customers may have less of a savings per site, however they might be more willing to make water-efficiency related improvements at their new home. Lastly, in-budget customers offer an opportunity to recognize and reward customers who have done what we have asked. These customers might also be more willing to cut their use even further.

For commercial customers, the target will be irrigation accounts and highest use sites which provide the largest water savings opportunities.

Each of these categories requires a uniquely crafted offer.

The strategy for new move-in customers and Tiers 3-5 customers is to offer efficiency evaluations as the first step. Evaluations are less about delivering immediate water savings and more about establishing the relationship with the customer, identifying site-specific opportunities and linking the customer with the most appropriate programs and services.

The objective for in-budget customers is to create a positive dialog and guide them towards an even more efficient water use and ultimately resulting in a drought-proof and resilient landscape.

PERSONALIZATION

The Role of Emotion

For decades water agencies have been promoting marketing messages grounded in logic — Save Water; Save Money.

These tag lines have brought results and a percentage of customers continue to respond to this inducement. The question is **why do these customers respond** to the Save Water/Save Money message?

Is it because the messages are logical, and people respond to commonsense offers OR is it that monetary savings and water savings resonates emotionally **with a particular subset** of the customer base? It's important to understand that the vast majority of customers don't have this reaction and, therefore, will never respond to program offers.

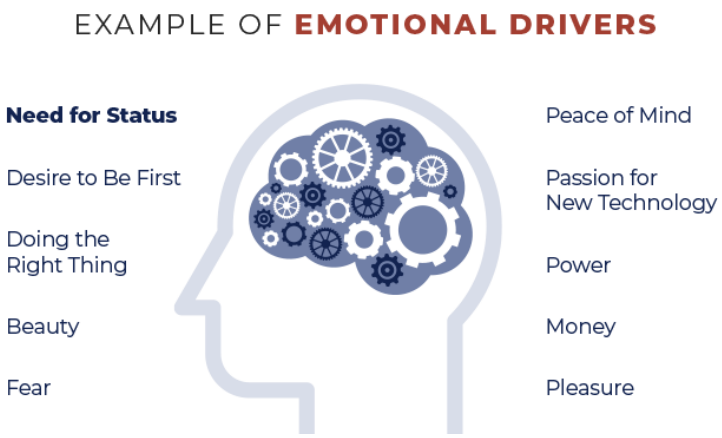
How does Western boost program response and reach the remainder of their customer base? What strikes an emotional chord with these customers? The answer is that **it varies from customer-to-customer and, for each customer, day-by-day**.

Example:

LET'S LOOK AT A THEORETICAL SALES TRANSACTION FOR ANOTHER BIG-TICKET ITEM, A CAR:

> Why on Thursday does Frank say that he can't justify buying a new car, but come Saturday, he's rolling down the driveway in a shiny new convertible?
>
> Logically, Frank knew it was more cost-effective to keep his old car, but on Saturday his emotions were swayed. The dealer made a sales pitch that appealed more strongly to Frank than did logic. He recognized Frank's desire for status. The dealer sold to Frank's emotions.

The role of emotion, as a sales driver, seems like a soft topic but it's actually foundational and powerful. When organizations effectively connect with customers' emotions, the payoff can be huge.



While an investment in lawn replacement is not identical to making a car purchase, the decision-making process is the same. The customer must first have a desire for the product. In other words, the product must appeal to a strong emotion and it needs to be strong enough that it drives the individual to spend the necessary money for the item.

THE WATER INDUSTRY HAS YET TO TAP DEEPLY INTO MESSAGING THAT INSPIRES EMOTIONAL CONNECTION AND RESPONSE.

There are innumerable emotional motivators that drive purchasing/participation choices. A customer's decision to "buy" is the result of several motivating factors in combination. While agencies have had success with a slim percentage of their customer base, there is great potential for more connectivity.

Personalize the Message + the Outreach

The success of Western's programs is largely dependent on the way customers respond to Western's marketing message and outreach vehicles. Through the use of big data and analytics, Western can **learn** about its customers - age, gender, lifestyle, interests, motivations and more - and can **create a profile** for every agency customer.

Analytics can also predict which of Western's **programs have the highest response potential** with a particular customer profile.

The next step is to create a message that entices a customer. In the past, a program message was the same for all customers. Today, people tune out irrelevant, one-size-fits-all messaging. In a world oversaturated with sales pitches, targeted messaging is the best way to pique customer interest and make a connection. This means that it is necessary for Western to **personalize messaging** and craft a "sales pitch" that particularly resonates with a distinct group of customers.

For instance, a retired engineer, Tier 4 customer, is more likely to favorably respond to a device-driven program with a message that includes facts about water and monetary savings. A young married couple, who just moved into a new home, are more likely to respond to a turf replacement

program with messaging that infers that grass is “out” and resilient properties are the new status symbol. The correct personalized message evokes an emotional attachment and heightens the probability of taking action.

This means that, **for the same program, Western may create four or five different messages**, designed to appeal to unique customer types with varied motivations.

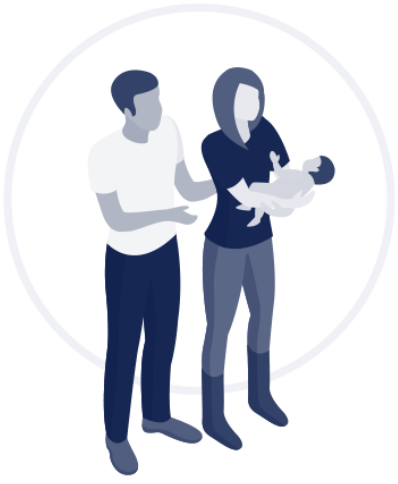
Beyond personalized messaging, customers also have differing ways in which they get information and communicate with others. This means that **outreach methods require personalization** as well. Referring again to the retired engineer, he checks his mail daily and thoroughly reads his bill stuffers. He also conducts thorough research on his computer, via how-to videos, before implementing any new project. The New Move-In couple is so busy with their new home and newborn baby that they rarely read through their mail or check their Facebook account.

Western has a high likelihood of connecting with the retired engineer through a bill insert or a social media link to a YouTube tutorial. For the New Move-In couple, if Western calls the customer, they are likely to jump at the opportunity to have the Field Evaluator visit their home and provide them with an on-site evaluation of their property.

The customers in Western’s territory have varying backgrounds, lifestyles, interests, and motivations. Program messaging and outreach must address this uniqueness in order to drive up response rates and, ultimately, water savings. Personalization also creates a closer connection with the customer and heightened brand loyalty.

The following are examples of three distinct customer types, demonstrating the difference in their profiles, highest potential response programs, and best messaging and outreach:

SAMPLE **“NEW MOVE-IN”** CUSTOMER



LEARN

Profile

- A married couple in their late 20s
- Sierra Club members
- Stay-at-home dad
- Wife is a professor at UCR

Highest Response Potential

- Full turf replacement with watershed approach

PERSONALIZE

Goals

- Secure budget compliance for customers presently out of budget
- Establish positive customer / agency communication pathways
- Heavily assist top target customers through program process
- Have them sign up for turf removal program

Marketing Message

- Status symbol to have watershed property
- Environmentally responsible
- Beauty

Recommended Outreach

- “Welcome” call by Engagement Consultant

Additional Strategies

- Initial “Welcome” outreach via phone call and offer audit
- Use audit to create strong customer / agency connection and identify “top target” customers

SAMPLE **"TIER 3, 4, OR 5"** CUSTOMER



LEARN

Profile

- A 60-year-old married male with 2 grown children
- Aerospace engineer
- Country club member
- Homeowner for 15 years: home on 2/3 acre lot
- Has never applied for a permit for property upgrades
- An avid Amazon Prime shopper
- High Summer Use

Highest Response Potential

- Smart Irrigation Package

PERSONALIZE

Goals

- Secure budget compliance for customers presently out of budget
- Establish positive customer / agency communication pathways
- Heavily assist top target customers through program process
- Have customer sign up for Smart Controller

Marketing Message

- High tech
- Programmable and pays for itself
- Easy to make changes
- DIY friendly

Recommended Outreach

- Bill stuffer with "practical" messaging
- FB ads with demos highlighting installation ease
- Youtube how to video links

Additional Strategies

- Utilize support services (design templates, video tutorials, blogs, etc.) to motivate and aid customer

SAMPLE **"IN BUDGET"** CUSTOMER



LEARN

Profile

- A 35-year-old single female
- Dental assistant
- Social media accounts include FB, Twitter, Instagram
- Actively uses Instagram and NextDoor; posts/clicks on enviro & animals
- Had service call for leak
- Received Rain Barrel Rebate

Highest Response Potential

- Front yard turf replacement
- Use of design support

PERSONALIZE

Goals

- Build loyalty & positive PR
- Thank them for operating within budget
- Motivate them to drive for .5 efficiency level
- Have them sign up for front yard turf replacement

Marketing Message

- Beauty & upscale look
- Entertain with style
- Happy dog

Recommended Outreach

- Short promo video clips on social media
- Bill stuffer with beauty messaging

Additional Strategies

- Send personalized "Thank You" message via desired communication form
- Provide a free 4" plant coupon from local nursery
- Communicate they can earn awards or tokens for Western prize raffles for activities (watch video on turf removal, water use reduction, over last year, 2 months in a row, answer survey questions, etc.)

ENGAGE + ASSIST

Generally speaking, Western's customers understand the critical need for water efficiency, and they showed this by rallying to save water during the last drought cycle. Why then aren't more customers participating in, and completing, the water efficiency programs offered to them?

The problem lies not with the programs, but instead with the ***breakdowns*** that occur at key junctures along the customer path, from sign-up to program completion.

Typical customer breakdowns:

- Doesn't respond to program offers
- Abandons application, half way through
- Signs up for a program but never implements the first step
- Starts the program process but simply loses interest
- Gets confused during a step of the process and stops

When not remedied, customer ***breakdowns*** result in ***program fails*** and an opportunity to capture water savings is lost.

Looking to the future, Western faces the daunting challenge to drive down *per capita* water use to a markedly new low level. It's essential that savings opportunities be maximized, and program fails be reduced.

Engagement Role

Successful customer engagement motivates and leads customers along the pathway to increased water use efficiency. The means to accomplish this is to:

- Communicate the value of the measures and programs
- Stop "breakdowns" from occurring
- Get a customer started OR back on track

These duties will be carried out by Western's Water Resources Specialists and require a significant amount of work to manage this amount of customer engagement.

These individuals will act as the customer motivator and problem solver. Like a concierge at a hotel, the Water Resources Specialist will help customers with their unique issues and facilitate the remedies. There are no absolute formulas when helping customers, therefore staff will need to think strategically and identify the best avenue to help each situation.

A COUPLE OF EXAMPLES OF THE ENGAGEMENT ROLE IN ACTION:

For Tier 3, 4, and 5 customers, as well as New Move-Ins, the Water Resources Specialist will **reach out to them** to schedule an on-line or on-site audit as the first step of engagement. For customers who are interested in specific measures, vouchers will be generated, and rebate information will be sent to these individuals.

To minimize program abandonment, the Water Resources Specialist will **generate automatic follow up communication** to customers in the midst of a program. The outreach will be personalized and designed to motivate the recipient. Most importantly, the message will be an offer of help from Western. The Water Resources Specialist will determine whether a customer should receive a phone call, email, postcard or other communication medium.

For turf replacement program participants that have shown **no progress over a long period of time**, the Water Resources Specialist will "check in" with each customer via phone call to see if they need any help. If the customer is still on track, they will be commended for their good work. If a customer is struggling with design layout, the Water Resources Specialist will dispatch the help they need. This might entail setting an on-site appointment with the Field Efficiency Evaluator or possibly sending a How-To video link to the customer's phone.

A customer often has a minor problem that can be **readily solved in a short interaction** with the Water Resources Specialist or Field Efficiency Evaluator. Instead of scheduling a time-consuming field visit, the Water Resources Specialist will, when possible, provide answers or send useful content to the customer. If the customer requires technical field information, the Water Resources Specialist may choose to arrange a phone call, Skype session, or site visit with the Field Efficiency Evaluator.

The engagement function is **essential**; creating solutions for problems and shepherding customers across the program finish line. Western staff is tasked with the responsibility to **identify the level of help required** and **deliver it** to the customer. The key is to keep following up with the customer until the project is completed. Performed effectively, this support will play a critical role in increasing overall water savings.

The following is a demonstration of the engagement process. These are actions that can be taken in varying combinations according to the specific customer situation.



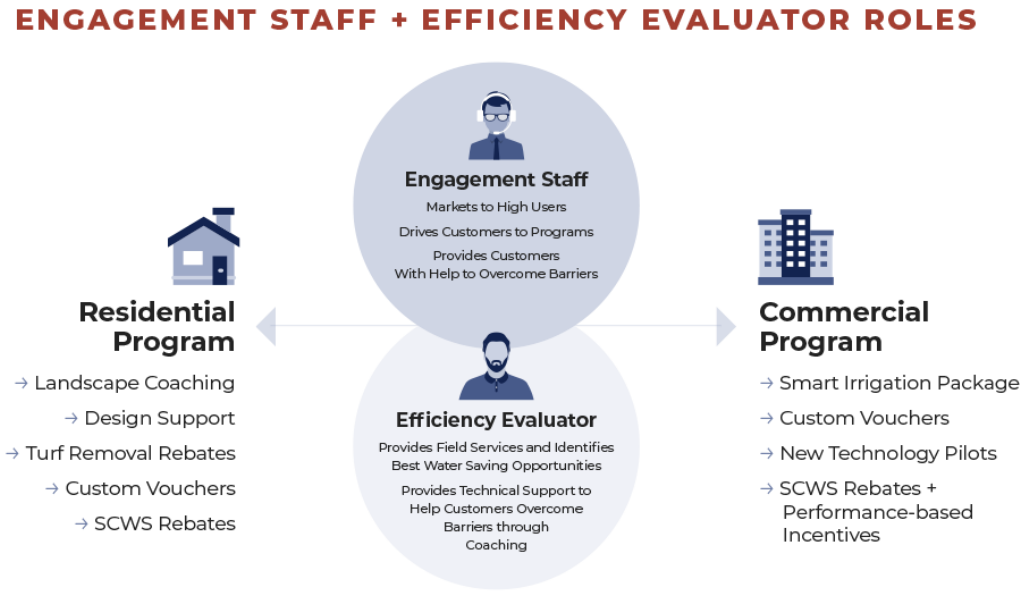
The Field Efficiency Evaluator

Practically speaking, the Water Resources Specialist and the Field Efficiency Evaluator need to be a close working team. While the Water Resources Specialist is working to keep customers on track from the office, the Field Efficiency Evaluator "carries the ball" from the field perspective. As the Water Resources Specialist identifies a customer-in-need, the Evaluator goes on-site, or if viable, via phone or Skype to give a customer the how-to coaching, design assistance and/or technical information needed to move forwards.

The Field Efficiency Evaluator can move the customer closer to a water-efficient property starting with the on-site audit. This is a prime opportunity to engage customers and show them where the best savings opportunities exist at their site.

The Evaluator can further advance the customer along the pathway by generating on-site delivery of vouchers and facilitation, with the Water Resources Specialist, to immediately sign the customer up for relevant programs.

Below is snapshot of support services provided by both individuals in their roles of connecting customers to appropriate programs.



Using Videos as an Engagement Tool

The influence of digital videos on our everyday culture is undeniable. People today are using educational videos as a tool for learning everything from changing a tire to the latest dance craze. Online video sharing sites such as YouTube and Facebook log millions of video page views per day.

Topics that once seemed difficult to teach and learn are now more accessible and understandable thanks to the availability of educational videos.

With digital videos well established in their popularity, it seems only natural that this familiar and widespread platform extends into the water agency and water use efficiency setting.

Studies have shown that the use of short video clips allows for more efficient processing and memory recall by the viewer. The visual and auditory nature of videos appeals to a wide audience and allows each user to process information in a way that's natural to them.

This makes videos an ideal medium for water agencies to engage and educate customers about water efficiency topics and programs.

Why Pinterest, ETSY or Similar Mobile Apps?

Videos are not the only way to educate customers and share information today.

This means Western can bring visitors to program websites by posting images of landscape designs and products on Pinterest.

Pinterest is one of the largest website traffic drivers in the world so Western can utilize it for increased awareness.

User engagement is high and attracts multiple generations.

Western can specifically track individual customer's interests.

Should deliver heightened program response.

Western has a three-fold objective for creating a video library:

1. To educate customers about the *value of water* and the *merit of Western's services*
2. Provide an answer as to *why it's so important to be water efficient*
3. How a customer can improve their water efficiency

Western can make use of videos as both a means of *engagement* and a way to provide *instructional How-to's* on a variety of topics such as the following:

- Soil / plant relationship and how to identify your soil
- Plants
- Watersheds / using rainwater
- Right plant, right place
- Watering based upon plant, soil and climate
- Knowing your landscape lifestyle / How you use your yard
- Plot plans
- Designing a water smart landscape
- Taking out your turf
- Irrigation systems
- Irrigation system troubleshooting
- Watering
- Programming your timer/smart controller
- Maintaining your water smart landscape

In addition, Western can use videos to educate customers about:

- Where water comes from and how it gets to you
- How water and wastewater are treated
- Water pricing
- What is the value of water
- Future water legislation/allocation/water budgeting
- What Western does (a day in the life, news from the trenches, fixing leaks, testing for quality)

When done effectively, creative and valuable-content-videos will build a stronger connection with the viewing customer. Western has the vision and innovative nature to create a video-based customer engagement strategy and library to further drive efficiency while creating a positive customer experience.

Creating Your Own Landscape Style

A successful landscape transformation has the right plants… in the right place… with the right style. When done well, the outcome is a proud homeowner with water-efficient landscaping that matches his or her design aesthetic.

This means creating landscapes with true Southern California style. Western's job is to support and empower each customer in reaching this positive end result.

With this aim, Western is developing a compendium of resources for customers to access, starting with **information about various plant options**. Customers will be able to browse through a database of plant collections that include pictures and detailed descriptions and recommendations. For inspiration, Western will provide photos and video of the beautiful array of plants at the historic Alessandro Gardens.

Knowing that customer styles vary, Western will have access to **an extensive compilation of landscape design collections** for the viewer to peruse, drill down on, and download. Western aims to include a variety of representative front yards within the service area, available to be indexed by size and characteristics.

Database of Landscape Style Categories for Customers to Explore:

Pollinator	*Butterfly*	*Native*	*Heritage*
Zen	*Flowery*	*Spring*	*Fall*
Feathered Friend	*Tasty*	*Shady*	*Desert*
Rain Only			

The property owner, designer, or contractor can reference the properties, along with the plant database, to build their preferred "style". In combination, these resources will improve the process required to create a landscape design.

Promoting Western's Landscape Resources

In the past, landscape program promotion was limited to a narrow list of traditional marketing activities. Moving into the future, Western is taking a more creative and proactive approach. Landscape transformation is a difficult market and Western recognizes the need for a broad range of outreach tactics including multi-directional strategies through both traditional and progressive channels.

Western, through marketing consultant JPW Communications, is in the process of designing new, creative program branding, messaging, strategies, and tactical campaigns. The program will have a stronger presence on social media to better capture customer interest and allow them to interact in a manner that best suits their style. Program posts will have click-throughs to the program's web pages, as well as the database collections of plants and landscape styles.

Messaging will be tailored to each customer's identified attitudes and motivations. Some customers will best respond to environmental and/or animal habitat themes, others may care more about community aesthetics or saving water. By tailoring the messaging, Western will be able to create communications that better connect with each customer. If successful, customers will steadily shift perceptions and move to a water-efficient landscape mindset.

Section 5: Creating Advocates

SHOWING APPRECIATION

William James, well-known psychologist and philosopher, said, “The deepest principle of human nature is a craving to be appreciated.” If an organization takes the time to express their heart-felt appreciation for something the customers has done, it boosts passion and purpose.

For water efficiency programs, customer appreciation can translate to **heightened activity** and **a positive bond** with Western. If customers **believe in Western** and they **believe in the benefits of the program,** they will **spread the word** on behalf of Western and the water efficiency cause.

There are two categories of customers, **those that have acted** and should receive a gesture of appreciation and those customers Western **seeks to ignite to act**.

Addressing both these customers will create a positive connection and good will which will advance the Western brand and water efficiency participation.

The goodwill can be leveraged by Western by asking participating customers to share their experiences and stories. Those that haven’t participated in the past may be more open to participation.

Western can thank customers for:

- Answering a survey
- Participating in the rebate program
- Taking out their lawn
- Recommending the program to a neighbor or friend
- Staying within their water budget allocation
- Paying their bills on time
- Being a customer for ten, twenty years

The form of the thank you can be any number of tactics. These gestures cost little to no money and build customer bond.

Appreciation examples include:

- Handwritten, personalized letters
- Follow back on social media
- Coupons and freebies
- Thank you breakfast and private events
- Recognition at Board meetings

- Reminding customers how Western is using their feedback
- Sharing their stories
- Sample devices
- Designating a specific day/week/month to customer appreciation

Regardless of the reasoning or methods, the *thank you* will fulfill the goals of a positive connection.

WHY SHOULD WESTERN DO ALL THIS?

An appreciated customer is likely to share their story and become an advocate.
It's well understood that the validation generated through **testimonials boosts credibility**. This applies to a review when buying a new pair of shoes as well as a customer's endorsement of a water efficiency program. Western already knows that a successful turf removal project can result in friends and neighbors following suit, possibly requiring no incentives.

Testimonials are stories and **storytelling is a powerful and credible tool** to enlist another supporter.

Research has shown that storytelling activates part of the brain and allows the listener to turn the story into their own ideas and experience. For instance, a person viewing a customer-to-customer video about their experience with their turf replacement project will begin to visualize their own landscape transformation.

Ways in which storytelling and sharing can occur:

- Instagram and Snapchat stories showing the before and after benefit of turf replacement
- Pinterest pictures and design ideas for customers
- Videos of the step-by-step turf removal process
- Postcards with testimonials with positive customer program experiences
- Customer-to-customer videos explaining how they personally used their water budget as a starting point to implement efficiency
- *"Ask the Expert"* blog or online channel to answer questions and provide how-to instruction
- Blog where customers can share experiences, recommendations and ideas (that Western cannot personally endorse)



PARTNERS AS ADVOCATES

There's a wide array of people, businesses and organization that can be advocates and advance the success of water efficiency programs.

This can be accomplished through a number of means including:

- Promoting the general efficiency message
- Providing funding
- Actively securing program participation

Western has five types of partners:

- Wholesale Agencies
- Local Businesses
- Regional Utilities and Organizations
- State and Federal Funding Agencies
- Industry Associations

Wholesale Agencies

Western has a strong, positive relationship with its wholesale agencies and, together, the partners have implemented a multitude of successful efficiency initiates. Western will continue to support wholesale agencies through funding and provision of tools, technical assistance and marketing

program templates. In addition, Western will work collaboratively to develop marketing campaigns, joint events, and other customer-focused activities.

These wholesale agency partnerships create a synergy of regional customer awareness, program response and, ultimately, water savings.

Moving into the future, Western will continue to prioritize Western-Wholesaler partnerships and provide a cadre of support services for these agencies. Key Western support services includes the following priority list:

1. **Supplemental funding and program assistance** - As available, Western will provide additional funding for local programs through both Western's budget and Metropolitan Member Agency Administered funds. In addition, Western is on hand to provide program design aid, including vendor RFPs templates, for any/all agencies requesting support.

2. **Program water savings analysis** – Western has analyzed and documented cost/savings numbers for a number of Western programs and measures. Western's analyst is available to work with wholesalers' staff to utilize this gained knowledge for local wholesale agency program analysis.

3. **Collaboration/Coordination of conservation program marketing** – Western has hired a marketing firm to create campaigns, messaging, social media, bill inserts, ad templates, and other materials. As appropriate, these will be made available to wholesale agencies for local implementation. Agencies will have access to survey results, customer targeting methodology, and successful campaigns. Additionally, Western will aid wholesale agencies with joint marketing of programs.

4. **Assistance on state framework legislation** – Western is available to support agencies with data and technical assistance to help wholesale agencies with 1) evaluation of compliance and 2) compliance achievement. This will include development of information, FAQs, and summary sheets.

5. **Aerial imagery assistance** – Aerial imagery is an invaluable informational tool for water budgets and programs, alike. Western will offer agencies technical support to separate out areas of turf, shrubs, and hardscape, as well as assist agencies to calculate targets.

6. **The Santa Ana Watershed Project Authority** (**SAWPA**) **North American Industry Classification System (NAICS) codes assistance –** Western will facilitate SAWPA's provision of NAICS code assignment of commercial, industrial, and institutional sites within each respective agency's territory. Upgraded code assignment will provide better understanding of the commercial base and aid in more refined commercial program targeting.

7. **Collaboration/Coordination of drought response/contingency plans** – With requirements for development of agency drought response/contingency plans, Western will collaborate with agencies to work through the necessary steps to generate drought response and contingency plans.

8. **Collaboration/Coordination of policies** – In order to provide strong messaging and less customer confusion, it is optimal for agencies to align policies whenever possible. Western will work with agencies on this coordination process to facilitate consensus of regional policies.

9. **Commercial audit assistance** – Western's vendor, Norris Consulting, is available, free of charge, to agencies for evaluation and audit services for commercial and large landscape customers.

10. **Landscape Design assistance** – A recommendation is for Western to hire or subsidize landscape designer(s) to provide support to customer's replacing their lawns. Western is prepared to aid agencies by administering the RFP for designers. Wholesale agencies would then market and schedule program services.

11. **Assistance with budget-based water rates** – Allocation-based rates have proven to be one of the most cost-effective water use efficiency programs. Western is available to provide support for rate analysis and design, staff training, and public outreach.

12. **Water loss assessment and reporting assistance** – With passage of SB 555, urban water suppliers are required to submit annual water loss reporting. Water audit reports are to be validated before being submitted to the state. Western is prepared to support wholesale agencies in meeting requirements through provision of a technical assistance vendor, and possibly payment for Level 1 Validator training.

13. **Coordinate "shared customers" programs with Riverside Public Utilities** – In order to minimize customer confusion, program overlap and budget dollars, Western will work with RPU to offer joint programs in common territory.

Local Businesses

Local businesses have direct relationships with the customers and much of the time are perceived as the expert. Customers go to them for answers about plants, landscaping, irrigation and plumbing. Working with local businesses, such as Ewing Irrigation**,** Louie's Nursery**,** Bonnett Irrigation, Kellog Supply, QWEL certified landscape contractors, as well as local green realtors, Western can leverage these connections to promote efficiency programs. Program activity will also drive business for these local companies.

These partnerships deliver mutual benefits: the business gains additional sales while Western secures water savings.

Regional Utilities + Organizations

Western has long worked with numerous regional utilities and organizations. Metropolitan Water District provides funding, programs, tools and other resources. Santa Ana Watershed Project

Authority pursues grant funding and facilitates funding to regional agencies. Western will continue leveraging these long-standing relationships.

Other potential regional agency partners are: SoCalGas**,** Southern California Edison**,** Riverside-Corona Resource Conservation District**,** Riverside Flood Control District, and Riverside County Master Gardeners**.** Through collaboration, these regional agencies can work together with Western to promote the water efficiency cause.

State + Federal Funding Agencies

Over the years Western has successfully received millions of dollars in grant funding from United States Bureau of Reclamation and Department of Water Resources**.**

These agencies will continue to provide substantial monetary benefits, aiding Western in implementing robust programs.

Industry Associations

Western participates in key industry associations, leveraging the partnerships, expertise and mutual visions of other leadership organizations actively involved in the water efficiency industry. Western participates in the following three major associations:

The California Water Efficiency Partnership: The California Water Efficiency Partnership (formerly the California Urban Water Conservation Council) is an innovative leader, voice, and expert on water efficiency in California, fostering collaboration among a wide variety of stakeholders. Western sits on the Board of CalWEP and will continue to play a leadership role.

Membership benefits include:

- Dedication to addressing California's unique issues, challenges and opportunities.
- Innovation, leadership and expertise on water efficiency.
- Collaboration with a wide variety of stakeholders.
- Information and tools to help members meet regulatory requirements and challenges.
- Information sharing, resources and networking.

The Alliance for Water Efficiency: Headquartered in Chicago, the Alliance serves as a North American advocate for water-efficient products and programs and provides research and data collection to advance water efficiency and spur market transformation.

The Alliance has embarked on seven key tasks to support and enhance water conservation efforts, providing benefit to water utilities, water conservation professionals, planners, regulators, and consumers:

- Stand as a clear and authoritative national voice for water efficiency.

- Provide comprehensive information about water-efficient products, practices, and programs--what works and what doesn't.
- Represent the interest of water efficiency in the development of codes and standards.
- Transform the market for fixtures and appliances.
- Coordinate with green building initiatives to institutionalize water efficiency.
- Train water conservation professionals.
- Educate water users.

Environmental Protection Agency, WaterSense Program: WaterSense is a voluntary public-private partnership program sponsored by the U.S. Environmental Protection Agency (EPA). It is both a label for water-efficient products and a resource for helping consumers save water.

The WaterSense label makes it simple to find water-efficient products, new homes, and programs that meet EPA's criteria for efficiency and performance. Items that meet WaterSense specifications must be independently tested and certified, and only then can they carry the WaterSense label. WaterSense-labeled products and services are certified to use at least 20 percent less water, save energy, and perform as well as or better than regular models. The EPA is actively developing new specifications to expand the WaterSense family.

Section 6: Past Programs

A LOOK BACK

In 2008, Western generated a Water Use Efficiency Implementation Strategy that documented a strategic vision and key tactics to deliver long-term water efficiency. The plan included a collection of customer-tailored solutions designed to achieve the water savings goals and change customer water-use behaviors.

There were three fundamental program tactics:

1. Develop a clear pricing signal for efficient use
2. Aggressively target high water use and pursue program participation
3. Find niche markets and conduct Pilot Programs directed at these markets

Western implemented the water budget rate structure in 2011. The higher price signal for inefficient use has provided customers with education and motivation to stay within budget. At present time, 80% of customers are within their budget during any given billing cycle. This is the first time customers understand how efficiently/inefficiently their property is using water. The water-budget rate structure is the foundational driver to water efficiency.

The plan included the potential for fifteen customer-focused programs. Western elected to implement ten. The selected programs performed well, and many are still being offered.

SELECTIVE EFFICIENCY EVALUATION PROGRAM

2009 - Present

Western began offering customers efficiency evaluations in 2009. The program was designed to be the introductory program by providing customers with a **site-specific efficiency assessment** and the link to programs. Norris Consulting was brought on board to conduct the audits.

Customers with irrigated landscapes are offered **free water use evaluations**. The focus of these evaluations is outdoor water use; however, an inventory of indoor devices and recommendations is also provided.

"This is one of the most useful reports I have RECEIVED, and I have implemented almost all of your recommendations. I intend to implement the remainder as time and money permits."

"Thanks, Tim!! This is AWESOME!!! I will take action immediately to implement your recommendations!!!"

In addition, the site visits include **educating the customer about water budgets** and billing. The key target is the single-family residential customer. Selected commercial sites are eligible for evaluations as well.

As the testimonials show, customers value the service**.** As importantly**,** a strong bond is created with Western**.**

Retail Program Activity	**Estimated Savings**
1,328 evaluations	5% per site

LARGE LANDSCAPE WBIC INSTALLATION PROGRAM

2009 – 2010

From 2009 – 2010, residential customers with greater than 1 acre of irrigated landscape received **free installation of smart controllers** and **high-efficiency sprinkler nozzles**. Through the program, 73 customers were served with 368 controllers and 11,253 nozzles being installed.

Outside funding for the program came from two sources:

1. Department of Water Resources Prop 50 grants
2. Metropolitan Member Agency Allocated funds

The program hit the goals of the grants with an estimated savings of 652 AF. Western's ability to leverage grant funding made this program **highly cost effective**.

Retail Program Activity	**Estimated Savings / Cost Effectiveness**
73 sites	14% per site
368 controllers 11,253 nozzles	$342 / AF

SMARTYARD PROGRAM

2010 -2011

The Smart Yard Program was a **self-sustaining, professional irrigation controller installation** program offered from 2010 to 2011. Designed as an innovative, public private partnership, Western installed top-tier weather-based irrigation controllers at participating residential customer sites. The customer paid for the controller on-bill over time, with Western paying for 1/2 of the cost. Participating homeowners paid the balance with zero-interest financing from Western, which placed a fixed fee, starting at $9.99, on their monthly water bill for a five-year timeframe.

Smart Yard was a turn-key program that included 1) a site audit to qualify the site as a "water over use" property and 2) professional controller installation to ensure quality workmanship and programming. Due to the extreme level of administrative and field labor requirements, Western

opted to sunset the program in 2012. Over the course of the Smart Yard Program, Western performed 461 installations.

Retail Program Activity	Estimated Savings / Cost Effectiveness
421 sites	5% per site
461 controllers	$2,073 / AF

TURF REPLACEMENT PROGRAM

2009 - 2014

Western offered turf replacement incentives from 2009 - 2015. Western customers were offered **an incentive per square foot** for the removal of turf and replacement with low water using landscape and efficient or low precipitation irrigation systems.

Metropolitan provided funds for the incentive and **Western staff processed the project paperwork and incentives**. The incentive started, briefly, at $.30/sf and ramped up to $2/sf at the program's peak during the drought.

In 2014, Metropolitan created a regional program administered by their vendor, EGIA. Western chose to continue operating the program internally with the objective to ensure high quality installations. Western's program had significantly more program requirements including site plans, plant coverage requirements, and irrigation system requirements.

In 2015, Western transitioned the program to Metropolitan's regional program. Although not as strict as Western's internal program, Metropolitan did allow agencies to add their specific requirements. The program ended in late 2015 when funds were exhausted.

In fiscal year 2018/19, **Metropolitan reintroduced the program with tighter program requirements** including pre- and post-site inspections and some form of onsite water retention. Western may elect to add funds to the $1 per square foot incentive offered by Metropolitan.

Retail Program Activity	Estimated Savings / Cost Effectiveness
227 customers	27% per site
792,185 square feet of turf removed	$1,888 / AF

REGIONAL DESIGN SUPPORT PROGRAM

As part of Western's Turf Replacement Program, customers were provided with **two hours of consultation and plan generation from a local landscape architect**. Free consulting covered landscape areas up to 6,000 square feet. The architect visited the customers site and working with

the customer identified layout and plant selection tailored for the property and customer preference. Back at their office, the landscape architect generated a landscape site plan. The site plan was then sent to customer.

Over 50 customers received design plans. Western required a customer deposit of $250, which was returned upon completion of the project. The vast majority of the projects were completed. The program ended when demand exceeded capability to provide support.

MULTI-FAMILY + HOTEL/MOTEL TOILET INSTALLATION PROGRAM

2011 - 2012

In 2011, Western hired Bottom Line Utility Solutions to market and implement the Multi-family & Hotel/Motel Toilet Installation Program.

Pre-1992 properties were targeted for **replacement of high-volume toilets with high-efficiency toilet**s, 1.28 gpf fixtures. The product and installation were provided at no cost to the customer.

A significant portion of Western's service area was built after 1992, therefore the remaining high-volume plumbing fixtures are limited. Western will continue to evaluate the potential replacement of post-1992 fixtures with the most efficient fixtures available in the market.

Retail Program Activity	**Estimated Lifetime Savings**
191 toilets	191 AF

DRIP IRRIGATION PILOT PROGRAM

2014

Prior to implementing an incentive for drip irrigation, Western aimed to better understand the required components and installation costs for a typical drip irrigation project.

In 2014, Western conducted a pilot in conjunction with Rain Bird installing drip irrigation at 11 sites. Sites with inefficient spray systems were identified through Western's Efficiency Evaluation Program. These customers were offered a retrofit of their existing spray heads to a drip system.

The installations resulted in more efficient irrigation but proved to be costly. Because these installations were retrofits of older systems, many times capping the heads caused leaks and other systems problems. Fixing these issues required additional labor and increased program costs. Due to the limited number of participants, Western was unable to determine water savings associated with this program. Western is currently considering offering vouchers for drip irrigation.

SOCAL WATER$MART REBATE PROGRAM

2007 - 2017

Metropolitan sponsors a region-wide program that offers single-family residents rebates for high-efficiency toilets, high-efficiency washers, smart irrigation controllers, high-efficiency sprinkler nozzles, and rain barrels. Metropolitan also offers incentives for commercial and multi-family customers that retrofit their plumbing fixtures, HVAC systems, food service equipment, cleaning equipment and medical equipment.

The program is administered by Metropolitan's regional vendor, EGIA. Metropolitan pays for the base incentive as well the administration. Western has added supplemental funding for toilets, washers, and weather-based irrigation controllers in the past. Western is currently evaluating water savings from these devices and will determine if it is worth adding supplemental funding in the future.

Over ten years, 2,616 single-family customers participated, representing 11% of Western's retail customer base.

SOCAL WATER$MART WATER SAVINGS INCENTIVE PROGRAMS

2013 - 2017

Metropolitan provides financial assistance to local businesses and industries to encourage investment in water-saving process improvements and large irrigation system upgrades.

The program is open to all public and private, commercial and industrial users within Metropolitan's service area. Financial assistance is provided for documented water savings derived from projects implemented that meet the qualifying criteria. This includes industrial process water use reduction and landscape efficiency improvement.

Western has had over a dozen participants in the WSIP program including:

- Altman Plants
- Big Tree HOA
- Trilogy at Glen Ivy Maintenance Association
- Horsethief Canyon Ranch Association
- GL Stephenson

- T.H. Nguyen
- Tuscany Hills Landscape and Recreation Corp
- Janet Van Arsdale
- Metal Container Corp.
- BH Beal
- Starbucks Corp

Retail Program Activity
2 projects:
Altman Plants
Big Tree HOA

Estimated Savings
Altman Plants: 3,420 AF
Big Tree HOA: 35 AF
Total: 3,456 AF

In addition to the programs contained in the 2008 plan, Western implemented a few other innovative and noteworthy programs including the FreeSprinklerNozzles.com and Urinal Upgrade Program.

FREESPRINKLERNOZZLES.COM

2010 – 2017

The FreeSprinklerNozzles.com Program provides participation water agencies with a full-service, minimal staff, approach to **distribute high-efficiency sprinkler nozzles** to its residential and commercial customers.

This program has been administered by Western on behalf of 28 participating water agencies – a **unique, first-of-a-kind program design** that reaches beyond Western's territory to deliver significant water savings at sites throughout California.

Western worked with over sixty irrigation suppliers and three irrigation manufacturers to distribute over 1.7 million nozzles. FSN.com is a public-private partnership, delivering benefits for all participating parties. The sprinkler manufacturers and irrigation suppliers benefit from the increased sales of nozzles; water agencies have an easy means to distribute water-saving nozzles in their service area and meet water saving goals; customers reap the benefit from the easy-to-use, free water efficient devices.

Since 2010, FSN.com, through participating agencies, has yielded overall water savings of approximately 22,500 acre-feet. **However, over the years, activity has waned** and Western is in the process of evaluating the program and redesigning the format.

Since 2010 over 640,000 nozzles have been distributed in Western's wholesale area.

Retail Program Activity	Estimated Lifetime Savings
60,592 single-family nozzles 52,105 commercial nozzles 112,697 total nozzles	806 AF

URINAL UPGRADE PROGRAM

2014 - 2017

The High-efficiency Urinal Flush Valve Upgrade Program is **a turnkey program for the replacement of the flush valve only**. The Program is funded in part through a United States Bureau of Reclamation WaterSMART grant.

Commercial customers within Western's wholesale and retail service area are targeted for participation. The customer is **offered free product and free installation** of the high-efficiency urinal flush valves. A high-efficiency flush valve is defined at flushing 0.5 gallons per flush.

1,258 urinal valves have been installed in commercial facilities throughout Western's wholesale area with savings estimated at 77 Acre-feet annually.

The program will continue until the goal of 2,000 urinal valve upgrades has been completed.

Retail Program Activity	Estimated Lifetime Savings
150 urinal valve upgrades	180 AF

Section 7 – Proposed Programs

MOVING FORWARD

EVALUATIONS, COACHING, DESIGN SUPPORT, VOUCHERS + REBATES

The plan moving forward includes program delivery formats deemed most valuable for customers. Audits, coaching and design support provide the education and instruction necessary to implement the water efficiency measures. Vouchers and rebates provide the mechanism for the incentive. Any measure can be incentivized through this means. Western will start with a set of measures most applicable to market opportunities today and the list will be updated as the market changes and new technologies become available.

Evaluations or audits are foundational, typically the first program contact with the customer. The evaluation identifies site-specific opportunities. The face-to-face format begins the personal connection with the customer and offers opportunity to direct the customer to the most appropriate programs and measures.

Coaching deals with a customer's specific area of landscape need. This could be replacing turf or fixing an irrigation system in disrepair. Coaching provides the customer with education about the topic and the steps to implement the project or reach the customer's desired outcome. The role of the coach is to not just provide information but to motivate, instruct, and guide the customer until the project is complete.

The Western-UCR customer survey showed a need for **design support** when initiating a turf replacement project. Customers get "hung up" with the design and many times abandon the project. A smartly crafted design assistance program can provide the needed support without requiring the lengthy hours and high-priced architect and consultant services.

Vouchers provide either minimal to no of out-of- pocket expenses for customers and make it easy to participate. Customers love them. Due to the low cost/no cost price tag these tend to be higher response programs. Voucher programs are scalable and can be applicable for most technologies and devices. Typically, they involve local businesses and work best with smaller community businesses. Vouchers are customizable and can be implemented as limited or seasonal offers.

Rebates are an old school yet effective way to drive installations of water efficiency measures. Rebates work for customers that don't need a lot of education, customers that don't mind the cash outlay, purchases of bigger ticket items, and lower priced products available through big box stores.

An added benefit is that Western can leverage Metropolitan's regional rebates, providing cost effective water savings. Western doesn't pay for administration or the base incentive and can add funds to selected devices.

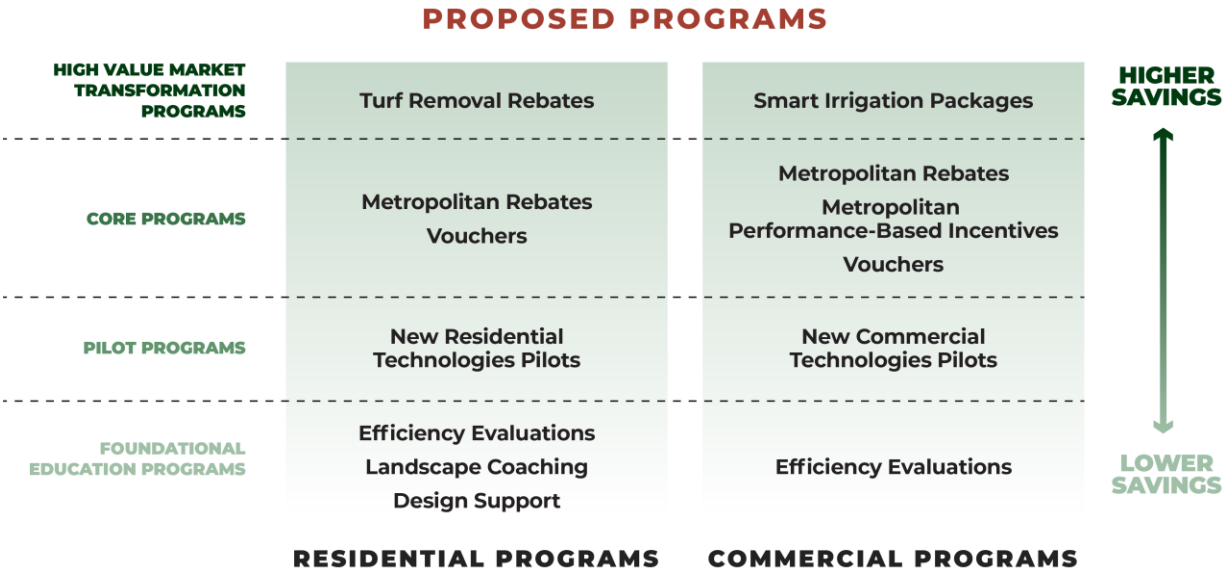
Although Metropolitan offers a limited selection of devices, they are the proven water savings devices. Metropolitan and its member agencies continually evaluate and update the devices offered and add devices as savings data becomes available or remove devices when markets become saturated.

PROPOSED PROGRAMS

Western has selected a portfolio of programs that best support the customer's journey to a water efficient home or business.

The programs:

- Match market opportunities best suited for each class of customer
- Maximize funding by leveraging Metropolitan funds
- Provide customer education, support, as well as incentives



EFFICIENCY EVALUATION PROGRAM

Western will continue the Efficiency Evaluation Program, using Norris Consulting. Future evaluations will focus on landscape and irrigation with target customers including new move-ins and out-of-budget customers.

LANDSCAPE COACHING



Landscape coaching will be offered for two purposes:

1. A customer is interested in a project
2. A customer is having problems during a project and needs assistance

Just like a personal trainer, mentor or business coach, the landscape coaching program will provide customers with one-on-one guidance through landscape upgrades. This could include such projects as upgrading an irrigation system, partial replacement of their lawn, full replacement of their lawn or implementation of a watershed plan. The goal of the coaching is to motivate and help customers overcome their particular barriers to complete the project.

Let's use as an example a customer that expresses interest in turf replacement during the evaluation. In reviewing the customer's record, staff notes no activity for 60 days. The Landscape Coach contacts the customer and finds out the customer is struggling with plant selection. The Landscape Coach then directs the customer to online plant databases, reviews plant options for their specific site, and possibly provides a voucher for free plants at Louie's, a local nursery.

Services could include:

- Personal coaching
- Landscape design tools and templates
- Plant lists
- How-to videos

DESIGN SUPPORT



The Design Support program would provide the services of a landscape designer to aid the customer in developing and completing their landscape plan. Customers would be given 1 to 2 hours of free services tailored specifically to their site and particular issues.

Services could include:

- Do's and don'ts of landscape design and turf removal
- Selecting climate appropriate plants and planting design
- Adding watershed and stormwater capture
- Water efficient irrigation plan designs

CONSERVATION CREDIT PROGRAM



It is the aim of Western to reward a customer's positive conservation efforts and, in doing so, create a stronger customer-as-advocate relationship.

Western has a fund dedicated to conservation activities among its retail customers and Water Use Efficiency staff wish to explore using this fund to implement a Conservation Credit Program. A Conservation Credit could award a customer a credit for conserving their water and not using their allocated monthly water amount (water budget). The Water Use Efficiency team will evaluate piloting this program for two years.

The goal of the Conservation Credit is to:

1. Reward customers that conserve water
2. Provide an incentive to customers using tiers 3 – 5 to conserve water
3. Provide an incentive for customers currently under their water budget to conserve more

LANDSCAPE TRANSFORMATION PROGRAM



Administered through Metropolitan, the new Landscape Transformation Program (previously called Turf Replacement) aims to combine turf removal, irrigation modification and rainwater retention or filtration. Every landscape transformation project now requires:

- Five plants per 100 square feet of area transformed
- Inclusion of a stormwater retention feature
- No hardscape within the transformed area, except permeable hardscape
- Replacement or modification of overhead spray sprinklers

Customers are now offered an incentive starting at $1.00 per square foot up to 1,500 square feet. Metropolitan pays the base incentive of $1.00. Western may add an additional $1.00 per square foot.

The previous version of the Turf Replacement Program had a high customer abandonment rate which needs to be better mitigated through customer support services. Western staff will track customer progress and routinely follow up with customers to identify barriers and deploy resources to assist customers.

ANY WAY YOU WANT VOUCHER

New

The web-based voucher format has proven to be successful with FreeSprinklerNozzles.com. Western will continue to offer sprinkler nozzles through this means and is currently revamping the program structure to become an on-line fulfillment program.

Future potential voucher programs may include:

- Low water use plants
- Drip irrigation/kits
- Pressure regulating spray heads
- Irrigation controllers
- Mulch

This could a be one-stop website, possibly using the FreeSprinklerNozzles.com platform, where customers are surveyed on their interests and issues and directed to the appropriate voucher measures for free or discounted product.

Most measures will be fulfilled through local business partners such as Louie's Nursery, Bonnett Irrigation, Kellogg Supply, and Ewing Irrigation and others.

SOCAL WATER$MART REBATES

Ongoing

The SoCal Water$mart Program offers residential and commercial customer rebates for a menu of indoor and outdoor devices. The program is funded and administered by Metropolitan.

Metropolitan pays for the base incentive and administration costs. Western can add funds to devices they want to promote. In addition to the standard rebates, Metropolitan offers performance-based incentives through the Water Savings Incentive Program under SoCal Water$mart.

Residential Measures:

- Rain Barrels & Cisterns
- Clothes Washers
- Irrigation Controllers
- Soil Moisture Sensors
- Sprinkler Nozzles
- Toilets

Commercial Measure:

- Cooling Tower Controllers
- Flow Restrictors
- Food Steamers
- Ice Machines
- Smart Controllers & Soil Moisture Sensors
- Plumbing Control Valves
- Soil Moisture Sensors
- Sprinkler Nozzles
- Toilets & Urinals

SMART IRRIGATION PACKAGE PILOT



Many commercial sites have expansive outdoor acreage which are typically maintained by landscape service professionals. These sites have high instances of irrigation system inefficiency with irrigation systems operating with mismatched, malfunctioning sprinkler heads and low technology controllers.

The Smart Irrigation program would offer customers a package of the most innovative, proven irrigation technologies available in the market. These devices, especially in combination, are considered industry best management practices. Western would solicit and enroll qualified contractors who would market the program to their customers and be paid the incentive for installing the irrigation package.

Measures:

- Smart Cloud-based Irrigation Controllers
- High-efficiency Sprinkler Nozzles
- Pressure Regulating Spray Heads and Check Valves
- Master Valves and Flow Sensors

NEW TECHNOLOGY PILOT PROGRAM



Promising new technologies will periodically enter the market. Western as an innovator, will test and incentivize the technologies that show positive results.

For example, once such emerging technology is Xeros Cleaning laundry machines. The machines use polymer beads to absorb stains and soils, resulting in lower water and chemical use. The product is currently available for commercial laundries and will be soon be available to the residential market.

Once Western has proof of technology, new technology incentives can be offered for this product. Other technologies will be considered as they emerge.

TECHNOLOGIES TO ENHANCE PROGRAM DELIVERY

Western continuously works to improve the customer experience utilizing technology innovation. Customers want technology to provide an easier, more customer-friendly experience. Self-service applications and websites can do just that while freeing up staff and providing the ability to scale

programs. Online tools allow customers to utilize program services on their own time, 24/7. In addition, these software solutions can easily track customer activity and collect valuable data.

Western has developed or is considering the following technologies:

AMI 

Western is in the process of implementing advanced metering infrastructure (AMI) systems that will meticulously track water usage and provide both Western and the customer with meaningful data. By providing key trends in water usage, AMI systems can drive water efficiency and influence change by providing customers with data to manage their use.

With periodic readings per day, as opposed to a few per year, AMI systems help provide a reliable baseline for comparison purposes. This data can be used to alert Western and/or the customer about anomalies in water use and trigger early response to leaks or other sudden increases in use.

Western will continue to deploy all aspects and benefits of AMI to further drive water efficiency.

CUSTOMER PORTAL 

Western partnered with local web developer, Droplet Technologies, to create a web-based customer friendly interface (portal). The portal helps customers understand their unique water budgets and provide a meaningful and visual representation of the information on the water bill.

Residential customers in Western's service area can log into their unique user profile 24 hours a day from a computer, tablet, or smart phone to view their past and current water budgets, update budget factors, and find the programs that can help them be more water efficient.

The format and layout of the portal is designed to increase understanding through simple icons and graphics that explain how individualized budget factors, such as the number of people in the household and landscape area affect their water budget. One of the main features is the budget calculator that allows users to manually select their budget factors and simultaneously see how the budget increases or decreases based on those changes.

In addition, the portal can maintain an on-line customer database with all program participation information, evaluation findings, recommendations, measures installed, and pertinent customer program information.

Western is currently considering a redesign of the portal and in the future may develop a portal for commercial customers as well.

EVALUATION "EVAL" APP



Working in collaboration with Droplet Technologies, Western created the "Eval App", a residential audit used by the evaluator in the field. The tool provides customers with an individualized report that communicates customer inefficiency immediately and in a compelling way – the tool delivers a graphical summary report via the tablet while in the field.

In addition, the app provides a specific roadmap for becoming more efficient by providing the customer access to available programs and incentives that will have the biggest impact on their property – a more comprehensive report is delivered via email with support tools and resources to conduct site repairs and make upgrades.

In the future, Western hopes to use the app as a means to keep the customer engaged through continued follow up, while tracking changes and encouraging next steps. The tool could incorporate automated follow up to customers to provide additional support, document when the repairs or upgrades are made, and give recognition to the customer.

For commercial customers, Western may consider promotion of EPA's EnergyStar Portfolio Manager that provides customers with water use intensity or benchmarking scores based on their type of business. Customers enter basic information about their site and business as well as their annual water use and receive back a score or intensity factor. This information illustrates how well a building is operating in regard to water use and can provide the trigger for customers to move forwards in evaluating potential efficiency project.

FREESPRINKLERNOZZLES.COM REDESIGN



With eight years of successful implementation, Western is looking to overhaul the FreeSprinklerNozzles.com program. The goal is for the new program to be a 100% online fulfillment program. Western is looking to streamline the sprinkler nozzle inventory process and deliver more accurate nozzle counts. In addition, Western wants to make the program more customer convenient with nozzle delivery direct to customer homes and businesses.

Western is evaluating the cost and benefits of developing a tool that would utilize aerial imagery for mapping the customer's landscaped area and irrigation system. The customer would use the tool to measure their irrigated area and note head locations. The system would then automatically generate a nozzle inventory which would be the sent to the irrigation fulfillment center electronically. The nozzles would then be shipped to the customer.

Section 8: The Details

STATE MANDATES + COMPLIANCE

On May 31, 2018 Gov. Jerry Brown signed into law two new bills that will require urban water providers throughout California to set new permanent water use targets for their service areas by 2022. Senate Bill 606 (Hertzberg) and Assembly Bill 1668 (Friedman) provide a framework for setting water use targets, as well as implementing and enforcing the new water use requirements.

While many details for implementing the new water use requirements will be determined over the next several years, the overall framework includes:

- A standard for indoor residential water use of 55 gallons per person per day—dropping incrementally to 50 gallons in 2030.
- A standard for outdoor residential water use (to be determined) based upon a community's climate and the amount of landscaped area.
- A standard for water loss due to leaks in water system pipes (to be determined).
- A CII water use standard (to be determined)

The first three standards will be calculated and added together to represent an **overall water use target** (in gallons) for the water provider. Although Western already bases their rates on a water budget for each customer, the new state laws do not contain water use targets for individual residents or businesses.

These laws outline an **overall framework** to guide urban water providers in setting water use targets, which must be approved by the State Water Resource Control Board. However, urban water providers will determine how their service area can best achieve the new water use target. Urban water providers will set and monitor targets for their service area as a whole (not on an individual basis) and will determine how to help their customers collectively reach the new targets.

Urban water **providers who do not meet their targets can be fined** by the State Water Board (up to $1,000 per day during non-drought years and $10,000 per day during drought emergencies). Fines apply to the urban water provider and not to individuals. Once water provider-level targets are established in 2022 and implementation begins in 2023, **water providers may choose to work with individual households and businesses to increase their water efficiency** through available rebates, services and programs.

While the new laws do not set specific water use targets for business, they do outline a framework for creating new water efficiency performance measures for businesses—these are **recommended actions for specific business sectors** to improve water efficiency over time. Performance measures will be determined over the next several years, and the process will include opportunities for public input.

The new rules were prompted by California's frequent cycles of drought and are meant to better prepare California for the next drought and the future effects of climate change on the state's water supplies. The overall goal is to make water conservation a way of life in California and a permanent part of the state's culture.

Water providers must set new water conservation targets by 2022 and will be expected to begin implementing them by 2023 and every year after that.

The new laws create long term water use targets, not short-term conservation targets like those implemented during the drought. The long-term targets are meant to inspire greater efficiency over time rather than mandate short-term cutbacks that require extreme measures such as not watering your lawn or flushing the toilet less.

Western expects to be fully compliant with the State's new framework for water use targets. Western's Water Budget Rate Structure, in place for the last five years, models the framework targets at the individual property. As the final requirements are set Western will evaluate and report on compliance.

IMPLEMENTATION TIMELINE

Program implementation is forecast for two years based upon current outside funding and available technologies. Some of these components are well established and easily measurable, while others are pilot initiatives with savings results that are not yet fully established.

Western will track performance and, as necessary, will make modifications along the way in order to maximize effectiveness. At the conclusion of each year, Western will conduct a comprehensive assessment of the plan and overhaul or replace any underperforming elements in advance of the prior fiscal year budget process.



PLAN UPDATES

The WUE Plan is a working document and, as such, must be modified and updated as changes occur and program years roll out. Western will regularly review the plan and make adjustments accordingly.

Changes and/or reviews of the plan should take place in line with the following conditions:

- When programs are added, subtracted or modified
- On a yearly basis in order to meet the annual reporting requirements
- Every 5 years to meet the Urban Water Management Plan report cycle
- As the State's Framework policies are finalized

P

Appendix P AWWA Water Audits

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

American Water Works Association.

? Click to access definition

\+ Click to add a comment

Water Audit Report for: WMWD - RIVERSIDE

Reporting Year: 2016 1/2016 - 12/2016

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

<---------- Enter grading in column 'E' and 'J' ---------->

WATER SUPPLIED

						Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr					acre-ft/yr
Water imported:	5	31,186.000	acre-ft/yr	4				acre-ft/yr
Water exported:	5	11,746.000	acre-ft/yr	8				acre-ft/yr

Enter negative % or value for under-registration

Enter positive % or value for over-registration

WATER SUPPLIED: **19,440.000** acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	5	16,155.000	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	48.600	acre-ft/yr		48.600	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: ? **16,203.600** acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) **3,236.400** acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		48.600	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	329.694	acre-ft/yr	2.00%		acre-ft/yr
Systematic data handling errors:		40.388	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: ? **418.681** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? **2,817.719** acre-ft/yr

WATER LOSSES: **3,236.400** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? **3,285.000** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	471.4	miles
Number of active AND inactive service connections:	7	20,654	
Service connection density:		44	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 5 100.0 psi

COST DATA

Total annual cost of operating water system:	10	$62,782,690	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$2.13	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	5	$781.78	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 58 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported

2: Customer metering inaccuracies

3: Billed metered

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association

? Click to access definition

+ Click to add a comment

Water Audit Report for: WMWD - RIVERSIDE

Reporting Year: 2017 1/2017 - 12/2017

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

						Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr					acre-ft/yr
Water imported:	7	31,181.360	acre-ft/yr	n/a				acre-ft/yr
Water exported:	7	12,077.420	acre-ft/yr	n/a				acre-ft/yr

Enter negative % or value for under-registration

Enter positive % or value for over-registration

WATER SUPPLIED: 19,103.940 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	6	17,672.860	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	8	5.000	acre-ft/yr			
Unbilled unmetered:	5	47.800	acre-ft/yr		47.800	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: ? 17,725.660 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 1,378.280 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		47.760	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	360.773	acre-ft/yr	2.00%		acre-ft/yr
Systematic data handling errors:		44.182	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: ? 452.715 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 925.565 acre-ft/yr

WATER LOSSES: 1,378.280 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 1,431.080 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	506.4	miles
Number of active AND inactive service connections:	7	20,810	
Service connection density:		41	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 8 100.0 psi

COST DATA

Total annual cost of operating water system:	10	$59,366,114	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$2.48	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	7	$1,068.43	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 71 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported

2: Billed metered

3: Customer metering inaccuracies

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association

Click to access definition
Click to add a comment

Water Audit Report for: WMWD - RIVERSIDE
Reporting Year: 2018 | 1/2018 - 12/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<-------- Enter grading in column 'E' and 'J' -------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

				Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr			
Water imported:	7	31,405.000	acre-ft/yr	n/a		acre-ft/yr
Water exported:	7	11,192.000	acre-ft/yr	n/a		acre-ft/yr
WATER SUPPLIED:		**20,213.000**	acre-ft/yr			

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	18,949.400	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	8	1.000	acre-ft/yr		1.000	acre-ft/yr
AUTHORIZED CONSUMPTION:		**18,950.400**	acre-ft/yr			

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) **1,262.600** acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		50.533	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	386.722	acre-ft/yr	2.00%	acre-ft/yr
Systematic data handling errors:		47.374	acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **484.628** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **777.972** acre-ft/yr

WATER LOSSES: **1,262.600** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: **1,263.600** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	502.5	miles
Number of active AND inactive service connections:	8	21,054	
Service connection density:		42	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 8 — 100.0 psi

COST DATA

Total annual cost of operating water system:	10	$63,758,239	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$3.11	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	7	$1,296.12	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 71 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association

? Click to access definition

+ Click to add a comment

Water Audit Report for: WMWD - RIVERSIDE

Reporting Year: 2019 1/2019 - 12/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

	Grading	Value		Grading	Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water imported:	7	26,881.900	acre-ft/yr	3	-4.00%		acre-ft/yr
Water exported:	7	9,159.600	acre-ft/yr	n/a			acre-ft/yr

Enter negative % or value for under-registration

Enter positive % or value for over-registration

WATER SUPPLIED: 18,842.379 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

	Grading	Value		Pcnt:	Value:	
Billed metered:	7	17,615.000	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	8	1.000	acre-ft/yr		1.000	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 17,616.000 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 1,226.379 acre-ft/yr

Apparent Losses

	Grading	Value		Pcnt:	Value:	
Unauthorized consumption:		47.106	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	359.490	acre-ft/yr	2.00%		acre-ft/yr
Systematic data handling errors:		44.038	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 450.633 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 775.746 acre-ft/yr

WATER LOSSES: 1,226.379 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,227.379 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	502.4	miles
Number of active AND inactive service connections:	8	21,325	
Service connection density:		42	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	8	100.0	psi

COST DATA

Total annual cost of operating water system:	10	$ 61,677,189.29	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$3.18	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	7	$1,265.00	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 71 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported

2: Customer metering inaccuracies

3: Billed metered

Q

Appendix Q Reduced Delta Reliance

Quantifying Regional Self-Reliance and Reduced Reliance on Water Supplies from the Delta

1. Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta, prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council. Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.

An urban water supplier that anticipates participating in or 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 should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta through Improved Regional Water Self-Reliance (WR P1).

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 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 in terms of (a)(1) above.

> *(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:*
>
> > *(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*
> >
> > *(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and*
> >
> > *(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self- reliance shall be reported in the*

Plan as the 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 the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

2. Demonstration of Regional Self-Reliance

The methodology used to determine Western Municipal Water District (Western)'s improved regional self-reliance is consistent with the approach detailed in the Department of Water Resources (DWR)'s UWMP Guidebook Appendix C (Guidebook Appendix C), including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Key assumptions underlying Western's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP, previously adopted UWMPs or other planning reports or actual water use data.
- All analyses were conducted at the Western general service area level, and all data reflect the total contributions of Western and the retail agencies within the Western general service area boundary.
- No projects or programs that are described in the UWMPs as "Projects Under Development" were included in the accounting of supplies.

Baseline, Data and Expected Outcomes

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. Data for the 2010 baseline were taken from Western's 2008 Integrated Water Management Plan (IRWMP), as the IRWMP includes a comprehensive set of supply and demand data for all retail agencies within Western's service area for a normal water year.

Consistent with the 2010 baseline data approach, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2015 was taken from the 2008 IRWMP.

There were no planning documents that provided a published comprehensive supply and demand projection for the year 2020 for Western's entire service area, and therefore, actual 2020 production data collected by Western from the retail agencies in their service area was used.

Data and expected outcomes for 2025-2045 was collected by Western from the retail agencies in their service area as part of the 2020 UWMP effort.

Documentation of the specific data sources and assumptions are included in the discussions below.

Service Area Demands without Water Use Efficiency

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of the percentage of water used. Normal water year demands serve as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill requirements of the UWMP Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers can calculate their embedded water use efficiency savings based on changes in forecasted per capita water use since the baseline. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise, the

effect of water use efficiency savings on regional self-reliance would be overestimated. Table C-1 shows the results of this adjustment for Western. Supporting narratives and documentation for all the data shown in Table C-1 are provided below.

Service Area Demands with Water Use Efficiency

The service area demands shown in Table C-1 represent the total water demands for Western's general service area, including Western Retail and other retail agencies. Demand data shown in Table C-1 were collected from the following sources:

- Baseline (2010): Western IRWMP 2008 Update, Table 4-3
- 2015: Western's IRWMP 2008 Update, Table 4-3
- 2020: Total Western demand developed by Metropolitan as part of Metropolitan's 2015 UWMP
- 2025-2045: Projections from Western and member agencies, collected as part of Western's 2020 UWMP effort

Non-Potable Water Demands

Recycled water demands were collected from the retail agencies respective 2010 and 2015 UWMPs and reported as actual 2010 and actual 2015 recycled water use.

Although Western and the other retail agencies in their service area also use other non-potable supplies, detailed data to form a baseline for 2010 was not available from published reports as potable and non-potable use was typically not reported separately in UWMPs prior to 2020. As a result, only recycled water demands are shown and the true improvement to regional self-reliance is expected to be greater than shown in this analysis.

Potable Service Area Demands with Water Use Efficiency

The "Potable Service Area Demands with Water Use Efficiency" was calculated by subtracting the "Non-Potable Water Demands" from "Service Area Demands with Water Use Efficiency."

Service Area Population

The population data shown in Table C-1 were collected from the following sources:

- Baseline (2010): Western 2005 UWMP, Appendix F. Populations for Western's service area developed by Metropolitan
- 2015: Western 2015 UWMP, Table 3-7
- 2020-2045: Western 2020 UWMP, Table 3-2

Estimated Water Use Efficiency Since Baseline

The "Estimated Water Use Efficiency Since Baseline" was calculated using "Potable Service Area Demands with Water Use Efficiency" divided by "Service Area Population" and then comparing with 2010 Per Capita Water Use.

Service Area Water Demands without Water Use Efficiency

In Table C-2, the "Service Area Demands with Water Use Efficiency" was added to the "Estimated Water Use Efficiency Since Baseline" to obtain the "Service Area Water Demands without Water Use Efficiency Accounted For".

Supplies Contributing to Regional Self-Reliance

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table

C-3 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The values shown in Table C-3 represent efforts to improve regional self-reliance for Western's entire service area and include the total contributions of Western and its customers. For this analysis, Western is focusing on new investments in regional self-reliance since the 2010 baseline. Supporting narratives and documentation for all the data shown in Table C-3 are provided below.

Water Use Efficiency

The water use efficiency information shown in Table C-3 is taken directly from Table C-1.

Water Recycling

Estimates for the 2010 baseline and 2015 recycled water use was collected from the retail agencies respective 2010 and 2015 UWMPs and reported as actual 2010 and actual 2015 recycled water use.

Stormwater Capture and Use

The stormwater capture and use supply shown in Table C-3 represents the Victoria Recharge Basin. Western constructed the Victoria Recharge Basin in 2019 to capture stormwater runoff and recharge the Riverside-Arlington groundwater basin. The Victoria Recharge Basin is anticipated to provide up to 1,800 acre-feet per year (AFY).

Advanced Water Technologies

The region has invested in advanced water technologies at the Arlington, Chino, and Temescal Valley Desalters to recover unused local non-potable groundwater supplies by treating them for use as potable supplies. These facilities began operation prior to 2010 and have long contributed to regional self-reliance. In 2017, the Chino Desalter was expanded to produce an additional supply, of which 3,534 AFY is allocated to Western Retail and 3,533 AFY is allocated to Jurupa Community Services District, a retail water agency in Western's service area. Therefore, a total of 7,067 AFY of new supply is included in the analysis under the Advanced Water Technologies category.

3. Reliance on Water Supplies from the Delta Watershed

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, which includes Western. 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, except for 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. 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.

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.

Programs Implemented by Metropolitan to Reduce Delta Reliance

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; the following table lists the groundwater conjunctive use programs that have been developed in the region.

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.

Because of this infeasibility to separate out the individual member agency's reduced reliance on the Delta, Metropolitan has completed the analysis to demonstrate a regional wide reduction which is shown in Table C-4.

4. Summary of Expected Outcomes for Reduced Reliance on the Delta

As stated in WR P1(c)(1)(C), 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.

The expected outcomes for Western's reduced Delta reliance and regional self-reliance were developed using the approach and guidance described in the Guidebook Appendix C issued in March 2021.

Improved Regional Self-Reliance

The data used to demonstrate increased regional self-reliance in this analysis represent the total regional efforts of Western and the retail agencies in its service area and was developed in conjunction with Metropolitan as part of the UWMP coordination process.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for Western's regional self-reliance.

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by approximately 120,000 AF from the 2010 baseline (Table C-3).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by approximately 115,000 AF from the 2010 baseline (Table C-3).

The results show that Western and the retail agencies in its service area are reducing reliance on the Delta and improving regional self-reliance through investing in local supplies, in conjunction with Metropolitan and other

member agency efforts. As discussed, additional investments in local supplies, such as recycled water, were not included in this analysis to be conservative due to gaps in comparable data between the 2010 baseline and future years. As a result, the improvement in regional self-reliance is expected to be even greater than demonstrated in this analysis.

Reduced Reliance on Supplies from the Delta Watershed

For reduced reliance on supplies from the Delta Watershed, the data used in this analysis represent the total regional efforts of Metropolitan, its member agencies (e.g., Western), and their customers, and were developed in conjunction with Western and other Metropolitan member agencies as part of the UWMP coordination process (as described in Section 5 of Metropolitan's 2020 UWMP). In accordance with UWMP requirements, Metropolitan's member agencies and their customers (many of them retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP, rather their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

While the demands that Metropolitan's member agencies and their customers report in their UWMP's are a good reflection of the demands in their respective service areas, they do not adequately represent each water suppliers' individual contributions to reduced reliance on the Delta. To calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this, first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta watershed.

For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta. Due to the extensive, long-standing, and successful implementation of regional demand management and local resource incentive programs in Metropolitan's service area, this infeasibility holds true for Metropolitan's members as well as their customers. For Metropolitan's service area, reduced reliance on supplies from the Delta watershed can only be accurately accounted for at the regional level.

The results show that as a region, Metropolitan and its members (including Western) as well as their customers are measurably reducing reliance on the Delta and improving regional self-reliance.

5. UWMP Implementation

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) 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.

Chapters 4 and 9 of Western's 2020 UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region's water needs.

6. 2015 UWMP Appendix Q

The information contained in this appendix is also intended to be a new Appendix Q to Western's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). Western provided notice of the availability of the draft 2020 UWMP, 2020 WSCP, and the new Appendix Q to the 2015 UWMP and held a public hearing to consider adoption of the documents 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, 2020 WSCP, and Appendix Q to the 2015 UWMP were posted on Western's website, https://www.wmwd.com/215/Urban-Water-Management-Plan, in advance of the public hearing on June 16, 2021. The notice of availability of the documents was sent to Western's customers, as well as cities and counties in Western's service area. Copies of the notification letters are included in the 2020 UWMP Appendix B. Thus, this Appendix Q to Western's 2020 UWMP, which was adopted with Western's 2020 UWMP, will also be recognized and treated as Appendix Q to Western's 2015 UWMP.

Western held a public hearing for the draft 2020 UWMP, draft 2020 WSCP, and draft Appendix Q to the 2015 UWMP on June 16, 2021, at a regular Board of Directors (Board) meeting, held online due to COVID-19 concerns. Western's Board determined that the 2020 UWMP and the 2020 WSCP accurately represent the water resources plan for Western's service area. In addition, Western's Board determined that this appendix to both the 2015 UWMP and the 2020 UWMP includes all the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action. As stated in Resolutions 3154, 3155, and 3158, Western's Board adopted the 2020 UWMP, 2020 WSCP, and Appendix Q to the 2015 UWMP and authorized their submittal to the State of California. Copies of the resolutions are included in the 2020 UWMP Appendix D.

Table C-1: Optional Calculation of Water Use Efficiency -To be completed if Water Supplier does not specifically estimate Water Use Efficiency as a supply

Service Area Water Use Efficiency Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	294,564	321,826	317,133	270,488	299,467	313,141	328,331	340,249
Non-Potable Water Demands	11,068	17,394	13,345	22,926	24,760	25,520	27,217	28,337
Potable Service Area Demands with Water Use Efficiency Accounted For	283,496	304,432	303,788	247,562	274,707	287,621	301,113	311,912

Total Service Area Population	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Population	838,200	955,531	979,634	1,026,150	1,072,666	1,119,183	1,151,427	1,183,671

Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Per Capita Water Use (GPCD)	302	284	277	215	229	229	233	235
Change in Per Capita Water Use from Baseline (GPCD)		(18)	(25)	(87)	(73)	(73)	(68)	(67)
Estimated Water Use Efficiency Since Baseline		18,748	27,544	99,502	88,090	90,909	88,322	88,429

Table C-2: Calculation of Service Area Water Demands Without Water Use Efficiency

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	294,564	321,826	317,133	270,488	299,467	313,141	328,331	340,249
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline		18,748	27,544	99,502	88,090	90,909	88,322	88,429
Service Area Water Demands without Water Use Efficiency Accounted For	294,564	340,574	344,677	369,990	387,557	404,050	416,653	428,678

Table C-3: Calculation of Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Use Efficiency		18,748	27,544	99,502	88,090	90,909	88,322	88,429
Water Recycling	11,068	17,394	13,345	22,926	24,760	25,520	27,217	28,337
Stormwater Capture and Use			1,800	1,800	1,800	1,800	1,800	1,800
Advanced Water Technologies			7,067	7,067	7,067	7,067	7,067	7,067
Conjunctive Use Projects								
Local and Regional Water Supply and Storage Projects								
Other Programs and Projects the Contribute to Regional Self-Reliance								
Water Supplies Contributing to Regional Self-Reliance	11,068	36,142	49,757	131,295	121,717	125,297	124,407	125,633

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	294,564	340,574	344,677	369,990	387,557	404,050	416,653	428,678

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies Contributing to Regional Self-Reliance	11,068	36,142	49,757	131,295	121,717	125,297	124,407	125,633
Change in Water Supplies Contributing to Regional Self-Reliance		25,074	38,689	120,227	110,649	114,229	113,339	114,565

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								
Change in Percent of Water Supplies Contributing to Regional Self-Reliance								

Table C-4: Calculation of Reliance on Water Supplies from the Delta Watershed

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
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	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 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	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 (Optional)
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 Water Supplies from the Delta Watershed		(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 (Optional)
Percent of Water 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 Water Supplies from the Delta Watershed		-7.6%	-6.6%	-3.0%	-3.7%	-4.3%	-4.8%	-5.2%

R

Appendix R DWR Submittal Tables

2-1R | Public Water Systems

STATUS: Published

NOTES: -

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020
CA3310049	WESTERN MWD	21,657	19,555
CA3310036	WESTERN MWD - MURRIETA DIVISION	2,946	2,233
CA3310076	WESTERN MWD (ID A - RAINBOW)	42	47
	Total:	**24,645**	**21,835**

2-2 | Public Water Systems

STATUS: Published

NOTES: -

Type of Plan	Member of RUWMP	Member of Regional Alliance	Name of RUWMP or Regional Alliance
Individual UWMP	No	No	

2-3 | Agency Identification

STATUS: Published

NOTES: cannot select both wholesale and retailer; override in word table

Type of Supplier	Year Type	First Day of Year		Unit Type
		DD	MM	
Retailer	Calendar Years			Acre Feet (AF)

Conversion to Gallons: *325851*
Conversion to Gallons per Day: *892.7425*

2-4R | Water Supplier Information Exchange

STATUS: Published

NOTES: -

Wholesale Water Supplier Name
Western Municipal Water District
1Western considers their retail system as a wholesale customer and imports water for their retail customers.

2-4W | Water Supplier Information Exchange

STATUS: Published

NOTES:

Supplier has informed more than 10 other water suppliers of water supplies available in accordance with Water Code Section 10631. Completion of the table below is optional.

If not completed, include a list of the water suppliers that were informed.

Location of List:

Wholesale Water Supplier Name
Box Springs Mutual Water District
City of Corona
City of Norco
Eagle Valley Mutual Water Company
Elsinore Valley Municipal Water District
Home Gardens County Water District
Jurupa Community Services District
Rancho California Water District
Riverside Highlands Water Company
Riverside Public Utilities
Rubidoux Community Services District
Santa Ana River Water Company
Temescal Valley Water District

3-1R | Current & Projected Population

STATUS: Published

NOTES:

Population Served	2020	2025	2030	2035	2040	2045
Riverside	79,044	87,652	97,260	107,981	120,293	134,013
Murrieta	15,676	18,011	20,610	23,506	26,389	29,621
Rainbow	178	202	231	262	294	324
Total	**94,898**	**105,865**	**118,101**	**131,749**	**146,976**	**163,958**

3-1W | Current & Projected Population

STATUS: Published

NOTES:

Population Served	2020	2025	2030	2035	2040	2045
Western Wholesale	979,634	1,025,334	1,077,603	1,131,288	1,177,721	1,225,915
Total	**979,634**	**1,025,334**	**1,077,603**	**1,131,288**	**1,177,721**	**1,225,915**

4-1R | Actual Demands for Water

STATUS: Published

NOTES:

Use Type	Additional Description	Level of Treatment When Delivered	2020 Volume
Single Family		Drinking Water	14,973
Multi-Family		Drinking Water	731
Commercial		Drinking Water	1,328
Industrial		Drinking Water	940
Landscape	Potable	Drinking Water	2,563
Agricultural irrigation	Potable	Drinking Water	397
Other	Military	Drinking Water	132
Other	Temporary	Drinking Water	159
Other	Fireline	Drinking Water	6
Losses		Drinking Water	602
Landscape	Non-Potable	Other Non-Potable Water	1,538
Agricultural irrigation	Non-Potable	Other Non-Potable Water	2,366
Losses	Non-Potable	Other Non-Potable Water	1,008
		Total:	**26,743**

Optional 4-1R | Actual Demands for Water: Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Level of Treatment When Delivered	2020 Volume
Single Family		Drinking Water	14,973
Multi-Family		Drinking Water	731
Commercial		Drinking Water	1,328
Industrial		Drinking Water	940
Landscape	Potable	Drinking Water	2,563
Agricultural irrigation	Potable	Drinking Water	397
Other	Military	Drinking Water	132
Other	Temporary	Drinking Water	159
Other	Fireline	Drinking Water	6
Losses		Drinking Water	602
		Total:	**21,831**

Optional 4-1R | Actual Demands for Water: Non-Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Level of Treatment When Delivered	2020 Volume
Landscape	Non-Potable	Other Non-Potable Water	1,538
Agricultural irrigation	Non-Potable	Other Non-Potable Water	2,366
Losses	Non-Potable	Other Non-Potable Water	1,006
		Total:	**4,910**

4-1W | Actual Demands for Water

STATUS: Published

NOTES:

Use Type	Additional Description	Level of Treatment When Delivered	2020 Volume
Sales/Transfers/Exchanges to Other Agencies	Box Springs Mutual Water District	Drinking Water	149
Sales/Transfers/Exchanges to Other Agencies	City of Corona	Drinking Water	1,229
Sales/Transfers/Exchanges to Other Agencies	City of Corona	Raw Water	16,637
Sales/Transfers/Exchanges to Other Agencies	City of Norco	Drinking Water	4,814
Sales/Transfers/Exchanges to Other Agencies	Eagle Valley	Raw Water	132
Sales/Transfers/Exchanges to Other Agencies	Elsinore Valley Municipal Water District	Drinking Water	15,115
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	Drinking Water	10,886
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	Raw Water	6,563
Sales/Transfers/Exchanges to Other Agencies	Temescal Valley Water District	Drinking Water	3,435
Sales/Transfers/Exchanges to Other Agencies	Western Retail	Drinking Water	12,004
Sales/Transfers/Exchanges to Other Agencies	Western Retail	Raw Water	1,819
		Total:	**72,783**

Optional 4-1W | Actual Demands for Water: Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Level of Treatment When Delivered	2020 Volume
Sales/Transfers/Exchanges to Other Agencies	Box Springs Mutual Water District	Drinking Water	149
Sales/Transfers/Exchanges to Other Agencies	City of Corona	Drinking Water	1,229
Sales/Transfers/Exchanges to Other Agencies	City of Norco	Drinking Water	4,814
Sales/Transfers/Exchanges to Other Agencies	Elsinore Valley Municipal Water District	Drinking Water	15,115
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	Drinking Water	10,886
Sales/Transfers/Exchanges to Other Agencies	Temescal Valley Water District	Drinking Water	3,435
Sales/Transfers/Exchanges to Other Agencies	Western Retail	Drinking Water	12,004
		Total:	**47,632**

Optional 4-1W | Actual Demands for Water: Non-Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Level of Treatment When Delivered	2020 Volume
Sales/Transfers/Exchanges to Other Agencies	City of Corona	Raw Water	16,637
Sales/Transfers/Exchanges to Other Agencies	Eagle Valley	Raw Water	132
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	Raw Water	6,563
Sales/Transfers/Exchanges to Other Agencies	Western Retail	Raw Water	1,819
		Total:	**25,151**

4-2R | Projected Demands for Water

STATUS: Published

NOTES:

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		16,704	18,632	20,784	23,183	25,802
Multi-Family		815	909	1,015	1,132	1,260
Commercial		1,481	1,652	1,843	2,056	2,288
Industrial		1,049	1,170	1,305	1,456	1,620
Other	Military	148	165	184	205	228
Landscape		2,859	3,189	3,557	3,968	4,417
Agricultural irrigation		443	494	551	615	685
Other	Fireline	6	7	8	9	10
Other	Temporary	177	198	220	246	274
Losses		930	1,037	1,157	1,289	1,435
Agricultural irrigation	Non-Potable	1,779	2,058	2,296	2,561	2,857
Landscape	Non-Potable	2,737	3,166	3,532	3,940	4,396
Losses	Non-Potable	1,039	1,202	1,340	1,495	1,668
Total:		**30,167**	**33,879**	**37,792**	**42,155**	**46,940**

Optional 4-2R | Projected Demands for Water: Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		16,704	18,632	20,784	23,183	25,802
Multi-Family		815	909	1,015	1,132	1,260
Commercial		1,481	1,652	1,843	2,056	2,288
Industrial		1,049	1,170	1,305	1,456	1,620
Other	Military	148	165	184	205	228
Landscape		2,859	3,189	3,557	3,968	4,417
Agricultural irrigation		443	494	551	615	685
Other	Fireline	6	7	8	9	10
Other	Temporary	177	198	220	246	274
Losses		930	1,037	1,157	1,289	1,435
Total:		**24,612**	**27,453**	**30,624**	**34,159**	**38,019**

Optional 4-2R | Projected Demands for Water: Non-Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Agricultural irrigation	Non-Potable	1,779	2,058	2,296	2,561	2,857
Landscape	Non-Potable	2,737	3,166	3,532	3,940	4,396
Losses	Non-Potable	1,039	1,202	1,340	1,495	1,668
Total:		**5,555**	**6,426**	**7,168**	**7,996**	**8,921**

4-2W | Projected Demands for Water

STATUS: Published

NOTES: -

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Sales/Transfers/Exchanges to Other Agencies	Box Springs	145	150	175	175	175
Sales/Transfers/Exchanges to Other Agencies	City of Corona	1,838	1,838	1,838	1,838	1,838
Sales/Transfers/Exchanges to Other Agencies	City of Corona	13,323	13,323	13,323	13,323	13,323
Sales/Transfers/Exchanges to Other Agencies	City of Norco	250	250	250	250	250
Sales/Transfers/Exchanges to Other Agencies	Eagle Valley Mututal Water Company	110	110	110	110	110
Sales/Transfers/Exchanges to Other Agencies	Elsinore Valley Municipal Water District	18,000	16,605	18,338	20,073	21,925
Sales/Transfers/Exchanges to Other Agencies	Elsinore Valley Municipal Water District	-	3,700	3,700	3,700	3,700
Sales/Transfers/Exchanges to Other Agencies	Jurupa Community Services District	10,000	10,000	10,000	10,000	10,000
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	16,593	12,240	12,848	9,289	10,088
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	13,286	13,286	13,286	17,625	17,625
Sales/Transfers/Exchanges to Other Agencies	Rubidoux Community Services District	1,200	2,000	2,000	2,000	2,000
Sales/Transfers/Exchanges to Other Agencies	Riverside Public Utilities	2,000	3,000	3,000	3,000	3,000
Sales/Transfers/Exchanges to Other Agencies	Temescal Valley Water District	3,720	3,800	3,800	3,800	3,800
Sales/Transfers/Exchanges to Other Agencies	Western Retail	14,680	19,306	22,293	26,181	31,928
Sales/Transfers/Exchanges to Other Agencies	Western Retail	1,671	1,300	1,300	1,300	1,681

Total:	**96,816**	**100,908**	**106,261**	**112,664**	**121,443**

Optional 4-2W | Projected Demands for Water: Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Sales/Transfers/Exchanges to Other Agencies	Box Springs	145	150	175	175	175
Sales/Transfers/Exchanges to Other Agencies	City of Corona	1,838	1,838	1,838	1,838	1,838
Sales/Transfers/Exchanges to Other Agencies	City of Norco	250	250	250	250	250
Sales/Transfers/Exchanges to Other Agencies	Elsinore Valley Municipal Water District	18,000	16,605	18,338	20,073	21,925
Sales/Transfers/Exchanges to Other Agencies	Jurupa Community Services District	10,000	10,000	10,000	10,000	10,000
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	16,593	12,240	12,848	9,289	10,088
Sales/Transfers/Exchanges to Other Agencies	Rubidoux Community Services District	1,200	2,000	2,000	2,000	2,000
Sales/Transfers/Exchanges to Other Agencies	Riverside Public Utilities	2,000	3,000	3,000	3,000	3,000
Sales/Transfers/Exchanges to Other Agencies	Temescal Valley Water District	3,720	3,800	3,800	3,800	3,800
Sales/Transfers/Exchanges to Other Agencies	Western Retail	14,680	19,306	22,293	26,181	31,928
	Total:	**68,426**	**69,189**	**74,542**	**76,606**	**85,004**

Optional 4-2W | Projected Demands for Water: Non-Potable

INCLUDE IN UWMP: Yes

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Sales/Transfers/Exchanges to Other Agencies	City of Corona	13,323	13,323	13,323	13,323	13,323
Sales/Transfers/Exchanges to Other Agencies	Eagle Valley Mututal Water Company	110	110	110	110	110
Sales/Transfers/Exchanges to Other Agencies	Elsinore Valley Municipal Water District	-	3,700	3,700	3,700	3,700
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	13,286	13,286	13,286	17,625	17,625
Sales/Transfers/Exchanges to Other Agencies	Western Retail	1,671	1,300	1,300	1,300	1,681
	Total:	**28,390**	**31,719**	**31,719**	**36,058**	**36,439**

4-3R | Total Gross Water Use

STATUS: Published

NOTES:

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1R and 4-2R	24,985	28,227	31,281	34,312	38,123	42,908
Recycled Water Demand* From Table 6-4R	1,758	1,940	2,598	3,480	4,032	4,032
Total Water Use:	**26,743**	**30,167**	**33,879**	**37,792**	**42,155**	**46,940**

Optional 4-3R | Total Gross Water Use: Potable

INCLUDE IN UWMP: Yes

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1R and 4-2R	21,831	24,612	27,453	30,624	34,159	38,019
Total Water Use	**21,831**	**24,612**	**27,453**	**30,624**	**34,159**	**38,019**

4-3R | Total Gross Water Use: Non-Potable

INCLUDE IN UWMP: Yes

	2020	2025	2030	2035	2040	2045
Recycled Water Demand* From Table 6-4R	1,758	1,940	2,598	3,480	4,032	4,032
Raw and Other Non-Potable From Table 4-1R and 4-2R	3,152	3,615	3,828	3,688	3,964	4,889
Total Water Use	**4,910**	**5,555**	**6,426**	**7,168**	**7,996**	**8,921**

4-3W | Total Water Use

STATUS: Published

NOTES: -

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1W and 4-2W	72,783	96,816	100,908	106,261	112,664	121,443
Recycled Water Demand* From Table 6-4W	-	-	-	-	-	-
Total Water Demand:	**72,783**	**96,816**	**100,908**	**106,261**	**112,664**	**121,443**

4-3W | Total Water Use: Potable

INCLUDE IN UWMP: Yes

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1W and 4-2W	47,632	68,426	69,189	74,542	76,606	85,004
Total Water Demand	**47,632**	**68,426**	**69,189**	**74,542**	**76,606**	**85,004**

4-3W | Total Water Use: Non-Potable

INCLUDE IN UWMP: Yes

	2020	2025	2030	2035	2040	2045
Recycled Water Demand* From Table 6-4W	-	-	-	-	-	-
Other Non-Potable Water From Tables 4-1W and 4-2W	25,151	28,390	31,719	31,719	36,058	36,439
Total Water Demand	**25,151**	**28,390**	**31,719**	**31,719**	**36,058**	**36,439**

4-4R | 12 Month Water Loss Audit Reporting

STATUS: Published

NOTES: -

Report Period Start Date		Volume of Water Loss*
MM	**YYYY**	
1	2016	3,251
1	2017	1,632
1	2018	1,300
1	2019	1,294
1	2020	666

4-4W | 12 Month Water Loss Audit Reporting

STATUS: Published

NOTES:

Report Period Start Date		Volume of Water Loss*
MM	YYYY	

4-5R | Inclusion in Water Use Projections

STATUS: Published

NOTES:

Are Future Water Savings Included in Projections? Refer to Appendix K of UWMP Guidebook.	No
Are Lower Income Residential Demands Included in Projections?	Yes

5-1R | Baselines & Targets Summary

STATUS: Published

NOTES: -

Baseline Period	Start Year	End Year	Average Baseline GPCD*	Confirmed 2020 Target *
10-15 Year	1995	2004	430	352
5 Year	2003	2007	370	352

*All values are in Gallons per Capita per Day (GPCD)

5-2R | 2020 Compliance

STATUS: Published

NOTES: -

Actual 2020 GPCD*	Optional Adjustments to 2020 GPCD					2020 GPCD (Adjusted if applicable)	Supplier Achieved Targeted Reduction in 2020
	Extraordinary Events*	Economic Adjustment*	Weather Normalization*	Total Adjustments*	Adjusted 2020 GPCD*		
235	0	0	0	0	235	235	Yes

Based on a retail population estimate of 94,898, calculated using DWR's population tool.

6-1R | Groundwater Volume Pumped

STATUS: Published

NOTES:

All or part of the groundwater described below is desalinated.						
Groundwater Type	**Location or Basin Name**	**2016**	**2017**	**2018**	**2019**	**2020**
Alluvial Basin	Temecula Valley	398	423	398	370	399
Alluvial Basin	San Bernardino Basin Area	227	227	227	227	227
	Total:	**625**	**650**	**625**	**597**	**626**

6-1W | Groundwater Volume Pumped

STATUS: Published

NOTES: -

All or part of the groundwater described below is desalinated.						
Groundwater Type	**Location or Basin Name**	**2016**	**2017**	**2018**	**2019**	**2020**
Alluvial Basin	Riverside-Arlington	4,880	4,754	5,433	4,449	4,814
	Total:	**4,880**	**4,754**	**5,433**	**4,449**	**4,814**

6-2R | Wastewater Collected within Service Area in 2020

STATUS: Published

NOTES:

The supplier will complete the table.

Percentage of 2020 service area covered by wastewater collection system (optional):	
Percentage of 2020 service area population covered by wastewater collection system (optional):	

Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	**Wastewater Volume Metered or Estimated**	**Wastewater Volume Collected from UWMP Service Area in 2020**	**Name of Wastewater Agency Receiving Collected Wastewater**	**Wastewater Treatment Plant Name**	**Wastewater Treatment Plant Located within UWMP Area**	**WWTP Operation Contracted to a Third Party**
Western Municipal Water District	Metered	1,758	**Western Municipal Water District**	Western Water Recycling Facility	Yes	No
Western Municipal Water District	Estimated	1,000	**Western Riverside County Regional Wastewater Authority**	Western Riverside County Regional Wastewater Treatment Plant	Yes	No
Rancho California Water District	Estimated	900	**Rancho California Water District**	Santa Rosa Water Reclamation Facility	No	Yes
Eastern Municipal Water District	Estimated	245	**Eastern Municipal Water District**	Temecula Valley Regional Water Reclamation Facility	No	Yes
	Total:	**3,903**				

6-3R | Wastewater Treatment & Discharge Within Service Area in 2020

STATUS: Published

NOTES:

The supplier will complete the table.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number	Method of Disposal	Plant Treats Wastewater Generated Outside the Service Area	Treatment Level	2020 Volumes				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
Western Water Recycling Facility	Riverside National Cemetary, General Old Golf Course, various agricultural and landscape customers	re-use: landscaping, agriculture, parks, schools, nurseries		Land disposal	No	Tertiary	1,758	-	1,758	-	
Western Riverside County Regional Water Authority Treatment Plant	Santa Ana River	surface water		River or creek outfall	Yes	Tertiary	850	850	-	-	
						Total:	**2,608**	**850**	**1,758**	**-**	**-**

6-3W | Wastewater Treatment & Discharge Within Service Area in 2020

STATUS: Published

NOTES: -

The supplier will complete the table.											
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number	Method of Disposal	Plant Treats Wastewater Generated Outside the Service Area	Treatment Level	2020 Volumes				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
						Total:	-	-	-	-	-

6-4R | Recycled Water Direct Beneficial Uses Within Service Area

STATUS: Published

NOTES:

The supplier will complete the table.

Name of Supplier Producing (Treating) the Recycled Water:	Western
Name of Supplier Operating the Recycled Water Distribution System:	Western
Supplemental Volume of Water Added in 2020:	
Source of 2020 Supplemental Water:	Western Water Recycling Facility

Beneficial Use Type	Potential Beneficial Uses of Recycled Water	Amount of Potential Uses of Recycled Water	General Description of 2020 Uses	Level of Treatment	2020	2025	2030	2035	2040	2045
Landscape Irrigation (excludes golf courses)		AF	Landscape Nonpotable	Tertiary	879	970	1,299	1,740	2,016	2,016
Other		AF	Agriculture Nonpotable	Tertiary	879	970	1,299	1,740	2,016	2,016
				Total:	**1,758**	**1,940**	**2,598**	**3,480**	**4,032**	**4,032**
Internal Reuse (Not included in Statewide Recycled Water Volume).										

*IPR - Indirect Potable Reuse

6-4W | Current & Projected Retailers Provided Recycled Water within Service Area

STATUS: Published

NOTES: -

Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table.

Name of Receiving Supplier or Direct Use by Wholesaler	Level of Treatment	2020	2025	2030	2035	2040	2045
	Total:	-	-	-	-	-	-

6-5R | 2015 Recycled Water Use Projection Compared to 2020 Actual

STATUS: Published

NOTES: -

The supplier will complete the table.

Use Type	2015 Projection for 2020	2020 Actual Use
Other	1,600	1,758
Total:	**1,600**	**1,758**

6-5W | 2015 Recycled Water Use Projection Compared to 2020 Actual

STATUS:	Published
NOTES:	

Recycled water was not used or distributed by the supplier in 2015, nor projected for use or distribution in 2020. The supplier will not complete the table.

Name of Receiving Supplier or Direct Use by Wholesaler	2015 Projection for 2020	2020 Actual Use
Total:	**-**	**-**

6-6R | Methods to Expand Future Recycled Water Use

STATUS: Published

NOTES: -

The supplier will complete the table below.

Name of Action	Description	Planned Implementation Year	Expected Increase of Recycled Water Use
Projects	Expanded WWRF	2045	2,274
		Total:	**2,274**

Western plans to utilize all effluent from the WWRF within its Riverside service area as flows increase due to growth.

6-7R | Expected Future Water Supply Projects or Programs

STATUS: Published

NOTES:

The supplier will complete the table.

Name of Future Projects or Programs	Joint Project with Other Suppliers	Agency Name	Description	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
Perris North Project	Yes	Eastern Municipal Water District	Groundwater remediation and supply project	2025	All Year Types	500 - 1,500 AFY

6-7W | Expected Future Water Supply Projects or Programs

STATUS: Published

NOTES: -

The supplier will complete the table.

Page Location for Narrative in UWMP:

Name of Future Projects or Programs	Joint Project with Other Suppliers	Agency Name	Description	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
Santa Ana River Conservation and Conjunctive Use Program (SARCCUP)	Yes	Eastern Municipal Water District, Inland Empire Utilities Agency, Orange County Water District, San Bernardino Valley Municipal Water District	Store imported water during wet years for use in dry years	2023	Single-Dry and Multi-Dry Year	11,417

6-8R | Actual Water Supplies

STATUS: Published

NOTES: -

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan	12,004	Drinking Water	
Purchased or Imported Water	Metropolitan	1,819	Other Non-Potable Water	
Groundwater (not desalinated)	Western Water (wheeled through RPU)	227	Drinking Water	
Purchased or Imported Water	Leased Meeks and Daley	4,208	Drinking Water	
Purchased or Imported Water	RPU Surplus	3,163	Drinking Water	
Groundwater (not desalinated)	Murrieta Wells	399	Drinking Water	
Purchased or Imported Water	Eastern	1,834	Drinking Water	
Purchased or Imported Water	EVMWD	944	Other Non-Potable Water	
Purchased or Imported Water	RPU	388	Other Non-Potable Water	
Recycled Water	WWRF	1,758	Recycled Water	
	Total:	**26,744**		**-**

Optional 6-8R | Actual Water Supplies: Potable

INCLUDE IN UWMP: Yes

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan	12,004	Drinking Water	
Groundwater (not desalinated)	Western Water (wheeled through RPU)	227	Drinking Water	
Purchased or Imported Water	Leased Meeks and Daley	4,208	Drinking Water	
Purchased or Imported Water	RPU Surplus	3,163	Drinking Water	
Groundwater (not desalinated)	Murrieta Wells	399	Drinking Water	
Purchased or Imported Water	Eastern	1,834	Drinking Water	
	Total:	**21,835**		**-**

Optional 6-8R | Actual Water Supplies: Non-Potable

INCLUDE IN UWMP:	Yes

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	EVMWD	944	Other Non-Potable Water	
Purchased or Imported Water	RPU	388	Other Non-Potable Water	
Recycled Water	WWRF	1,758	Recycled Water	
Purchased or Imported Water	Metropolitan	1,819	Other Non-Potable Water	
	Total:	**4,909**		**-**

6-8W | Actual Water Supplies

STATUS: Published

NOTES:

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan Water District	42,817	Drinking Water	
Purchased or Imported Water	Metropolitan Water District	25,151	Other Non-Potable Water	
Desalinated Water - Groundwater	Arlington Desalter	4,814	Drinking Water	
	Total:	**72,782**		**-**

Optional 6-8W | Actual Water Supplies: Potable

INCLUDE IN UWMP: Yes

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan Water District	42,817	Drinking Water	
Desalinated Water - Groundwater	Arlington Desalter	4,814	Drinking Water	
	Total:	**47,631**		**-**

Optional 6-8W | Actual Water Supplies: Non-Potable

INCLUDE IN UWMP:	Yes

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan Water District	25,151	Other Non-Potable Water	
	Total:	**25,151**		**-**

6-8DS | Source Water Desalination

STATUS: Published

NOTES:

The supplier will complete the table below.

Plant Name or Well ID	Plant Capacity	Intake Type	Source Water Type	Influent TDS	Brine Discharge	Volume of Water Desalinated in AFY				
						2016	2017	2018	2019	2020
Chino Desalter (1)	28000	Vertical Well	Groundwater		Brine Line	3,534	3,534	3,534	3,534	3,534
Arlington Desalter (2)		Vertical Well	Groundwater		Brine Line	4,880	4,754	5,433	449	4,814
					Total:	**8,414**	**8,288**	**8,967**	**3,983**	**8,348**

Notes:
(1) Chino Desalter is a Western Retail supply and is described in Section 9.2 of the 2020 UWMP. Western Retail does not currently use this supply and leases it to another agency.
(2) Arlington Desalter is a Western Wholesale supply and is described in Section 4.2 of the 2020 UWMP.

6-9R | Projected Water Supplies

STATUS: Published

NOTES:

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan	14,680		19,306		22,293		26,181		31,928	
Desalinated Water - Groundwater	Chino Desalter	3,534		3,534		3,534		3,534		3,534	
Groundwater (not desalinated)	Temecula Valley	1,452		1,452		1,452		1,452		1,452	
Purchased or Imported Water	Leased Meeks and Daley	4,680		4,680		4,680		4,680		4,680	
Groundwater (not desalinated)	Western Owned Meeks and Daley	227		227		227		227		227	
Purchased or Imported Water	RPU Surplus	2,000		-		-		-		-	
Purchased or Imported Water	Eastern North Perris Agreement	500		1,000		1,500		1,500		-	
Purchased or Imported Water	Metropolitan - Non-Potable	1,671		1,300		1,300		1,300		1,681	
Groundwater (not desalinated)	Riverside Arlington Groundwater	2,500		3,171		3,104		3,465		4,100	
Recycled Water	WWRF	1,940		2,598		3,481		4,032		4,032	
Recycled Water	WRCWRA	920		997		1,079		1,169		1,266	
	Total:	**34,104**	**-**	**38,265**	**-**	**42,650**	**-**	**47,540**	**-**	**52,900**	**-**

Optional 6-9R | Projected Water Supplies: Potable

INCLUDE IN UWMP: Yes

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan	14,680		19,306		22,293		26,181		31,928	
Desalinated Water - Groundwater	Chino Desalter	3,534		3,534		3,534		3,534		3,534	
Groundwater (not desalinated)	Temecula Valley	1,452		1,452		1,452		1,452		1,452	
Purchased or Imported Water	Leased Meeks and Daley	4,680		4,680		4,680		4,680		4,680	
Purchased or Imported Water	RPU Surplus	2,000		-		-		-		-	
Purchased or Imported Water	Eastern North Perris	500		1,000		1,500		1,500		-	
Groundwater (not desalinated)	Western Owned Meeks and Daley	227		227		227		227		227	
	Total:	**27,073**	**-**	**30,199**	**-**	**33,686**	**-**	**37,574**	**-**	**41,821**	**-**

Optional 6-9R | Projected Water Supplies: Non-Potable

INCLUDE IN UWMP: Yes

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan - Non-Potable	1,671		1,300		1,300		1,300		1,681	
Groundwater (not desalinated)	Riverside Arlington Groundwater	2,500		3,171		3,104		3,465		4,100	
Recycled Water	WWRF	1,940		2,598		3,481		4,032		4,032	
Recycled Water	WRCWRA	920		997		1,079		1,169		1,266	
Total:		**7,031**	**-**	**8,066**	**-**	**8,964**	**-**	**9,966**	**-**	**11,079**	**-**

6-9W | Projected Water Supplies

STATUS: Published

NOTES:

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Desalinated Water - Groundwater	Arlignton Desalter	5,000		5,000		5,000		5,000		5,000	
Purchased or Imported Water	Metropolitan	91,816		95,908		101,261		107,664		116,443	
Total:		**96,816**	**-**	**100,908**	**-**	**106,261**	**-**	**112,664**	**-**	**121,443**	**-**

Optional 6-9W | Projected Water Supplies: Potable

INCLUDE IN UWMP: Yes

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Desalinated Water - Groundwater	Arlington Desalter	5,000		5,000		5,000		5,000		5,000	
Purchased or Imported Water	Metropolitan	63,426		64,189		69,542		71,606		80,004	
Total:		**68,426**	**-**	**69,189**	**-**	**74,542**	**-**	**76,606**	**-**	**85,004**	**-**

Optional 6-9W | Projected Water Supplies: Non-Potable

INCLUDE IN UWMP: Yes

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Purchased or Imported Water	Metropolitan	28,390		31,719		31,719		36,058		36,439	
Total:		**28,390**	**-**	**31,719**	**-**	**31,719**	**-**	**36,058**	**-**	**36,439**	**-**

7-1R | Basis of Water Year Data (Reliability Assessment)

STATUS: Published

NOTES:

Quantification of available supplies is provided in this table as either volume only, percent only, or both.

Year Type	Base Year	Available Supply if Year Type Repeats	
		Volume Available	Percent of Average Supply
Average Year	1922		
Single-Dry Year	1977		100%
Consecutive Dry Years 1st Year	1988		100%
Consecutive Dry Years 2nd Year	1989		100%
Consecutive Dry Years 3rd Year	1990		100%
Consecutive Dry Years 4th Year	1991		100%
Consecutive Dry Years 5th Year	1992		100%

7-1W | Basis of Water Year Data (Reliability Assessment)

STATUS: Published

NOTES: -

Quantification of available supplies is provided in this table as either volume only, percent only, or both.

Year Type	Base Year	Available Supply if Year Type Repeats	
		Volume Available	Percent of Average Supply
Average Year	1922		
Single-Dry Year	1977		99%
Consecutive Dry Years 1st Year	1988		100%
Consecutive Dry Years 2nd Year	1989		100%
Consecutive Dry Years 3rd Year	1990		100%
Consecutive Dry Years 4th Year	1991		100%
Consecutive Dry Years 5th Year	1992		100%

7-2R | Normal Year Supply and Demand Comparison

STATUS: Published

NOTES:

	2025	2030	2035	2040	2045
Supply Totals From Table 6-9R	34,104	38,265	42,650	47,540	52,900
Demand Totals From Table 4-3R	30,167	33,879	37,792	42,155	46,940
Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**

Optional 7-2R | Normal Year Supply and Demand Comparison: Potable

INCLUDE IN UWMP: Yes

	2025	2030	2035	2040	2045
Supply Totals From Optional Table 6-9R	27,073	30,199	33,686	37,574	41,821
Demand Totals From Optional Table 4-3R	24,612	27,453	30,624	34,159	38,019
Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**

Optional 7-2R | Normal Year Supply and Demand Comparison: Non-Potable

INCLUDE IN UWMP: Yes

	2025	2030	2035	2040	2045
Supply Totals From Optional Table 6-9R	7,031	8,066	8,964	9,966	11,079
Demand Totals From Optional Table 4-3R	5,555	6,426	7,168	7,996	8,921
Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**

7-2W | Normal Year Supply and Demand Comparison

STATUS: Published

NOTES:

	2025	2030	2035	2040	2045
Supply Totals From Table 6-9W	96,816	100,908	106,261	112,664	121,443
Demand Totals From Table 4-3W	96,816	100,908	106,261	112,664	121,443
Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-2W | Normal Year Supply and Demand Comparison: Potable

INCLUDE IN UWMP: Yes

	2025	2030	2035	2040	2045
Supply Totals From Optional Table 6-9W	68,426	69,189	74,542	76,606	85,004
Demand Totals From Optional Table 4-3W	68,426	69,189	74,542	76,606	85,004
Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-2W | Normal Year Supply and Demand Comparison: Non-Potable

INCLUDE IN UWMP: Yes

	2025	2030	2035	2040	2045
Supply Totals From Optional Table 6-9W	28,390	31,719	31,719	36,058	36,439
Demand Totals From Optional Table 4-3W	28,390	31,719	31,719	36,058	36,439
Difference:	**0**	**0**	**0**	**0**	**0**

7-3R | Single Dry Year Supply & Demand Comparison

STATUS: Published

NOTES: -

	2025	2030	2035	2040	2045
Supply Totals	34,104	38,265	42,650	47,540	52,900
Demand Totals	30,167	33,879	37,792	42,155	46,940
Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**

Optional 7-3R | Single Dry Year Supply & Demand Comparison: Potable

INCLUDE IN UWMP: No

	2025	2030	2035	2040	2045
Supply Totals	27,073	30,199	33,686	37,574	41,821
Demand Totals	24,612	27,453	30,624	34,159	38,019
Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**

Optional 7-3R | Single Dry Year Supply & Demand Comparison: Non-Potable

INCLUDE IN UWMP: No

	2025	2030	2035	2040	2045
Supply Totals	7,031	8,066	8,964	9,966	11,079
Demand Totals	5,555	6,426	7,168	7,996	8,921
Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**

7-3W | Single Dry Year Supply & Demand Comparison

STATUS: Published

NOTES: -

	2025	2030	2035	2040	2045
Supply Totals	96,816	100,908	106,261	112,664	121,443
Demand Totals	96,816	100,908	106,261	112,664	121,443
Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-3W | Single Dry Year Supply & Demand Comparison: Potable

INCLUDE IN UWMP: Yes

	2025	2030	2035	2040	2045
Supply Totals	68,426	69,189	74,542	76,606	85,004
Demand Totals	68,426	69,189	74,542	76,606	85,004
Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-3W | Single Dry Year Supply & Demand Comparison: Non-Potable

INCLUDE IN UWMP: Yes

	2025	2030	2035	2040	2045
Supply Totals	28,390	31,719	31,719	36,058	36,439
Demand Totals	28,390	31,719	31,719	36,058	36,439
Difference:	**0**	**0**	**0**	**0**	**0**

7-4R | Multiple Dry Years Supply & Demand Comparison

STATUS: Published

NOTES: -

		2025	2030	2035	2040	2045
First Year	**Supply Totals**	34,104	38,265	42,650	47,540	52,900
	Demand Totals	30,167	33,879	37,792	42,155	46,940
	Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**
Second Year	**Supply Totals**	34,104	38,265	42,650	47,540	52,900
	Demand Totals	30,167	33,879	37,792	42,155	46,940
	Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**
Third Year	**Supply Totals**	34,104	38,265	42,650	47,540	52,900
	Demand Totals	30,167	33,879	37,792	42,155	46,940
	Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**
Fourth Year	**Supply Totals**	34,104	38,265	42,650	47,540	52,900
	Demand Totals	30,167	33,879	37,792	42,155	46,940
	Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**
Fifth Year	**Supply Totals**	34,104	38,265	42,650	47,540	52,900
	Demand Totals	30,167	33,879	37,792	42,155	46,940
	Difference:	**3,937**	**4,386**	**4,858**	**5,385**	**5,960**
Sixth Year	**Supply Totals**					
	Demand Totals					
	Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-4R | Multiple Dry Years Supply & Demand Comparison: Potable

		2025	2030	2035	2040	2045
First Year	**Supply Totals**	27,073	30,199	33,686	37,574	41,821
	Demand Totals	24,612	27,453	30,624	34,159	38,019
	Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**
Second Year	**Supply Totals**	27,073	30,199	33,686	37,574	41,821
	Demand Totals	24,612	27,453	30,624	34,159	38,019
	Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**
Third Year	**Supply Totals**	27,073	30,199	33,686	37,574	41,821
	Demand Totals	24,612	27,453	30,624	34,159	38,019
	Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**
Fourth Year	**Supply Totals**	27,073	30,199	33,686	37,574	41,821
	Demand Totals	24,612	27,453	30,624	34,159	38,019
	Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**
Fifth Year	**Supply Totals**	27,073	30,199	33,686	37,574	41,821
	Demand Totals	24,612	27,453	30,624	34,159	38,019
	Difference:	**2,461**	**2,746**	**3,062**	**3,415**	**3,802**
Sixth Year	**Supply Totals**					
	Demand Totals					
	Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-4R | Multiple Dry Years Supply & Demand Comparison: Non-Potable

		2025	2030	2035	2040	2045
First Year	**Supply Totals**	7,031	8,066	8,964	9,966	11,079
	Demand Totals	5,555	6,426	7,168	7,996	8,921
	Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**
Second Year	**Supply Totals**	7,031	8,066	8,964	9,966	11,079
	Demand Totals	5,555	6,426	7,168	7,996	8,921
	Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**
Third Year	**Supply Totals**	7,031	8,066	8,964	9,966	11,079
	Demand Totals	5,555	6,426	7,168	7,996	8,921
	Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**
Fourth Year	**Supply Totals**	7,031	8,066	8,964	9,966	11,079
	Demand Totals	5,555	6,426	7,168	7,996	8,921
	Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**
Fifth Year	**Supply Totals**	7,031	8,066	8,964	9,966	11,079
	Demand Totals	5,555	6,426	7,168	7,996	8,921
	Difference:	**1,476**	**1,640**	**1,796**	**1,970**	**2,158**
Sixth Year	**Supply Totals**					
	Demand Totals					
	Difference:	**0**	**0**	**0**	**0**	**0**

7-4W | Multiple Dry Years Supply & Demand Comparison

STATUS: Published

NOTES: -

		2025	2030	2035	2040	2045
First Year	**Supply Totals**	96,816	100,908	106,261	112,664	121,443
	Demand Totals	96,816	100,908	106,261	112,664	121,443
	Difference:	**0**	**0**	**0**	**0**	**0**
Second Year	**Supply Totals**	96,816	100,908	106,261	112,664	121,443
	Demand Totals	96,816	100,908	106,261	112,664	121,443
	Difference:	**0**	**0**	**0**	**0**	**0**
Third Year	**Supply Totals**	96,816	100,908	106,261	112,664	121,443
	Demand Totals	96,816	100,908	106,261	112,664	121,443
	Difference:	**0**	**0**	**0**	**0**	**0**
Fourth Year	**Supply Totals**	96,816	100,908	106,261	112,664	121,443
	Demand Totals	96,816	100,908	106,261	112,664	121,443
	Difference:	**0**	**0**	**0**	**0**	**0**
Fifth Year	**Supply Totals**	96,816	100,908	106,261	112,664	121,443
	Demand Totals	96,816	100,908	106,261	112,664	121,443
	Difference:	**0**	**0**	**0**	**0**	**0**
Sixth Year	**Supply Totals**					
	Demand Totals					
	Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-4W | Multiple Dry Years Supply & Demand Comparison: Potable

		2025	2030	2035	2040	2045
First Year	**Supply Totals**	68,426	69,189	74,542	76,606	85,004
	Demand Totals	68,426	69,189	74,542	76,606	85,004
	Difference:	**0**	**0**	**0**	**0**	**0**
Second Year	**Supply Totals**	68,426	69,189	74,542	76,606	85,004
	Demand Totals	68,426	69,189	74,542	76,606	85,004
	Difference:	**0**	**0**	**0**	**0**	**0**
Third Year	**Supply Totals**	68,426	69,189	74,542	76,606	85,004
	Demand Totals	68,426	69,189	74,542	76,606	85,004
	Difference:	**0**	**0**	**0**	**0**	**0**
Fourth Year	**Supply Totals**	68,426	69,189	74,542	76,606	85,004
	Demand Totals	68,426	69,189	74,542	76,606	85,004
	Difference:	**0**	**0**	**0**	**0**	**0**
Fifth Year	**Supply Totals**	68,426	69,189	74,542	76,606	85,004
	Demand Totals	68,426	69,189	74,542	76,606	85,004
	Difference:	**0**	**0**	**0**	**0**	**0**
Sixth Year	**Supply Totals**					
	Demand Totals					
	Difference:	**0**	**0**	**0**	**0**	**0**

Optional 7-4W | Multiple Dry Years Supply & Demand Comparison: Non-Potable

		2025	2030	2035	2040	2045
First Year	**Supply Totals**	28,390	31,719	31,719	36,058	36,439
	Demand Totals	28,390	31,719	31,719	36,058	36,439
	Difference:	**0**	**0**	**0**	**0**	**0**
Second Year	**Supply Totals**	28,390	31,719	31,719	36,058	36,439
	Demand Totals	28,390	31,719	31,719	36,058	36,439
	Difference:	**0**	**0**	**0**	**0**	**0**
Third Year	**Supply Totals**	28,390	31,719	31,719	36,058	36,439
	Demand Totals	28,390	31,719	31,719	36,058	36,439
	Difference:	**0**	**0**	**0**	**0**	**0**
Fourth Year	**Supply Totals**	28,390	31,719	31,719	36,058	36,439
	Demand Totals	28,390	31,719	31,719	36,058	36,439
	Difference:	**0**	**0**	**0**	**0**	**0**
Fifth Year	**Supply Totals**	28,390	31,719	31,719	36,058	36,439
	Demand Totals	28,390	31,719	31,719	36,058	36,439
	Difference:	**0**	**0**	**0**	**0**	**0**
Sixth Year	**Supply Totals**					
	Demand Totals					
	Difference:	**0**	**0**	**0**	**0**	**0**

7-5 | Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)

STATUS: Published

NOTES:

2021	**Gross Water Use**	27,394
	Total Supplies	33,446
	Surplus/Shortfall without WSCP Action	**6,052**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**6,052**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2022	**Gross Water Use**	28,062
	Total Supplies	31,677
	Surplus/Shortfall without WSCP Action	**3,615**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**3,615**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2023	**Gross Water Use**	28,747
	Total Supplies	31,913
	Surplus/Shortfall without WSCP Action	**3,166**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**3,166**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2024	**Gross Water Use**	29,449
	Total Supplies	32,153
	Surplus/Shortfall without WSCP Action	**2,704**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,704**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2025	**Gross Water Use**	30,167
	Total Supplies	32,896
	Surplus/Shortfall without WSCP Action	**2,729**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,729**
	Resulting Percent Use Reduction from WSCP Action	**0%**

Optional 7-5 | Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b): Potable

INCLUDE IN UWMP:	Yes

2021	**Gross Water Use**	22,361
	Total Supplies	26,193
	Surplus/Shortfall without WSCP Action	**3,832**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**3,832**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2022	**Gross Water Use**	22,904
	Total Supplies	24,299
	Surplus/Shortfall without WSCP Action	**1,395**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**1,395**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2023	**Gross Water Use**	23,460
	Total Supplies	24,406
	Surplus/Shortfall without WSCP Action	**946**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**946**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2024	**Gross Water Use**	24,029
	Total Supplies	24,513
	Surplus/Shortfall without WSCP Action	**484**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**484**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2025	**Gross Water Use**	24,612
	Total Supplies	25,121
	Surplus/Shortfall without WSCP Action	**509**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**509**
	Resulting Percent Use Reduction from WSCP Action	**0%**

Optional 7-5 | Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b): Non-Potable

INCLUDE IN UWMP:	Yes

2021	**Gross Water Use**	5,033
	Total Supplies	7,253
	Surplus/Shortfall without WSCP Action	**2,220**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,220**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2022	**Gross Water Use**	5,158
	Total Supplies	7,378
	Surplus/Shortfall without WSCP Action	**2,220**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,220**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2023	**Gross Water Use**	5,287
	Total Supplies	7,507
	Surplus/Shortfall without WSCP Action	**2,220**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,220**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2024	**Gross Water Use**	5,420
	Total Supplies	7,640
	Surplus/Shortfall without WSCP Action	**2,220**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,220**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2025	**Gross Water Use**	5,555
	Total Supplies	7,775
	Surplus/Shortfall without WSCP Action	**2,220**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**2,220**
	Resulting Percent Use Reduction from WSCP Action	**0%**

7-5 | Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)

STATUS: Published

NOTES:

2021	**Gross Water Use**	76,446
	Total Supplies	76,446
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2022	**Gross Water Use**	79,002
	Total Supplies	79,002
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2023	**Gross Water Use**	81,549
	Total Supplies	81,549
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2024	**Gross Water Use**	83,736
	Total Supplies	83,736
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2025	**Gross Water Use**	97,560
	Total Supplies	97,560
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**

Optional 7-5 | Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b): Potable

INCLUDE IN UWMP:	Yes

2021	**Gross Water Use**	52,015
	Total Supplies	52,015
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2022	**Gross Water Use**	53,401
	Total Supplies	53,401
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2023	**Gross Water Use**	54,744
	Total Supplies	54,744
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2024	**Gross Water Use**	55,782
	Total Supplies	55,782
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2025	**Gross Water Use**	68,426
	Total Supplies	68,426
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**

Optional 7-5 | Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b): Non-Potable

INCLUDE IN UWMP:	Yes

2021	**Gross Water Use**	24,431
	Total Supplies	24,431
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2022	**Gross Water Use**	25,601
	Total Supplies	25,601
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2023	**Gross Water Use**	26,775
	Total Supplies	26,775
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2024	**Gross Water Use**	27,954
	Total Supplies	27,954
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**
2025	**Gross Water Use**	29,134
	Total Supplies	29,134
	Surplus/Shortfall without WSCP Action	**0**
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	**0**
	Resulting Percent Use Reduction from WSCP Action	**0%**

8-1R | Water Shortage Contingency Plan Levels

STATUS: Published

NOTES:

Shortage Level	Percent Shortage Range[1] (Numerical Value as a Percent)	Water Shortage Condition
1	At all times	Water Supply Watch
2	Up to 4%	Water Supply Alert
3	Up to 15%	Targeting Waste Reduction
4	Up to 50%	Targeting Outdoor Reductions
5	Greater than 50%	Mandatory Targeted Indoor/Outdoor Reductions - Catastrophic Failure or "Immediate Emergency"

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

8-1W | Water Shortage Contingency Plan Levels

STATUS: Published

NOTES:

Shortage Level	Percent Shortage Range[1] (Numerical Value as a Percent)	Water Shortage Condition
1	Up to 10%	
2	Up to 20%	
3	Up to 30%	
4	Up to 40%	
5	Up to 50%	
6	Greater than 50%	

8-2R | Demand Reduction Actions

STATUS: Published

NOTES:

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement
All	Landscape - Other landscape restriction or prohibition	480	Adjust automatic irrigation timers for weather patterns and landscape requirements; Texas Living Waters	Yes
All	Other - Require automatic shut of hoses			Yes
All	Landscape - Limit landscape irrigation to specific times	4,800	Texas Living Waters	Yes
All	Other water feature or swimming pool restriction		Features and pools shall be equipped with re-circulating pumps.	Yes
All	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	6,000	EPA Cases in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs	Yes

All	Landscape - Restrict or prohibit runoff from landscape irrigation			Yes
3 and Up	Implement or Modify Drought Rate Structure or Surcharge		Eliminate Adjustments to outdoor water budgets; Eliminate Tier in rates	Yes
4 and Up	Other		potable service connections, temporary meters, or permanent meters	No
4 and Up	Landscape - Other landscape restriction or prohibition		No new landscapes unless irrigated with recycled water.	No
5 and Up	Landscape - Prohibit all landscape irrigation			Yes

8-2W | Demand Reduction Actions

STATUS: Published

NOTES: -

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement
All	Expand Public Information Campaign		coordinate with retail agencies	No

8-3R | Supply Augmentation & Other Actions

STATUS: Published

NOTES: -

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?	Additional Explanation or Reference
All	Other purchases		Depends on supply availability from neighboring agencies or Western Wholesale

8-3W | Supply Augmentation & Other Actions

STATUS: Published

NOTES: -

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?	Additional Explanation or Reference
All	Stored emergency supply		Supply augmentation actions consisting of stored water and as-needed flexible supplies are expected to address between 0 to 100 percent of anticipated shortages for any shortage level, depending on availability of those supplies; in lesser WSCP shortage levels, it is more likely that shortages can be completely addressed through supply augmentation.

10-1R | Notification to Cities & Counties

STATUS: Published

NOTES: -

City	60 Day Notice	Notice of Public Hearing	Other
City of Corona	Yes	Yes	
City of Norco	Yes	Yes	
City of Riverside	Yes	Yes	
City of Lake Elsinore	Yes	Yes	
City of Murrieta	Yes	Yes	
City of Temecula	Yes	Yes	
City of Eastvale	Yes	Yes	
City of Jurupa Valley	Yes	Yes	
County	**60 Day Notice**	**Notice of Public Hearing**	**Other**
Home Gardens County Water	Yes	Yes	
County of Riverside	Yes	Yes	
Other	**60 Day Notice**	**Notice of Public Hearing**	**Other**
Riverside Public Utilities	Yes	Yes	
Eagle Valley Mututal Water Di	Yes	Yes	
Rubidoux Community Service	Yes	Yes	
Box Springs Mutual Water Co	Yes	Yes	
Temescal Valley Water Distric	Yes	Yes	
Rancho California Water Distr	Yes	Yes	
Elsinore Valley Municipal Wat	Yes	Yes	
Riverside Highland Water Cor	Yes	Yes	
Home Gardens Sanitary Distri	Yes	Yes	
Jurupa Community Services I	Yes	Yes	
Metropolitan Water District of	Yes	Yes	

10-1W | Notification to Cities & Counties

STATUS: In Progress

NOTES: -

Supplier has notified more than 10 cities or counties in accordance with Water Code Sections 10621 (b) and 10642. Completion of the table is not required. Provide a separate list of the cities and counties that were notified.

Page Location for List in UWMP: Appendix

City	60 Day Notice	Notice of Public Hearing	Other
City of Corona	Yes	Yes	
City of Norco	Yes	Yes	
City of Riverside	Yes	Yes	
City of Lake Elsinore	Yes	Yes	
City of Murrieta	Yes	Yes	
City of Temecula	Yes	Yes	
City of Eastvale	Yes	Yes	
City of Jurupa Valley	Yes	Yes	

County	60 Day Notice	Notice of Public Hearing	Other
Home Gardens County Water	Yes	Yes	
County of Riverside	Yes	Yes	

Other	60 Day Notice	Notice of Public Hearing	Other
Riverside Public Utilities	Yes	Yes	
Eagle Valley Mututal Water Di	Yes	Yes	
Rubidoux Community Service	Yes	Yes	
Box Springs Mutual Water Co	Yes	Yes	
Temescal Valley Water Distric	Yes	Yes	
Rancho California Water Distr	Yes	Yes	
Elsinore Valley Municipal Wat	Yes	Yes	
Riverside Highland Water Cor	Yes	Yes	
Home Gardens Sanitary Distri	Yes	Yes	
Jurupa Community Services I	Yes	Yes	
Metropolitan Water District of	Yes	Yes	

S

Appendix S CEQA Completion

STATE OF CALIFORNIA - THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

ENVIRONMENTAL FILING FEE CASH RECEIPT

Receipt #: 21-292420

State Clearinghouse # (if applicable):

Lead Agency: WESTERN MUNICIPAL WATER DISTRICT *Date:* 06/17/2021

County Agency of Filing: RIVERSIDE *Document No:* E-202100598

Project Title: 2020 URBAN WATER MANAGEMENT PLAN, WATER SHORTAGE CONTINGENCY PLAN, APPENDIX

Project Applicant Name: WESTERN MUNICIPAL WATER DISTRICT *Phone Number:* (951) 571-7260

Project Applicant Address: 14205 MERIDIAN PARKWAY, RIVERSIDE, CA 92518

Project Applicant: LOCAL PUBLIC AGENCY

CHECK APPLICABLE FEES:

☐ *Environmental Impact Report*	
☐ *Negative Declaration*	
☐ *Application Fee Water Diversion (State Water Resources Control Board Only)*	
☐ *Project Subject to Certified Regulatory Programs*	
☐ *County Administration Fee*	$0.00
☐ *Project that is exempt from fees (DFG No Effect Determination (Form Attached))*	
☒ *Project that is exempt from fees (Notice of Exemption)*	
Total Received	$50.00

Signature and title of person receiving payment: Deputy

Notes: 2020 URBAN WATER MANAGEMENT PLAN, WATER SHORTAGE CONTINGENCY PLAN, APPENDIX Q: DEMONSTRATION OF REDUCED DELTA RELIANCE IN THE 2015 URBAN WATER SERVICE MANAGEMENT PLAN

NOTICE OF EXEMPTION

TO:	☐	Clerk of the Board of Supervisors or County Clerk County of: Riverside	FROM:	Western Municipal Water District 14205 Meridian Parkway Riverside, CA 92518

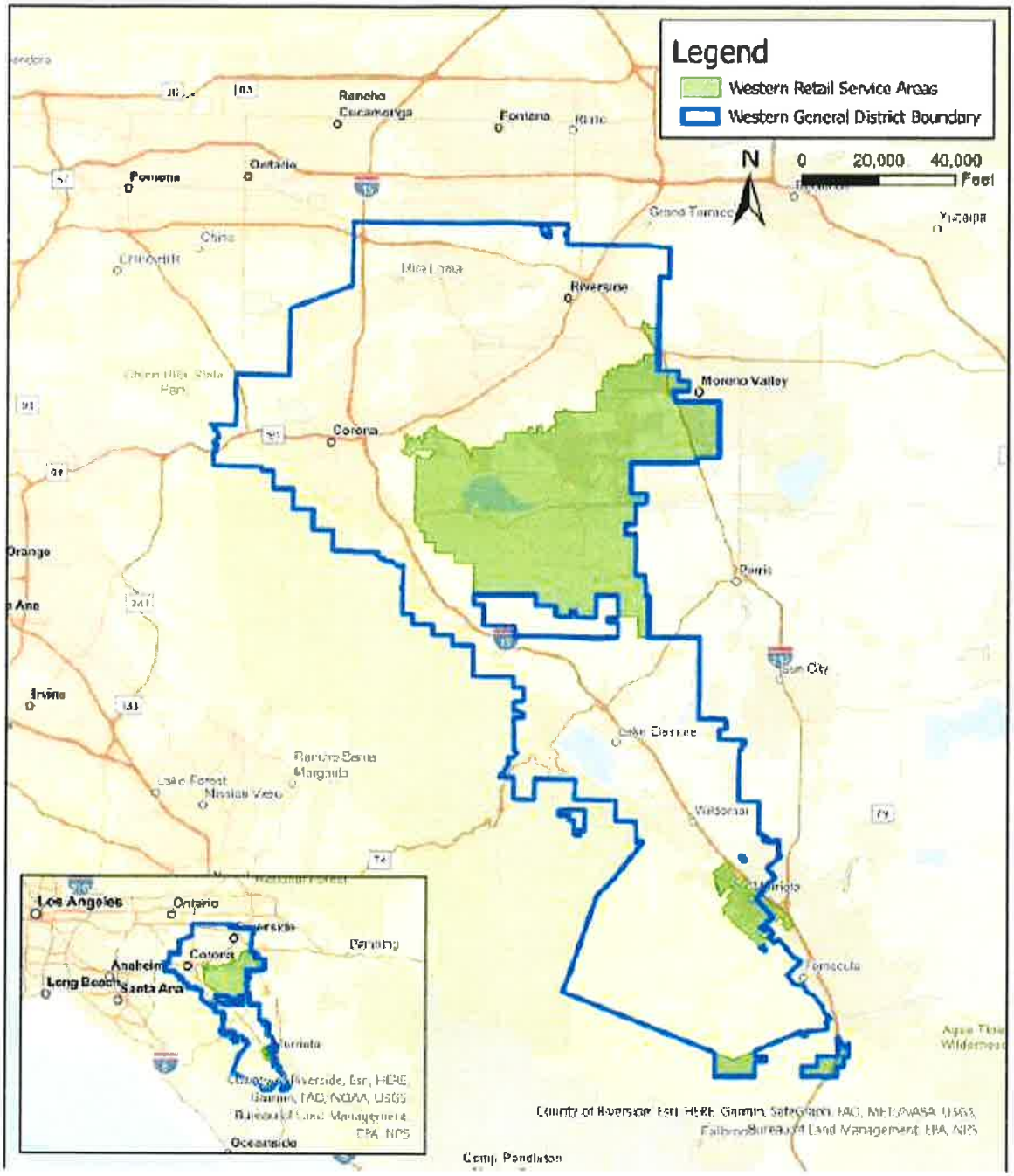
1.	Project Title:		2020 Urban Water Management Plan, Water Shortage Contingency Plan, Appendix Q: Demonstration of Reduced Delta Reliance in the 2015 Urban Water Management Plan
2.	Project Location – Identify street address and cross streets or attach a map showing project site (preferably a USGS 15' or 7 1/2' topographical map identified by quadrangle name):		Within Western Municipal Water District's service area. This is a planning document for the overall District region. Figure 1-1 shows the map of Western's Service Area.
3.	(a)	Project Location – City:	Riverside
	(b)	Project Location – County:	Riverside
4.	Description of nature, purpose, and beneficiaries of Project:		In 1983, the State of California Legislature (Legislature) enacted the Urban Water Management Planning Act (UWMP Act). The law required an urban water supplier, providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 AF annually, to adopt an Urban Water Management Plan every five years demonstrating water supply reliability under normal as well as drought conditions. The UWMP Act applies to wholesale and retail suppliers. The current UWMP Act requirements are found in Sections 10610-10656 and 10608 of the California Water Code. The purpose of the UWMP and corresponding plans are for water suppliers to evaluate their long-term resource planning and establish management measures to ensure adequate water supplies are available to meet existing and future demands. The UWMP provides a framework to help water suppliers maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions or other water supply interruptions.
5.	Name of Public Agency approving project:		Western Municipal Water District
6.	Name of Person or Agency carrying out project:		Western Municipal Water District
7.	Exempt status: (check one)		
	(a)	☐ Ministerial project.	
	(b)	☐ Not a project.	
	(c)	☐ Emergency Project.	
	(d)	☐ Categorical Exemption. State type and class number:	
	(e)	☐ Declared Emergency.	

F I L E D / P O S T E D
County of Riverside
Peter Aldana
Assessor-County Clerk-Recorder
E-202100598
06/17/2021 12:27 PM Fee: $ 50.00
Page 1 of 2
Removed: By: Deputy

	(f) ☒	Statutory Exemption. State Code section number:	California Water Code §10652
	(g) ☐	Other. Explanation:	
8.	Reason why project was exempt:		The Project is statutorily exempt from CEQA pursuant to California Water Code §10652 because CEQA does not apply to the preparation and adoption of an (urban water management plan/water shortage contingency plan) or to the implementation of the actions taken pursuant to such plans. Because this Project comprises of Lead Agency's urban water management plan/water shortage contingency plan and involves its implementation, no CEQA review is required.
9.	Contact Person:		Melissa Matlock
	Telephone:		951.571.7260
10.	Attach Preliminary Exemption Assessment (Form "A") before filing.		

Date Received for Filing: _____	_____ Signature (Lead Agency Representative)
(Clerk Stamp Here)	Water Resources Specialist II Title

Figure 1-1. Western Wholesale and Western Retail Service Area Boundaries



PRELIMINARY EXEMPTION ASSESSMENT

(Certificate of Determination
When Attached to Notice of Exemption)

11.	Name or description of project:	2020 Urban Water Management Plan, Water Shortage Contingency Plan, Appendix Q: Demonstration of Reduced Delta Reliance in the 2015 Urban Water Management Plan
12.	Project Location – Identify street address and cross streets or attach a map showing project site (preferably a USGS 15' or 7 1/2' topographical map identified by quadrangle name):	Within Western Municipal Water District's service area. This is a planning document for the overall District region. Figure 1-1 shows the map of Western's Service Area.
13.	Entity or person undertaking project:	A. Western Municipal Water District
		B. Other (Private)
		(1) Name
		(2) Address

14. Staff Determination:

The Lead Agency's Staff, having undertaken and completed a preliminary review of this project in accordance with the Lead Agency's "Local Guidelines for Implementing the California Environmental Quality Act (CEQA)" has concluded that this project does not require further environmental assessment because:

(a)	☐	The proposed action does not constitute a project under CEQA.	
(b)	☐	The project is a Ministerial Project.	
(c)	☐	The project is an Emergency Project.	
(d)	☐	The project constitutes a feasibility or planning study.	
(e)	☐	The project is categorically exempt.	
		Applicable Exemption Class:	
(f)	☒	The project is statutorily exempt.	
		Applicable Exemption:	California Water Code §1652
(g)	☐	The project is otherwise exempt on the following basis:	
(h)	☐	The project involves another public agency which constitutes the Lead Agency.	
		Name of Lead Agency:	

Date: 6/17/2021

Staff: _____

Melissa Matlock
Water Resources Specialist II

T

Appendix T Errata

2020 UWMP Errata Sheet

Western Municipal Water District (Western)

2020 Urban Water Management Plan (UWMP)

This errata sheet logs minor content errors that were identified after final adoption of Western's 2020 UWMP. The Department of Water Resources (DWR) has determined that these corrections are minor and do not require the UWMP to be amended.

☒ These data errors have been corrected in DWR's UWMP database at https://wuedata.water.ca.gov/secure/

☒ This errata sheet has been filed with the UWMP in all locations where it is made publicly available, including the California State Library. Errata may be submitted to State Library via email to cslgps@library.ca.gov

Name and agency of the person filing the errata sheet:

Melissa Matlock, Ph.D., P.M.P

Western Municipal Water District

Correction No.	Description of Correction	Location	Rational	Date Error Corrected
1	In Table 6-6R, the value for "Expected Increase of Recycled Water Use" was changed from 1,400 AF to 2,274 AF. Planned Implementation Year of 2045 was added.	UWMP document Appendix R	The "Expected Increase of Recycled Water Use" for Western Retail is 2,274 AF by 2045 and reflects the 2045 projected recycled water supply from the WWRF (4,032 AF) less 2020 actual recycled water use (1,758 AF). Table 6-6R in the WUE data portal contains the correct values. Table 6-6R in Appendix R of the document was entered incorrectly and is updated to match the WUE data portal. See updated table below.	3/30/2022
2	Footnotes added to Table 6-8DS to clarify the two desalter facilities and their relation to Western Wholesale or Western Retail supplies.	WUE data portal and UWMP document Appendix R	All Western desalter facilities were included in Table 6-8DS within the WUE data portal because separate tables for Wholesale and Retail are not available. Footnotes were added to clarify that the Chino Desalter is considered a Western Retail supply source and the Arlington Desalter is a Western Wholesale supply and refers to the appropriate sections of the UWMP document where each desalter is discussed. Table 6-8DS in the WUE data portal and Appendix R is updated to include these clarifying notes. See updated table below.	3/30/2022
3	Table 6-5W values removed.	UWMP document Appendix R	As noted on page 4-11 of the UWMP document, Western Wholesale does not currently use recycled water to meet wholesale demands. In the WUE portal, Table 6-5W correctly shows zero recycled water demand for wholesale and Table 6-5R correctly shows the recycled water demand for Western Retail. Table 6-5W in Appendix R was entered incorrectly and is updated to match the WUE data portal. See updated table below.	3/30/2022

Correction No.	Description of Correction	Location	Rational	Date Error Corrected
4	Revised 2020 GPCD calculation to include non-potable water use.	UWMP document: Executive Summary, Section 10.4.1, Appendix R Table 5-2R, Appendix N Table 4, 4-A, 5, 6, and 9 WUE data portal: Table 5-2R, SBX7-7 Tables 4, 4-A, 5, and 9	All non-potable water use was excluded from the Western Retail GPCD calculation for 2016-2020. It is not clear if the data used to set the GPCD baseline excluded any non-potable water so, to be conservative, Western's non-potable water use (excluding recycled water use) was added to the gross water use in the GPCD calculation. With the updated calculation, Western Retail 2020 GPCD was 235, still far exceeding the 2020 target of 352. Table 5-2R is updated in Appendix R and the WUE data portal. SBx7-7 Compliance Form tables 4, 4-A, 5, and 9 are also updated to reflect this revision. Figures depicting GPCD trends in the Executive Summary and Section 10.4.1 of the UWMP document are also updated.	3/30/2022

Correction No. 1: Table 6-6R

6-6R | Methods to Expand Future Recycled Water Use

STATUS: Published

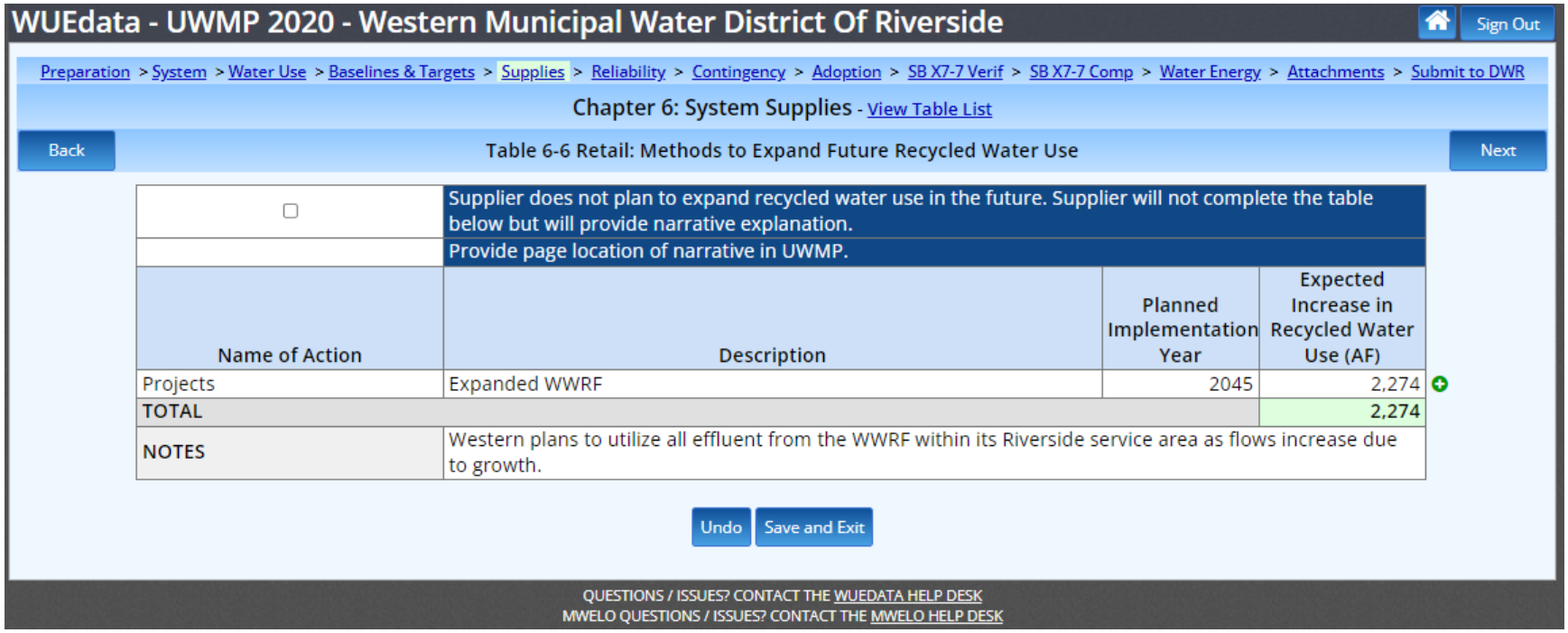
NOTES: -

The supplier will complete the table below.

Name of Action	Description	Planned Implementation Year	Expected Increase of Recycled Water Use
Projects	Expanded WWRF	2045	2,274
		Total:	**2,274**

Western plans to utilize all effluent from the WWRF within its Riverside service area as flows increase due to growth.

Correction No. 1: WUE Data Table (no changes)



WUEdata - UWMP 2020 - Western Municipal Water District Of Riverside

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 6: System Supplies - View Table List

Back | Table 6-6 Retail: Methods to Expand Future Recycled Water Use | Next

☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.
	Provide page location of narrative in UWMP.

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Projects	Expanded WWRF	2045	2,274
TOTAL			2,274
NOTES	Western plans to utilize all effluent from the WWRF within its Riverside service area as flows increase due to growth.		

Undo | Save and Exit

QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

Correction No. 2: Table 6-8DS

6-8DS | Source Water Desalination

STATUS: Published

NOTES:

The supplier will complete the table below.

Plant Name or Well ID	Plant Capacity	Intake Type	Source Water Type	Influent TDS	Brine Discharge	Volume of Water Desalinated in AFY				
						2016	2017	2018	2019	2020
Chino Desalter (1)	28000	Vertical Well	Groundwater		Brine Line	3,534	3,534	3,534	3,534	3,534
Arlington Desalter (2)		Vertical Well	Groundwater		Brine Line	4,880	4,754	5,433	449	4,814
					Total:	**8,414**	**8,288**	**8,967**	**3,983**	**8,348**

Notes:
(1) Chino Desalter is a Western Retail supply and is described in Section 9.2 of the 2020 UWMP. Western Retail does not currently use this supply and leases it to another agency.
(2) Arlington Desalter is a Western Wholesale supply and is described in Section 4.2 of the 2020 UWMP.

Correction No. 2: WUE Data Table

WUEdata - UWMP 2020 - Western Municipal Water District Of Riverside

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 6: System Supplies - View Table List

Back | OPTIONAL Table 6-8 DS: Source Water Desalination | Next

☐	Neither groundwater nor surface water are reduced in salinity prior to distribution									
Plant Name or Well ID	Plant Capacity	Intake Type	Source Water Type	Influent TDS	Brine Discharge	Volume of Water Desalinated (AF) 2016	2017	2018	2019	2020
Chino Desalter	28000	vertical well	groundwater		Brine Line	3,534	3,534	3,534	3,534	3,534
Arlington Desalter		vertical well	groundwater		Brine Line	4,880	4,754	5,433	449	4,814
TOTAL						8,414	8,288	8,967	3,983	8,348
NOTES	Chino Desalter is a Western Retail supply and is described in Section 9.2 of the 2020 UWMP. Western Retail does not currently use this supply and leases it to another agency. Arlington Desalter is a Western Wholesale supply and is described in Section 4.2 of the 2020 UWMP.									

Undo | Save and Exit

QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

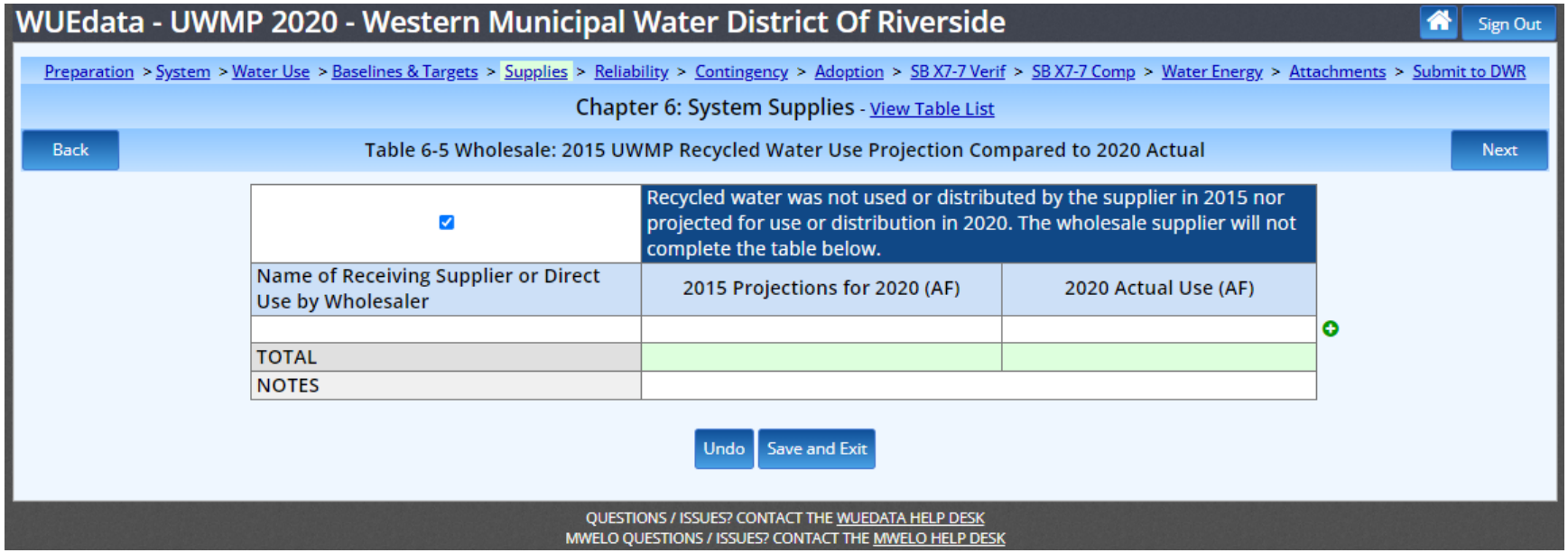
Correction No. 3: Table 6-5W

6-5W | 2015 Recycled Water Use Projection Compared to 2020 Actual

STATUS:	Published
NOTES:	

Recycled water was not used or distributed by the supplier in 2015, nor projected for use or distribution in 2020. The supplier will not complete the table.		
Name of Receiving Supplier or Direct Use by Wholesaler	**2015 Projection for 2020**	**2020 Actual Use**
Total:	-	-

Correction No. 3: WUE Data Table (no changes)



Correction No. 4: Table 5-2R (also SBx7-7 Compliance Form Table 9)

5-2R | 2020 Compliance

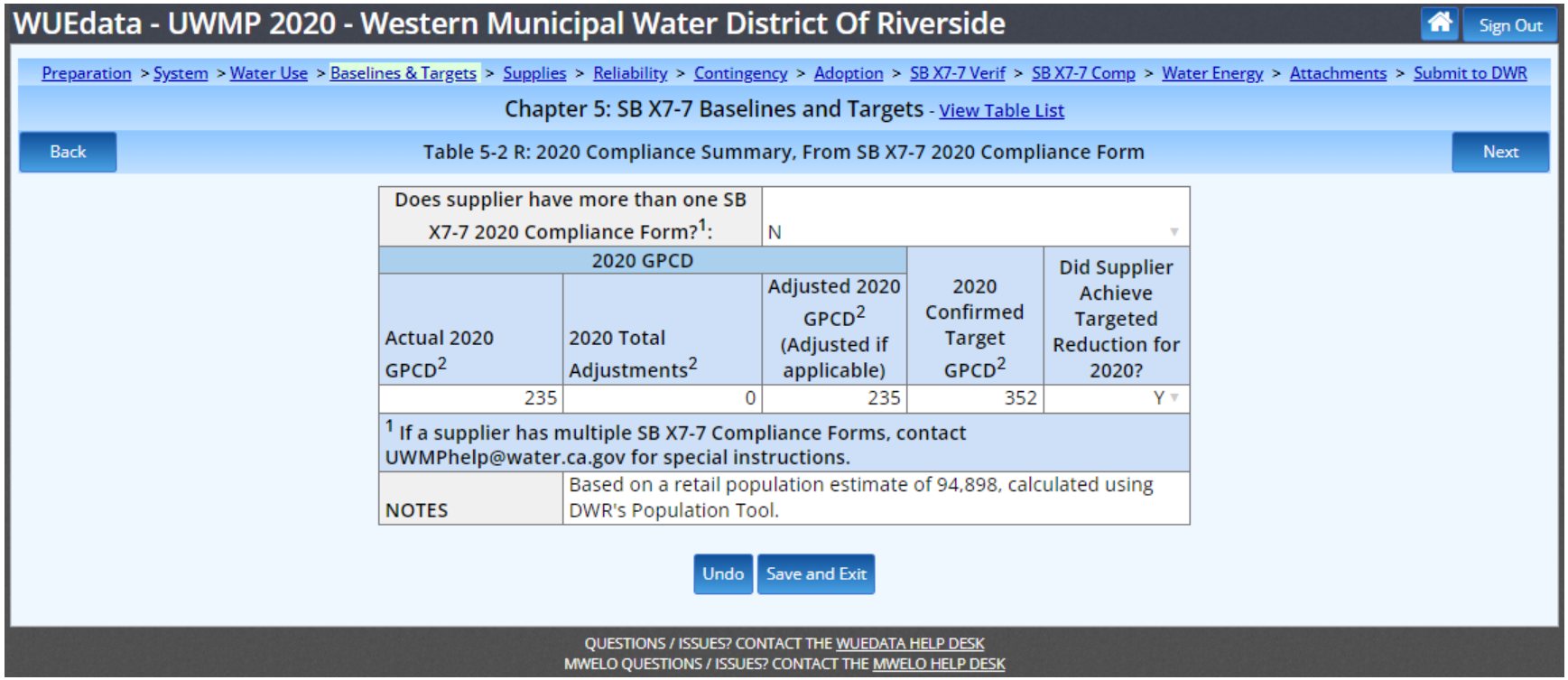
STATUS: Published

NOTES: -

Actual 2020 GPCD*	Optional Adjustments to 2020 GPCD					2020 GPCD (Adjusted if applicable)	Supplier Achieved Targeted Reduction in 2020
	Extraordinary Events*	Economic Adjustment*	Weather Normalization*	Total Adjustments*	Adjusted 2020 GPCD*		
235	0	0	0	0	235	235	Yes

Based on a retail population estimate of 94,898, calculated using DWR's population tool.

Correction No 4: Revised WUE Data Table 5-2R



WUEdata - UWMP 2020 - Western Municipal Water District Of Riverside

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 5: SB X7-7 Baselines and Targets - View Table List

Back

Table 5-2 R: 2020 Compliance Summary, From SB X7-7 2020 Compliance Form

Next

Does supplier have more than one SB X7-7 2020 Compliance Form?[1]:	N

2020 GPCD				
Actual 2020 GPCD[2]	2020 Total Adjustments[2]	Adjusted 2020 GPCD[2] (Adjusted if applicable)	2020 Confirmed Target GPCD[2]	Did Supplier Achieve Targeted Reduction for 2020?
235	0	235	352	Y

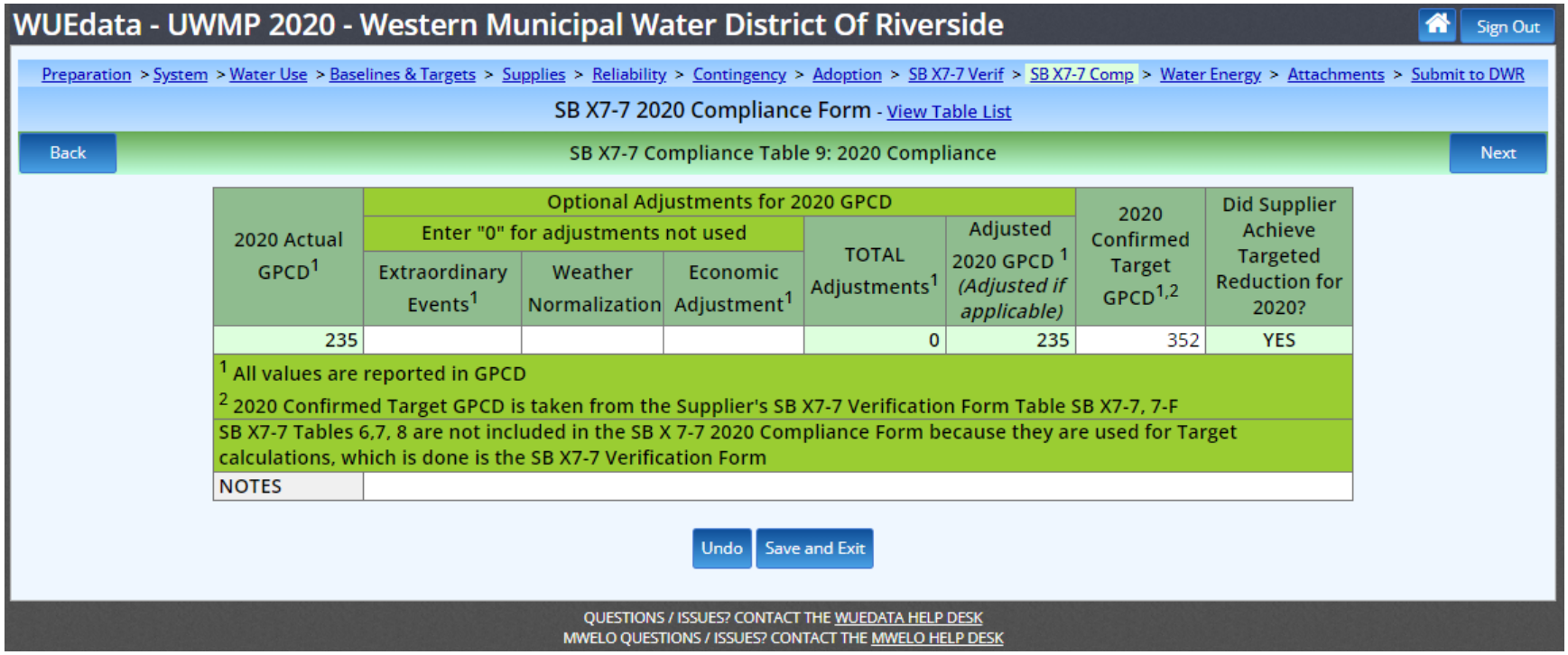
[1] If a supplier has multiple SB X7-7 Compliance Forms, contact UWMPhelp@water.ca.gov for special instructions.

NOTES	Based on a retail population estimate of 94,898, calculated using DWR's Population Tool.

Undo Save and Exit

QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

Correction No 4: Revised WUE Data SBX7-7 Table 9



WUEdata - UWMP 2020 - Western Municipal Water District Of Riverside

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

SB X7-7 2020 Compliance Form - View Table List

Back | SB X7-7 Compliance Table 9: 2020 Compliance | Next

2020 Actual GPCD[1]	Optional Adjustments for 2020 GPCD (Enter "0" for adjustments not used)			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD[1,2]	Did Supplier Achieve Targeted Reduction for 2020?
	Extraordinary Events[1]	Weather Normalization	Economic Adjustment[1]				
235				0	235	352	YES

[1] All values are reported in GPCD

[2] 2020 Confirmed Target GPCD is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F

SB X7-7 Tables 6,7, 8 are not included in the SB X 7-7 2020 Compliance Form because they are used for Target calculations, which is done is the SB X7-7 Verification Form

NOTES

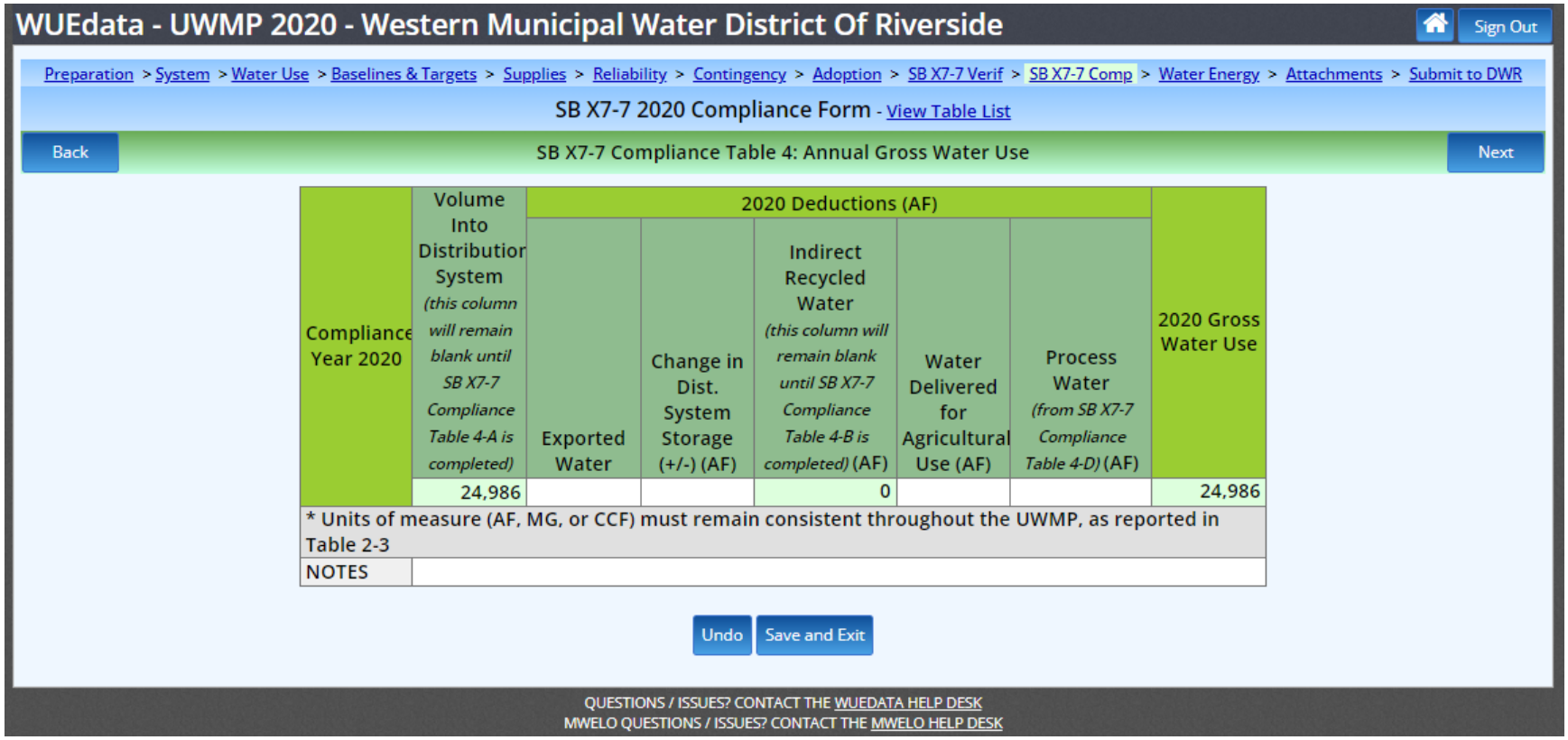
Undo | Save and Exit

QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

Correction No 4: Revised SBx7-7 Compliance Table 4

SB X7-7 Table 4: 2020 Gross Water Use							
		2020 Deductions					
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Exported Water ***	**Change in Dist. System Storage* (+/-)**	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	**2020 Gross Water Use**
	24,986			-		-	**24,986**
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.							
NOTES:							

Correction No 4: Revised WUE Data SBX7-7 Compliance Table 4



WUEdata - UWMP 2020 - Western Municipal Water District Of Riverside

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

SB X7-7 2020 Compliance Form - View Table List

Back

SB X7-7 Compliance Table 4: Annual Gross Water Use

Next

Compliance Year 2020	Volume Into Distribution System *(this column will remain blank until SB X7-7 Compliance Table 4-A is completed)*	2020 Deductions (AF)					2020 Gross Water Use
		Exported Water	Change in Dist. System Storage (+/-) (AF)	Indirect Recycled Water *(this column will remain blank until SB X7-7 Compliance Table 4-B is completed)* (AF)	Water Delivered for Agricultural Use (AF)	Process Water *(from SB X7-7 Compliance Table 4-D)* (AF)	
	24,986			0			24,986
* Units of measure (AF, MG, or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3							
NOTES							

Undo

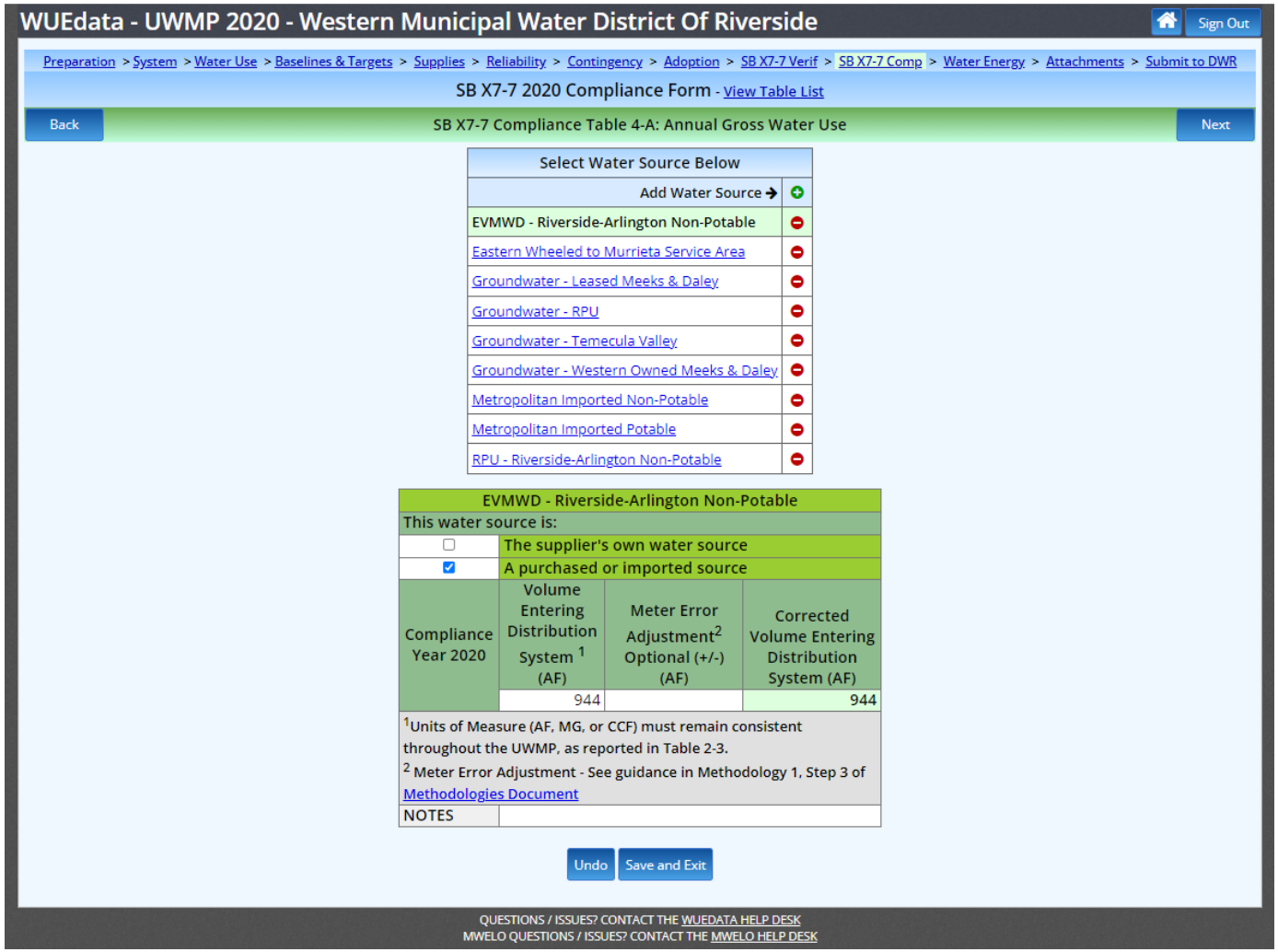
Save and Exit

QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

Correction No. 4: SBx7-7 Compliance - Table 4-A Inputs

Source	Supplier's Own or Purchased Source	Volume Entering Distribution System (AF)
Eastern Wheeled to Murrieta Service Area	Supplier's Own Source	1,834
Groundwater – Leased Meeks & Daley	Purchased Source	4,208
Groundwater – RPU	Purchased Source	3,163
Groundwater – Temecula Valley	Supplier's Own Source	399
Western Owned Meeks & Daley	Supplier's Own Source	227
Metropolitan Imported Potable	Purchased Source	12,004
Metropolitan Imported Non-Potable	Purchased Source	1,819
EVMWD – Riverside-Arlington Non-Potable	Purchased Source	944
RPU – Riverside-Arlington Non-Potable	Purchased Source	388
	Total	**24,986**

Correction No 4: Revised WUE Data SBX7-7 Compliance Table 4-A



WUEdata - UWMP 2020 - Western Municipal Water District Of Riverside

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

SB X7-7 2020 Compliance Form - View Table List

Back | SB X7-7 Compliance Table 4-A: Annual Gross Water Use | Next

Select Water Source Below	
Add Water Source →	⊕
EVMWD - Riverside-Arlington Non-Potable	⊖
Eastern Wheeled to Murrieta Service Area	⊖
Groundwater - Leased Meeks & Daley	⊖
Groundwater - RPU	⊖
Groundwater - Temecula Valley	⊖
Groundwater - Western Owned Meeks & Daley	⊖
Metropolitan Imported Non-Potable	⊖
Metropolitan Imported Potable	⊖
RPU - Riverside-Arlington Non-Potable	⊖

EVMWD - Riverside-Arlington Non-Potable			
This water source is:			
☐	The supplier's own water source		
☑	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System [1] (AF)	Meter Error Adjustment[2] Optional (+/-) (AF)	Corrected Volume Entering Distribution System (AF)
	944		944

[1] Units of Measure (AF, MG, or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.

[2] Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES	

Undo | Save and Exit

QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

Correction No. 4: SBx7-7 Compliance Form Table 5

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water *Fm SB X7-7 Table 4*	**2020 Population** *Fm SB X7-7 Table 3*	**2020 GPCD**
24,986	94,898	**235**
NOTES:		

Correction No. 4: WUE Data SBX7-7 Compliance Table 5

