2020 Urban Water Management Plan

Public Draft

JUNE 2021

COUNTY OF SAN BERNARDINO DEPARTMENT OF PUBLIC WORKS
SPECIAL DISTRICTS COUNTY SERVICE AREA 64 SPRING VALLEY LAKE

WSC

COUNTY OF SAN BERNARDINO DEPARTMENT OF PUBLIC WORKS - SPECIAL DISTRICTS COUNTY SERVICE AREA 64

2020 Urban Water Management Plan

JUNE 2021

ENGINEER STAMP

Prepared by Water Systems Consulting, Inc.

WSC

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ACRONYMS & ABBREVIATIONS

°F	Degrees Fahrenheit
AB	Assembly Bill
AF	Acre Foot
AFY	Acre Feet per Year
AMI	Advanced Metering Infrastructure
AWWA	American Water Works Association
AWAC	Alliance for Water Awareness and Conservation
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CSA 64	San Bernardino County Public Works Special Districts, County Service Area 64
CWC	California Water Code
DCR	DWR SWP Delivery Capacity Report
DMM	Demand Management Measure
DOF	Department of Finance
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
EPA	United States Environmental Protection Agency
ES	Executive Summary
ET	Evapotranspiration
ETo	Reference Evapotranspiration
FPA	Free Production Allowance
GHG	Greenhouse Gas
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
GWMP	Groundwater Management Plan
HET	High Efficiency Toilet
IRWMP	Integrated Regional Water Management Plan
ITP	Independent Technical Panel
kWh	Kilowatt-Hour

LAFCO	Local Agency Formation Commission
MAF	Million Acre-Feet
MG	Million Gallons
MGD	Million Gallons per Day
MWA	Mojave Water Agency
NOAA	National Oceanic and Atmospheric Administration
PWS	Public Water System
R^3	Regional Recharge and Recovery Project
RUWMP	Regional Urban Water Management Plan
RWA	Replacement Water Assessment
SBX7-7	Senate Bill 7 of Special Extended Session 7
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
UCR	University of California Riverside
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VVC	Victor Valley College
VVWRA	Victor Valley Wastewater Reclamation Authority
WSCP	Water Shortage Contingency Plan
WWTP	Wastewater Treatment Plant

URBAN WATER MANAGEMENT PLAN

Executive Summary

This section summarizes the 2020 Urban Water Management Plan (UWMP or Plan) for San Bernardino County Service Area 64 Spring Valley Lake (CSA 64). It provides a summary of the fundamental purposes of the UWMP, including water service reliability, future challenges, and strategies for managing risks to water reliability in a manner that is accessible to non-technical readers.

IN THIS SECTION

- Purpose and Organization
- Water System Demands
- Water Supplies
- Water Reliability
- Water Shortage Contingency Plan

County Service Area 64 is governed by the County Board of Supervisors, authorized by LAFCO, and permitted by the State of California to provide potable water services and sewage collection, for the Spring Valley Lake area located generally in the southeastern Victorville community. The water service includes five wells, one booster station, three water tanks, and fire suppression facilities. Sewage treatment and disposal is provided by contract with the Victor Valley Wastewater Reclamation Authority. CSA 64 has invested in extensive conservation programs to ensure a reliable water supply for the future and any potential dry years that may occur.

This UWMP was prepared in compliance with California Water Code requirements for UWMPs following guidance from the California Department of Water Resources (DWR) and is intended to guide long-term water resources planning for CSA 64.

Purpose and Organization of the Plan

This UWMP provides a detailed summary of present and future water resources and demands within CSA 64's service area and assesses CSA 64's water resource needs. Specifically, the UWMP provides water supply planning for a 25-year planning period in five-year increments and identifies water supplies needed to meet existing and future demands. The demand analysis identifies supply reliability under three hydrologic or rainfall conditions: an average (or normal) year, a single-dry year, and multiple-dry years (drought conditions). CSA 64 prepared UWMPs for 2010 and 2015, according to the 5-year planning cycle. This 2020 UWMP serves as an update to the 2015 UWMP and complies with new requirements and regulations.

New to the 2020 UWMP, water suppliers are required to prepare a standalone Water Shortage Contingency Plan (WSCP) that can be updated independently of the UWMP. 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. An overview of the WSCP is described in the body of this UWMP and the standalone WSCP is attached as **Appendix A**.

The 2021 WSCP is proposed for adoption in conjunction with the 2020 UWMP to meet the California Water Code (CWC) requirements.

Outreach and Engagement

CSA 64 has closely coordinated with Mojave Water Agency during the preparation of its UWMP. Recognizing that coordinating among other relevant public agencies is key to the success for its UWMP, CSA 64 worked closely with other entities to develop and update this planning document. CSA 64 also provided a public review period for the Draft UWMP and held a public hearing to solicit input from stakeholders and the public.

Service Area Description

Located in the Victor Valley High Desert Region of San Bernardino County, CSA 64 provides water services to the Spring Valley Lake unincorporated area, which is in the southeastern Victorville community. A map of CSA 64's service area is shown in **Figure ES-1**.

In 2020, CSA 64 served a population of approximately 11,244 and provided potable water through 3,971 active connections within the 4 square mile service area. Service is provided to customers for residential, commercial, institutional, and landscape irrigation uses. The service area population is expected to grow by an average of 2.7% per year until build out, (approximately 200 more parcels).

County Service Area 64

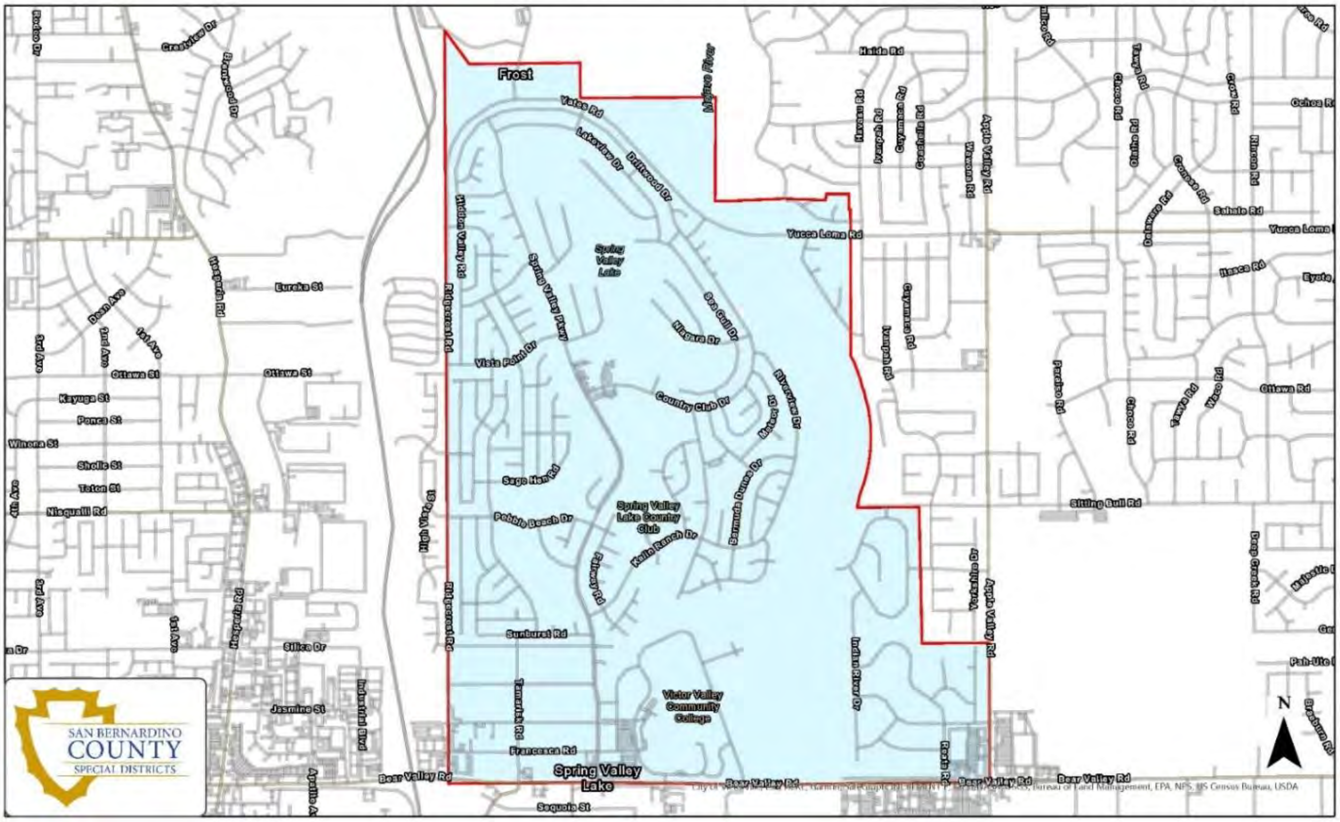

Figure ES-1: CSA 64 Service Area Map

Water System Demands

CSA 64 serves potable drinking water to meet all municipal (residential, commercial, landscape irrigation) and industrial demands. This includes single-family residences, multi-family residences, parks, schools, a church, and recreational uses (golf course, Spring Valley Lake, and equestrian).

Over the last five years, CSA 64 used an average of 2,614 Acre-Feet per Year (AFY) of potable water. Residential demand accounts for about 76% of the total demand and has remained relatively constant since 2016. **Table ES-1** shows the historical and current water use by customer class.

The Water Conservation Bill of 2009 (SBX7-7) requires individual retail water suppliers to set water conservation targets for 2020 to support an overall state goal of reducing urban potable per capita water use by 20 percent by 2020. CSA 64's investments in water conservation have helped its customers achieve its 2020 SBX7-7 water use reduction target. CSA 64's 2020 per capita water use target is 269 gallons per capita per day (GPCD) while the actual consumption in 2020 was 214 GPCD. CSA 64 is continuously implementing demand management measures to continue meeting its SBX7-7 water use target and position for future State mandated water use efficiency standards that are currently under development.

Water demands have been projected out until 2045 based on the expected population forecast. Single-family uses are determined to be the largest area of growth with an estimated 181 AF increase in demand from 2020 until 2045. The total demand is predicted to increase by about 7.4%. **Table ES-2** summarizes the results of the demand projection.

Table ES-1. Historical and Current Water Uses by Use Sector (AFY)

USE TYPE	2016	2017	2018	2019	2020
Single Family	1,831	1,994	2,130	2,007	2,007
Multi-Family	4	5	5	5	5
Commercial	43	46	49	47	47
Institutional/Governmental	131	143	153	144	144
Landscape	35	38	40	38	38
Other – Water Only	8	8	9	9	9
Losses	342	388	431	370	453
TOTAL:	**2,396**	**2,623**	**2,817**	**2,618**	**2,701***

*This number differs slightly from CSA 64 data as the state reported data was used to match data used in MWA's UWMP

Table ES-2. Projected Demands for Water (AFY)

DWR Table 4-2R

		PROJECTED WATER USE				
USE TYPE	ADDITIONAL DESCRIPTION	2025	2030	2035	2040	2045
Single Family		2,090	2,120	2,142	2,150	2,188
Multi-Family		5	5	5	5	5
Commercial		49	49	50	50	51
Institutional/Governmental		150	152	153	154	157
Landscape		40	40	41	41	42
Other	Water Only Use Category	9	9	9	9	9
Losses		429	435	440	441	449
	TOTAL:**	**2,770***	**2,810**	**2,840**	**2,850**	**2,900***

*Due to rounding errors, the summation of the use type demands is slightly off from the total for years 2025 and 2045.

**These numbers are from MWA's UWMP as they performed the water demand projection analysis.

Water Supplies

CSA 64's only water supply comes from 5 active groundwater wells within its distribution system that actively pump groundwater from the Alto Subbasin, located in the southwestern portion of the Mojave River Groundwater Basin. The Watermaster of the basin has allocated pumping rights to each agency that utilizes this groundwater source. When an agency requires more water than that allotment, the supplier must buy replacement water which comes from buying additional water rights, buying imported water from MWA, or leasing groundwater rights for one year from other water rights holders. This ensures the basin remains in hydrologic balance and thus providing a reliable water resource. The historical groundwater production and projected water supplies are found in **Table ES-3** and **Table ES-4**, respectively.

Table ES-3. Groundwater Volume Pumped (AFY)

DWR Table 6-1R

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Mojave River	2,398	2,633	2,842	2,649	2,701
	TOTAL:	**2,398**	**2,633**	**2,842**	**2,649**	**2,701**

Table ES-4. Projected Water Supplies (AFY)

DWR Table 6-9R

	PROJECTED WATER SUPPLY				
	2025	2030	2035	2040	2045
WATER SUPPLY	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME
Groundwater (not desalinated)	2,770	2,810	2,840	2,850	2,900
TOTAL:	**2,770**	**2,810**	**2,840**	**2,850**	**2,900**

Water Supply Reliability

Every urban water supplier in California is required to assess the reliability of its water service under normal, dry, and multiple-dry years hydrologic conditions, and specifically assess the drought risk over the next five years. Water service reliability is dependent upon variability of supplies and availability of infrastructure to meet projected demand. Evaluating the water service reliability is critical for water management as it can help identify potential shortfalls before they occur. Water managers can then take proactive steps to mitigate shortages by encouraging water use efficiency, securing new water supplies and/or investing in infrastructure.

For this 2020 UWMP, the supply reliability assessment considered factors that could limit the expected quantity of current and projected water sources through 2045. Multiple drought scenarios were considered, and the quantitative impacts of the aforementioned factors on water supply and demand were evaluated and possible methods for addressing these issues were identified.

CSA 64's water service reliability assessment and drought risk assessment (DRA) results indicate that no water shortages are anticipated within the next 25-years under normal, single dry water years, and five consecutive dry years, including a 5-year drought extending through 2025. The implementation of water conservation is crucial to ensure CSA 64's water supplies are reliable, while reducing CSA 64's reliance on imported water.

Water Shortage Contingency Plan

CSA 64 has developed a comprehensive water shortage contingency plan (WSCP) to provide reliability during shortage situations. 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 purpose of the 2021 WSCP is to conserve the available water supply and protect the water supply's integrity while also protecting and preserving public health, welfare, and safety. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions during a water shortage.

The 2021 WSCP serves as the operating manual that CSA 64 will use to respond through proactive, rather than reactive, mitigation strategies to address water shortages. The 2021 WSCP is used to provide guidance to CSA 64's Board of Supervisors (Board), staff, and the public by identifying anticipated water shortages and response actions to manage any water shortage with predictability and accountability in an efficient manner. The 2021 WSCP is not intended to provide absolute direction but rather it is intended to provide a working framework and options to help guide the CSA 64's response to water shortages.

CSA 64's 2021 WSCP is a stand-alone document that can be modified as needed and is included as **Appendix A**. CSA 64 is maintaining its current water shortage levels, as identified in the Special Districts Drought Ordinance No. 15-04, with the intent to update them in the revised 2021 ordinance. CSA 64 uses four shortage stages to identify and respond to water shortage emergencies. At a minimum, CSA 64 encourages baseline conservation efforts year-round, regardless of a shortage emergency. **Ordinance No. 15-04** provides CSA 64 the authority to adopt and enforce the WSCP. **Ordinance No. 15-04** outlines the shortage stages and response actions identified in this WSCP. **Table ES-5** shows the WSCP shortage stages. Those stages trigger a series of actions that may include measures to reduce demand, augment supply, change typical operations, or impose mandatory prohibitions. The actions are intended to increase supplies or reduce demand to mitigate the impact of a water shortage condition.

Table ES-5. Water Shortage Contingency Plan Levels

SHORTAGE LEVEL	PERCENT SHORTAGE RANGE[1] (NUMERICAL VALUE AS A PERCENT)	SHORTAGE RESPONSE ACTIONS
1	Up to 15%	Stage 1 response actions
2	Up to 40%	Stage 1 and 2 response actions
3	Up to 50%	Stage 1, 2, and 3 response actions
4	Greater than 50%	Stage 1, 2, 3, and 4 response actions

[1]One stage in the WSCP must address a water shortage of 50%.

URBAN WATER MANAGEMENT PLAN

1 Introduction and Lay Description

This chapter provides a brief overview of the San Bernardino County Department of Public Works, Special Districts County Service Area 64 – Spring Valley Lake (CSA 64) 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 CSA 64 is involved in.

CSA 64 ‘s service area is located in the southwest region of San Bernardino County and encompasses approximately 4 square miles.

CSA 64’s potable water system supplies water solely from groundwater, pumped from the Mojave River Basin (Basin). The Basin is adjudicated and the Mojave Water Agency (MWA) serves as the Watermaster. Per the Mojave Basin Area Judgment, producers in the Mojave Basin Area are allocated a Free Production Allowance (FPA). Producers may pump more than their FPA, provided they purchase Replacement Water. Funds collected for Replacement Water are then used by MWA to purchase imported water supplies in wet years and recharge them into the Basin for use in dry years.

IN THIS SECTION

- California Water Code
- UWMP Organization
- Consistency with the Delta Plan

1.1 The California Water Code

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 (UWMP) every five years demonstrating water supply reliability under normal as well as drought conditions.

Since the original UWMP Act was passed, it has undergone significant expansion, particularly since the previous UWMPs were prepared for 2015. Prolonged droughts, groundwater overdraft, regulatory revisions, and changing climatic conditions affect the reliability of each water supplier as well as the statewide water reliability overseen by California Department of Water Resources (DWR), the State Water Resources Control Board (SWRCB), and the Legislature. Accordingly, the UWMP Act has grown to address changing conditions and the current requirements are found in Sections 10610-10656 and 10608 of the California Water Code (CWC).

The purpose of the 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 and Statewide water planning efforts, such as Integrated Regional Water Management Plans and the California Water Plan.

The DWR provides guidance for urban water suppliers by preparing an Urban Water Management Plan Guidebook 2020, conducting workshops, developing tools, and providing program staff to help water suppliers prepare comprehensive and useful water management plans, implement water conservation programs, and understand the requirements in the CWC. Suppliers prepare their own UWMPs in accordance with the requirements and submit them to the DWR. The DWR then reviews the plans to make sure they have addressed the requirements identified in the CWC and submits a report to the Legislature summarizing the status of the plans for each five-year cycle. The 2020 DWR UWMP Guidebook, finalized in March 2021, was used to complete this 2020 UWMP (State of California Department of Water Resources, 2021).

CWC 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 is described in the body of this Plan and the standalone WSCP is attached as **Appendix A**.

This plan, which was prepared in compliance with the CWC and as set forth in the 2020 guidelines and format established by the DWR, constitutes the 2020 Urban Water Management Plan (Plan) for CSA 64.

1.2 UWMP Organization

CSA 64 generally followed the DWR's recommended organizational outline in the preparation of its 2020 UWMP.

Below is a summary of the information included in the various chapters of the 2020 UWMP:

Chapter 1 – Introduction and Overview.

This chapter provides background information on the UWMP process, new regulatory requirements, and an overview of the information covered throughout the remaining chapters.

Chapter 2 – Plan Preparation.

This chapter provides information on the processes used for developing the UWMP, including efforts in coordination and outreach.

Chapter 3 – System Description.

This chapter describes CSA 64's water system, service area, population demographics, local climate, and land uses.

Chapter 4 – System Water Use.

This chapter describes and quantifies the current and projected water uses through 2045 within the water service area.

Chapter 5 – Baselines and Targets.

This chapter describes the Water Conservation Act of 2009 (also known as SBX7-7), Baseline, Targets, and 2020 Compliance.

Chapter 6 – System Supplies.

This chapter describes and quantifies the current and projected potable and non-potable water supplies.

Chapter 7 – Water Supply Reliability.

This chapter describes the water service reliability through 2045 and includes the Drought Risk Assessment (DRA) for the next five years.

Chapter 8 – Water Shortage Contingency Plan.

This chapter is a standalone report that is a detailed plan for how CSA 64 intends to predict and respond to foreseeable and unforeseeable water shortages. The WSCP is a stand-alone document and is included as **Appendix A**.

Chapter 9 – Demand Management Measures.

This chapter describes CSA 64's efforts to promote conservation and reduce water demand, including discussions of specific demand management measures.

Chapter 10 – Plan Adoption, Submittal, and Implementation.

This chapter discusses the steps taken to prepare CSA 64's 2020 UWMP, hold a public hearing, adopt, and submit the 2020 UWMP, and implement the adopted Plan.

1.3 UWMPs in Relation to Other Efforts

The UWMP characterizes water use, estimates future demands and supply sources, and evaluates supply reliability for normal, single-dry, and consecutive dry years. The UWMP also requires reevaluation of CSA 64's Water Shortage Contingency Plan (WSCP). Details on the WSCP is provided in **Chapter 8**. Other documents that were leveraged in preparation of this UWMP are listed below:

- CSA 64 2015 UWMP
- San Bernardino Countywide Plan 2020
- Mojave Water Agency (MWA) 2020 UWMP
- MWA Population Forecast – 2020 Edition
- Mojave Integrated Regional Water Management Plan – 2014

1.4 UWMPs and Grant or Loan Eligibility

For a water supplier to be eligible for a grant or loan administered by the DWR, and potentially other agencies, the supplier must have a current UWMP on file that meets the requirements set forth by the Water Code. A current UWMP must also be maintained by the supplier throughout the term of any grants or loans received. CSA 64 has prepared the 2020 UWMP under guidance from the DWR's 2020 UWMP Guidebook (State of California Department of Water Resources, 2021).

1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

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.

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 UWMPs that can then be used in the covered action process to demonstrate consistency with regulatory Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (WR P1).

SBX7-1, which was signed in 2009, reformed Sacramento-San Joaquin Delta (Delta) policy and governance, including requiring development, adoption, and implementation of a "Delta Plan" and establishing a statewide policy to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency.

The DWR does not review the analysis demonstrating consistency with WR P1 as part of the UWMP approval process; therefore, this information has been prepared as a standalone document and is attached as **Appendix B**. The analysis and documentation provided in the appendix include 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.

URBAN WATER MANAGEMENT PLAN

2 Plan Preparation

This plan was prepared based on guidance from the DWR's 2020 Urban Water Management Plan Guidebook 2020 and provides information on the processes used for developing the UWMP, including efforts in coordination and outreach. The 2020 UWMP must be submitted to the DWR by urban water suppliers by July 1, 2021.

IN THIS SECTION

- Basis for Preparing a Plan
- Coordination and Outreach

This UWMP was prepared following guidance from the DWR's 2020 UWMP Guidebook, the DWR UWMP Public Workshops and Webinars, Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (SB7 Guidebook), and the 2020 DWR Review Sheet Checklist (**Appendix C**). This Plan includes a selection of the required DWR standardized tables for Chapters 1 through 10 in the body of this Plan as necessary to present supporting data, while the rest are found in **Appendix D**.

The 2020 UWMP was prepared in a transparent manner and CSA 64 engaged stakeholders, cities, counties, water agencies, and the public to both seek and distribute water use, supply, and reliability information to strengthen the region's ability to assess and plan for the region's water future. Details regarding CSA 64's UWMP preparation and the coordination and outreach efforts conducted are provided in this Chapter.

2.1 Plan Preparation

CSA 64 prepared this 2020 UWMP in accordance with CWC Section 10617, which requires water suppliers with **3,000** or more service connections, or those supplying **3,000 AFY** or more to prepare an UWMP. Suppliers are required to update UWMPs at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.

CSA 64's 2020 UWMP must be submitted to the DWR by July 1, 2021.

2.2 Basis for Preparing a Plan

CSA 64 provides water to a service area that includes mostly unincorporated areas of San Bernardino County as well as a portion of the Cities of Victorville and Apple Valley. CSA 64 operates a single Permitted Public Water System (PWS). Relevant statistics about CSA 64's PWS are presented in **Table 2-1** below. As stated in **Table 2-2**, CSA 64 has prepared its UWMP individually and is not a part of a regional plan or alliance. Throughout this UWMP, water volume is represented in units of AFY, unless otherwise noted, and data is presented on a water year basis as noted in **Table 2-3**.

Table 2-1. Public Water Systems

DWR Table 2-1R

PUBLIC WATER SYSTEM NUMBER	PUBLIC WATER SYSTEM NAME	NUMBER OF MUNICIPAL CONNECTIONS 2020	VOLUME OF WATER SUPPLIED 2020 (AFY)
30610121	CSA 64	3,971	2,701
	TOTAL:	**3,971**	**2,701**

Table 2-2. Plan Identification

DWR Table 2-2

TYPE OF PLAN	MEMBER OF RUWMP	MEMBER OF REGIONAL ALLIANCE	NAME OF RUWMP OR REGIONAL ALLIANCE
Individual UWMP	No	No	

Table 2-3. Agency Identification

DWR Table 2-3

TYPE OF SUPPLIER	YEAR TYPE	FIRST DAY OF YEAR		UNIT TYPE
		DD	MM	
Retailer	Water Years	1	10	Acre Feet (AF)

2.3 Coordination and Outreach

To prepare this UWMP, CSA 64 coordinated with multiple neighboring and stakeholder agencies. The coordinated efforts were conducted to: 1) inform the agencies of CSA 64's efforts and activities; 2) gather high quality data for use in developing this UWMP; and 3) coordinate planning activities with other related regional plans and initiatives. The coordination activities conducted by CSA 64 are summarized in **Table 2-4**.

Table 2-4. Water Supplier Information Exchange

DWR Table 2-4

AGENCY / ORGANIZATION	PARTICIPATED IN DEVELOPING THE PLAN	COMMENTED ON THE DRAFT	ATTENDED PUBLIC MEETINGS	WAS CONTACTED FOR ASSISTANCE	WAS SENT A COPY OF THE DRAFT PLAN[1]	WAS SENT A NOTICE OF INTENTION TO ADOPT
Mojave Water Agency	x				x	x
Town of Apple Valley					x	x
County of San Bernardino					x	x
City of Victorville					x	x
City of Hesperia					x	x

2.3.1 Coordination with Other Agencies and the Community

As a regional water planning and management agency, Mojave Water Agency (MWA) has engaged the retail water agencies in their service area in a cooperative approach to developing the 2020 UWMPs. MWA developed a customized and robust methodology for population and demand forecasts that can be applied uniformly to the retail water agencies in their service area to ensure the regional consistency of this 2020 UWMP cycle. CSA 64 worked cooperatively with MWA through the development of this UWMP to share historic water use data and apply this regional methodology. The projections presented in this plan have been integrated into MWA's UWMP to be rolled up into their regional forecast.

URBAN WATER MANAGEMENT PLAN

3 System Description

This chapter describes the CSA 64's water system, service area, population demographics, local climate, and land uses.

The mission of CSA 64 is to efficiently provide our customers with safe, reliable, high quality water and wastewater services, while meeting or exceeding all regulatory requirements in a fiscally and environmentally responsible manner.

CSA 64 provides water services to approximately 4,000 customer connections, serving a population of approximately 11,200 within its 4 square mile service area, which is located in the High Desert area of western San Bernardino County, California. CSA 64's Water Enterprise includes approximately 41 miles of distribution and transmission mains, 5 active wells, 1 booster pumping station, and 3 water storage reservoirs.

IN THIS SECTION

3.1 General Description

CSA 64 encompasses a total gross area of approximately 2,576 acres (4.02 square miles) in the Victor Valley High Desert Region of San Bernardino County and consists of residential, commercial, retail, schools and recreational uses including a golf course, Spring Valley Lake, and equestrian uses. A large portion of this land is undevelopable open space at the north end or within the Mojave River. Net developed/developable area within CSA 64 is approximately 2,076 acres and includes a combined total of 4,185 developed and undeveloped residential lots on 1,341 acres. Other nonresidential uses include commercial, retail and office, as well as the institutional land uses of the Victor Valley College, elementary, middle, and high schools that are located throughout the service area. In 2020, CSA 64 had just under 4,000 service connections that are served with approximately 41 miles of distribution and transmission asbestos cement pipelines ranging in size from 4-inch to 16-inch diameters.

The study area consists of rugged outcrops of basement rock surrounded by alluvium-filled basins. The area's most distinguishing feature is the Mojave River, which traverses the east side of the Study Area. The river flows throughout its length only during high runoff conditions. Much of the year, however, the river is dry although considerable groundwater moves through the river alluvium. At Victorville, it passes through a shallow granite gorge that forces the underflow to the surface.

Topography of the Study Area is uniform throughout most of the area. Elevations within CSA 64 vary from 2,900 feet in the southwesterly portion to 2,780 feet in the northeasterly portion. The elevation difference of approximately 120' between the northern and southern portion of the Study Area has caused the water distribution system to be divided into two water pressure zones. Water service in each zone is gravity fed from storage reservoirs located at higher elevations to maintain a fixed hydraulic gradient throughout the distribution system via gravity. Pressure zone 1 is served with an above-ground 1-million-gallon (MG) tank and pressure zone 2 receives water from two tanks with a total of 1.65 MG capacity. CSA 64 proposes to add storage capacity at each above ground storage site to improve reliability and increase well pumping efficiency. Staff have plans to construct new storage reservoirs which will increase the storage capacity for the service area to a total of six million gallons of storage, which will increase system reliability during periods of high demand which occurs in the summer months. The proposed above ground storage reservoirs have not been constructed and the future construction date has yet to be determined.

Water supply comes from five active groundwater wells within the Mojave River Groundwater Basin with a total discharge capacity of about 5,835 gallons per minute (GPM). This is their only supply and there are no future plans at this time for new supply sources. CSA 64's service area lies within Mojave Water Agency's (MWA) service area, which was established in 1960 as the Watermaster of the Mojave River Groundwater Basin and other nearby basins to monitor and regulate the health of the aquifers while ensuring sufficient water availability for the retail agencies dependent on groundwater resources. MWA implements the Mojave Basin Area Judgement that adjudicated the rights to produce water from the available natural water supply. As a contract agency of the SWP, the Watermaster also acts as wholesale water provider of imported SWP water for replenishment of the Mojave Groundwater Basin.

3.2 Service Area Boundary Maps

CSA 64 is located south of the City of Victorville and is situated in unincorporated area of San Bernardino County along the upper reaches of the Mojave River. The service area is generally bounded by Bear Valley Road to the south, Ridgecrest Road to the west, Apple Valley Road to the east and Yates Road to the North. Some residential and commercial land use areas are located between the Mojave River and Apple Valley Road. **Figure 3-1** displays the CSA 64 Study Area Map.

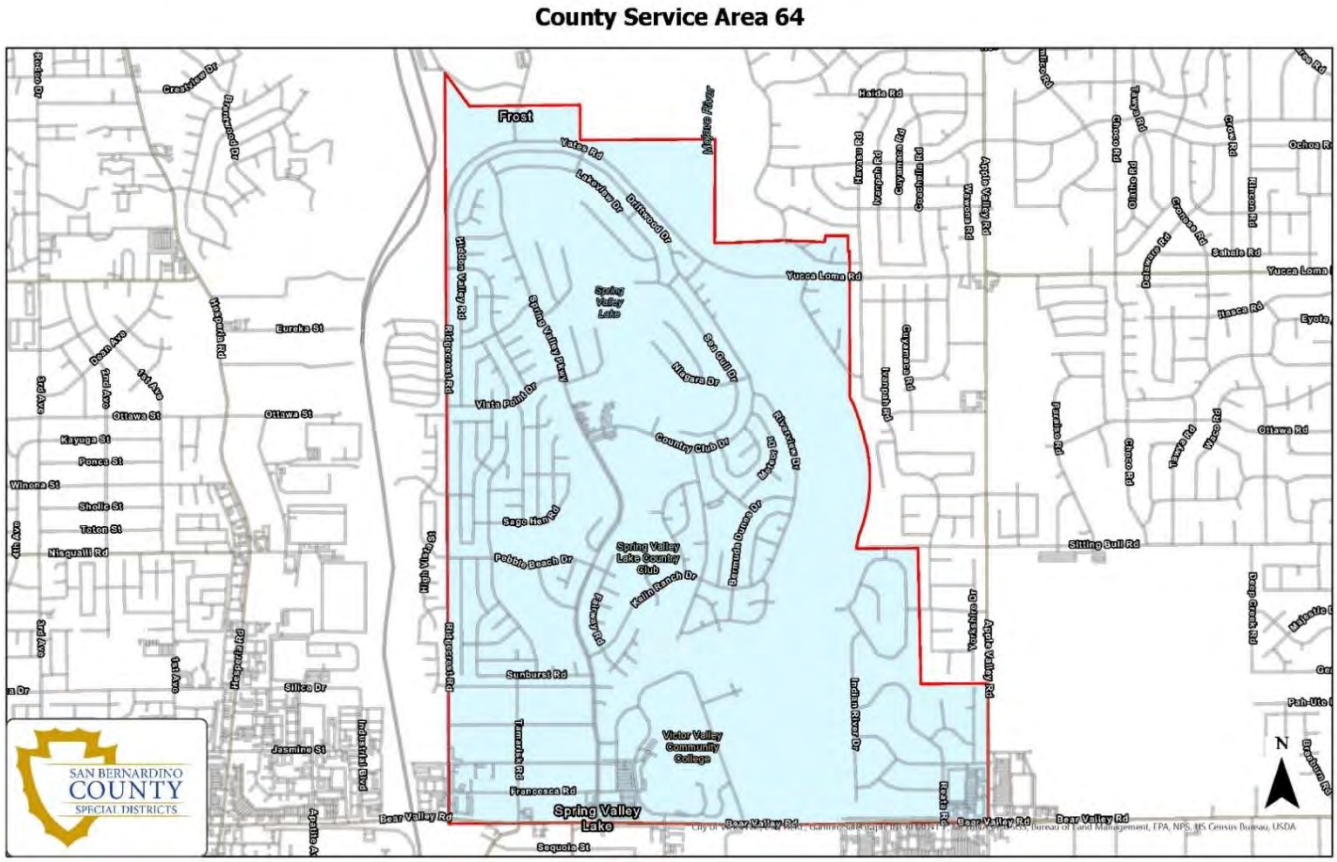

Figure 3-1: CSA 64 Service Area Map

3.3 Service Area Climate

CSA 64's climate is characteristic of the desert, consisting of meager rainfall, low humidity, high summer temperatures, abundant sunshine, relatively cool winters, and frequent high winds. **Table 3-1** presents average monthly climate data from the nearest California Irrigation Management Information System (CIMIS) station, located in Victorville. The warmest month of the year is July with an average temperature of 80 degrees Fahrenheit (°F), while the coldest months of the year are December and January with an average temperature of 44°F (NOAA, 2021). Average annual precipitation is about 6 inches with the majority of rainfall occurring between November and March. January and February are the wettest months with an average rainfall of about 1 inch.

Climate change is an important consideration when determining supply and demand projections. For CSA 64's water supplies, it is increasingly important to account for the dry weather and monitor the health of the groundwater basin. For a detailed description of how climate change impacted these projections, refer to **Section 4.3**. Additionally, a comprehensive discussion of long-term strategies of mitigating climate change impacts is found in **Section 6.1.10**.

Table 3-1. Historical Climate Data

MONTH	AVERAGE TEMPERATURE (°F)[1]	AVERAGE PRECIPITATION (INCH)[1]	AVERAGE STANDARD ETO (INCH)[2]
January	44.4	0.95	2.02
February	47.8	1.05	3.51
March	52.0	0.80	5.16
April	58.0	0.36	6.55
May	65.2	0.13	7.65
June	73.2	0.04	8.75
July	80.0	0.14	8.68
August	78.8	0.21	9.27
September	72.9	0.23	6.73
October	62.4	0.32	4.26
November	51.0	0.50	2.90
December	44.4	0.79	2.16

Notes:

[1]NOAA weather station 049325 in Victorville; data from 1917 through 2016 (NOAA, 2021)

[2]CIMIS weather station 117 in Victorville (CIMIS, 2021)

3.4 Service Area Population and Demographics

3.4.1 Service Area Population

For the 2020 UWMP cycle, MWA engaged University of California Riverside School of Business Center for Economic Forecasting and Development (UCR Center) to develop a customized population forecast through 2065 for the MWA service area and its incorporated cities, subareas, and water purveyors, including the CSA 64 service area. These population forecasts were used for this UWMP. The methodology and findings are summarized below and are described in more detail in the **MWA Population Forecast**, 2020, provided in **Appendix E**.

Historical data used in the population forecast of the incorporated cities were obtained from the California Department of Finance (DOF), which makes population estimates available from 1970 forward on an annual basis, and the United States decennial census. Based on this data, the UCR Center created an econometric time series model to capture the historical correlations with countywide population growth. Future population growth for the incorporated cities of the MWA service area was then estimated using these historic correlations and a long run driver of countywide population growth. Long-run forecasts are an estimate of what the population is expected to be in a given time period based on current economic and demographic trends.

Current economic and demographic trends indicate that California's population is slowing down and will continue to do so well into the future. Statewide net migration remains positive but has declined

significantly, relying on foreign migration to keep total net migration above zero. Furthermore, birth rates have dropped across most racial and ethnic groups and are expected to flatten out or continue declining. The UCR Center expects the same patterns to resonate within San Bernardino County and the MWA. While San Bernardino County and MWA service area experience greater home affordability compared to the nearby regions, regional data patterns over the past few years have shown negative net migration and declining birth rates. With the decline in birth rates and net migration in the negatives, the MWA service area's population projections have decreased.

Even with the growth slowing, the MWA service area is anticipated to experience population growth rates over the next several decades that are stronger than those anticipated for San Bernardino County overall. The broader Inland Empire region has seen strong economic and employment growth these last few years, and much of that has been due to its affordability advantage it holds over coastal counties of Southern California. In similar fashion, the MWA service area is expected to see this kind of growth as well, relative to other parts of the Inland Empire, due to its affordability advantage relative to the broader region (UCR School of Business, 2020).

The current forecast calls for 2.7% average annual population growth for the CSA 64 service area through 2045. The historical, current, and projected service area populations are shown in **Table 3-2**.

Table 3-2. Current and Projected Population

DWR Table 3-1R

POPULATION SERVED	2020	2025	2030	2035	2040	2045
CSA 64	11,244	11,691	12,099	12,390	12,646	12,844

3.4.2 Other Social, Economic, and Demographic Factors

The service area contains Victor Valley College (VVC or College), that will have a large population during the daytime during certain times of the year (when the college is in session) and will have an impact on water demand and supply calculations but will not be considered for population purposes. The College has a current enrollment of approximately 13,000 full-time and part-time students.

3.5 Land Uses within Service Area

According to the San Bernardino County Land Use Service Department, CSA 64's service area consists of low-density residential, open space, medium-density residential, rural living, public facilities, and commercial land use areas. The two largest areas are the low-density residential and open space. Projected land use development involves construction of new housing units by 2040 (San Bernardino County, 2020). **Figure 3-2** displays a map of CSA 64's service area by land use category.

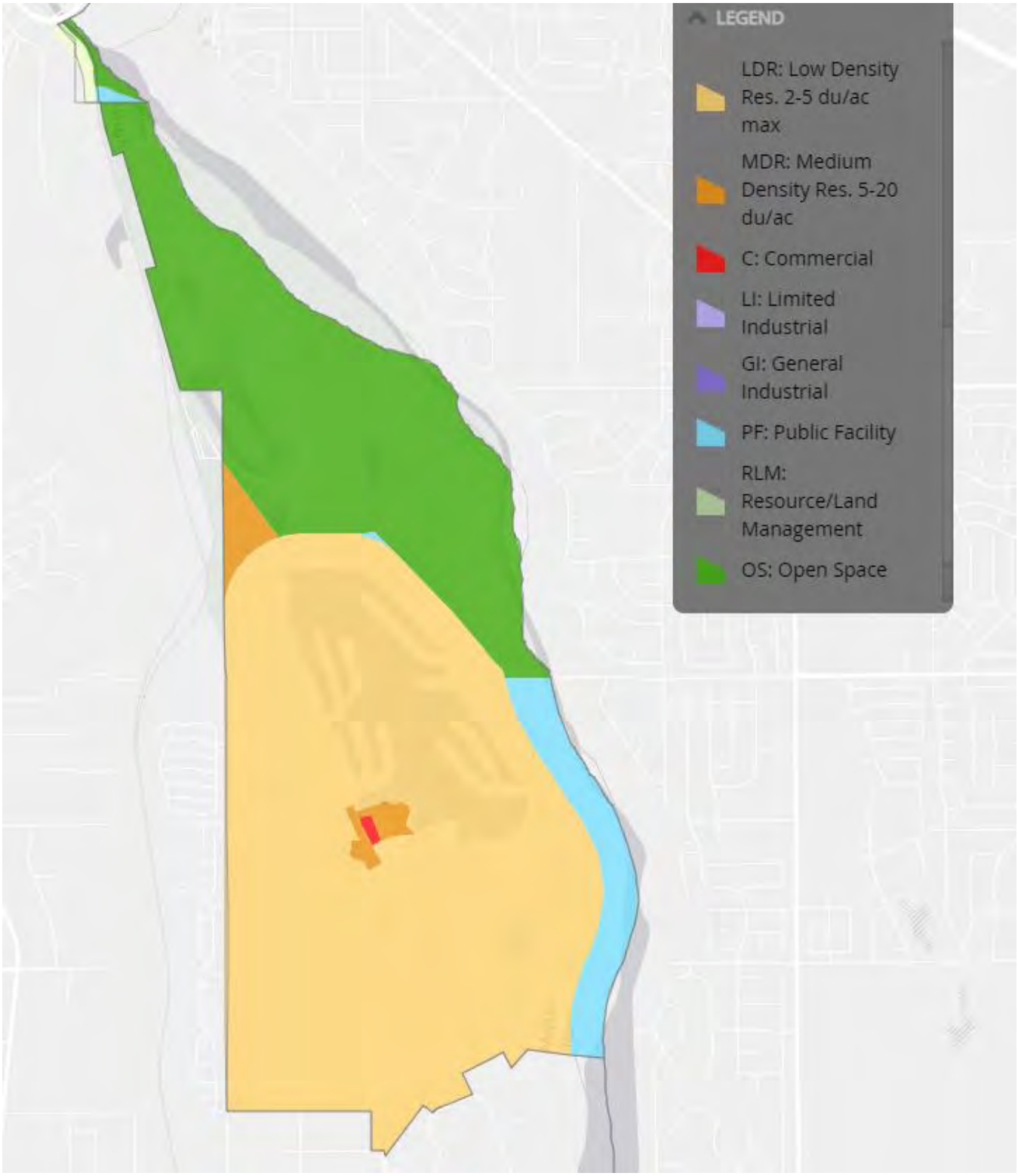

Figure 3-2: CSA 64 Land Use Map (San Bernardino County, 2020)

URBAN WATER MANAGEMENT PLAN

4 Water Use Characterization

This chapter describes historical and current water usage and presents projected future demands within CSA 64's service area. Water usage is presented by customer class such as single-family and multi-family residential, industrial, institutional, landscape, agricultural, and other purposes.

IN THIS SECTION

- Non-Potable vs. Potable Water Use
- Water Use by Sector
- Past and Current Water Use
- Projected Water Use

Demand projections are dynamic, often changing because of economic, political, and environmental pressures. Several factors can affect demand projections, including land use revisions, new regulations, consumer choice, economic conditions, transportation needs, environmental factors, conservation programs, and plumbing codes. These factors can impact not only the amount of water needed but also the timing and location of when and where it is needed. Since CSA 64 is highly residential, population growth is the most influential factor in determining water demand projections.

The projections presented in this UWMP do not attempt to forecast extreme economic or climatic changes. Likewise, no speculation was made regarding future plumbing codes or other regulatory changes.

4.1 Past, Current, and Projected Water Use by Sector

This UWMP provides insight into the expected customer demand and how it compares to the historical and actual demands. These projections are forecasted through 2045 and are categorized into water use types defined by the CWC. Water losses and climate change are also considered in this analysis.

4.1.1 Water Use Sectors Listed in Water Code

Water suppliers are required to identify water uses, to the extent that records are available, for at least each of the 10 water use sectors identified in CWC Section 10631(d) to assist in the water demand projections.

CSA 64 has the following water uses:

Single Family Residential

Single family demands account for all dwelling units that contain one dwelling unit. On average, single family residential demand accounts for about 74% of total uses.

Multi-Family Residential

Multi-family demands result from buildings that house more than one dwelling unit. This use sector provides 0.2% of the service area demand.

Commercial

Commercial water use comes from users that provide or distribute a product or service. On average, commercial water uses account for about 1.7% of total uses.

Institutional/Governmental

Institutional and governmental water use comes from users dedicated to public services, such as higher-education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions. In CSA 64's service area, this includes parks, schools, and a church. On average, this demand accounts for about 5.3% of the total demand.

Landscape

This use sector involves landscape irrigation that is associated with one of the above sectors and makes up about 1.5% of the total demand.

Other – Water Only

The connections that only receive potable water service and do not have sewer service are separated out into this Water Only category accounting for about 0.3% of the total demand.

Losses

Distribution system water losses are the physical potable water losses from the point of water entry to the distribution system and throughout the distribution system until the delivery point to the customer's system. Water losses typically account for about 16% of the demand and are further discussed in **Chapter 4.2.3**.

4.1.2 Past and Current Water Use

Historical water uses help suppliers understand water use trends which are crucial for developing water use projections. **Table 4-1** provides a summary of the previous five years of water usage within CSA 64's service separated by usage type. On average, residential demand accounts for about 75% of the total demand and has remained relatively constant since 2016.

Over the last five years, CSA 64 used an average of approximately 2,645 AFY. The most recent peak in demand occurred in 2018 with a total demand of 2,842 AFY, which is a 444 AFY increase since 2016. The demand decreased by 6.8% in 2019 and then stayed about the same in 2020 (**Table 4-2**). Water use in 2020 was affected by the COVID-19 Pandemic, government-mandated closures of schools and businesses, and extended stay-at-home orders.

Table 4-1. Historical Water Use by Use Sector (AFY)

USE TYPE	2016	2017	2018	2019
Single Family	1,831	1,994	2,130	2,007
Multi-Family	4	5	5	5
Commercial	43	46	49	47
Institutional/Governmental	131	143	153	144
Landscape	35	38	40	38
Other – Water Only	8	8	9	9
Losses	347	399	455	400
TOTAL:	**2,398**	**2,633**	**2,842**	**2,649**

Table 4-2. Actual Demands for Water (AFY)

DWR Table 4-1R

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME
Single Family		Drinking Water	2,007
Multi-Family		Drinking Water	5
Commercial		Drinking Water	47
Institutional/Governmental		Drinking Water	144
Landscape		Drinking Water	38
Other	Water Only Use Category	Drinking Water	9
Losses		Drinking Water	453
-		**TOTAL:**	**2,701***

This number differs slightly from CSA 64 data as the state reported data was used to match data used in MWA's UWMP

4.1.3 Distribution System Water Losses

Distribution system water losses are the physical potable water losses from the water system, calculated as the difference between water produced and the customers' billed consumption plus other authorized uses of water. Water loss can result from aging infrastructure, leaks, flushing program, fire flow testing, annual tank overflows, seepage, theft, meter inaccuracies, data handling errors and other causes. Addressing water losses can increase water supplies and recover revenue. Over the last five years, CSA

64 water losses have ranged from 14% to 17% as shown in **Table 4-3**. **Chapter 9.1.2** provides information about the new metering system in place that will reduce water loss in the future.

CWC Section 10631 (d)(3)(C) requires water suppliers to provide data to determine if the supplier will meet its SWRCB water loss performance standard. Although the standard has not yet been implemented, the data needs to be included in the 2020 UWMP. Compliance with the future water loss performance standards will be determined in the next UWMP cycle. **Chapter 9.1.5** discusses CSA 64's programs to assess and manage distribution system real loss in preparation for these stricter requirements.

More detailed assessments of water loss were completed using the American Water Works Association (AWWA) Water Audit Software, presented in **Table 4-4**. This software includes estimates for unbilled, unmetered, and apparent losses which is not included in the previous method resulting in different values between **Table 4-3** and **Table 4-4**. These audits are required by the state to be completed every year and while these audits were not completed in 2015 and 2016, CSA 64 staff plans to complete them annually moving forward. The 2017-2019 AWWA Water Audits are provided in **Appendix F**.

Table 4-3. Water Losses

	2016	2017	2018	2019	2020
Losses (AFY)	345	388	431	370	453
Percentage	14.4%	14.8%	15.3%	14.1%	16.8%

Table 4-4. 12 Month Water Loss Audit Reporting

DWR Table 4-4R

REPORT PERIOD START DATE		
MM	**YYYY**	**VOLUME OF WATER LOSS* (AFY)**
7	2017	356
7	2018	365
7	2019	442

[1] Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.
[2] Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

4.1.4 Projected Water Use

CSA 64's water use forecast was estimated in conjunction with MWA, the population projection discussed in **Section 3.4.1,** the California Model Water Efficient Landscape Ordinance, Green Building Standards Code, and Per-capita urban water conservation objectives. A gallons-per-capita-per-day (GPCD) water factor was determined for the existing customers and the new customers that are expected in the future. The existing customer water factor was based upon the 2020 GPCD and is scaled down slightly for future use to account for conservation efforts. The future customer water factor was estimated using the expected future indoor targets set by the CWC. The sum of these factors was then multiplied by the population projection to get the projected water demands for the entire service area (Tully & Young, 2021).

The service area demand was then split into the water use categories using the 2020 water use ratios for each sector. The water losses were projected by using the last five-year average water use ratio of 15.1%. Water losses are discussed in more detail in **Section 4.1.3.**

Table 4-5 summarizes the future water demand for each of the Land Use types. The demand is estimated to increase from the actual 2020 demands by about 300 AFY or 7.4% by 2045.

Table 4-5. Projected Demands for Water (AFY)

DWR Table 4-2R

		PROJECTED WATER USE				
USE TYPE	ADDITIONAL DESCRIPTION	2025	2030	2035	2040	2045
Single Family		2,100	2,130	2,153	2,160	2,198
Multi-Family		5	5	5	5	5
Commercial		49	49	50	50	51
Institutional/Governmental		150	153	154	155	157
Landscape		40	40	41	41	42
Other	Water Only Use Category	9	9	9	9	9
Losses		418	424	428	430	437
-	**TOTAL:**	**2,770***	**2,810**	**2,840**	**2,850**	**2,900***

*Due to rounding errors, the summation of the use type demands is slightly off from the total for years 2025 and 2045.

4.1.5 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). The demand projections established in this chapter assume typical, unconstrained demand, free from other influential factors. In the next five years, CSA 64 anticipates that potable demands may increase by approximately 69 AFY from current conditions. Details on this analysis for the next five years is discussed in **Chapter 7**.

4.2 Water Use for Lower Income Households

Senate Bill 1087 requires that water use projections of an UWMP include the projected water use for single-family and multi-family residential housing for lower income households. However, there are no current areas within CSA 64's service area that are specifically designed for low-income housing and there no known plans for this type of development in the future. Therefore, it is assumed that any existing low-income housing demands are included.

Table 4-6. Inclusion in Water Use Projections

DWR Table 4-5R

Are Future Water Savings Included in Projections? Refer to Appendix K of UWMP Guidebook.	No
Are Lower Income Residential Demands Included in Projections?	Yes

4.3 Climate Change Considerations

Including climate change in a water use analysis aids in understanding the potential effects on long-term reliability, which in turn, allows CSA 64 to proactively begin planning appropriate responses with MWA. For example, hotter and drier weather may lead to an increased demand in landscape irrigation, especially during the spring and fall months, increasing the pressure on water supplies that may have availability restrictions during these periods (Tully & Young, 2021).

However, the High Desert climate already has low rainfall and extreme temperatures. Thus, adjustments for the near-term planning horizon are not warranted. In addition, long-term effects of climate change are not expected to impact the residential usage within CSA 64's service area.

URBAN WATER MANAGEMENT PLAN

5 SBX7-7 Baseline, Targets and 2020 Compliance

This chapter describes the Water Conservation Act of 2009, also known as SBX7-7, Baseline, Targets, and 2020 Compliance. The goal of this chapter is to demonstrate compliance with the 2020 targeted water-use reduction of 20 percent.

IN THIS SECTION

- Updated Calculations
- Baselines & Targets
- 2020 Compliance

Senate Bill 7 of Special Extended Session 7 (SBX7-7) was incorporated into the 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. SBX7-7 required the DWR to develop certain criteria, methods, and standard reporting forms through a public process that water suppliers could use to establish their baseline water use and determine their water conservation targets.

SBX7-7 and the DWR's Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use specify methodologies for determining the baseline water demand, 2015 interim urban water use target and the 2020 urban water use target for CSA 64 as described in the following sections (State of California Department of Water Resources, 2016). The SBX7-7 Verification Forms, which are required to be submitted to the DWR to demonstrate compliance with the SBX7-7 requirements, are presented in **Appendix G**.

5.1 Updated Calculations from 2015 UWMP to the 2020 UWMP

With the adoption of SBX7-7, also known as the Water Conservation Act of 2009, the State of California was required to reduce urban per capita water use by 20% by 2020. This section summarizes the past targets CSA 64 developed and demonstrates that compliance in 2020 was achieved.

Water use targets were developed in terms of gallons per capita per day, or GPCD, which is calculated by dividing the total water from all customer categories by the population.

The DWR has prepared standardized tables to record and document the calculations required for this section. The standardized tables for CSA 64's calculations are included in **Appendix G**.

5.1.1 Baselines and Target Summary

CSA 64's baseline and 2020 target was originally calculated in the 2015 UWMP but a typo led to an inaccuracy in the document. Therefore, these numbers have been recalculated for this UWMP. This resulted in a lower 2020 compliance target than was submitted in the 2015 UWMP but does not affect CSA 64's compliance with the required water use reduction nor the interim 2015 target. More details on the development of the baselines and target can be found in **Appendix G**. CSA 64's calculated water use target for 2020 is **269 GPCD** as shown in **Table 5-1**.

Table 5-1. Baselines and Targets Summary

DWR Table 5-1R

BASELINE PERIOD	START YEAR	END YEAR	AVERAGE BASELINE GPCD*	CONFIRMED 2020 TARGET *
10-15 Year	2001	2010	336	269
5 Year	2006	2010	331	

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

* All cells in this table are populated manually from the supplier's SBX7-7 Verification Form.

5.2 Methods for Calculating Population and Gross Water Use

To calculate baseline and compliance water use in GPCD, the population and gross water use must be correctly calculated for the baseline and compliance years. For the 2020 population estimate of 11,244, CSA 64 used the DWR Population Tool, as discussed in **Chapter 3**.

The gross water use was obtained from supply production reports submitted to the State Water Resources Control Board by CSA 64. The gross water usage for water year 2019-2020 was 2,701 AFY. For more information on historic gross water use, refer to **Chapter 4**.

5.3 2020 Compliance Daily Per-Capita Water Use (GPCD)

As part of the 2020 UWMP, CSA 64 must demonstrate compliance with its 2020 water use target by completing the SB X7-7 2020 Compliance Form. This Form is an abbreviated version of the SB X7-7 Verification Form solely for 2020 compliance calculations. A summary of the 2020 SB X7-7 2020 compliance table is shown in **Table 5-2**. There were no extreme cases that warranted an adjustment to the GPCD compliance calculation. The 2020 calculated GPCD for 2020 is **214 GPCD**, which meets CSA 64's 2020 SBX7-7 target of 269 GPCD. A copy of the completed SB X7-7 Compliance Form is included in **Appendix G**.

Table 5-2. 2020 Compliance

DWR Table 5-2R

	OPTIONAL ADJUSTMENTS TO 2020 GPCD						
ACTUAL 2020 GPCD*	EXTRAORDINARY EVENTS*	ECONOMIC ADJUSTMENT*	WEATHER NORMALIZATION*	TOTAL ADJUSTMENTS*	ADJUSTED 2020 GPCD*	2020 GPCD* (ADJUSTED IF APPLICABLE)	SUPPLIER ACHIEVED TARGETED REDUCTION IN 2020
214	-	-	-	-	-	-	Yes

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

*All cells in this table are populated manually from the supplier's SBX7-7 Verification Form.

URBAN WATER MANAGEMENT PLAN

6 Water Supply Characterization

This chapter describes and quantifies the current and projected potable and non-potable water supplies. It also aims to characterize each water source to gather the information needed to manage water resources, assess supply reliability, perform the Drought Risk Assessment, and prepare and implement the WSCP.

A thorough water supply analysis can provide information about how diverse and reliable a utility's water portfolio is. This prepares the supplier for long-term climate change impacts and regulatory revisions. CSA 64 currently pumps all potable water supplies from the Mojave Groundwater Basin. If additional supplies above the Free Production Allowance (FPA) are required, CSA 64 can buy a portion of other user's FPA via the MWA Watermaster. The Watermaster then uses that money to fund recharge to the Mojave River from the California Aqueduct.

IN THIS SECTION

6.1 UWMP Water Supply Characterization

6.1.1 Purchased or Imported Water

In 2013, MWA created the Regional Recharge and Recovery Project (R^3) that stores SWP water for later recovery and distribution. SWP water is delivered to recharge sites located along the Mojave River in Hesperia and southern Apple Valley. MWA then recovers the recharged water at wells downstream and delivers through pipelines directly to retail water agencies. This project provides an alternate source of supply that allows agencies to reduce pumping and maintain groundwater levels in the vicinity of their wells. While CSA 64 does not currently have a contract to obtain supplies from the R^3 project, staff are considering this water supply option for the future.

6.1.2 Groundwater

CSA 64 has 5 active groundwater wells within its distribution system that are actively used to pump groundwater from the Alto Subbasin, located in the southwestern portion of the Mojave River Groundwater Basin.

Mojave River Basin Description

The Mojave River Groundwater Basin, the largest in the region, encompasses 1,400 square miles, and has an estimated total water storage capacity of nearly 5 million acre-feet (MAF). The Mojave River Groundwater Basin Area is essentially a closed basin which means that very little groundwater enters or exits the basin. However, within the basin, groundwater moves between the different subareas; groundwater-surface water and groundwater-atmosphere interchanges also occur. Approximately 80% of the basin's natural recharge is through infiltration from the Mojave River. Other sources of recharge include infiltration of storm runoff from the mountains and recharge from human activities such as irrigation return flows, wastewater discharge, and enhanced recharge with imported water. Over 90% of the basin groundwater recharge originates in the San Gabriel and San Bernardino Mountains. Groundwater is discharged from the basin primarily by well pumping, evaporation through soil, transpiration by plants, seepage into dry lakes where accumulated water evaporates, and seepage into the Mojave River. The Mojave Basin Area is shown in **Figure 6-1**.

Recent investigations by MWA, the US Geological Survey (USGS), and others have resulted in an improved understanding of the geology and hydrogeology of the Mojave Basin Area. Specifically, a more refined examination of the hydrostratigraphy has allowed for differentiation between the more permeable Floodplain Aquifer that has a limited extent along the Mojave River and the more extensive but less permeable Regional Aquifer. In the Mojave Basin Area, the Alto, Centro, and Baja subareas contain both the Floodplain Aquifer and the Regional Aquifer while Oeste and Este subareas only contain the Regional Aquifer.

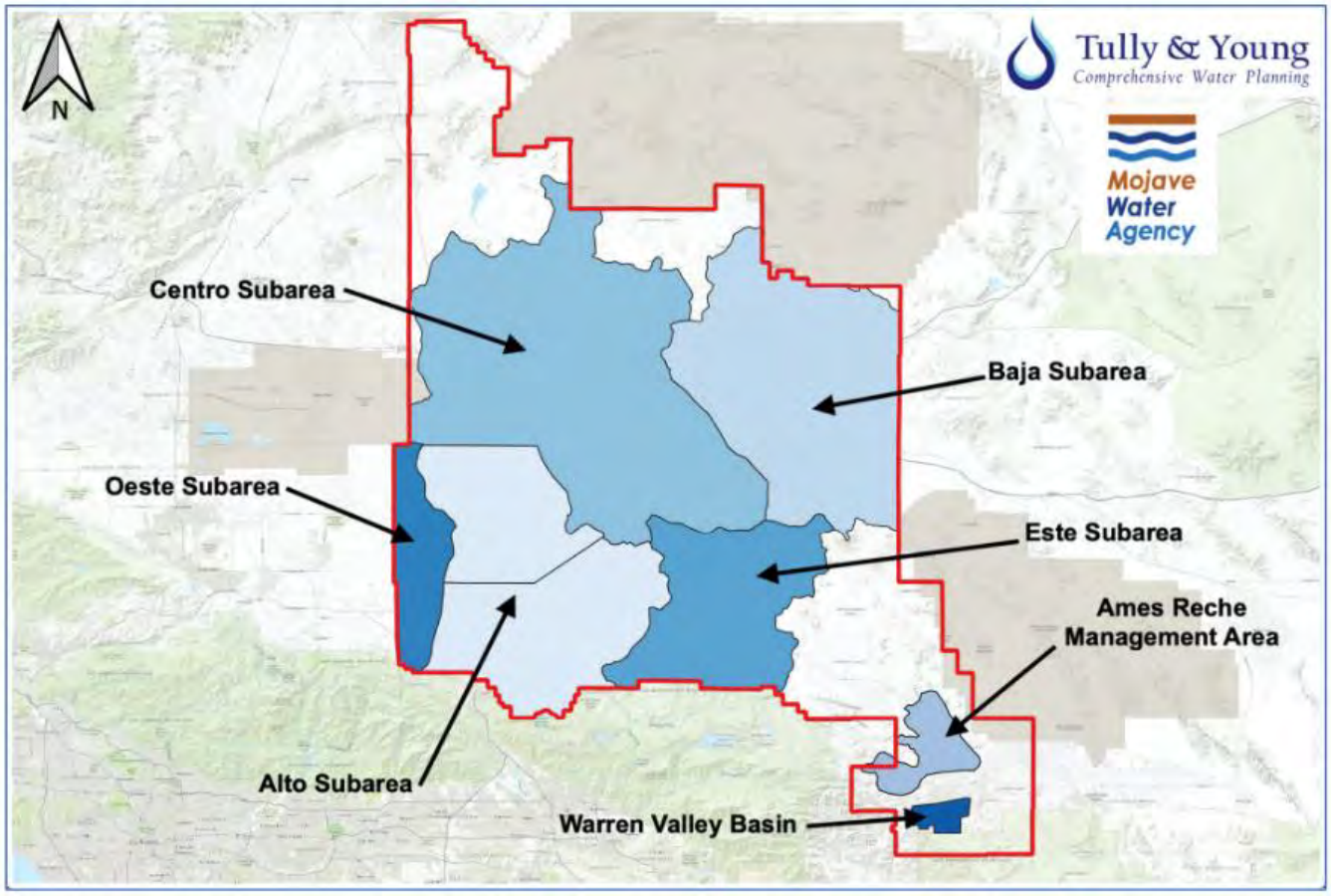

Figure 6-1. Mojave Basin Area Within MWA's Service Area (Figure 3-6; Tully & Young, 2021)

6.1.2.1 Groundwater Management

The MWA Integrated Regional Water Management Plan (IRWMP) established the framework for managing future water supplies within MWA's service area which encompasses 4,900 square miles. Water rights within the Mojave River Basin have been the subject of litigation since the early 1990's. Riverside County Superior Court's stipulated Mojave Basin Area Judgment (Judgment) for the adjudication of the Mojave River groundwater basin identified MWA as the Watermaster. The Judgment stipulated that MWA has both the authority and obligation to secure supplemental supplies as part of the solution to overdraft within the Mojave River Basin. While the increased groundwater pumping in excess of natural supplies over the last 50 years has resulted in a decline in groundwater elevations, the groundwater basins remain capable of meeting annual water demands through dry years and consecutive multiple dry years. The Judgment and IRWMP are intended to bring all basins into long term hydrologic balance. Projects and water management actions are needed to continue to recharge the groundwater basins to maintain groundwater levels and protect quality. A copy of the Mojave Basin Area Judgment is included in **Appendix H**.

To maintain proper water balance within each subarea, any producer, such as CSA 64, who produces in any year an amount of water in excess of that producer's share (Free Production Allowance or FPA) for a subarea must buy replacement water (Replacement Water Assessment or RWA). Replacement obligations can be met by buying additional water rights, buying imported water from MWA, or leasing groundwater rights for one year from other water rights holders. The RWA is equal to the number of AF of excess production by the producer multiplied by the RWA rate per AF as adopted annually by the 2020

Mojave Basin Area Watermaster. Based on this year's municipal percentage for the CSA 64 Subarea, the FPA for CSA 64 is **2,103 AFY**, subject to decrease in the future. The 2,103 AFY FPA is used as the available supply for CSA 64 without RWA. Use over this quantity is subject to replacement obligations adopted by the Watermaster and paid to the Watermaster. When available, CSA 64 can also lease water from agencies that pump less than their FPA and this can offset the amount of water in their RWA.

Producers in the Mojave Basin Area are allowed to produce as much water as they need annually to meet their requirements, according to the Judgment. An underlying assumption of the Judgment is that sufficient water will be made available to meet the needs of the Basin in the future from a combination of natural supply, imported water, water conservation, water reuse and transfers of FPA among parties. MWA is actively operating recharge sites for conjunctive use along the Mojave River Pipeline, Oro Grande Wash Pipeline, Morongo Basin Pipeline and Silverwood Dam. Recharge sites provide MWA with the ability to recharge SWP water into the Subareas where replacement water is purchased. These sites also provide MWA with the ability to bank excess SWP water when available in wet year for storage to be used in dry years (Kennedy/Jenks Consultants, 2014). R^3 facilities allow MWA to manage the groundwater basins surrounding CSA 64 by delivering imported SWP water stored in upper Mojave River recharge areas to purveyors that can reduce pumping from their wells when taking R^3 water which allows partial recovery of local pumping depressions.

CSA 64 will continue aggressive water conservation efforts in an effort to balance supplies and demands into the future. Pumping beyond the FPA is anticipated to continue as needed to meet water demands and will require CSA 64 to continue to pay replenishment fees to support implementation of additional water supply projects by MWA or purchase of water rights from other agencies in the subbasin.

In addition to conducting regional groundwater management, MWA works closely with the U.S. Geological Survey (USGS) in a cooperative water resources program by which the USGS assists MWA with monitoring activities in their service area. MWA currently maintains a monitoring network of approximately 900 monitoring wells for regular measurements of water levels and water quality and uses that data to track trends and fluctuations.

Contaminants that are currently being monitored within the Alto Subbasin by the MWA include Arsenic, Nitrates, Iron, Manganese, Chromium VI, and Total Dissolved Solids (TDS). Measurements in excess of drinking water standards have been found for many of these constituents in the Alto Subbasin. Ongoing water quality monitoring allows identification of more sensitive areas. Groundwater pumping in these areas are avoided, treated, or blended. Salt accumulation is also monitored, however the addition of SWP water generally dilutes the groundwater thus enhancing water quality.

CSA 64's groundwater wells meet state and federal drinking water standards without treatment. These wells receive wellhead chlorination for disinfection and pump directly into the distribution system or into storage tanks.

6.1.2.2 Overdraft Considerations

MWA and CSA 64 consider it a high priority to maintain stability in previously over drafted groundwater basins and reduce overdraft in groundwater basins experiencing ongoing water table declines. Overdraft is not only considered a challenge for reliability in quantity of supply but also in quality of supply. One way to reduce overdraft throughout the Mojave Basin is through artificial recharge. Further discussion of artificial recharge within the Mojave Basin is in **Section 6.1.2.1**.

6.1.2.3 Past Five Years

Historic groundwater use over the last five years is presented in **Table 6-1.**

Table 6-1. Groundwater Volume Pumped (AFY)

DWR Table 6-1R

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Mojave River	2,396	2,623	2,817	2,618	2,701
-	**TOTAL:**	**2,396**	**2,623**	**2,817**	**2,618**	**2,701**

6.1.3 Surface Water

The CSA 64 service area contains three freshwater lakes. The Spring Valley Lake is situated in the middle of the service area and is used for recreational purposes. The two other lakes, Horseshoe and Pelican Lakes, are smaller and located in the northern portion of the service area. CSA 64 does not directly utilize these surface water supplies as a potable water resource for the service area.

6.1.4 Stormwater

During high precipitation storms, the Mojave River will receive that stormwater runoff and a negligible amount of that runoff will infiltrate into the Mojave River Groundwater Basin. CSA 64 does not use stormwater as a potable water source and therefore does not have a stormwater recovery system in place. The service area relies on the natural Mojave River to move the runoff through the service area. In addition, the Adjudication of the Mojave Basin Area included an injunction against diverting stormwater flow away from downstream users of the Mojave River, therefore, no storm water capture projects are planned to increase water supplies.

6.1.5 Wastewater and Recycled Water

Wastewater within the service boundary of CSA 64 is collected via the CSA 64 owned and operated 35-mile collector sewer system involving three sewage lift stations. Total wastewater flow is measured through a single metering station as it discharges to regional interceptor sewer (CSA 64 Outfall) and Regional Wastewater Treatment Plant owned and operated by the Victor Valley Wastewater Reclamation Authority (VVWRA). The VVWRA then uses the treated recycled water to recharge the underlying groundwater aquifer. In water year 2020, CSA 64 collected about 589 AF of wastewater from the entire service area, as shown in **Table 6-2**.

CSA 64 currently does not use recycled water as a water source nor has the facilities available to do so. If CSA 64 were to pursue this water source in the future, recycled water pipeline facilities from the Subregional plants, VVWRA, or their own Subregional plant would need to be constructed to have access to recycled water flows. There are no plans at this time to do so.

6.1.5.1 Actions to Exchange and Optimize Future Recycled Water Use

CSA 64 has the potential to expand recycled water use once additional recycled water distribution facilities have been constructed. Currently CSA 64 does not have any plans to expand recycled water use within the service area. The service area contains a large golf course that could be irrigated with recycled water in the future if the recycled water facilities are constructed to deliver water to the golf course, however the golf course currently produces irrigation water from its own private wells. Until the need for recycled water outweighs the cost to construct the required facilities, CSA 64 will continue to rely on potable groundwater for all water needs, including irrigation.

6.1.6 Desalinated Water Opportunities

Desalination refers to treatment processes that remove salts from water to achieve salinity concentrations that are acceptable for municipal and agricultural uses. The desalination strategy covers treatment of seawater as well as brackish water. Desalination technologies may also be used to treat wastewater to produce high quality recycled water. In California, the principal method for desalination is reverse osmosis. This process can be used to remove salt as well as specific contaminants in water such as disinfection byproduct precursors, volatile organic compounds, nitrates, and pathogens. As summarized below, there is no opportunity for desalination of any kind by CSA 64.

6.1.6.1 Brackish Water and/or Groundwater Desalination

The groundwater basins located under or near the CSA 64 are not brackish and do not require desalination. Therefore, there is no water of this nature available to CSA 64 for direct use.

6.1.6.2 Seawater Desalination

Because CSA 64 is not located in a coastal area, it is neither practical nor economically feasible for CSA 64 to implement a seawater desalination program.

6.1.7 Water Exchanges and Transfers

Since the drought of 1987-1992, the concept of water transfers has evolved into a viable supplemental source to improve supply reliability. Various laws have been enacted in recent years to help define parameters for water transfers and set up a variety of approaches through which water or water rights can be transferred among individuals or agencies.

CSA 64 does not directly engage in water transfers or exchanges. However, MWA has participated in both exchanges and transfers with other SWP contracting agencies when necessary and available and thus indirectly impacts CSA 64. These transactions are characterized as supplementary supplies and are not required for MWA to maintain a reliable water portfolio. Any future agreements will depend on available SWP allocation amounts, SWP carryover amounts, groundwater banking opportunities, and financial capability of the agreement (Tully & Young, 2021).

6.1.8 Future Water Supply Projects

CSA 64 has no future water supply projects planned; however, staff is considering the R^3 project as a potential future supply option. In addition, there are plans to replace well #1 with a new well #8 for increased pumping capacity from the Alto Subbasin but this is not a new supply source and does not affect CSA 64's pumping rights.

6.1.9 Summary of Existing and Planned Sources of Water

CSA 64's historical, current, and projected water supplies are summarized in **Table 6-3** and

Table 6-4. As shown, the groundwater supply is available to meet the current and forecasted demands. These quantities are based on projected demands in **Chapter 4**.

Table 6-2. Wastewater Collected within Service Area in 2020

DWR Table 6-2R

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 (AFY)	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
CSA 64	Metered	589	Victor Valley Wastewater Reclamation Authority	VVWRA	No	
	TOTAL:	**589**				

Table 6-3. Actual Water Supplies (AFY)

DWR Table 6-8R

		2020		
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	ACTUAL VOLUME	WATER QUALITY	TOTAL RIGHT OR SAFE YIELD
Groundwater (not desalinated)		2,701	Drinking Water	2,103
-	**TOTAL:**	**2,701**		**2,103**

Table 6-4. Projected Water Supplies (AFY)

DWR Table 6-9R

		PROJECTED WATER SUPPLY				
		2025	2030	2035	2040	2045
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME	REASONABLY AVAILABLE VOLUME
Groundwater (not desalinated)		2,770	2,810	2,840	2,850	2,900
-	**TOTAL*:**	**2,770**	**2,810**	**2,840**	**2,850**	**2,900**

*These numbers are from MWA's UWMP as they performed the water supply projection analysis.

6.1.10 Climate Change Effects

The MWA IRWMP performed an assessment of climate change effects throughout their service area, including CSA 64's service area. Climate change is driven by increasing concentrations of carbon dioxide and other greenhouse gases (GHG) that cause an increase in temperature and stress natural systems, such as oceans and the hydrologic cycle. California faces the prospect of significant water management challenges related to climate change and is already experiencing a wide array of effects. Impacts that are currently occurring and that are projected to continue include increased temperatures, sea level rise, a reduced winter snowpack, and altered precipitation patterns, including more frequent and intense storm events.

While actions must be taken to reduce GHG emissions to mitigate impacts on global climate, adaptation to already-occurring impacts is also crucial to continue to effectively manage the State's water resources. Water resource managers and customers can play key roles in improving water and energy efficiency, reducing GHG emissions, and improving stewardship of the State's natural resources.

Climate changes that may affect CSA 64 water resources include:

- **Higher Temperatures and Heat Waves:** An increase demand for water, especially for irrigation uses.
- **Water Uncertainty:** A projected overall decrease in precipitation levels coupled with more intense individual storm events may lead to increased flooding. Higher temperatures may cause more precipitation to fall as rain rather than snow, hasten snowmelt and increase runoff, making it more difficult to capture storm water flows for storage. Increased evaporation will create a generally drier climate, with wildfires likely to increase and groundwater basins likely to receive less replenishment.

CSA 64's expected water supply is groundwater pumped from the Mojave Groundwater Basin, the largest groundwater resource in the MWA service area. Any water quality impacts to groundwater sources due to climate change are expected to be indirect, and primarily due to decreased recharge from lower precipitation and increased use of groundwater to make up loss of imported water. Decreased recharge and increased groundwater pumping may allow concentrations of groundwater contaminants such as arsenic, nitrates, Chromium VI and TDS to increase in local basins, which may trigger additional treatment requirements and increase groundwater treatment costs.

A projected overall decrease in precipitation levels coupled with more intense individual storm events may lead to increased flooding in the region. Flood risks are greatest if flood conveyance channels, storm drains and natural streambeds lack sufficient capacity to convey these intense flows (Kennedy/Jenks Consultants, 2014).

6.1.10.1 Addressing Climate Change

There are two main strategies to deal with climate change – mitigation strategies and adaptation strategies. Mitigation strategies combat climate change by directly reducing GHG emissions or minimize increases in GHG emissions while adaptation strategies generally refer to efforts that deal with the impacts of climate change.

Typically, mitigation or GHG reduction measures are accomplished by implementing specific energy efficiency programs or projects, installing renewable energy projects, implementing waste-to-energy projects at wastewater treatment plants, promoting carbon sequestration, and conducting water efficiency and demand reduction programs. All these measures either directly create carbon-free energy or reduce the need for generation of electricity from fossil fuel-fired electric plants. The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG emissions that cause climate change. The scoping plan has a range of GHG reduction actions which include direct regulations, alternative compliance

mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

Adaptation addresses operational changes that need to be made to accommodate the increasing temperatures, the increased possibility for severe flooding and the decreasing precipitation as snow predicted by the climate models.

Large water and wastewater agencies could conduct Energy and GHG Master Plans to assess their energy and carbon footprints and create an Action Plan of strategies for greater energy efficiency and GHG emission reductions. Fully exploring the Water-Energy-Carbon nexus can identify opportunities for energy savings and GHG emission reductions through water operations, programs, and projects.

Suggested regional adaptation strategies to address potential reductions in water supply include the following:

- Establish a climate change adaptation public outreach and education program.
- Build collaborative relationships between regional entities and neighboring communities to promote complementary adaptation strategy development and regional approaches.
- Establish an ongoing monitoring program to track local and regional climate impacts and adaptation strategy effectiveness. Expand water storage and conjunctive management of surface and groundwater resources.
- Address the State policy goal of reducing reliance on the Delta by promoting and investing in projects and programs that allow the Region to meet water demands with alternative sources of supply and/or demand management actions during times when imported supplies from the Delta are reduced or unavailable due to dry years, droughts, system outages, environmental and regulatory restrictions, or other reasons.
- Enhance use of recycled water for appropriate uses as a drought-proof water supply.
- Enhance practices of water exchanges and water banking outside the Region to supplement water supply.
- Encourage local agencies to develop and implement Assembly Bill (AB) 3030 Groundwater Management Plans (GWMPs) as a fundamental component of the IRWMP.
- Develop plans for local agencies in the Region to monitor the elevation of their groundwater basins.
- Encourage cities and the county agencies in the Region to adopt local ordinances that protect the natural functioning of groundwater recharge areas (Kennedy/Jenks Consultants, 2014).

6.2 Energy Intensity

Water energy intensity is the total amount of energy, calculated on a whole-system basis, required for the use of a given amount of water in a given location. This calculation is intended to report energy usage for facilities within CSA 64's operational control for extraction, diversion, conveyance, placement into storage, treatment, and distribution for the entirety of 2020.

Reporting water energy intensity has many benefits for water utilities and their customers including:

- Identifying energy saving opportunities as energy consumption is often a large portion of the cost of delivering water.
- Calculating energy savings and greenhouse gas (GHGs) emissions reductions associated with water conservation programs.
- Potential opportunities for receiving energy efficiency funding for water conservation programs.

- Informing climate change mitigation strategies.
- Benchmarking of energy use at each water acquisition and delivery step and the ability to compare energy use among similar agencies.

At the CSA 64 utility, energy usage comes from pumping water from the groundwater basin. **Table 6-5** summarizes the energy intensity at each of the five groundwater wells as well as the total for the utility. In general, the energy usage at wells 1 and 5 have decreased from 2015 to 2020 and wells 3 and 6 have remained about the same. Well 7 did not go online until approximately 2018 and thus did not contribute to the energy intensity until then. From 2018 until 2020 the energy usage remained about the same. The total facility usage has decreased from 2018 to 2020. CSA 64 will continue to monitor this energy output and evaluate options to mitigate the impact on the climate.

Table 6-5. Energy Intensity (kWh/AFY)

	ENERGY INTENSITY					
	2015	2016	2017	2018	2019	2020
Well 1	505	476	395	416	423	411
Well 3	374	382	368	384	374	383
Well 5	564	540	535	562	515	514
Well 6	408	403	406	402	416	408
Well 7	-	-	-	310	345	309
TOTAL	**1,851**	**1,801**	**1,704**	**2,704**	**2,073**	**2,025**

URBAN WATER MANAGEMENT PLAN

7 Water Service Reliability and Drought Risk Assessment

This section considers CSA 64's water supply reliability during normal, single dry, and multiple dry water years. The supply reliability assessment discusses factors (i.e., climatic, environmental, water quality, and legal) that could potentially limit the expected quantity of water available from CSA 64's current sources of supply through 2045. In addition, a Drought Risk Assessment (DRA) is included to provide an overview of any potential supply deficits if a drought were to occur in the next five years.

IN THIS SECTION

- Water Service Reliability Assessment
- Drought Risk Assessment

Water service reliability is dependent upon variability of supplies and availability of infrastructure to meet projected demand. Evaluating the water service reliability is critical for water management as it can help identify potential shortfalls before they occur. Water managers can then take proactive steps to mitigate shortages by encouraging water use efficiency, securing new water supplies, and/or investing in infrastructure.

For this 2020 UWMP, the supply reliability assessment considered factors that could limit the expected quantity of current and projected water sources through 2045. Multiple drought scenarios were considered and the quantitative impacts on water supply and demand as well as possible methods for addressing these issues are discussed.

CSA 64's water service reliability assessment and DRA results indicate that no water shortages are anticipated within the next 25-years under normal, single dry water years, and five consecutive dry years. The approach for the analysis and results are discussed in this section.

7.1 Water Service Reliability Assessment

7.1.1 Constraints on Water Sources

In any given year, the variability in weather patterns around the state may affect the availability of groundwater replenishment supplies from the SWP to MWA (and, in turn, to CSA 64). MWA's service area is typical in terms of water management in southern California, local groundwater supplies are used to a greater extent when imported supplies are less available due to dry conditions in the north, and larger amounts of imported water supplies are used during periods when northern California has wetter conditions. This pattern of "conjunctive use" has been in effect since SWP supplies first became available to CSA 64's wholesale water supplier (MWA) in 1978. SWP supplies have supplemented the overall supply of MWA's service area, which previously depended solely on local groundwater supplies.

To supplement these local groundwater supplies, MWA contracted with the DWR for delivery of SWP water, providing an imported water supply to the groundwater basins. However, the variability in SWP supplies affects the ability of MWA to meet the overall water supply needs for the service area. Among MWA's available supply sources, the SWP supplies are most variable, and therefore have the largest effect on supply reliability.

As a SWP Contractor with DWR, MWA's contract contains the maximum water allotment that MWA can receive from the SWP. However, the amount of SWP water actually allocated to MWA (as well as all other SWP contractors) each year is dependent on a number of factors than can vary significantly from year to year. The primary factors affecting SWP supply availability include hydrologic conditions in northern California, the amount of water in SWP storage reservoirs at the beginning of the year, regulatory and operational constraints, and the total amount of water requested by the contractors. The availability of SWP supplies to MWA is generally less than their full contracted amounts and can be significantly less in very dry years (Tully & Young, 2021).

MWA uses the DWR's State Water Project Delivery Capability Report 2019, to assess the reliability of the SWP component of their overall supplies. The Report updates the DWR's estimate of the current (2020) and future (2040) water delivery reliability of the SWP. The updated analysis shows that the primary component of the annual SWP deliveries will be less under current and future conditions, when compared to the preceding report (SWP Delivery Reliability Report 2017).

In the 2019 Report, the DWR presents the results of its analysis of the reliability of SWP supplies, based on model studies of SWP operations. In general, the DWR model studies show the anticipated amount of SWP supply that would be available for a given SWP water demand, given an assumed set of physical facilities and operating constraints, based on years of historic hydrology. The results are interpreted as the capability of the SWP supply to meet the assumed SWP demand, over a range of hydrologic conditions, for that assumed set of physical facilities and operating constraints. In these model studies, the DWR assumed existing SWP facilities and operating constraints for both 2015 and 2035. Using these studies the DWR has projected future SWP delivery reliability for MWA, as a percent of their contracted amount, to range from five (5) to fifty-eight (58) percent for long term average supply until 2040 based on single dry year, average year, and multiple dry years (State of California Department of Water Resources, 2020).

Per the Mojave Basin Area Judgment, producers in the Mojave Basin Area are allowed to produce as much water as they need annually to meet their requirements. An underlying assumption of the Judgment is that sufficient water will be made available to meet the needs of the Basin in the future from a combination of natural supply, imported water, water conservation, water reuse and transfers of FPA among parties.

Portions of the Mojave Basin Area contain numerous, naturally occurring contaminants including arsenic, nitrates, iron, manganese, chromium-6, and excess TDS. CSA 64 utilizes chlorination to ensure that

water delivered to its customers meets the drinking water standards. CSA 64 will continue to monitor groundwater quality to maintain the quality of the water supply.

Climate change impacts that may have a long-term effect on water supplies include increased temperatures, sea level rise, a reduced winter snowpack, and altered precipitation patterns, including more frequent and intense storm events. Mitigation and adaptation strategies are being investigated and implemented by CSA 64 and MWA to address the effects that climate change will have on their future water supply (Tully & Young, 2021).

Additional details on the water quality of the Mojave Basin Area as it pertains to CSA 64 and climate change's effect on CSA 64's supply is provided in **Section 6.1.10** and **Section 4.3**, respectively.

7.1.2 Year Type Characterization

In general, groundwater and recycled water supplies are less vulnerable to seasonal and climatic changes than surface water (i.e., local and imported) supplies. Natural groundwater supply estimates are based on the long-term averages, which account for inconsistency in natural supplies (i.e., historic periods of drought are included in the long-term average). Therefore, CSA 64 does not have any inconsistent water sources that result in reduced supplies in dry or multiple dry years. MWA is actively operating recharge sites for conjunctive use along the Mojave River Pipeline, Oro Grande Wash Pipeline, Morongo Basin Pipeline and Silverwood Dam. Recharge sites provide MWA with the ability to recharge SWP water into the Subareas where replacement water is purchased. These sites also provide MWA with the ability to bank excess SWP water when available in wet year for storage to be used in dry years. R^3 facilities allow MWA to manage the groundwater basins surrounding CSA 64 by delivering imported SWP water stored in upper Mojave River recharge areas to purveyors that can reduce pumping from their wells when taking R^3 water which allows partial recovery of local pumping depressions. For these reasons, supplies are considered to be unchanged in normal, dry, and multiple dry years.

The basis for the "year type" is determined from the single-driest and multiple-driest years using precipitation data (1940- 2016) from the closest National Oceanic and Atmospheric Administration (NOAA) station to the CSA 64 service area, Station 049325 in Victorville. However, even though precipitation is variable, groundwater supply estimates are based on the long-term averages, which account for these variabilities so groundwater is assumed to be 100% available in single-dry and multiple-dry year conditions as shown in **Table 7-1**.

Per UWMP requirements, CSA 64 has evaluated reliability for an average year, single dry year, and a 5 consecutive dry year period.

The UWMP Act defines these years as:

- **Normal Year:** this condition 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.
- **Single Dry Year:** the single dry year is recommended to be the year that represents the lowest water supply available.
- **Five-Consecutive Year Drought:** the driest five-year historical sequence for the Supplier, which may be the lowest average water supply available for five years in a row.

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

DWR Table 7-1R

YEAR TYPE	BASE YEAR	PERCENT OF AVERAGE SUPPLY
Average Year	1970	100%
Single-Dry Year	1953	100%
Consecutive Dry Years 1st Year	2007	100%
Consecutive Dry Years 2nd Year	2008	100%
Consecutive Dry Years 3rd Year	2009	100%
Consecutive Dry Years 4th Year	2010	100%
Consecutive Dry Years 5th Year	2011	100%

7.1.3 Water Service Reliability

CSA 64 and MWA recognize that a sustainable and reliable water supply requires a regional effort. Recently, the partnership between the two entities has helped to reduce water demand by installing water efficient fixtures, implementing a cash-for-grass program, and providing informational water conservation media at public outreach events (see **Chapter 9**). With MWA monitoring the groundwater levels and charging producers that pump above their FPA, the health of the groundwater aquifer can be maintained. The health of the groundwater aquifer is the most important aspect of supply reliability for the region. If the groundwater levels are maintained with supplies generated within the MWA service area, the SWP supplies will be relied upon less. The water supplies generated within the MWA service area include captured runoff, and recycled water which is used to maintain the aquifer levels. MWA will continue to rely on SWP supplies because they are entitled to a percentage of their contracted amount. The SWP supplies will be used to maintain aquifer levels, which will maintain the supply reliability for the region.

With the availability of replenishment water found within the MWA service area, MWA's ability to collect SWP supplies for groundwater recharge, and the producers found in MWA taking steps to reduce their required water production from the aquifer will maintain the supply reliability for the region. All the steps that MWA takes as Watermaster to maintain levels in the aquifer, and the steps that producers, such as CSA 64, have taken to reduce their water demand will be the steps that are required for the region to maintain an adequate water supply.

According to the MWA 2020 UWMP, MWA has adequate supplies to meet the region's demands and replacement water needs during average, single dry and multiple dry years throughout the 25-year planning period. CSA 64's demand projections are included in MWA's demand analysis; therefore, it is concluded that CSA 64 has adequate supplies to meet demands during average, single dry and multiple dry years throughout the 25-year planning period. CSA 64 will continue aggressive water conservation efforts and participation in new water supply projects with MWA to ensure they have enough supply to continue to meet their demands (Tully & Young, 2021).

Results of the water supply and demand analysis for normal, single dry, and five-year consecutive droughts are shown in the following sections. CSA 64 expects to meet demands under all water year scenarios. CSA 64 is committed to continuing water conservation efforts to ensure reliability and resiliency in the future.

7.1.3.1 Water Service Reliability – Normal Year

MWA, as the Watermaster, provides an overall assessment about the health of the groundwater aquifer. Water deliveries to MWA via the SWP are used to replenish water that is pumped by the producers, including CSA 64, above their FPA. In an average year, MWA will be entitled to approximately fifty-eight (58) percent of the contracted amounts of SWP water. With the use of SWP water to replenish the aquifer, and the supplies currently found in the aquifer, CSA 64 will be able to meet the supply and demand for the next twenty-five (25) years during an average water year. CSA 64 can pump groundwater to achieve all their demand for the next twenty-five (25) years and the replacement water purchased through MWA via the SWP will be used to maintain the overall health of the groundwater aquifer. **Table 7-2** presents a comparison of supply and demand projections in an Average Year.

Table 7-2. Normal Year Supply and Demand Comparison (AFY)

DWR Table 7-2R

	2025	2030	2035	2040	2045
Supply Totals (From Table 6-9R)	2,770	2,810	2,840	2,850	2,900
Demand Totals (From Table 4-3R)	2,770	2,810	2,840	2,850	2,900
DIFFERENCE:	**0**	**0**	**0**	**0**	**0**

7.1.3.2 Water Service Reliability – Single Dry Year

During the dry year scenario, SWP availability was anticipated to be reduced to five (5) percent for the single dry year analysis. Despite this large difference from average year conditions, the available supplies found in the aquifer will be able to achieve the demand due in part to MWA storing excess imported water during wet years. MWA will use any water that is received from the SWP during a dry year scenario to recharge the groundwater aquifer in an attempt to keep the groundwater levels at a safe pumping level for the producers, including CSA 64.

Demand during dry years was assumed to remain constant due to ongoing state and local conservation programs. Groundwater supply is assumed to remain 100 percent available because the long-term average of the groundwater basin includes dry periods, and any single or multiple-year dry cycle does not impact the long-term yield of the basin. Supplies are sufficient to meet dry year demands through year 2045 as shown in **Table 7-3**.

Table 7-3. Single Dry Year Supply and Demand Comparison (AFY)

DWR Table 7-3R

	2025	2030	2035	2040	2045
Supply Totals	2,770	2,810	2,840	2,850	2,900
Demand Totals	2,770	2,810	2,840	2,850	2,900
DIFFERENCE:	**0**	**0**	**0**	**0**	**0**

7.1.3.3 Water Service Reliability – Five Consecutive Dry Years

The table below outlines CSA 64's water supplies available to meet demands in five-year increments to year 2045 during multiple dry year scenarios, similar to the droughts that occurred in California in 2007-2011. During this five-year dry scenario, SWP availability was anticipated to be reduced to 35 percent for

the first year, five percent for the second and third years, 20 percent for the fourth year, and 35 percent for the fifth year. Again, all water demands are assumed to remain the same due to ongoing conservation efforts and will be able to be met through existing groundwater supplies and the small amount of SWP that will be delivered to MWA. The available supplies are sufficient to meet multiple dry year demands through year 2045 as shown in **Table 7-4.**

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

DWR Table 7-4R

		2025	2030	2035	2040	2045
First Year	Supply Totals	2,770	2,810	2,840	2,850	2,900
	Demand Totals	2,770	2,810	2,840	2,850	2,900
-	**DIFFERENCE:**	**0**	**0**	**0**	**0**	**0**
Second Year	Supply Totals	2,770	2,810	2,840	2,850	2,900
	Demand Totals	2,770	2,810	2,840	2,850	2,900
-	**DIFFERENCE:**	**0**	**0**	**0**	**0**	**0**
Third Year	Supply Totals	2,770	2,810	2,840	2,850	2,900
	Demand Totals	2,770	2,810	2,840	2,850	2,900
-	**DIFFERENCE:**	**0**	**0**	**0**	**0**	**0**
Fourth Year	Supply Totals	2,770	2,810	2,840	2,850	2,900
	Demand Totals	2,770	2,810	2,840	2,850	2,900
-	**DIFFERENCE:**	**0**	**0**	**0**	**0**	**0**
Fifth Year	Supply Totals	2,770	2,810	2,840	2,850	2,900
	Demand Totals	2,770	2,810	2,840	2,850	2,900
-	**DIFFERENCE:**	**0**	**0**	**0**	**0**	**0**

According to the MWA 2020 UWMP, MWA has adequate supplies to meet the region's demands and replacement water needs during average, single dry and multiple dry years throughout the 25-year planning period. CSA 64's demand projections were provided to MWA for inclusion in their analysis; therefore, it is concluded that CSA 64 has adequate supplies to meet demands during average, single dry and multiple dry years throughout the 25-year planning period. CSA 64 will continue aggressive water conservation efforts, and participation in future supply projects with MWA to ensure they have enough supply to continue to meet their demands.

7.2 Drought Risk Assessment

A new provision of the Water Code directs Suppliers to prepare a Drought Risk Assessment (DRA). The DRA considers a drought period lasting five consecutive years, starting with the year following when the

assessment is conducted. For this UWMP, the DRA considers five consecutive dry years from 2021 through 2025. CSA 64 may conduct an interim update or updates to this DRA within the five-year cycle of its UWMP update.

The results of MWA's DRA indicate that there would be a deficit of imported supplies to meet the required demands in the second, third, and fourth years. However, stored water assets are available to make up for the loss in imported water supply. In addition, the first and fifth year would have excess imported water that can be stored for future use as either carryover supply or as banked groundwater (Tully & Young, 2021).

The DRA analysis allows CSA 64 to examine the management of its supplies during stressed hydrologic conditions and an opportunity to evaluate if they may need to enact its WSCP during the next actual drought period lasting at least five years. The projected gross water use for the five-year DRA is based on unrestricted potable demand. The reliability of supplies over a five-consecutive year drought is described in **Section 7.1.2**. **Table 7-5** compares the total projected supply and demand for the 5-year DRA for 2021 through 2025. As shown, CSA 64 does not expect to enact its WSCP for a 5-year consecutive year drought based on the unrestricted potable demand projections, the current supply portfolio and reliability, and the results of MWA's DRA.

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

DWR Table 7-5

2021	Gross Water Use (AFY)	2,715
	Total Supplies (AFY)	2,715
	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 (AFY)	2,729
	Total Supplies (AFY)	2,729
	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%

*Table continues on the next page

2023	Gross Water Use (AFY)	2,743
	Total Supplies (AFY)	2,743
	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 (AFY)	2,756
	Total Supplies (AFY)	2,756
	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 (AFY)	2,770
	Total Supplies (AFY)	2,770
	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%

URBAN WATER MANAGEMENT PLAN

8 Water Shortage Contingency Plan

This Water Shortage Contingency Plan (WSCP) is a detailed plan for how the San Bernardino County Service Area 64 (CSA 64) intends to predict and respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply is reduced to a level that cannot support typical demand at any given time or reduction in demand is otherwise needed.

This WSCP is used to provide guidance to CSA 64, the Board of Supervisors (the Board), the Director of Department of Public Works, Special Districts Department (Director), staff, and the public by identifying anticipated shortages and response actions to allow for efficient management of any water shortage with predictability and accountability. The WSCP is a detailed proposal for how the CSA 64 intends to act in the case of an actual water shortage condition. This WSCP is not intended to provide absolute direction but rather intended to provide options to manage water shortages.

IN THIS SECTION

- Water Supply Reliability
- Annual Assessment Procedures
- Shortage Levels and Response Actions
- Communication Protocols
- Compliance, Enforcement, and Legal Authority
- Financial Consequences

Water shortages can be triggered by a hydrologic limitation in supply (i.e., a prolonged period of below normal precipitation and runoff), limitations or failure of supply and treatment infrastructure, or a combination of conditions.

Hydrologic or drought limitations tend to develop and abate more slowly, whereas infrastructure failure tends to happen quickly and relatively unpredictably. Water supplies may be interrupted or reduced significantly in several ways, such as during a drought that limits supplies, an earthquake that damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality.

This WSCP describes the following:

Water Supply Reliability Analysis

Summarizes CSA 64 water supply analysis and reliability and identifies the 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.

Six Standard Shortage Levels

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 level to reduce gaps between supply and demand as well as minimize social and economic impacts to the community.

Communication Protocols

Describes communication protocols under each level to ensure customers, the public, and local 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 CSA 64 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 levels 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 shortage response actions should be adjusted.

WSCP Refinement Procedures

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

Special Water Features Distinctions

Defines considerations and definitions for water use for decorative features versus pools and spas.

Plan Adoption, Submittal, and Availability

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

This WSCP was prepared in conjunction with the CSA 64'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 incorporated guidance from the State of California Department of Water Resources (DWR) UWMP Guidebook 2020 (State of California Department of Water Resources, 2021) and the American Water Works Association (AWWA) Manual of Water Supply Practices (M60) Drought Preparedness and Response (American Water Works Association (AWWA), 2019).

The WSCP addresses several types of water supply shortages that could potentially impact CSA 64 and its customers:

- Long-term supply shortages due to prolonged drought, contamination, destruction of critical water supply facilities, etc.
- Short-term water supply shortages due to natural or man-made catastrophic emergencies or production capacity limitations.

Since the WSCP is a standalone document, it has been submitted as an appendix to this UWMP (**Appendix A**). This provides easy reference to the shortage plan in case of a drought.

URBAN WATER MANAGEMENT PLAN

9 Demand Management Measures

The Demand Management Measures (DMM) section provides a comprehensive description of the water conservation programs that CSA 64 has implemented for the past five years, is currently implementing, and plans to implement in the future.

The section of the CWC addressing DMMs was significantly modified in 2014, based on recommendations from the Independent Technical Panel (ITP) to the legislature. The ITP was formed by the DWR to provide information and recommendations to the DWR and the Legislature on new DMMs, technologies and approaches to water use efficiency. The ITP recommended, and the legislature enacted, streamlining the requirements from the 14 specific measures reported on in the 2010 UWMP to six more general requirements plus an "other" category for measures agencies implemented in addition to the required elements. No changes to DMMs have been enacted since the 2015 UWMP.

IN THIS SECTION

9.1 Existing Demand Management Measures for Retail

Consistent with the requirements of CWC, this section describes the DMMs that have been implemented in the past five years to meet the SBX7-7 water use target and will continue to be implemented for future State mandated water use efficiency standards currently under development by the DWR. CSA 64 is a member of the Alliance for Water Awareness and Conservation (AWAC) organization, which provides conservation program support to member agencies throughout the Mojave Water Agency service area and has helped CSA 64 implement and maintain these programs.

9.1.1 Water Waste Prevention Ordinances

The County's Water Conservation Ordinance SD 15-04 (**Appendix I**) prohibits water waste and is an ongoing component of the water conservation program.

SD 15-04 includes the following water waste prohibitions:

- Water shall be confined to the customer's property and shall not be allowed to run-off to adjoining properties or to the roadside ditch or gutter. Care shall be taken not to water past the point of saturation.
- Washing streets, parking lots, driveways, sidewalks, or buildings, except as necessary for health, esthetic, or sanitary purposes, is prohibited.
- Landscape irrigation is only allowed during certain times of the day, depending on annual season.
- Non-commercial vehicle washing only allowed with automatic shutoff device on hose.
- Only recirculated water is allowed for use in decorative fountains. Fountains must recycle water.
- Water shall not be allowed to leak; leaks must be repaired in a timely manner.
- Restaurants only provide water upon request.
- Construction water must be used in an efficient manner.
- All new construction must be equipped with low flow devices.
- All new model home and commercial construction landscape must use native or drought-tolerant plantings and must use highly efficient irrigation systems.
- Cooling systems must use recycled water to the extent possible.
- All new pools and spas must be covered.
- Hotels/motels inform customers to conserve water.
- Current customers encouraged to install flow reducers and faucet aerators.
- Parks, golf course, cemeteries, and school grounds only irrigate between 9:00 PM and 3:00 AM.

The water waste prohibition program is implemented as part of the County's water shortage contingency plan. Penalties for violations include installation of flow restrictor device or service shutoff, with customer responsible for all costs. Depending on hydrologic or supply conditions, additional constraints on water use are enforced by the County through additional violation notices and fines.

9.1.2 Metering

The CSA 64 service area is one hundred (100) percent metered. All customers are billed bi-monthly based on commodity rates, including a three-tier price structure. All new customers are metered and billed on the metered rate.

The County recently is installing new Advanced Metering Infrastructure (AMI) water meters on all its customer connections in 2020. These meters allow for automatic meter reading and include software that transmits the meter read data through the cellular network and works with the customer database interface to support customer billing. The meters include database query tools and reports to allow County staff to investigate daily, or even hourly, customer demands to identify potential leaks and develop demand management programs to cost effectively meet the GPCD compliance requirements. These upgrades should be completed in August 2021.

9.1.3 Conservation Pricing

All CSA 64 connections are metered and charged on a three-tiered metered rate. The metered rates consist of two parts; facility charge and volumetric charge. Each customer is charged a facility charge based on meter size. The three-tiered water rate structure contains increasing volumetric prices and is applicable to all customers. Meters are read bi-monthly and customers are billed bi-monthly.

9.1.4 Public Education and Outreach

Public Information Programs

The County provided information on its water conservation program and on water conservation to the public through its own efforts and through the Alliance for Water Awareness and Conservation (AWAC). The public information program includes informational materials, community event participation, speaker's bureau, print and radio advertisements and public service announcements, newsletters, and other efforts.

The AWAC annually participates in over seven community events such as festivals, home and garden shows, and fairs. AWAC provides a booth and staff to give presentations, answer questions, handout information and literature, and raise water use awareness in which County staff participate. An annual calendar is published that highlights a drought tolerant plant each month and provides month-specific water use tips and conservation information. Newsletters and special newspaper inserts provide information on conservation programs and resources. Specific public workshops are offered to provide information on high desert plant species, indoor and outdoor water conservation, planning and operating water efficient irrigations systems, planning and maintaining water efficient landscape, water system winterizing, and other topics. A plant of the month is identified and promoted each month through the various media such as print, radio, website, and special events. The County also promotes these events and opportunities to its customers through its website, Facebook, bill stuffers, and other advertising. Most of the printed material is available to customers at the County's office.

School Education Program

The County implements a school education program which involves grade-specific water efficiency educational materials for distribution to teachers and schools in the County's service area. County staff assists with developing school presentations and promotes the program to the local schools in the City of Victorville. The County coordinates with AWAC to identify program elements that could be implemented through AWAC on a valley-wide basis.

9.1.5 Programs to Assess and Manage Distribution System Real Loss

The County continually evaluates its system for unaccounted water. This is done by monitoring the system through SCADA, field crew observations, customer reports, and visual inspection by employees and crew who can react quickly to repair a detected or reported leak. Staff also check the meter box for leaks during meter maintenance and either repair leaks on the County's side or notify the customer of

leaks on the customer's side of the meter. Water main leaks are typically repaired within the same day and field staff prepare a leak repair report. These reports are reviewed and tabulated by management staff including plotting of leak locations and frequency on a water distribution map. From these records, short- and long-term plans are developed for replacement of chronically leaking infrastructure. More information on the quantified water losses is discussed in **Section 4.2.3**.

The County completed a $2 million dollar service connection replacement program in which nearly all the service lines were replaced in 2009-2010. The program was identified as a priority based on operations and maintenance data and observations of high number of service line leaks.

The County has increased its leak detection and repair, and non-revenue water monitoring efforts through new Beacon software that tracks this daily. This allows staff to continuously monitor the meters and determine if a leak may be occurring. In addition, operations and maintenance staff have been trained on leak detection methods through the California Rural Water Association. The County uses the AWWA Water Audit model to track and identify non-revenue water components. This data is used to focus the non-revenue water reduction efforts on the appropriate elements.

The County's Water and Sanitation department is available for customers to call if they require help determining if there is a leak. Water audit kits are sent to customers to aid with leak detection as well.

The County has upgraded its production meters to improve meter performance and accuracy. In addition, meters have been added to the well lube lines to account for pumping water use. This improved tracking and accounting of actual water production will increase the non-revenue water analysis accuracy and support the GPCD tracking and compliance efforts.

9.1.6 Water Conservation Program Coordination and Staffing Support

The County's Division Manager serves as the conservation coordinator. Specific programs and/or tasks are delegated to the appropriate operations and maintenance, customer service, or outreach staff. The County also coordinates with the members of AWAC who implement extensive public outreach efforts, information programs, and rebate programs. The County conservation coordinator duties include coordination, oversight, and implementation of the conservation program, as well as coordination and participation in AWAC programs and AWAC committees.

9.1.7 Other Demand Management Measures

In addition to the six DMM categories required by CWC Section 10631, CSA 64 also implements other programs, rebates, and incentives to further promote water conservation within the service area.

Water Survey Programs for Single-Family and Multi-Family Residential Customers

The County offers water use audits to all its customers. Depending on the customer's request, the survey may include an irrigation system review, meter calibration, meter replacement if older than ten (10) years, and basic leak detection. The County does not currently conduct indoor water audits but is considering adding a customer indoor questionnaire to the audit procedures in the future. The indoor questionnaire would ask the customer to quantify number and type of toilets, washing machines, showerheads, and faucet aerators, as well as other water use information. The customer would be offered information on the County's indoor conservation programs and information on water efficient devices and practices.

The County would use the indoor survey results to inform and support its conservation program analysis and review so that the most efficient program can be offered to its customers.

Residential Plumbing Retrofit

The County purchases retrofit kits for distribution to customers during the water survey audit (DMM 1), or for pickup at the County's office or during public outreach events. The retrofit kits contain WaterSense

compliant faucet aerators and low flow showerheads, hose sprayers with automatic shutoff, toilet leak detection kits, information, or other items, depending on the kit selected. The program budget evaluates staff efforts and costs, alternative kits, and maximum annual expenses.

Large Landscape Conservation Programs and Incentives

The County and AWAC provide extensive landscape education materials to all its customers. Materials include information on desert landscape and recommended plantings. The program has developed six prototype landscape designs to educate customers on landscape and planting options.

The program also provides a cash-for-grass rebate when funding is available. AWAC currently relies on grant funding for the program; therefore, the cash for grass program is currently suspended.

The County Land Use Services Department is responsible for land use planning and ordinances. The Department adopted the State Model Efficient Landscape Ordinance on January 1, 2001 per State statute. CSA 64 works with the County Land Use Department to implement the Landscape Ordinance requirements for each of its water service areas.

Residential Toilet Replacement Program

The County has an ongoing toilet replacement rebate program and has also included it on the 2021/2022 budget. The program offers rebates for customers to replace existing 1.7 gallon per flush or larger toilets with high efficiency toilets (HET) that consume less than 1.28 gallons per flush. Program implementation includes promotional material describing the program and enrollment information, which is provided on the County's website, in customer bills, at public outreach events, and at the County office. Customers receiving rebates are required to complete the water audit to maximize the overall water efficiency potential for each customer. Survey information is collected and analyzed to help the County improve and focus its conservation program to maintain GPCD compliance.

The rebate program is funded on an annual basis at a set amount. Once the budget is expended for the fiscal year, additional rebates are not available until funding is provided in the next fiscal budget cycle. Depending on each annual budget, the County may adjust the rebate amount to better match customer participation and coverage potential.

9.2 Reporting Implementation

9.2.1 Implementation Over the Past Five Years

CSA 64 maintains records of each of the programs described above, including the extent of each program and the expenditures. From 2015-2020, 177 customers have participated in the Residential Plumbing Retrofit program resulting in numerous WaterSense fixtures implemented in new homes. In addition, from 2015-2016, approximately 570,000 square feet of turf has been removed as part of the Large Landscape Conservation Program.

9.2.2 Implementation Achieve Water Use Targets

CSA 64 has already successfully implemented its DMMs to meet its 2020 Water Use Target, as discussed in **Chapter 5**. These conservation efforts will continue to be implemented to further reduce water usage within the CSA 64 service area and comply with any future regulations.

9.3 Water Use Objectives (Future Requirements)

The State of California is developing water use efficiency standards that will require suppliers to limit water use to allowable levels for indoor use, landscape irrigation, and other categories. The State is also preparing performance standards for water loss from the distribution system. These future regulations and potential variances are still being reviewed and finalized with stakeholder input.

Future water use standards will supersede SBX7-7 standards and likely require further reductions in water use. Therefore, CSA 64 plans to continue encouraging efficient water use and implementing water use efficiency measures to support meeting future water use standards and to enhance resiliency for drought and other water shortage conditions.

URBAN WATER MANAGEMENT PLAN

10 Plan Adoption, Submittal, and Implementation

This section describes the steps taken to adopt and submit the UWMP and to make it publicly available. It also includes a discussion of the agency's plan to implement the UWMP.

IN THIS SECTION

- Public Hearing Notices
- Plan Submittal & Availability

To fulfill the requirements of Water Code Section 10642 of the UWMP Act, CSA 64 made the draft 2020 UWMP available for public review and held a public hearing on June 22, 2021. The time and place of the public review hearing was noticed on April 22, 2021. The hearing notice is attached in **Appendix J**.

CSA 64 encouraged public participation in the UWMP adoption process through the notifications to the public through the newspaper and publicizing the UWMP through its website. CSA 64 also made the 2020 UWMP available for public review in its offices during normal hours prior to the public hearing and 30 days after.

The Final 2020 UWMP was formally adopted by the CSA 64 Board of Supervisors on June 22, 2021. A copy of the Adoption Resolution is included in **Appendix K**. A copy of the Final 2020 UWMP was sent to the California State Library, the DWR (electronically using the WUE data reporting tool), and other appropriate agencies within 30 days of adoption. The adopted UWMP will be available for public review at the CSA 64's offices during normal business hours for 30 days following submission to the DWR and will be posted on CSA 64's website.

The implementation of this plan shall be carried out as described unless significant changes occur between the adoption of this plan and the 2020 plan. If such significant changes do occur, CSA 64 will amend and readopt the plan as required by the California Water Code.

10.1 Inclusion of All 2020 Data

CSA 64 included all requisite 2020 data in the development of this UWMP.

10.2 Notice of Public Hearing

10.2.1 Notice to Cities and Counties

CWC Section 10621(b) requires that suppliers notify cities and counties in which they serve water that the UWMP and WSCP are being updated and reviewed at least 60 days prior to the public hearing. To fulfill this requirement, on April 22, 2021, CSA 64 notified all cities and counties within the service area of their intent to update the UWMP by June 31, 2021. On April 22, 2021, notices of public hearing to all cities and counties within the service area were provided, which provided the time and place of the public hearing. These notices meet the CWC requirements and are included in **Appendix J**. **Table 10-1** shows the notification provided to the surrounding cities and counties.

Table 10-1. Notification to Cities and Counties

DWR Table 10-1R

CITY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
City of Victorville	Yes	Yes	
Town of Apple Valley	Yes	Yes	
City of Hesperia	Yes	Yes	

COUNTY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
San Bernardino County	Yes	Yes	

10.2.2 Notice to the Public

Per Government Code 6066, CSA 64 noticed the 2020 UWMP, 2021 WSCP, and 2015 UWMP Addendum public hearing at least two weeks in advance in a local newspaper and the county website with at least 5 days between publications. The public hearing was first noticed in the local paper on June 08, 2021 and noticed again on June 15, 2021. The hearing notices are attached as **Appendix J**.

10.3 Public Hearing and Adoption

The 2020 UWMP, 2021 WSCP, and 2015 UWMP addendum were noticed, and reviewed in a Public Hearing at the regularly scheduled Board of Supervisors meeting on June 22, 2021. This hearing provided cities, counties, and members of the public a chance to review the staff report and provide comments. The public hearing took place before the adoption, allowing an opportunity for the report to be modified in response to public input. CSA 64's Board of Supervisors adopted the 2020 UWMP, 2021 WSCP and 2015 UWMP addendum on June 22, 2021. A copy of each Board's Resolution of Plan Adoption is included as **Appendix K**.

10.4 Plan Submittal

The 2020 UWMP, 2021 WSCP, and 2015 UWMP addendum were submitted to the DWR by July 1, 2021 (within 30 days of adoption) using the DWR WUE Data Portal. The documents were also submitted to the California State Library and to all cities and counties within CSA 64's service area within 30 days of adoption.

10.5 Public Availability

Commencing no later than **June 8, 2021**, CSA 64 will have a copy of the 2020 UWMP, 2021 WSCP, and 2015 UWMP addendum available for public review at the San Bernardino County Public Works Special District office (see address below) during regular business hours.

San Bernardino County Department of Public Works, Special Districts
222 W. Hospitality Lane, 2nd Floor
San Bernardino, CA 92415

The final documents will also be posted on the Agency's website at https://www.specialdistricts.org/.

10.6 Amending an Adopted UWMP or Water Shortage Contingency Plan

Should CSA 64 need to amend the adopted 2020 UWMP or WSCP in the future, CSA 64 will hold a public hearing for review of the proposed amendments to the document. CSA 64 will send a 60-day notification letter to all cities and counties within the CSA 64 service area and notify the public in same manner as set forth in **Chapter 2** of this UWMP. Once the amended document is adopted, a copy finalized version will sent to the California State Library, the DWR (electronically using the WUEdata reporting tool), and all cities and counties within the CSA 64 service area within 30 days of adoption. The finalized version will also be made available to the public both online on the CSA 64 website and in person at the CSA 64 office during normal business hours.

Table 10-2. Steps to Adopt, Submit, and Implement the UWMP and WSCP

STEP	TASK	DESCRIPTION	TIMEFRAME
1	Notice to cities and counties	Notify cities and counties within the service area that the UWMP or WSCP is being updated. It is recommended that the notice includes: • Time and place of public hearing. • Location of the draft Plan, latest revision schedule, and contact information of the Plan preparer.	At least 60 days before public hearing. * If desired, advance notices can be issued without providing time and place of public hearing.
2	Publish Plan	Publish the draft UWMP or WSCP in advance of public hearing meeting	At least 2 weeks before public hearing.

STEP	TASK	DESCRIPTION	TIMEFRAME
3	Notice to the public	Publish two notifications of the public hearing in a local newspaper notice at least once a week for two consecutive weeks, with at least 5 days between publications. This notice must include: • Time and place of hearing. • Location of the draft UWMP or WSCP.	At least 2 weeks before public hearing. * Include a copy of public notices in plan.
4	Public hearing and optional adoption	Host at least one public hearing before adopting the UWMP or WSCP to: • Allow for community input. • Consider the economic impacts for complying with the Plan. **For UWMP only** As part of public hearing, • Provide information on the SB X7-7 baseline water use, target water use, compliance status, and implementation plan. • If needed, re-adopt a method for determining urban water use targets	Public hearing date * Adoption can be combined as long as public hearing is on the agenda before adoption
5	Adoption	Before submitting the UWMP or WSCP to DWR, the governing body must formally adopt it. An adoption resolution must be included, as an attachment or as a web address indicating where the adoption resolution can be found online.	At public hearing or at a later meeting. *The UWMP or WSCP can be adopted as prepared or as modified after the hearing.
6	Plan submittal	Submit the adopted or amended UWMP or WSCP via the WUE Data Portal within 30 days of adoption or by July 1, if updated with the UWMP five-year cycle.	Within 30 days of adoption or by July 1st, whichever comes first.
7	Plan availability	Submit a CD or hardcopy of the adopted UWMP or WSCP to the California State Library within 30 days of adoption. California State Library Government Publications Section Attention: Coordinator, Urban Water Management Plans P.O. Box 942837 Sacramento, CA 94237-0001 Provide a copy (hardcopy or electronic) of the adopted UWMP or WSCP to any cities and counties within the service area. Make the UWMP or WSCP available to the public by posting the Plan on website or making a hardcopy available for public review during normal business hours.	Within 30 days after adoption
9	Other - Notification to Public Utilities Commission	For water suppliers regulated by the California Public Utilities Commission (CPUCP) submit UWMP and WSCP as part of the general rate case filing.	

URBAN WATER MANAGEMENT PLAN

11 References

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A

Water Shortage Contingency Plan

Water Shortage Contingency Plan

Public Draft

JUNE 2021

COUNTY OF SAN BERNARDINO DEPARTMENT OF PUBLIC WORKS
SPECIAL DISTRICTS COUNTY SERVICE AREA 64 SPRING VALLEY LAKE

WSC

COUNTY OF SAN BERNARDINO DEPARTMENT OF PUBLIC WORKS - SPECIAL DISTRICTS COUNTY SERVICE AREA 64

2020 Urban Water Management Plan

JUNE 2021

ENGINEER STAMP

Prepared by Water Systems Consulting, Inc.

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ATTACHMENTS

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Attachment 2: 2021 WSCP Adoption Resolution

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Water Shortage Contingency Plan

This WSCP was prepared in conjunction with CSA 64'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 incorporated guidance from the State of California Department of Water Resources (DWR) UWMP Guidebook 2020 (State of California Department of Water Resources, 2021) and the American Water Works Association (AWWA) Manual of Water Supply Practices (M60) Drought Preparedness and Response (American Water Works Association (AWWA), 2019).

The WSCP addresses several types of water supply shortages that could potentially impact CSA 64 and its customers:

Long-term supply shortages due to prolonged drought, contamination, destruction of critical water supply facilities, etc.

Short-term water supply shortages due to natural or man-made catastrophic emergencies or production capacity limitations.

1.1 Water Supply Reliability Analysis

This section is consistent with CWC Section 10632(a)(1) and describes the key findings of the water supply reliability analysis conducted pursuant to CWC Section 10635, which is presented in **Chapter 7** of CSA 64 2020 UWMP. As part of the 2020 UWMP, water suppliers must perform long-term (2025-2045) water service reliability assessment to evaluate reliability under normal, single dry year, and five-year consecutive dry year periods and a short-term (2021-2025) Drought Risk Assessment (DRA) to evaluate reliability under a five-year consecutive dry year period. Water supply reliability reflects CSA 64's ability to meet the water needs of its customers with water supplies under varying conditions. The analysis considers plausible hydrological and regulatory variability, infrastructure capacity, climate conditions, and other factors that affect CSA 64 water supply and demand.

CSA 64 expects to meet demands under all water year scenarios while continuing to promote conservation. Supply is not anticipated to change between normal and dry years due to ongoing conservation efforts in the region and the storage of SWP water in wet years. In addition, the long-term average of the basin includes dry periods. It is anticipated that this supply volume will be available to meet CSA 64's demands under foreseeable conditions.

The DRA analyzes historical data to allow CSA 64 to view patterns and more reliably determine if there could be any water shortages within a given time frame. The DRA looks at historical consumption data by customer class, populated from billing records, and historical supply data by source from production reports. Next, future demand and supply estimates for the planning period are analyzed to determine if there are any gaps between supply and demand. As mentioned above, CSA 64 does not anticipate a supply shortage.

CSA 64 has water rights to the adjudicated Alto Subbasin. The Basin's groundwater supply is replenished by the Mojave Water Agency (MWA) purchasing imported water from the State Water Project SWP when available and recharging the aquifer with recycled water and captured surface runoff into the Basin. Since CSA 64's only current source of water is the Alto Subbasin, CSA 64 is committed to promoting conservation to improve resiliency and subsequent reliability as described in **Chapter 7**.

1.2 Annual Water Supply and Demand Assessment

As established by CWC Section 10632.1, urban water suppliers must conduct an Annual Water Supply and Demand Assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to DWR. The Annual Assessment is an evaluation of the short-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 to maintain supply reliability. Beginning by July 1, 2022, and every year after, CSA 64 must prepare their Annual Assessment and submit an Annual Water Shortage Assessment Report to DWR. The annual report should report the approved anticipated shortage level, triggered shortage response actions, compliance and enforcement actions, and communication actions that will be implemented to mitigate the shortage identified in the Annual Assessment.

1.2.1 Key Data Inputs and Evaluation Criteria

Key data inputs and their sources for the Annual Assessments are summarized in **Table 1-1** and described in detail in **Section 8.2.2**.

Evaluation criteria that can be used to determine and declare severity of supply shortages may include any, or combinations, of the following:

Historic rainfall- reflects changes to supply due to changes in groundwater recharge

Water levels within the Alto Subbasin- reflects status of groundwater conditions

Existing infrastructure capabilities and plausible constraints- reflects limited production and distribution capacity due to a variety of factors potentially including, but not limited to man-made or natural catastrophic events

Customer demands- reflects current year and one projected single dry year conditions for comparison to available supplies

State mandates- reflects State orders and mandatory compliance with water use efficiency standards

Other locally applicable evaluation criteria as necessary

Supply shortages due to any combination of drought or groundwater conditions affect many users of the basin and surrounding region, not just CSA 64 customers. A shortage emergency may be declared when it is demonstrated that conditions threaten the ability to provide water for public health, safety, and welfare of the community. Furthermore, compliance with State mandates for water use efficiency can be declared during drought or in preparation for future droughts, such as in response to the Governor's drought declarations in the 2012-2016 drought with a subsequent Executive Order B-37-16 and related legislation for Making Conservation a California Way of Life.

Short-term and long-term supply shortages may be caused by constrained production capacity or natural or man-made catastrophic emergencies and include, but are not limited to, the following events: power outages, winter storms, wildfires, earthquakes, structural failures, contamination, and bomb threats. These types of emergencies may limit immediate ability to provide adequate water service to meet the requirements for human consumption, sanitation, and fire protection. Impacts of such emergencies vary in duration; thus, consumption reduction measures and prohibitions may differ for short-term and long-term shortages.

Table 1-1. Key Data Inputs for the Annual Assessment

KEY DATA INPUT	SOURCE
Rainfall	Monthly rainfall data. Rainfall sources for CSA 64 include the Victorville station.
Groundwater conditions	Production data, static water levels, input from the Board or Director.
Infrastructure capabilities and plausible constraints	Production data, input from the Board or Director.
Customer demands	Customer billing data, 2020 UWMP projections, input from the Board or Director.
State mandates	Executive Orders from the Governor, State Water Resources Control Board orders and policies, input from the Board or Director.

1.2.1.1 Production Capacity

Infrastructure capabilities and overall production will be analyzed to determine if a possible outage or deficiency may occur or continue in the coming year due to a variety of factors potentially including, but not limited to man-made or natural catastrophic events. This may include well replacement, evaluation of wells for possible contamination, and others. If CSA 64 determines there are limitations to production capacity, a shortage level declaration and subsequent demand reductions may be required.

1.2.1.2 State Mandates

As described previously, compliance with State mandates for water use efficiency can be declared during drought or in preparation for future droughts, such as in response to the Governor's drought declarations in the recent drought with a subsequent Executive Order B-40-17 and related legislation for Making Conservation a California Way of Life. CSA 64 may consider State mandates and mandatory compliance with water use efficiency standards in determining water shortage levels.

1.2.2 Annual Assessment Procedures

CSA 64 will perform the Annual Assessment between April and May, or on a more frequent basis if necessary. Steps to conduct the Annual Assessment are as follows:

1. Director or other staff gather the key inputs, compile historical data, and analyze potential supply and demand gaps.
2. Director or other staff provide insight on demand trends, water supply conditions, and production capacity.
3. A hydrogeologist may be consulted to provide additional groundwater condition information.
4. Director or other staff will determine a recommended level of conservation required, if any, that will then be brought to the Board for approval. Director is authorized to declare and rescind Level 1 but shall provide notice to the Board for Levels 2-4
5. The Director or Board will declare the level of conservation required at the implementation or termination of each level and the declaration shall remain in effect until the Director or Board so otherwise declares.
6. The declaration shall be published at least once in a newspaper of general circulation.
7. CSA 64 will develop and/or implement appropriate communication protocols and applicable response actions.
8. The Annual Assessment starts in 2022 with the first Annual Assessment Report due to DWR by July 1, 2022.

1.3 Six Standard Water Shortage Levels

This section is consistent with CWC Section 10632(a)(2) and describes water shortage levels implemented by CSA 64. New to the CWC, water suppliers must now adopt six standard water shortage levels. Shortage levels indicate the gap between supply and demand compared to normal year conditions. DWR standardized six shortage levels to provide a consistent regional and statewide approach to measure water supply shortage conditions. The six shortage levels correspond to 10-, 20-, 30-, 40-, 50-percent, and greater than 50 percent shortage compared to the normal reliability conditions. However, a water supplier may use its own shortage levels if a crosswalk is included relating its existing shortage levels to the six standard levels.

CSA 64 currently has a four-level water shortage contingency plan adopted in the Special Districts Drought Ordinance No. 15-04 (**Appendix I**), which consists of mandatory water waste prohibitions in all four levels. The ordinance details water conservation action items for Level 1 to achieve up to 15% reduction, up to 40% reduction for Level 2, up to 50% reduction for Level 3, and greater than 50% reduction for Level 4. The water shortage levels and a summary of criteria for each are presented below in **Table 1-2**.

At each conservation level the consumers will be informed that a supply reduction is required, and steps will be implemented so that the percent reduction is achieved.

The priorities for use of available water for this shortage contingency plan are:

1. Health and Safety – interior residential and firefighting;
2. Commercial, Industrial and Municipal (in-office use) – maintain jobs and economic base;
3. Existing Landscape – especially trees and shrubs;
4. New Demand – project under construction when shortage is declared

Consumers will be notified of the specific percentage reductions requested at each level of shortage as presented in **Table 1-2**. If further water usage reduction beyond the request of 10 percent is warranted, CSA 64 staff will inform consumers of the need for greater conservation. If reduction goals cannot be met by Ordinance SD 15-04, the County Board of Supervisors must take appropriate actions (after public hearings) which are supported by thorough engineering evaluations.

The duration of the declaration of any conservation level shall remain in effect until such time as another level is declared or the current level is rescinded.

Table 1-2. Water Shortage Contingency Plan Levels

DWR Table 8-1

SHORTAGE LEVEL	PERCENT SHORTAGE RANGE (NUMERICAL VALUE AS A PERCENT)	WATER SUPPLY CONDITION
1	0-15%	Drought Watch
2	15-40%	Drought Alert
3	40-50%	Drought Critical Condition
4	>50%	Drought Emergency

1.3.1 Water Shortage Levels Crosswalk

As described previously, CWC Section 10632(a)(3)(A) includes six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. If the supplier's water shortage levels do not correspond with the six standard levels, then a crosswalk between the supplier's levels and the standard levels is required for compliance. The crosswalk between CSA 64's four levels and the standard water shortage levels is shown in **Figure 1-1**.

Figure 1-1. Water Shortage Levels Crosswalk

CSA 64 Shortage Stage	Percent Shortage Range
1	0 - 15%
2	15 - 40%
3	40 - 50%
4	>50%

Standard WSCP Level	Percent Shortage Level
1	10%
2	20%
3	30%
4	40%
5	50%
6	>50%

1.4 Shortage Response Actions

This section is in accordance with CWC Section 10632(a)(4) and 10632.5(a) and describes the response actions that may be implemented or considered for each level with emphasis to minimize social and economic impacts to the community. CSA 64 expects to mitigate supply shortages through a variety of response actions including demand reduction actions, conservation, operational changes, outreach, and if necessary, mandatory prohibitions.

This WSCP identifies various actions to be considered by CSA 64 during water shortage conditions. In the event of a water shortage emergency, CSA 64 will evaluate the cause of the emergency to help inform which response actions should be implemented. Depending on the nature of the water shortage, CSA 64 can elect to implement a combination of response actions to mitigate the shortage and reduce gaps between supply and demand. It should be noted that all actions listed for Level 1 apply to Levels 2, 3, and 4. Likewise, Level 2 actions apply to Levels 3 and 4, and Level 3 actions apply to Level 4. If necessary, CSA 64 may adopt additional actions that are not listed here. The following section discusses the potential response actions for each of CSA 64's four water supply shortage levels.

1.4.1 Demand Reduction

In the event of a water supply shortage, CSA 64 may implement mandatory compliance measures to induce water conservation. The Special Districts Drought Ordinance No. 15-04 includes prohibitions on various wasteful water uses during a declared water supply shortage (**Appendix I**). These restrictions are implemented at various levels and are listed in **Table 1-3**. Additionally, during a Level 4 water supply shortage, the Board may impose any water rationing requirement that it deems appropriate to protect public health, safety, welfare, comfort, and convenience.

Table 1-3. Demand Reduction Actions

DWR Table 8-3

SHORTAGE LEVEL	DEMAND REDUCTION METHODS AND OTHER ACTIONS BY WATER SUPPLIER	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?[1]	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT[2]
1	Offer Water Use Surveys	0-1%		No
1	Provide Rebates on Plumbing Fixtures and Devices	0-1%	Customers shall be encouraged to install and use water saving devices such as rain sensors, low-flow showerheads, faucet aerators and sprinkler and irrigation watering valves; low-flow or waterless toilets; high-efficiency, low water use washing machines and dishwashers; and automated irrigation timers and/or controllers as well as other available water retrofit kits.	No
1	Decrease Line Flushing	0-1%		No
1	Reduce System Water Loss	0-5%	Increased meter reading for timely leak detection and repair	No
1	Expand public Information Campaign	0-5%	Community Outreach and Messaging. See Section 8.5 for more information	No
1	Improve Customer Billing	0-3%		No
1	Landscape - Limit landscape irrigation to specific days	0-1%	Outdoor irrigation is limited to 4-days per week	Yes
2	Provide Rebates for Landscape Irrigation Efficiency	0-1%	Expanded/Enhanced Rebate Programs	No
2	Provide Rebates for Turf Replacement	0-1%		No
2	Landscape - Limit landscape irrigation to specific times	0-5%	Watering, sprinkling, aerial watering or irrigating of any landscaped or vegetated areas, including lawns, trees, shrubs, grass, ground cover, plants, vine gardens, vegetables, flowers, or other landscaping shall only occur between the hours of 9:00 p.m. and 6:00 a.m. during the high use season (April 1 through October 31 of each year). in the low use season (November 1 through March 31), such watering shall only occur between the hours of 8:00 a.m. and 3:00 p.m. Commercial and Industrial use shall only occur between the hours of 9:00 p.m. and 6:00 a.m. year-round. These restrictions shall not apply to hand-held hose or drip irrigation systems.	Yes

SHORTAGE LEVEL	DEMAND REDUCTION METHODS AND OTHER ACTIONS BY WATER SUPPLIER	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?[1]	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT[2]
2	Landscape - Limit landscape irrigation to specific days	0-1%	Outdoor irrigation shall be limited to 3-days or 2-days per week, with specific days of the week to be designated by the Director.	Yes
2	Landscape - Other landscape restriction or prohibition[3]		The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited	Yes
2	Other - Prohibit use of potable water for washing hard surfaces[3]		There shall be no hose washing of sidewalks, walkways, driveways, parking areas, patios, porches, verandas, tennis courts, or other paved, concrete, or other hard surface areas.	Yes
2	Water Features - Restrict water use for decorative water features, such as fountains[3]		Potable water shall not be used in fountains or other decorative water features, except where the water is a part of a recirculating system.	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	0-1%	No person shall permit water to leak from any facility or plumbing fixture on his/her premises. Upon receiving notice of the existence of any such leak, the water Customer shall identify the source of the . water, and within 48 hours, stop the source by turning off the valve that supplies the water, and within 7 days, evaluate the extent of, and repair or correct the problem. Broken sprinklers shall be repaired within 24 hours of notification.	Yes
2	Landscape - Restrict or prohibit runoff from landscape irrigation[3]		Use of water for any purpose, which results in flooding or run-off, such that water flows onto adjacent property, non-irrigated areas, private and public walkways, parking lots, structures, in gutters, driveways or streets, is prohibited. Sprinklers and irrigation systems shall be adjusted to avoid overspray. Customers shall avoid the use of sprinklers for any type of irrigation during high winds.	Yes
2	Landscape - Other landscape restriction or prohibition[3]		There shall be no irrigation with potable water of ornamental turf on public street medians.	Yes
2	Other - Prohibit use of potable water for construction and dust control	0-1%	Water for construction purposes, including but not limited to debrushing of vacant land, compaction of fills and pads, trench backfill, and other construction uses, shall use recycled or non-potable water when available and water application must be attended at all times.	Yes
2	CII - Restaurants may only serve water upon request	0-1%	The serving of drinking water other than upon request in eating or; drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars or other public places where food and drink are served and/or purchased is prohibited.	Yes

SHORTAGE LEVEL	DEMAND REDUCTION METHODS AND OTHER ACTIONS BY WATER SUPPLIER	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?[1]	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT[2]
2	CII - Lodging establishment must offer opt out of linen service	0-1%	Hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. Hotels and motels shall prominently display notice of this option in each guestroom using clear and easily understood language.	Yes
2	Other	0-1%	Water used for cooling systems must be recycled to the extent possible.	No
2	Pools and Spas - Require covers for pools and spas	0-1%	Evaporation resistant covers are encouraged for all swimming pools and hot tubs.	No
2	Landscape - Other landscape restriction or prohibition	0-5%	Customers are strongly encouraged to convert lawns to drought tolerant, low water use or native plants, incorporating the principals of Xeriscaping	No
2	Other	0-1%	Winterizing pipes and valves to prevent leaks and breakage is strongly encouraged.	No
2	Other	0-1%	Home Owner Associations (HOAs) are strongly encouraged to adopt and enforce water use restrictions in their rules and regulations	No
3	Increase Water Waste Patrols	0-5%		No
3	Landscape - Limit landscape irrigation to specific days	0-5%	Outdoor irrigation shall be limited to 1-day per week, with specific days of the week to be designated by the Director.	Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0-1%	Washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment is prohibited unless conducted at a commercial car or other facility wash utilizing recycling systems. The only exception to this prohibition is where the public health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles used to transport food and perishables	Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	0-1%	The use of fountains or other decorative water features is prohibited unless necessary as habitat for aquatic pets, in which case recirculating water shall be permitted.	Yes
3	Other water feature or swimming pool restriction		Draining and refilling of private swimming pools is prohibited unless necessary for public health and safety and approved by the Director.	Yes
4	Implement or Modify Drought rate Structure or Surcharge	0-1%	Due to reduction in consumption, the rate paid by the customer will be less because less water is being used.	No

SHORTAGE LEVEL	DEMAND REDUCTION METHODS AND OTHER ACTIONS BY WATER SUPPLIER	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?[1]	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT[2]
4	Increase Frequency of Meter Reading	0-5%	Increase the frequency of meter reading in order to monitor the limited supply more closely. This will allow CSA 64 to identify potential problems in the system and allow the water supplier to fix the problem faster than if a bi-monthly check of the water meter was conducted.	No
4	Moratorium or Net Zero Demand Increase on New Connections	0-5%	Will-serve letters may no longer be issued, if the Board of Supervisors finds that there exists insufficient water supply to serve new connections.	No
4	Landscape - Other landscape restriction or prohibition	0-5%	All residential, commercial and industrial outdoor irrigation is prohibited except as determined on a case-by-case basis by the Director.	Yes

Notes:

1. Reduction in the shortage gap is estimated and can vary significantly.
2. Refer to Section 8.6 for Penalties for Water Wastage
3. Theses restrictions will be made mandatory in the revised 2021 Drought Ordinance.

1.4.2 Supply Augmentation

Given the consistent supply of groundwater through pumping, CSA 64 has no immediate plan to augment supply. During dry years, CSA 64 can extract more groundwater as needed while abiding by any safe yield restrictions on the basin. This volume of additional extracted groundwater can vary significantly depending on need.

1.4.3 Operational Changes

During shortage conditions, operations may be affected by demand reduction responses. Operational changes to address a short-term water shortage may be implemented based on the severity of the reduction goal. CSA 64 will maximize its groundwater supply by implementing operational strategies and demand reduction measures.

As part of the Annual Assessment process, CSA 64 will consider their operational procedures at the time of a shortage to identify changes that can be implemented to address water shortage on a short-term basis, including but not limited to:

Expansion of public information campaign to educate and inform customers of the water shortage emergency and required water savings

Decrease line flushing to only on a compliant basis

Use water patrols and increase frequency of meter reading by recruiting staff from other departments if necessary

Offer water use surveys

Implementing or modifying drought rate structure or surcharge or water emergency tiered pricing, pursuant to the requirements of Proposition 218 and in accordance with California Law

Prohibit any new permits for hydrant-construction or temporary construction meters.

Monitoring construction meters and fire hydrant meters for efficient water use in the event that a meter identified wastes water.

Moratorium on issuing any new building permit unless the: (a) Project is found by the Board or Director to be necessary for public health, safety. (b) Project will use recycled water for construction. (c) Project will not result in a net increase in non-recycled water use. (d) Project has adequate Conservation Offsets

Suspending the consideration of annexation to its service area unless the annexation increases the water supply available more than the anticipated demands of the property to be annexed

Reducing overhead in the short-term and mid-term by deferring non-critical CIP and major maintenance expenditures, and in the long-term by adjusting operational and staffing levels and retail water rate structures to incorporate the reality of lower retail water sales than previously anticipated.

Decrease in the level or, if need be, even a total interruption in the expenditures for the agency's facility replacement program. Non-critical replacement projects will have little or no impact on the agency or its customers and would only extend the master planned replacement schedule.

1.4.4 Additional Mandatory Restrictions

Executive Order B-40-17 presents permanent restrictions that are in place at all times despite the enacted stage of a supplier's WSCP. CSA 64 has five restrictions listed as required in Drought Stage 2, however this will be updated to be mandatory at all times in the revised Drought Ordinance planned for fall 2021.

Permanent restrictions prohibit the wasteful use of water including:

Hosing off sidewalks, driveways, and other hardscapes

Washing automobiles with hoses not equipped with a shut-off nozzle

Using non-recirculated water in a fountain or other decorative water feature

Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation

Irrigating ornamental turf on public street medians.

1.4.5 Emergency Response Plan

In addition to long-term shortages caused by droughts, other emergency situations could result in a temporary water shortage situation resulting from earthquake, fire, or other disasters affecting the power supply or the distribution system, and thus CSA 64's ability to provide potable water.

For a major emergency such as an earthquake, Southern California Edison (Edison) has declared that in the event of an outage, power would be restored within a 24-hour period. For example, following the 1994 Northridge earthquake, Edison was able to restore power within 19 hours. Edison experienced extensive damage to several key power stations yet was still able to recover within a 24-hour timeframe. It is possible, although highly unlikely, that severe damage to southern California electric utility infrastructure could cause outages lasting four to five days.

CSA 64 has backup power supply in place at critical locations throughout the distribution system in order to provide minimum health and safety water supply to its customers during this type of an outage.

In the event of a natural or human caused disaster that could affect CSA 64's ability to provide potable water for up to thirty (30) days, the following measures would be implemented as needed:

CSA 64's Precautionary Boil Water Notification Program would be activated. The notice would be provided to local radio stations and newspapers. CSA 64's emergency services would be contacted to broadcast messages throughout neighborhoods. Customers would be notified of supplemental sources of water for cooking and drinking.

Irrigation uses of water would immediately be prohibited. Enforcement would occur through CSA 64 emergency services.

Local bottled water companies would be contacted to begin deliveries of potable water tanks to selected sites within CSA 64. The trucks would be manned by CSA 64 personnel to distribute water for drinking purposes.

A public information program would be initiated. A member of CSA 64 staff would appear on local television and provide daily reports to the local newspaper and radio stations. Members of CSA 64 staff would speak to local service clubs and Chamber of Commerce.

1.4.6 Seismic Risk Assessment and Mitigation Plan

Disasters, such as earthquakes, can and will occur without notice. CSA 64 certified with the EPA that their RRA was compliant with all AWIA requirements on June 30, 2020, and will certify their ERP on December 31, 2021, meeting all federal deadlines. The RRA and ERP contain confidential information related to infrastructure risk and response measures, and therefore is used as an internal document only and located at the County. In addition, **Attachment 1** includes the Seismic Risk Assessment and Mitigation Plan procedures for CSA 64.

1.4.7 Shortage Response Action Effectiveness

Water use is determined by meter records, which are read and recorded bi-monthly. All of CSA 64's customers are metered. CSA 64 will use these devices to monitor CSA 64's actual reductions in water use during enacted shortage levels compared to normal year conditions as decided by the Director. This data allows CSA 64 to determine the effectiveness of the implemented shortage response actions. If

reduction goals are not being met, the Board or Director can make the necessary decisions for corrective action to be taken.

1.5 Communication Protocols

This section is in accordance with CWC Section 10632(a)(5) and describes the communication protocols and procedures to inform customers, the public, and state and local officials of any current or predicted water shortages. When a shortage level is enacted or changed, a notice is published in the local the newspaper and the Special District's website updated. Based on the severity of the shortage condition, CSA 64 may also advertise on the local radio, publish especial publications, post billboards throughout the service area, hang door tags, or send mail notifications to all its customers. This WSCP includes a staged plan to outline and provide guidance for efficient communication of declaration of a shortage level, inform restrictions, and provide updates during a water shortage emergency shown in **Table 1-4**.

Table 1-4. Communication Protocol During Water Shortage Conditions

LEVEL	ACTION[1]
1	Information posted on the Special District's website
1	Increased messaging with the utility bill (message printed on front and back of bill, flier insert with bill, message printed on front and back of envelope)
2	Increased paid advertising – print, online, radio, TV, streaming, social media, movie theatres, buses, etc.
2	Signage in all public facilities to reduce water usage, such as kitchens and bathrooms.
2	Letters, postcards, and fliers mailed to residents and businesses impacted by water use regulations.
2	Outreach materials and drought notices mailed to the hospitality industry including restaurants and lodging.
2	Fliers posted in public places such as libraries and neighborhood centers.
2	Targeted outreach and technical assistance to highest water users in each classification.
2	Assemble and promote the speaker's bureau for water shortage presentations for neighborhood groups, gardening clubs, HOAs, churches, senior centers, neighborhood associations, business associations, community groups, property management companies, etc.

Note:

1. If a water shortage progresses through multiple levels, all measures in the previous level(s) are implemented in addition to current level actions.

1.6 Compliance and Enforcement

This section is in accordance with CWC Section 10632(a)(6) and describes the compliance and enforcement provisions. All of the restrictions and prohibitions on end uses are associated with enforcement measures as outlined below. This system is based on the progressive number of violations of the user. Failure to comply with the provisions shall constitute a misdemeanor punishable under CWC Section 377. The fines for each violation are noted below in **Table 1-5**. Fines and penalties collected shall be used to offset any state-imposed fines and penalties and water conservation education and the drought response programs.

Table 1-5. Penalties for Water Wastage

VIOLATION[1]	PENALTY[2]
First	Written Warning - Notice of Violation and Warning of Penalties – a written warning accompanied by a copy of this ordinance, delivered by U.S. Mail and/or hung on customer's door.
Second	$100 or attendance and successful completion of a "Water Conservation Education Course" within thirty days of the violation notice. Course must be approved by the Director.
Third	$200
Fourth	$300 and fee for installation of flow restricting device by the Department of Public Works, Special Districts during the duration of drought declaration.
Fifth	$500 and termination of service for such period as determined to be appropriate under the circumstances.

Note:

2. Violations are counted and enforced within a one-year period from the first violation
3. Customer shall be responsible for payment of charges for installing and/or removing any flow restricting device and for disconnecting and/or reconnecting service. Such charges shall be paid prior to the removal of the flow restrictor or reconnection of service, whichever the case may be.

1.7 Legal Authorities

County of San Bernardino Ordinance No. SD 15-04 addresses droughts, outages, and shortages, and includes a water shortage contingency plan (**Appendix I**). The adoption resolution providing the Board with authority to enact each level of the WSCP is included in **Attachment 2** of this document.

CSA 64 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.

When a WSCP Stage 2 or greater is implemented, CSA 64 will inform the following cities and counties:

- Town of Apple Valley
- City of Victorville
- City of Hesperia
- County of San Bernardino

1.8 Financial Consequences of WSCP

The majority of operating costs for most water agencies are fixed rather than a function of the amount of water sold. As a result, when significant conservation programs are undertaken, it is frequently necessary to raise water rates because the revenue generated is based on lower total consumption while the revenue required is basically fixed.

CSA 64 has structured rates in a way that customers pay a fixed "water availability" charge based on meter size and separately pay a usage charge based on metered usage. The intention behind this structure is to appropriately allocate rates according to the costs, whether fixed or variable. This results in less of an impact to CSA 64's budget if water sales decrease dramatically. CSA 64 anticipates reduced revenue while implementing the WSCP due to decreased water use by its customers and additional costs associated with implementing water use restrictions and associated reduction actions. CSA 64 would make up for declining revenues by reducing operating and maintenance expenses, deferring some capital improvement projects until after the drought situation improves, deferring the purchase of computers, upgrades, publications, and using the funds held in reserve for replacement of facilities. With the reduced per capita water consumption due to enactment of the WSCP, it will also reduce water replenishment payment obligations to the Mojave Basin Area Watermaster.

1.8.1 Use of Financial Reserves

In the event that revenue declines were severe enough that operating expenses could not realistically be reduced to meet revenues, CSA 64 has built financial reserves that can be utilized for a limited time to cover expenses. The goal of CSA 64 is not to rely on the financial reserves and that steps will be taken to charge the customers an appropriate amount for water consumption in order to avoid paying for expenses out of financial reserves.

1.9 Monitoring and Reporting

This section is in accordance with CWC Section 10632(a)(9) and describes the reporting requirements and monitoring procedures to implement the WSCP and track and evaluate the response actions effectives. As described in **Section 8.2**, CSA 64 intends to track its supplies and project demands on an annual basis, and if supply conditions described in **Table 1-2** are projected, CSA 64 will enact their WSCP. Monitoring demands is essential to ensure the WSCP response actions are adequately meeting reductions and decreasing the supply/demand gap. This will help to analyze the effectiveness of the WSCP or identify the need to activate additional response actions.

The water savings from implementation of the WSCP will be determined based on monthly production reports which will be compared to the supply from prior months, the same period of the prior year, and/ or the allocation. At first, the cumulative consumption for the various sectors (e.g., residential, commercial, etc.) will be evaluated for reaching the target demand reduction level. Then if needed, individual accounts will be monitored. Weather and other possible influences may be accounted for in the evaluation.

1.10 WSCP Refinement Procedures

This section is consistent with CWC Section 10632 (a)(10). The WSCP is best prepared and implemented as an adaptive management plan. CSA 64 will use results obtained from the monitoring and reporting program to evaluate any needs for revisions. The WSCP is used to provide guidance to the Board, Director, staff, and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability.

To maintain a useful and efficient standard of practice in water shortage conditions, the requirements, criteria, and response actions need to be continually evaluated and improved upon to ensure that its shortage risk tolerance is adequate, and the shortage response actions are effective and up to date based on lessons learned from implementing the WSCP. Potential changes to the WSCP that would warrant an update include, but are not limited to, any changes to shortage level triggers, changes to the shortage level structure, and/or changes to the response actions. Any prospective changes to the WSCP would need to be presented at a public hearing, staff would obtain any comments and adopt the updated WSCP. The steps to formally amend the WSCP are discussed in **Section** Error! Reference source not found..

Potential refinements will be documented and integrated in the next WSCP update. If new response actions are identified by staff or public, these could be advertised as voluntary actions until these are formally adopted as mandatory.

1.11 Special Water Feature Distinction

The CWC 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. However, CSA 64 does not have any such known water features at this time.

1.12 Plan Adoption, Submittal, and Availability

This section was completed pursuant to CWC Section 10632(a)(c). Because the WSCP is a standalone document that can be updated as needed, **Table 1-6** describes the general steps to adopt and submit an updated or amended WSCP.

This 2020 WSCP was presented for adoption to the Board at the June 22, 2021 Board of Supervisors meeting. Notifications were sent to all necessary Cities, Counties, and Districts 60 days prior to the June 22, 2021 public board meeting. To comply with the notice to the public, CSA 64 published notices in the local newspaper two weeks in advance with 5 days between publications. Copies of the 60-day notices and public hearing newspaper notices are provided in **Appendix J**. The WSCP was also made available in advance of the public hearing.

The WSCP was formally adopted on June 22, 2021 by the Board through Resolution XX-XX, included in **Attachment 2**. The WSCP was made available to all staff, customers, and any affected cities, counties, or other members of the public at Special District's office and online within 30 days of the adoption date.

The WSCP was submitted to DWR via the WUE Data Portal at the same time as the 2020 Urban Water Management Plan, but no later than July 1st, 2021. A copy of the 2020 UWMP and WSCP were submitted to the California State Library within 30 days of adoption. Electronic and/or hard copies were provided to all relevant cities and counties within or effected by CSA 64's service area within 30 days of adoption.

Table 1-6. Processes and Steps to Adopt, Submit, and Implement the WSCP

STEP	TASK	DESCRIPTION	TIMEFRAME
1	Notice to cities and counties	Notify cities and counties within the service area that the WSCP is being updated. It is recommended that the notice includes: 1. Time and place of public hearing. 2. Location of the draft Plan, latest revision schedule, and contact information of the Plan preparer.	At least 60 days before public hearing. * If desired, advance notices can be issued without providing time and place of public hearing.

STEP	TASK	DESCRIPTION	TIMEFRAME
2	Publish Plan	Publish the draft WSCP in advance of public hearing meeting on Special District's website	At least 2 weeks before public hearing.
3	Notice to the public	Publish two notifications of the public hearing in a local newspaper notice at least once a week for two consecutive weeks, with at least 5 days between publications. This notice must include: 1. Time and place of hearing. 2. Location of the draft WSCP.	At least 2 weeks before public hearing. * Include a copy of public notices in plan.
4	Public hearing and optional adoption	Host at least one public hearing before adopting the WSCP to: 1. Allow for community input. 2. Consider the economic impacts for complying with the Plan.	Public hearing date * Adoption can be combined as long as public hearing is on the agenda before adoption
5	Adoption	Before submitting the WSCP to DWR, the governing body must formally adopt it. An adoption resolution must be included, as an Appendix or as a web address indicating where the adoption resolution can be found online.	At public hearing or at a later meeting. *The WSCP can be adopted as prepared or as modified after the hearing.
6	Plan submittal	Submit the adopted or amended WSCP via the WUE Data Portal within 30 days of adoption or by July 1, if updated with the UWMP five-year cycle.	Within 30 days of adoption or by July 1st, whichever comes first.
7	Plan availability	Submit a CD or hardcopy of the adopted WSCP to the California State Library within 30 days of adoption. California State Library Government Publications Section Attention: Coordinator, Urban Water Management Plans P.O. Box 942837 Sacramento, CA 94237-0001 Provide a copy (hardcopy or electronic) of the adopted WSCP to any cities and counties within the service area. Make the WSCP available to the public by posting the Plan on website or making a hardcopy available for public review during normal business hours.	Within 30 days after adoption
8	Other - Notification to Public Utilities Commission	For water suppliers regulated by the California Public Utilities Commission (CPUC) submit UWMP and WSCP as part of the general rate case filing.	

Attachment 1: Seismic Risk Assessment and Mitigation Plan

Seismic Emergency Response Plan

This Seismic Emergency Response Plan was prepared under America's Water Infrastructure Act (AWIA) of 2018.

Prepared for:

SAN BERNARDINO COUNTY
SPECIAL DISTRICTS
WATER & SANITATION

Prepared under the responsible charge of:

Kirsten Plonka, P.E.

Water Systems Consulting, Inc.

WSC

Published on: Click or tap to enter a date.

Plan Information

PWSID	CA30610121
Street Address	222 W. Hospitality Lane, 2nd Floor
City, State, Zip Code	San Bernardino, CA 92415
Phone Number	(800) 554-0565
Population Served	3,300 to < 50,000
Prepared By	Water Systems Consulting
Reviewed By	Charles Brammer
Date Completed	June 3, 2021

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1 Seismic Emergency Response Plan

This plan acts as an amendment to the Emergency Response Plan for the seismic requirements until the Plan is due in December. It discusses the measures in place at the Utility to prepare for and lessen the impact of earthquake hazards.

Emergency response plans and procedures can be implemented in the event of a malevolent act or natural hazard that threatens the utility's ability to deliver safe drinking water. These procedures are typically broken up into four categories: Core Procedures, Mitigation Actions, Detection Strategies, and Action Plans.

IN THIS SECTION

- Core Procedures
- Mitigation Actions
- Detection Strategies
- Action Plan

1.1 Seismic Mitigation Plan

Natural Hazards threaten your utility's ability to deliver safe drinking water. These hazards can include earthquakes, floods, wildfires, and more. Specifically, in California, earthquakes are high probability occurrences in many areas and thus, it is important for utilities to implement measures to protect and prevent impacts from these events. The tables in this section describes the utility's resources and procedures for earthquakes.

1.1.1 Core Procedures

Core procedures are the "building blocks" for action plans, as they are typically implemented across a broad variety of incidents. The table in this section lists the core response procedures for all natural hazards.

TABLE 1 – NATURAL HAZARDS CORE RESPONSE PROCEDURES

Assembly Areas	Utilize the Department Emergency Operations Plan to locate designated areas.
Supplies	Arrowhead bottled water.
Family Disaster Plan	Secure family and report when requested.
General Natural Hazards	Utilize the Department Emergency Operations Plan.

1.1.2 Mitigation Actions

Mitigation actions can obviate or significantly lessen the impact of a malevolent act or natural hazard on the public health and the safety and supply of drinking water provided to the community and individuals, including the development of alternative source water options, relocation of water intakes, and construction of flood protection barriers. These mitigation actions, procedures, and equipment help the utility to better withstand and rapidly recover from incidents, thereby increasing overall resilience. It is more cost-effective to mitigate the risks from than it is to repair damage after the disaster. The table in this section lists the mitigation actions for earthquakes.

TABLE 2 – EARTHQUAKE MITIGATION ACTIONS

Earthquake - General	Participating in internal emergency action drills related to Earthquakes.
	Participating in community-wide earthquake preparedness training and exercises related to Earthquakes (Great Shake Out event)
	Have adequate spare parts (e.g., temporary piping, pre-made hose bibs and hydrant cable connections), equipment and certified, trained staff to rapidly fix damage after an earthquake.
Earthquake - Buildings	Follows ASCE 7 Standard Minimum Design Loads for Buildings.
	Anchored equipment (e.g., computers, bookshelves).
	Used seismic resistant pipe for transmission pipelines subject to ground deformation from liquefaction and landslides.
	Installed isolation valves on main transmission lines.
	Anchored pumps and process and lab equipment.

Earthquake - Wells and Pump Stations	Installed flexible connections for pipeline connections from well #7 to pump stations.
Earthquake - Power	Fixed generator is bolted to the slab at well #6.

1.1.3 Detection Strategies

Detection strategies can aid in the identification of malevolent acts or natural hazards that threaten the security or resilience of the utility. Effective response to an emergency requires timely detection, which allows the utility to implement its ERP as soon as possible. The most appropriate method of detecting a possible incident depends on the type of threat. Where possible, multiple detection methods should be used. This increases the utility's ability to receive timely warning of an imminent threat or incident. The table in this section lists the detection strategies for earthquakes.

TABLE 3 – EARTHQUAKE DETECTION STRATEGIES

Earthquake - Notifications	Earthquake Notification through USGS Earthquake Early Warning System.

1.1.4 Action Plan

The events causing an earthquake can vary in scale from minor ground shaking to catastrophic landslides. Earthquakes create many cascading and secondary impacts that may include, but are not limited to:

- Structural damage to facility infrastructure and equipment
- Water tank damage or collapse
- Water source transmission line realignment or damage
- Damage to distribution lines due to shifting ground and soil liquefaction, resulting in potential water loss, water service interruptions, low pressure, contamination, and sinkholes and/or large pools of water throughout the service area
- Loss of power and communication infrastructure
- Restricted access to facilities due to debris and damage to roadways

Action Plans are the specialized procedures tailored to an incident type. These plans provide a quick approach for responding to a specific incident and complement actions already initiated under the ERP. Action plans can be detached and taken to the field to help with emergency preparedness, response, and recovery activities. The following includes those adapted to responding to an earthquake at the utility, including contacts, resources, and actions to prepare, respond, and recover.

Earthquake Action Plan | Contacts

ROLE	ORGANIZATION	PHONE
Local Emergency Management	County Office of Emergency Services	(909) 822-8071
State Emergency Management	CAL OES	(916) 845-8510 (916) 845-8911
Police Department	San Bernardino County Sherriff	(760) 552-6811 911

ROLE	ORGANIZATION	PHONE
Fire Department	San Bernardino County Fire	911

Earthquake Action Plan | Resources

GUIDANCE
Recent Earthquake Activity Map [USGS]
Earthquake Hazard Mitigation Handbook [FEMA]
Earthquake Hazards Program [USGS]
Earthquake Shaking Maps and Information for California Residents [Association of Bay Area Governments]
Recent Earthquakes: Implications for U.S. Water Utilities [WRF]
Planning for an Emergency Drinking Water Supply [EPA]
All-Hazard Consequence Management Planning for the Water Sector [CIPAC]
Vulnerability Self-Assessment Tool [EPA]
Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency [EPA]
How to Develop a Multi-Year Training and Exercise Plan [EPA]
Make a Plan [FEMA]
Community Based Water Resiliency [EPA]
Seismic Guidelines for Water Pipelines [American Lifelines Alliance]
Federal Funding for Utilities in National Disasters [EPA]
Earthquake Publications: Building Designers, Managers, and Regulators [FEMA]
IS-323: Earthquake Mitigation Basics for Mitigation Staff [FEMA]
HAZUS: FEMA's Methodology for Estimating Potential Losses from Disasters [FEMA]
Earthquake Hazard Mitigation for Utility Lifeline Systems [FEMA]

Earthquake Action Plan | Actions to Prepare

GENERAL

☐ Conduct briefings, training, and exercises to ensure utility staff is aware of all preparedness, response, and recovery procedures.

☐ Identify priority water customers and develop a plan to restore those customers first.

☐ Complete pre-disaster activities to help apply for federal disaster funding.
(e.g., contact state/ local officials with connections to funding, set up a system to document damage and costs, take photographs of the facility for comparison to post-damage photographs).

☐ Coordinate with neighboring utilities to discuss:

- Outlining response activities, roles and responsibilities and mutual aid procedures (e.g. how to request and offer assistance)
- Conducting joint tabletop or full-scale exercises
- Obtaining resources and assistance (e.g. equipment, personnel, technical support, or water)
- Establishing interconnections between systems and agreements with necessary approvals to activate this alternate source.
- Equipment, pumping rates and demand on the water sources need to be considered and addressed in the design and operations
- Establishing communication protocols and equipment to reduce misunderstandings during the incident

☐ Coordinate with other key response partners to discuss:

- How restoring system operations may have higher priority than establishing an alternative water source
- Potential points of distribution for the delivery of emergency water supply (e.g., bottled water) to the public, as well as who is responsible for distributing the water

☐ Understand how the local and utility emergency operations center (EOC) will be activated and what your utility may be called on to do, as well as how local emergency responders and the local EOC can support your utility during a response.

☐ Ensure credentials to allow access will be valid during an incident by checking with local law enforcement.

☐ Identify essential personnel and ensure they are trained to perform critical duties in an emergency (and possibly without communication), including the shut down and startup of the system.

☐ Establish communication procedures with essential and non-essential personnel. Ensure all personnel are familiar with emergency evacuation and shelter in place procedures

☐ Pre-identify emergency operations and clean- up crews. Establish alternative transportation strategies if roads are impassable.

☐ Consider how evacuations or limited staffing due to transportation issues (potentially all utility personnel) will impact your response procedures.

☐ Identify possible staging areas for mutual aid crews if needed in the response, and the availability of local facilities to house the crews.

☐ Encourage personnel, especially those that may be on duty for extended periods of time, to develop family emergency plans.

FACILITY

☐ Inventory and order extra equipment and supplies, as needed:

- Motors
- Fuses
- Chemicals (ensure at least a two week supply)
- Cellular phones or other wireless communications device
- Emergency Supplies
    - Tarps/tape/rope
    - Cots/blankets
    - First aid kits
    - Foul weather gear
    - Plywood
    - Flashlights/flares
    - Sandbags (often, sand must be ordered as well)
    - Bottled water
    - Batteries
    - Non-perishable food

☐ Ensure communication equipment works and is fully charged.

☐ Document pumping requirements and storage capabilities, as well as critical treatment components and parameters.

☐ Establish a seismically hardened or offsite facility to store essential records and equipment.

☐ Inspect utility for structural stability and consider implementing actions to improve the utility's ability to withstand damage from earthquakes, such as:

- Secure fixtures, shelves, and equipment
- Anchor or stabilize utility equipment to withstand earthquake forces and movements
- Reinforce, secure, or improve utility transmission lines and connections to withstand earthquake forces, soil movements and differential settlements
- Anchor or improve tank structures to withstand earthquake forces and movements

POWER, ENERGY, FUEL

☐ Evaluate condition of electrical panels to accept generators; inspect connections and switches.

☐ Verify generator connection type, capacity load and fuel consumption.

☐ Contact fuel vendors and inform them of estimated fuel volumes needed if utility is impacted.

COMMUNICATION WITH CUSTOMERS

☐ Develop outreach materials to provide your customers with information they will need after an earthquake. (e.g., clarification about water advisories, maintenance and information about earthquake mitigation).

☐ Review public information protocols with local EMA and public health agencies. These protocols should include developing water advisory messages (e.g., boil water) and distributing them to customers using appropriate mechanisms, such as reverse 911.

NOTES

Earthquake Action Plan | Actions to Respond

GENERAL

☐ Notify local and state emergency management of system status.

☐ If needed, request or offer assistance (e.g. water buffalos, water sampling teams, generators) through mutual aid networks.

☐ Account for all personnel and provide emergency care, if needed. Caution personnel about known hazards resulting from earthquakes.

☐ Deploy emergency operations and clean-up crews (e.g., securing heavy equipment). Identify key access points and roads for employees
to enter the utility and critical infrastructure; coordinate the need for debris clearance with local emergency management or prioritize it for employee operations.

FACILITY

☐ Conduct damage assessments of the utility to prioritize repairs.

☐ Check that back-up equipment and facility systems, such as controls and pumps, are in working order, and ensure that chemical containers and feeders are intact.

DRINKING WATER UTILITIES

☐ Inspect the utility and service area for damage. Identify facility components (e.g., valve boxes) and fire hydrants that are buried, inaccessible, or destroyed.

☐ Investigate drinking water wells for damage caused by liquefaction. This could result in the loss of storage for groundwater or ground subsidence.

☐ Ensure pressure is maintained throughout the system and isolate those sections where it is not.

☐ Isolate and control leaks in water transmission and distribution piping.

☐ Turn off water meters at destroyed homes and buildings.

☐ Monitor water quality, develop a sampling plan and adjust treatment, as necessary.

☐ Notify regulatory agencies if operations and/or water quality or quantity are affected.

☐ Utilize pre-established emergency connections or setup temporary connections to nearby communities, as needed. Alternatively, implement plans to draw emergency water from pre-determined tanks or hydrants. Notify employees of the activated sites.

POWER, ENERGY, FUEL

☐ Use backup generators, as needed, to supply power to system components.

☐ Monitor and plan for additional fuel needs in advance; coordinate fuel deliveries to the generators.

☐ Maintain contact with electric provider for power outage duration estimates.

DOCUMENTATION

☐ Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked, and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds.

☐ Take photographs of damage at each work site (with time and date stamp).

☐ Work with your local EMA on the required paperwork for public assistance requests.

COMMUNICATION WITH CUSTOMERS

☐ Notify customers of any water advisories and consider collaborating with local media to distribute the message. If emergency water is being supplied, provide information on the distribution locations.

NOTES

Earthquake Action Plan | Actions to Recover

GENERAL

☐ Continue work with response partners to obtain funding, equipment, etc.

FACILITY

☐ Complete damage assessments.

☐ Complete permanent repairs, replace depleted supplies and return to normal service.

DOCUMENTATION

☐ Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications.

☐ Develop a “lessons learned” document and/or an after action report to keep a record of your response activities. Update your emergency response plan and contingency plans.

☐ Revise budget and asset management plans to address increased costs from response-related activities.

COMMUNCIATION WITH CUSTOMERS

☐ Assign a utility representative to continue to communicate with customers concerning a timeline for recovery and other pertinent information.

MITIGATION

☐ Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to earthquakes when planning for system upgrades (e.g., replacing pipes, wellheads, and water tanks to address seismic weaknesses).

NOTES

Attachment 2: 2021 WSCP Adoption Resolution

B

Appendix B: Demonstration of Reduced Delta Reliance

Quantifying Regional Self-Reliance and Reduced Reliance on Water Supplies from the Delta Watershed

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.

The 2020 UWMP Guidebook states that that an urban water supplier that anticipates participating in or receiving water from a proposed project, such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs)'s that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy, WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self Reliance (California Code Req., tit. 23, § 5003).

San Bernardino County Service Area 64 (CSA 64) is an urban water supplier that anticipates receiving a blend of Delta water indirectly through the use of State Water Project water used by Mojave Water Agency (MWA) to replace groundwater in the basin. When CSA 64's demand is higher than their Free Production Allocation (FPA), CSA 64 incurs a replacement obligation and can purchase additional pumping rights for the water year in the basin from other suppliers' unused FPA or purchase this replacement water directly from the MWA Watermaster. The MWA Watermaster uses funds collected for the replacement obligation to replenish the groundwater supply with State Water Project water. Therefore, CSA 64 is preparing this analysis to comply with the Delta Plan Policy WR P1.

The Delta Plan Policy WR P1 specifies the measures that must be taken by water suppliers under certain conditions to reduce their reliance on the Delta and improve regional self-reliance. In addition, the Delta Plan recommends that all water suppliers within the Delta watershed voluntarily implement the measures contained in WR P1 to reduce their reliance on the Delta and improve regional self-reliance. Delta Plan WR P1 identifies UWMP's as the tool to be used to demonstrate consistency with the state policy that states that suppliers who carry out or take part in covered actions must reduce their reliance on the Delta.

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 means in terms of (a)(1) above.

(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:

(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and

(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the 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 CSA 64's improved regional self-reliance is consistent with the approach detailed in the 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. Some of the key assumptions underlying CSA 64's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP, previously adopted UWMPs, or MWA Watermaster Annual Reports and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of CSA 64 and its customers.

Baseline and Expected Outcomes

To demonstrate the expected outcomes for a reduced reliance on the Delta and improved regional self-reliance, a comparison to a baseline is needed. Although the guidebook indicates that starting with a 2010 baseline is recommended, CSA 64's delta reliance analysis uses 2015 as the baseline. This is because the Guidebook Appendix C also indicates that to accurately represent normal water year data, the projection from the previous year's UWMP shall be used since UWMPs generally do not provide normal water year data for the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on). CSA 64 does not have a UWMP from 2005 but does have one from 2010 and thus the baseline is for year 2015. Thus, population, demand, and supply data for the 2015 baseline were taken from CSA 64's 2010 UWMP.

Consequently, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2015 and 2020 were taken from CSA 64's 2010 and 2015 UWMPs, respectively. Expected outcomes for 2025-2045 are from the current 2020 UWMP. 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 volume 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 the 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 compared to 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 1** shows the results of this adjustment for CSA 64. Supporting narratives and documentation for all the data shown in **Table 1** are provided below.

Service Area Demands with Water Use Efficiency

The service area water demands shown in **Table 1** represent the total municipal and industrial (M&I) water demands for CSA 64's retail service area.

The M&I demand data shown in **Table 1** were collected from the following sources:

- Baseline (2015): CSA 64 2010 UWMP, Table 2-6
- 2020: CSA 64 2015 UWMP, Table 4-2
- 2025-2045: CSA 64 2020 UWMP, Table 4-5

Non-Potable Water Demands

CSA 64 does not utilize non-potable resources and thus this section is not applicable.

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 1** were collected from the following sources:

- Baseline (2015): CSA 64 2015 UWMP, Table 3-1
- 2020-2045: CSA 64 2020 UWMP, Table 3-1

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 2015 Baseline Per Capita Water Use.

Service Area Water Demands without Water Use Efficiency

In **Table 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 3** shows expected outcomes for supplies contributing to regional self-reliance in

terms of volume. **Table 3** represents efforts to improve regional self-reliance for CSA 64's entire service area and include the total contributions of CSA 64 and its customers. Supporting narratives and documentation for all the data provided in **Table 3** are described below.

Water Use Efficiency

The water use efficiency information shown in **Table 3** is taken directly from **Table 1**.

Local and Regional Water Supply and Storage Projects

CSA 64 directly pumps all water from the groundwater basin to meet all demands in the service area. However, any amount that is over their FPA must be purchased from another supplier's unused FPA or purchased directly from MWA to replenish the basin with imported water from the Delta. In 2015 and 2020, CSA 64 did require more water than the FPA allowed. Therefore, for the purposes of this analysis, the FPA value is reported as the volume of groundwater used each year that contributes to regional self-reliance. It is assumed that for 2025 through 2045, CSA 64 will also require more water than the FPA allows and that the FPA stays the same as 2020. The regional water supplies are shown in **Table 3** and were from the following sources:

- Baseline (2015): MWA Watermaster Annual Report 2014-2015 Appendix B
- 2020: MWA Watermaster Annual Report 2019-2020 Appendix B
- 2025-2045: MWA Watermaster Annual Report 2019-2020 Appendix B

3. Reliance on Water Supplies from the Delta Watershed

MWA'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. MWA's water purveyors coordinate reliance on the Delta through MWA, a regional Watermaster overseeing the Mojave River Groundwater Basin and the 12 retail agencies that utilize water from it. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual MWA retail agencies.

MWA's retail agencies, and those agencies' customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. MWA's retail agencies do not control how much of the water pumped includes the Delta water used to recharge the basin. Each retail agency is implementing demand management programs that increase the future reliability of water resources for the region. In addition, these 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.

Because of the integrated nature of MWA's systems and operations, and the collective nature of MWA's regional efforts, it is infeasible to quantify each of MWA retail agencies' individual reliance on the Delta. It is infeasible to attempt to segregate an entity and a system designed to work as an integrated regional cooperative.

Since it is not feasible to separate out individual member agencies' or their customer's reduced reliance on the Delta, MWA has completed the analysis to demonstrate a regional wide reduction which is shown in **Table 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 CSA 64's reduced Delta reliance and regional self-reliance were developed using the approach and guidance described in Guidebook Appendix C issued in March 2021.

Regional Self-Reliance

The data used to demonstrate increased regional self-reliance in this analysis represent the total regional efforts of CSA 64 and its customers and were developed in conjunction with Western and MWA as part of the UWMP coordination process.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for CSA 64's regional self-reliance.

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by about 1,500 AFY from the 2015 baseline (**Table 3**).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by almost 1,800 AFY from the 2015 baseline (**Table 3**).

The results show that CSA 64 and its customers are measurably reducing reliance on the Delta and improving regional self-reliance.

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 MWA and its retail water service agencies within MWA's service area and were developed in conjunction with CSA 64 and other MWA retail agencies as part of the UWMP coordination process (as described in Chapter 1 of MWA's 2020 UWMP). In accordance with UWMP requirements, MWA's 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 MWA'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 MWA's retail agencies 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 MWA's service area, this infeasibility holds true for MWA's agencies. For MWA'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, MWA and its retail agencies (including CSA 64) 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, including 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.

Chapter 6 of CSA 64'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 J

The information contained in this appendix is also intended to be a new Appendix J to CSA 64's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). CSA 64 provided notice of the availability of the draft 2020 UWMP, 2021 WSCP, and the new Appendix J 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, Appendix J to the 2015 UWMP, and the 2021 WSCP were posted on CSA 64's website, **specialdistricts.com**, in advance of the public hearing on **June 22, 2021**. The notice of availability of the documents was sent to CSA 64's customers, as well as cities and counties in CSA 64's service area. Copies of the notification letter sent to the customers and cities and counties in CSA 64's service area are included in the 2020 UWMP **Appendix J**. Thus, this **Appendix B** to CSA 64's 2020 UWMP, which was adopted with CSA 64's 2020 UWMP, will also be recognized and treated as Appendix J to CSA 64's 2015 UWMP.

CSA 64 held a public hearing for the draft 2020 UWMP, draft Appendix J to the 2015 UWMP, and draft 2021 WSCP on **June 22, 2021**, at a regular Board of Directors meeting, held online due to COVID-19 concerns. CSA 64's Board of Directors determined that the 2020 UWMP and the 2021 WSCP accurately represent the water resources plan for CSA 64's service area. In addition, CSA 64's Board of Directors determined that Appendix J 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 XXXX, XXXX, and XXXX, the CSA 64 Board of Directors adopted the 2020 UWMP, Appendix J to the 2015 UWMP, and the 2021 WSCP and authorized their submittal to the State of California. Copies of the resolutions are included in the 2020 UWMP **Appendix K**.

Table 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 (2015)	2020	2025	2030	2035	2040	2045
Service Area Water Demands with Water Use Efficiency Accounted For	3,626	2,787	2,770	2,810	2,840	2,850	2,900
Non-Potable Water Demands							
Potable Service Area Demands with Water Use Efficiency Accounted For	3,626	2,787	2,770	2,810	2,840	2,850	2,900

Total Service Area Population	Baseline (2015)	2020	2025	2030	2035	2040	2045
Service Area Population	9,541	11,244	11,691	12,099	12,390	12,646	12,844

Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2015)	2020	2025	2030	2035	2040	2045
Per Capita Water Use (GPCD)	339	221	212	207	205	201	202
Change in Per Capita Water Use from Baseline (GPCD)		(118)	(128)	(132)	(135)	(138)	(138)
Estimated Water Use Efficiency Since Baseline		1,486	1,673	1,788	1,869	1,956	1,981

Table 2: Calculation of Service Area Water Demands Without Water Use Efficiency

Total Service Area Water Demands (Acre-Feet)	Baseline (2015)	2020	2025	2030	2035	2040	2045
Service Area Water Demands with Water Use Efficiency Accounted For	3,626	2,787	2,770	2,810	2,840	2,850	2,900
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline		1,486	1,673	1,788	1,869	1,956	1,981
Service Area Water Demands without Water Use Efficiency Accounted For	3,626	4,273	4,443	4,598	4,709	4,806	4,881

Table 3: Calculation of Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2015)	2020	2025	2030	2035	2040	2045
Water Use Efficiency	-	1,486	1,673	1,788	1,869	1,956	1,981
Water Recycling							
Stormwater Capture and Use							
Advanced Water Technologies							
Conjunctive Use Projects							
Local and Regional Water Supply and Storage Projects	2,294	2,103	2,103	2,103	2,103	2,103	2,103
Other Programs and Projects the Contribute to Regional Self-Reliance							
Water Supplies Contributing to Regional Self-Reliance	2,294	3,589	3,776	3,891	3,972	4,059	4,084

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2015)	2020	2025	2030	2035	2040	2045
Service Area Water Demands without Water Use Efficiency Accounted For	3,626	4,273	4,443	4,598	4,709	4,806	4,881

Change in Regional Self Reliance (Acre-Feet)	Baseline (2015)	2020	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	2,294	3,589	3,776	3,891	3,972	4,059	4,084
Change in Water Supplies Contributing to Regional Self-Reliance		1,295	1,482	1,597	1,678	1,765	1,790

Table 4: Calculation of Reliance on Water Supplies from the Delta Watershed

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
Total Percent of Water Supplies from the Delta Watershed	34.3%	34.2%	31.9%	28.7%	26.2%	24.4%	22.9%	22.2%
Change in Percent of Water Supplies from the Delta Watershed		-0.1%	-2.4%	-5.6%	-8.1%	-9.9%	-11.4%	-12.1%

C

UWMP Checklist

2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Executive Summary
Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Chapter 1
Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Chapter 2.1, 2.2
Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Chapter 2.3
Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Chapter 2.3
Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Chapter 2.3
Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Chapter 3.1, 3.2
Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Chapter 3.3
Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Chapter 3.4.1
Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Chapter 3.4.2
Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Chapter 3.4.1
Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Chapter 3.5
Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Chapter 4.1
Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Chapter 4.1.3
Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	Chapter 4.1.4
Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Chapter 4.1.4
Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Chapter 4.1.3
Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Chapter 4.2
Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Chapter 4.3
Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5
Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Chapter 5.3
Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Chapter 5.1.1
Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Chapter 5.3
Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Chapter 5.3, Appendix G
Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Chapter 6.1
Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	Chapter 6.1.10
Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Chapter 6.1
Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Chapter 6.1
Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Chapter 6.1.9
Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Chapter 6.1.2
Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Chapter 6.1.2.1
Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Chapter 6.1.2
Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Chapter 6.1.2.1
Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	N/A
Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Chapter 6.1.2.3
Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Chapter 6.1.9
Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	Chapter 6.1.7
Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Chapter 6.1.5
Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Chapter 6.1.5
Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Chapter 6.1.5.1
Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	N/A
Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Chapter 6.1.5.1
Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Chapter 6.1.5.1
Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Chapter 6.1.6
Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Chapter 6.1.5

Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Chapter 6.1.8
Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Chapter 6.2
Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Chapter 7.1.1
Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Chapter 7.1.3, Chapter 9
Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Chapter 7.1.3
Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Chapter 7.2
Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Appendix A
Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix A Section 1.1
Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix A Section 1.2.1
Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix A Section 1.2.2
Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Appendix A Section 1.2.2
Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Appendix A Section 1.3
Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Appendix A Section 1.3.1
Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Appendix A Section 1.4.2
Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Appendix A Section 1.4.1
Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Appendix A Section 1.4.3
Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Appendix A Section 1.4.4
Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Appendix A Section 1.4.7
Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Appendix A Section 1.4.6, Attachment 1
Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix A Section 1.5
Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix A Section 1.5
Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Appendix A Section 1.6
Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Appendix A Section 1.7
Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix A Section 1.7
Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix A Section 1.7
Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix A Section 1.8
Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix A Section 1.8
Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Appendix A Section 1.8
Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Appendix A Section 1.9
Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Appendix A Section 1.11
Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Appendix A Section 1.12
Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Appendix A Section 1.12
Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Chapter 9
Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.2
Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Chapter 10.2.1
Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Chapter 10.4
Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Chapter 10.2.2, 10.3, Appendix J

Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Chapter 10.3
Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Appendix K
Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.4
Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.4
Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.4
Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.5
Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.5
Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.6

D

DWR Tables

DWR Tables

Appendix D Table 1. DWR 4-3R Total Water Use

	2020	2020	2030	2035	2040	2045
Potable and Raw Water From Table 4-1R and 4-2R	2,701	2,770	2,810	2,840	2,850	2,900
Recycled Water Demand* From Table 6-4R	0	0	0	0	0	0
Total Water Use:	**2,701**	**2,770**	**2,810**	**2,840**	**2,850**	**2,900**

Appendix D Table 2. DWR 6-3R Wastewater Treatment and Discharge within Service Area in 2020

No wastewater is treated or disposed of within the UWMP service area. The supplier will not 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:	-	-	-	-	-

[1] Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the Wastewater Discharge ID Number is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

Appendix D Table 3. DWR 6-4R Recycled Water within Service Area in 2020

Recycled water is not used and is not planned for the use within the service area of the supplier. The supplier will not complete the table.

Name of Supplier Producing (Treating) the Recycled Water:											
Name of Supplier Operating the Recycled Water Distribution System:											
Supplemental Volume of Water Added in 2020:											
Source of 2020 Supplemental Water:											
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**	
AGRICULTURAL IRRIGATION											
LANDSCAPE IRRIGATION (EXC GOLF COURSES)											
GOLF COURSE IRRIGATION											
COMMERCIAL USE											
INDUSTRIAL USE											
GEOTHERMAL AND OTHER ENERGY PRODUCTION											
SEAWATER INTRUSION BARRIER											
RECREATIONAL IMPOUNDMENT											
WETLANDS OR WILDLIFE HABITAT											
GROUNDWATER RECHARGE (IPR)											
RESERVOIR WATER AUGMENTATION (IPR)											
DIRECT POTABLE REUSE											
OTHER											
			TOTAL:		**-**	**-**	**-**	**-**	**-**	**-**	
INTERNAL REUSE (NOT INCLUDED IN STATEWIDE RECYCLED WATER VOLUME).											

*IPR - Indirect Potable Reuse

Appendix D Table 4. DWR 6-5R 2015 Recycled Water Use Projection Compared to 2020 Actual

Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table.

BENEFICIAL USE TYPE	2015 PROJECTION FOR 2020	2020 ACTUAL USE
AGRICULTURAL IRRIGATION		
LANDSCAPE IRRIGATION (EXCLUDES GOLF COURSES)		
GOLF COURSE IRRIGATION		
COMMERCIAL USE		
INDUSTRIAL USE		
GEOTHERMAL AND OTHER ENERGY PRODUCTION		
SEAWATER INTRUSION BARRIER		
RECREATIONAL IMPOUNDMENT		
WETLANDS OR WILDLIFE HABITAT		
GROUNDWATER RECHARGE (IPR)*		
SURFACE WATER AUGMENTATION (IPR)*		
DIRECT POTABLE REUSE		
TOTAL:	-	-

Appendix D Table 5. DWR 6-6R Methods to Expand Future Recycled Water Use

The supplier does not plan to expand recycled water use in the future. The supplier will not complete the table below but will provide narrative explanation.

NAME OF ACTION	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	EXPECTED INCREASE OF RECYCLED WATER USE
		TOTAL:	-

Appendix D Table 6. DWR 6-7R Expected Future Water Supply Projects or Programs

Optional subtitle goes here.

No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table.

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

Appendix D Table 7. DWR 6-8DS Source Water Desalination

Neither groundwater nor surface water are reduced in salinity prior to distribution. The supplier will not complete the table.

						VOLUME OF WATER DESALINATED IN AFY				
PLANT NAME OR WELL ID	PLANT CAPACITY	INTAKE TYPE	SOURCE WATER TYPE	INFLUENT TDS	BRINE DISCHARGE	2016	2017	2018	2019	2020
					TOTAL:	-	-	-	-	-

E

MWA Population Forecast

UC RIVERSIDE | School of Business
CENTER FOR ECONOMIC FORECASTING & DEVELOPMENT

MOJAVE WATER AGENCY

POPULATION FORECAST | 2020 EDITION

August 2020

Mojave Water Agency

ABOUT THE CENTER

The UC Riverside School of Business Center for Economic Forecasting and Development opened its doors in October 2015 and represents a major economic research initiative in one of California's most vital growth regions. The Center produces a wide variety of research both independently and in collaboration with academic, business, and government partners. Research products include monthly employment analyses, quarterly regional economic forecasts, a quarterly business activity index, a white paper series, and a major regional economic forecast conference, hosted annually.

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EXECUTIVE SUMMARY

Urban planning involves the investment of millions of dollars in infrastructure projects long before they will be realized. From transportation to water supply management, these developments require many years of planning and resources in order to become fully functional. As a result, it is imperative to have a firm understanding of the size of population needed to support these projects, especially regarding water supply. This report, commissioned by the Mojave Water Agency (MWA), details population estimates forecasted to 2065 for the MWA region, subareas, and incorporated cities and towns. It also discusses methodology and recent changes in population trends, and provides an overview of the economic conditions in the Inland Empire and, specifically, San Bernardino County.

For years, California has experienced a housing supply crisis with several major metropolitan areas suffering a serious shortage of available homes. Home prices have skyrocketed over the past decade, with most California metropolitan areas surpassing pre-Recession peaks. However, San Bernardino County and the Inland Empire have remained considerably more affordable than some nearby counties, Los Angeles and Orange County in particular. The Inland Empire has the third largest workforce of any of California's metropolitan regions. It is a powerhouse for Logistical industries such as Transportation and Warehousing, and is ideally situated near the ports of Los Angeles and Long Beach, the largest in the nation in terms of import and export movement. As such, it is likely that interest in the Inland Empire will continue to grow as nearby counties in Southern California become less affordable and supply remains low.

Current economic and demographic trends indicate that California's population is slowing down, and will continue to do so well into the future. Statewide net migration remains positive but has declined significantly, relying on foreign migration to keep total net migration above zero. Furthermore, birth rates have dropped across most racial and ethnic groups, and are expected to flatten out or continue declining. The UCR Center for Economic Forecasting ("The UCR Center") expects the same patterns to resonate within San Bernardino County and the Mojave Water Agency. While the County and MWA service area experience greater home affordability compared to the nearby regions, regional data patterns over the past few years have shown negative net migration and declining birth rates. Net migration has averaged below zero between 2010 and 2019 – periods of considerable economic expansion. Between 2007 and 2018, San Bernardino County has gone from roughly 18 births per 1000 people to 13 births per 1000, a 24.2% drop. With crude birth rates declining and net migration in the negatives, San Bernardino County's and the MWA service area's populations have been revised down considerably.

The UCR Center estimates that between 2020 and 2060, the MWA service area will grow by 39.2% - which remains considerably larger than estimated growths in both San Bernardino County (21.1%) and California (12.9%).

The UCR Center forecasts incorporated cities and towns in order to estimate future populations in the MWA service areas and its subareas as well. The following are some key findings for recent estimates of the MWA incorporated cities and towns:

- Adelanto had the largest percentage growth of any incorporated city in the last decade, with population increasing by 10.5% between 2011 and 2019.

- Victorville, the largest population of any MWA incorporated city, saw the second largest percent growth at 7.7% between 2011 and 2019.

- The slowest growing cities by percentage were Apple Valley and Barstow, at 5.3% each between 2011 and 2019.

FORECAST METHODOLOGY

The UCR Center uses a comprehensive econometric forecasting model for the MWA service area, to include population estimates for the incorporated cities, subareas, and water purveyors. Structured around a long-term forecast of the San Bernardino County economy, the model includes economic indicators such as residential housing stock, home prices, and employment trends. Relying on the underlying fundamentals of each variable, research is applied to identify the relationship between the variables of interest and various moving parts of the economy. Using this methodology, the UCR Center estimates population forecasts based on the incorporated cities in the MWA service area.

Historical population data was collected from two primary sources: The United States decennial census, and the DOF for annual estimates dating back to 1970. Census estimates were used to derive shares of population by census block in order to calculate population for subareas and purveyors by cities/towns. The DOF historical estimates were used to build a time series model, incorporating not only historical population estimates, but economic indicators including housing stock and home prices. The incorporated cities were then estimated using these econometric models out to 2065, and their respective shares were used to build the MWA service area. The subareas and water purveyors were developed using growth estimates from the incorporated cities and using the shares based off of the census blocks.

The long-run estimates from the DOF's San Bernardino County population forecast are used as a driver for the incorporated cities, accompanied by economic variables that help define the structure and interrelationships within the economy. As previously mentioned, demographic projections in California have been revised significantly to better reflect the changes in birth rates, deaths and net migration patterns. For example, California overall has seen its population forecast for 2060 lowered by roughly 5.2 million people, from over 50 million to just over 45 million. For San Bernardino County, 2060 estimates were lowered from roughly 3.2 million to about 2.7 million. A primary reason for the lower estimates is the revision in annual net migration. Previous iterations of the population forecasts predicted annual net migration between 2020 and 2060 to average roughly 14,470. In the revised forecasts, net migration averages just over 2,500 people per year. This means that, according to the revised forecast, an estimated 478,000 fewer people will move to San Bernardino County between 2020 and 2060. Given changes to the population at the county level, there will be notable differences in population estimates for the incorporated cities, subareas, purveyors and therefore the MWA service area as a whole.

Long-run forecasts are an estimate of what the population is expected to be in a given time period based on current economic and demographic trends. Policy decisions and large, random events add to the inherent uncertainty of any economic outlook. However, these models are developed using the most up-to-date data, and include comprehensive variables to accurately estimate what the population of the MWA service area will be in the future, given current and anticipated economic conditions.

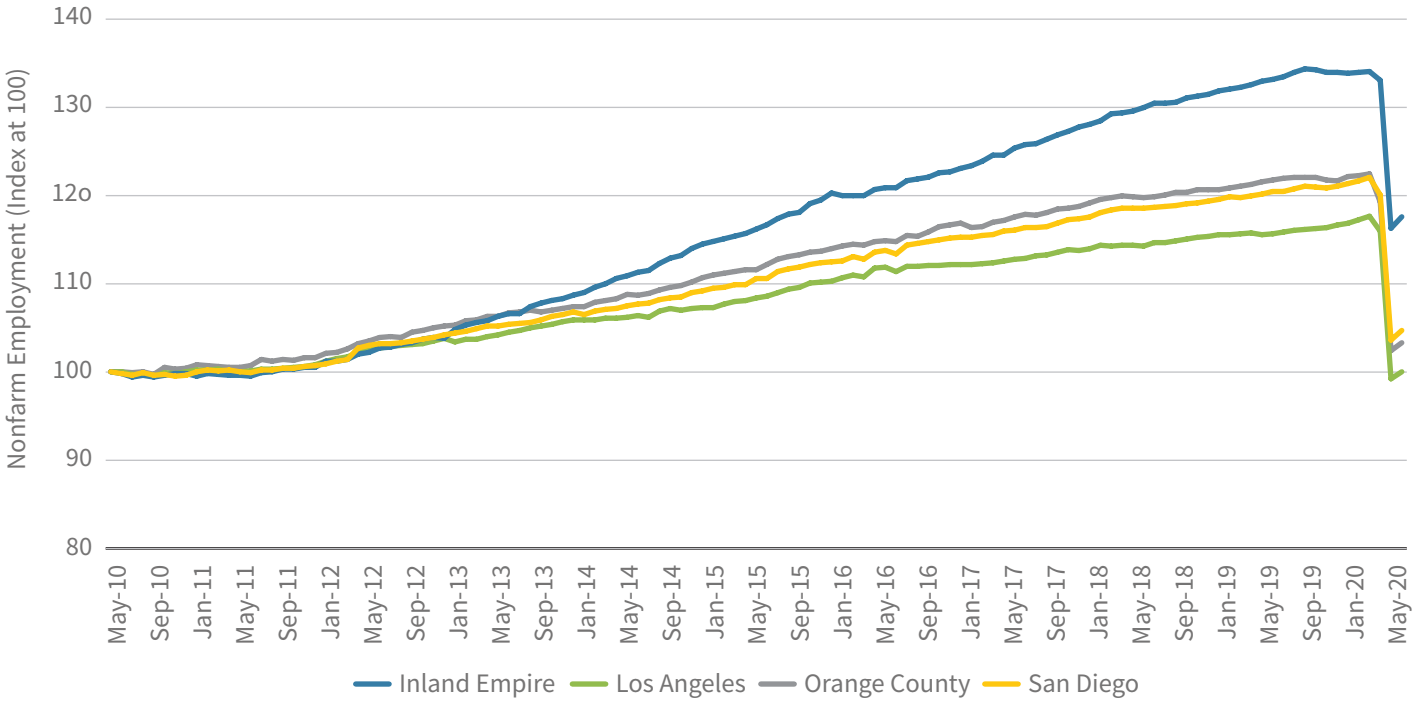
ECONOMIC AND DEMOGRAPHIC TRENDS INLAND EMPIRE AND SAN BERNARDINO COUNTY

Demographic trends are affected by various factors, from employment opportunities and economic development, to housing supply. Understanding the current situation in the Inland Empire and, more specifically, in San Bernardino County, gives better insight into how the population may change. Moreover, it is highly unlikely that any one factor would, by itself, determine and drive population trends and growth in any given area. For example, a city that has focused solely on housing supply, without taking economic and workforce developments into consideration, is unlikely to attract workers and large cohorts of the population. It takes a mixture of good economic development opportunities, housing affordability and more to attract large in-migration.

JOB GROWTH: 10-YEAR CHANGE AND THE COVID IMPACT

Since the recovery from the Great Recession, the Inland Empire has experienced some of the highest employment growth rates in the state. As a primary national hub for Logistics, the Inland Empire has seen significant employment increases in the Transportation, Trade, and Warehouse sectors. Furthermore, greater housing affordability has allowed workers to move to the region and commute to nearby areas such as Los Angeles and Orange County.

TOTAL NONFARM GROWTH INDEX AT 100



Source: California Employment Development Department; Analysis by The Center for Economic Forecasting

Over the past ten years, total nonfarm employment growth in the Inland Empire has surpassed all other metropolitan areas in Southern California. In the first quarter of 2020, as the COVID-19 pandemic began to shut down economies, levels of growth in the Inland Empire were better sustained than Los Angeles, Orange County, or San Diego.

PRE-COVID ECONOMY:

JOB GROWTH BETWEEN FEBRUARY 2010 AND FEBRUARY 2020 IN SOUTHERN CALIFORNIA

Industry	Inland Empire Feb-2020 Employment (000s)	*10-Year % Growth*			
		Inland Empire	Los Angeles	Orange County	San Diego
Total Nonfarm	1,549.5	34.9	18.4	23.6	23.8
Construction	109.1	79.1	46.4	57.2	51.2
Education/Health	255.7	58.6	28.0	39.1	34.6
Logistics	397.1	47.7	16.3	7.0	13.5
Leisure and Hospitality	172.9	42.2	45.3	39.3	33.4
Wholesale Trade	66.8	38.7	10.1	3.6	6.7
Admin Support	106.8	38.4	27.9	33.7	23.9
Professional/Business	156.6	29.9	27.3	32.7	32.1
NR/Mining	1.2	18.4	-35.7	2.6	33.7
Other Services	44.8	18.0	18.3	25.5	20.3
Retail Trade	181.8	16.9	8.7	7.8	11.8
Manufacturing	98.7	15.5	-11.6	6.2	23.3
Government	258.4	9.6	3.0	7.8	11.4
Financial Activities	43.6	6.8	7.1	17.6	15.2
Information	11.3	-20.4	20.2	15.4	-8.1

Source: California Employment Development Department; Analysis by The Center for Economic Forecasting

Compared to its neighbors, growth in the Inland Empire over the past decade has been astonishing. Between 2010 and 2020, growth in Construction, Education/Health, Wholesale Trade, and Admin Support was significantly higher than other regions in Southern California. However, it is in Logistics that growth has dwarfed nearby counties. With a growth of 47.7% between February 2010 and February 2020, the Inland Empire's percentage growth was almost three times higher than the next highest growing county in Southern California.

While the Inland Empire economy has enjoyed a strong resurgence over the last ten years, in line with nationwide trends, the outbreak of COVID-19 halted the largest U.S. economic expansion in history, effectively shutting down the economy. Because mitigation efforts have largely allowed only essential businesses to remain open, customer-reliant industries such as Leisure and Hospitality, In-store Retail, and Other Services (barbershops, nail salons, dry cleaners and so on) have taken a huge hit. Industries that have traditionally proved resilient during economic cycles, such as Health Care, have also suffered substantial job losses, since changes in consumer demand have cause people to book less routine and elective procedures due to concerns over health risks.

The uncertainty surrounding the timeline of the virus outbreak, and severity of the surge in cases has resulted in businesses being forced to close and re-open. Between February and June of 2020, the impact of the COVID-19 shutdowns in the Inland Empire has mirrored statewide figures. Total nonfarm employment has declined 10% over the last four months, compared to 11% statewide. Although the Leisure and Hospitality and Other Services industries have been hit hardest, the pandemic has caused declines in every industry, across both the Inland Empire and California.

Logistics, the Inland Empire's largest employer, contracted 7.6% between February and June, slightly less than the 9.3% figure for California overall. However, demand for Transportation and Warehousing has increased considerably in the COVID-19 economy as the pandemic has spurred e-commerce and direct-to-consumer shopping. As long-term changes in consumer behavior continue, the Inland Empire will be well positioned to capitalize on these structural shifts.

The economic effects in other sectors of the Inland Empire economy will be contingent on the length and severity of each stage of the re-opening process; the degree to which each sector has been impacted throughout the mitigation phase; and any structural changes that have occurred within the industry. A crucial component of the recovery will be the number of people circulating within the economy (i.e. consumers returning to pre-pandemic behaviors). This is contingent on public policy and mandated business closures and consumers' willingness to engage in high contact environments.

COVID'S IMPACT ON JOBS:
INLAND EMPIRE VS CALIFORNIA

Industry	June 2020 Employment (000s)	*% Growth February to June 2020*	
		Inland Empire	California
Total Nonfarm	1,393.9	-10.0	-11.0
Logistics	367.1	-7.6	-9.3
Government	242.7	-6.1	-8.6
Education/Health	239.2	-6.4	-7.0
Retail Trade	159.2	-12.4	-11.6
Professional/Business	145.6	-7.0	-7.6
Leisure and Hospitality	118.2	-31.6	-30.8
Construction	102.4	-6.2	-5.4
Admin Support	97.4	-8.8	-11.5
Manufacturing	90.0	-8.8	-7.4
Wholesale Trade	64.0	-4.3	-6.5
Financial Activities	42.1	-3.5	-2.4
Other Services	36.0	-19.7	-24.1
Information	9.5	-16.4	-12.9
NR/Mining	1.1	-7.2	-1.8

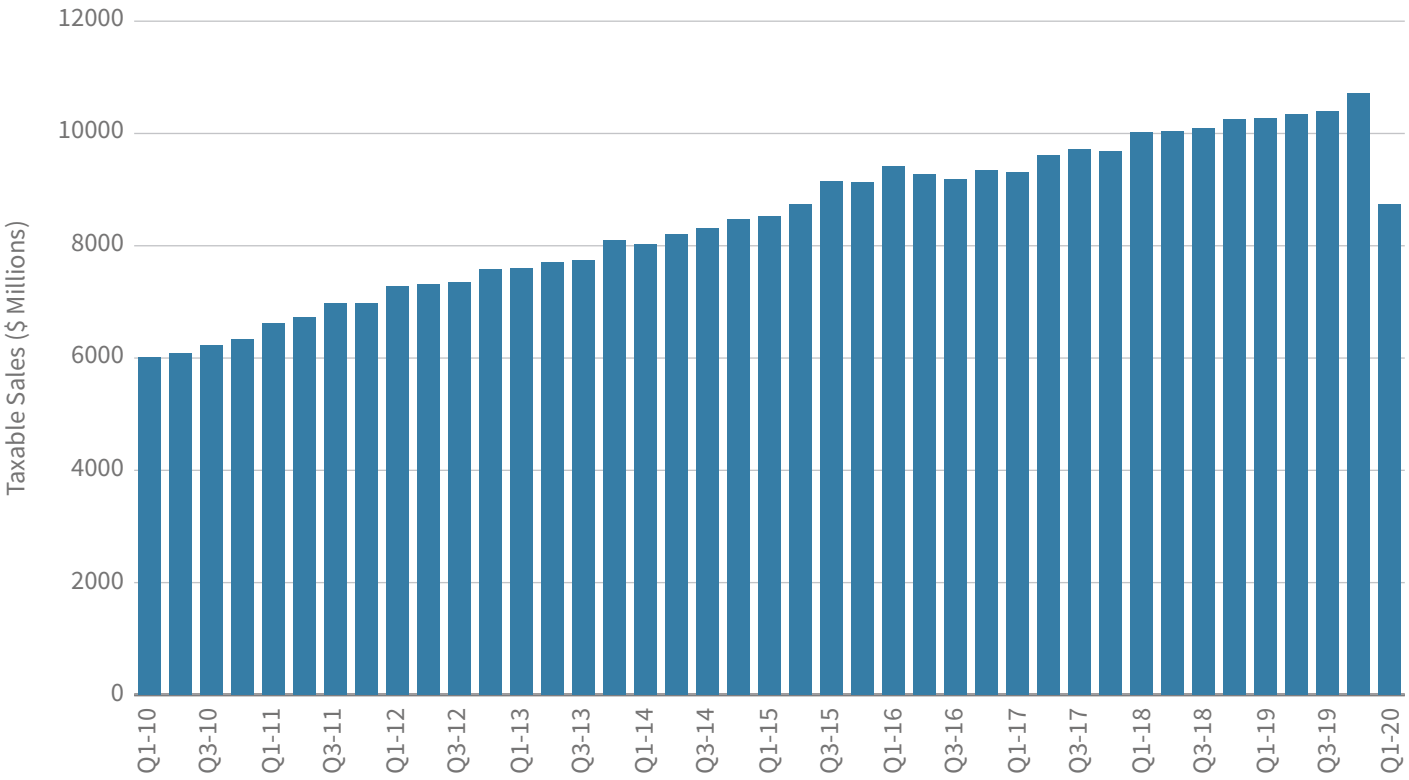
Source: California Employment Development Department; Analysis by The Center for Economic Forecasting

Along with employment, consumer spending has also been hit hard by the COVID-19 crisis. The resulting freeze-up of consumer-driven revenues, such as sales and use tax and transient occupancy tax, have left local governments with multiyear budget shortfalls. Additionally, the freeze in consumer demand is keeping jobs sidelined, especially in customer-facing service sectors such as Leisure and Hospitality and Retail Trade, where consumers must engage in environments requiring close personal contact.

Prior to the pandemic, taxable sales in the Inland Empire, and especially San Bernardino, had been growing significantly. Between the fourth quarter of 2010 and the fourth quarter of 2019, taxable sales in San Bernardino County grew by 82.4% to over $11.3 billion. Over the decade from 2010 to 2019, San Bernardino had the second largest percent growth in taxable sales after Riverside County (89.7%).

TAXABLE SALES

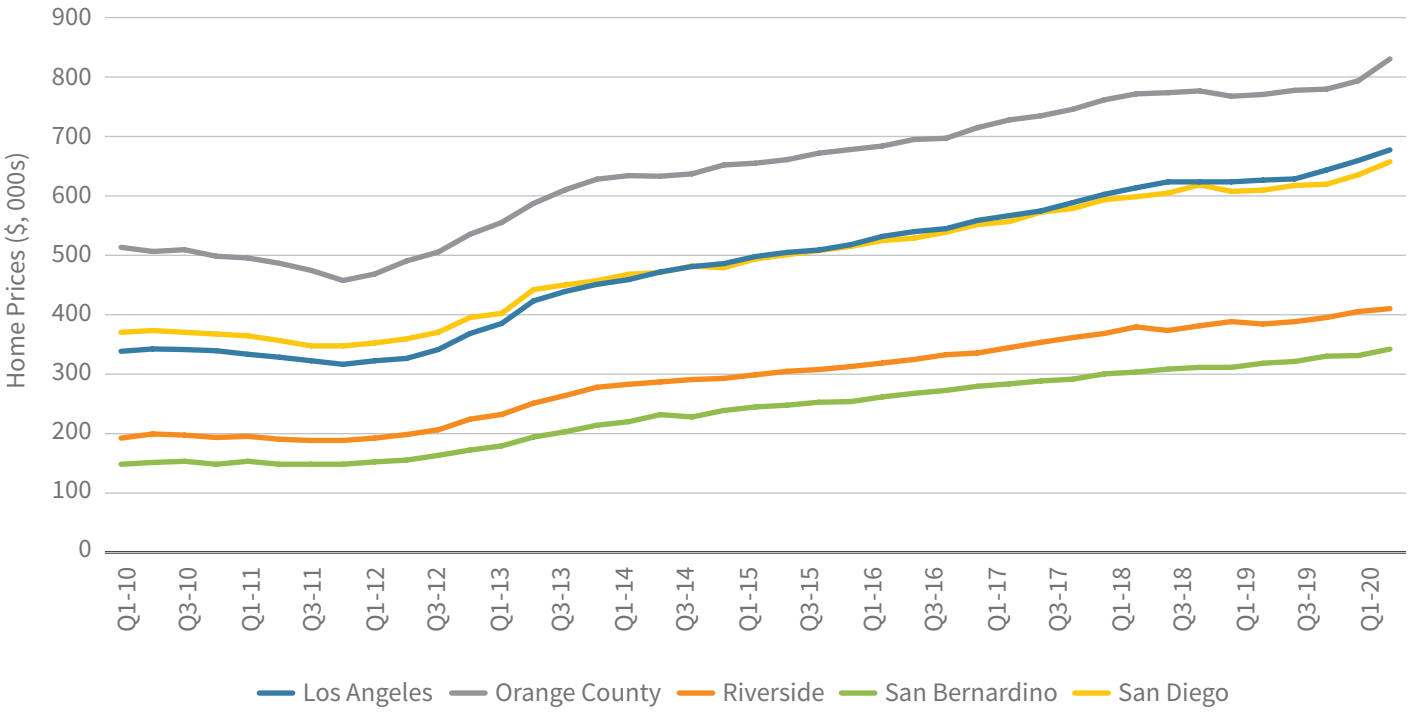
SAN BERNARDINO COUNTY, Q1-2010 TO Q1-2020



Source: California Department of Tax and Fee Administration; Analysis by The Center for Economic Forecasting

Prior to COVID's impact on the economy, housing shortage was one of the biggest problems facing California. In terms of population growth, housing supply has fallen drastically short of requirements. The severity of the matter is spread unevenly among California's major metropolitan regions. The Inland Empire, and San Bernardino County in particular, remain an affordable haven compared to other areas, with median home prices the lowest of the five major counties in Southern California.

MEDIAN HOME PRICES



Source: CoreLogic; Analysis by The Center for Economic Forecasting

As of the first quarter of 2020, the Inland Empire also had the lowest office and retail rents (both at $23.3 per square foot). In fact, it is the only region in Southern California where office and retail rents are below $30 per square foot.

	Q1-2020 Cost of Rent ($ per Square Foot)		
Region	Office	Retail	Warehouse/Distribution
Los Angeles	40.6	34.0	7.9
Orange County	35.1	34.5	7.6
San Diego	34.2	32.6	9.2
Inland Empire	23.3	23.3	5.8

Source: REIS; Analysis by The Center for Economic Forecasting

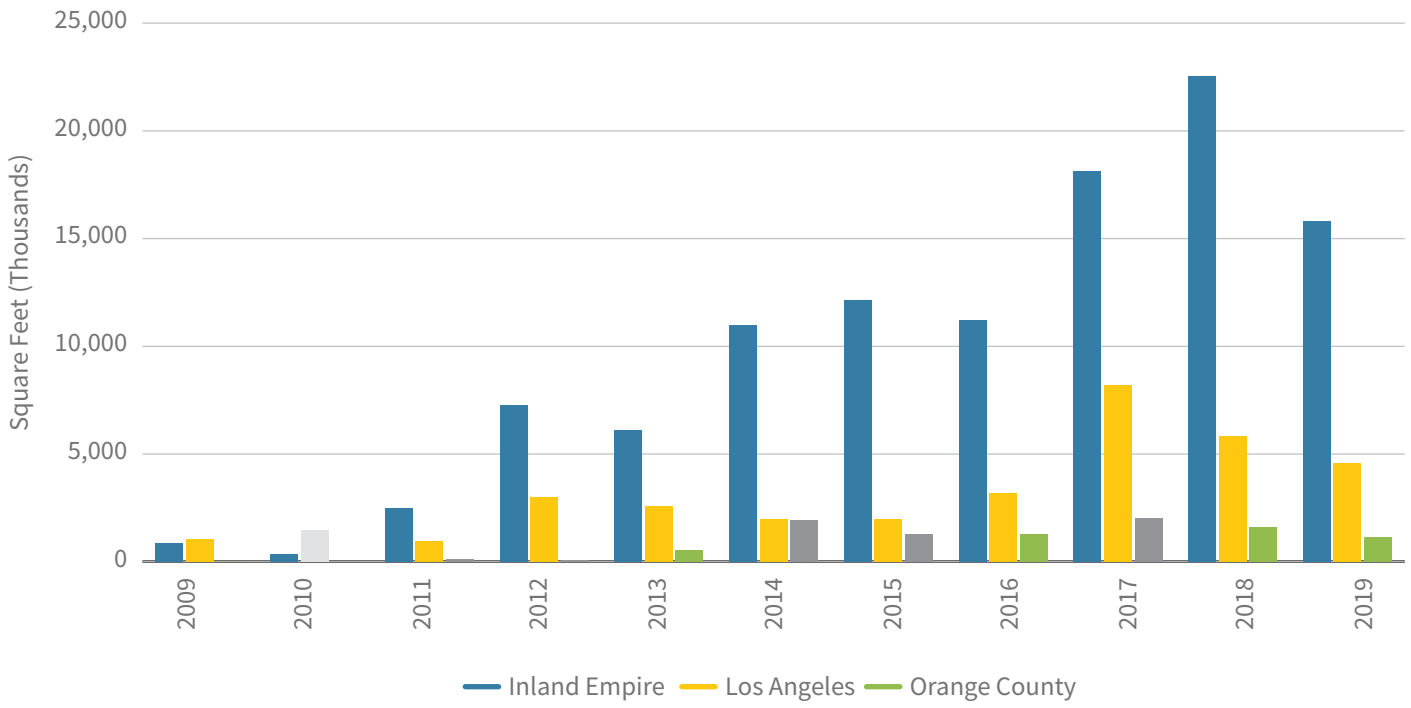
Despite tremendous growth in Logistics over the past ten years, the Inland Empire still offers cheaper rents for warehousing and distribution, and more availability, since its vacancy rate of 10.2% is higher than any other region in Southern California.

	Q1-2020 Vacancy Rate (%)		
Region	Office	Retail	Warehouse/Distribution
Los Angeles	14.2	7.2	5.7
Orange County	16.6	5.6	7.5
San Diego	16.0	6.0	8.7
Inland Empire	16.7	9.8	10.2

Source: REIS; Analysis by The Center for Economic Forecasting

Compared to other Southern California regions, vacancy rates in the Inland Empire are generally higher across commercial real estate properties. However, this is more a result of construction activity in the region rather than a lack of demand for commercial real estate. The square footage of office, retail, and industrial property completed in the Inland Empire vastly outpaces neighboring Los Angeles and Orange County. Additionally, substantial and sustained levels of net absorption over the last ten years suggest that the high commercial vacancy rates in the Inland Empire are due to construction activity fueled by high demand for space.

COMMERCIAL REAL ESTATE COMPLETIONS



Source: REIS; Analysis by The Center for Economic Forecasting

DOES AFFORDABILITY DRIVE MIGRATION?

Domestic and foreign migration patterns differ considerably in California. For the most part, foreign net migration has been positive, with an average of around 150,000 net migrants coming from abroad every year since 2010. Domestically however, the story is quite different. Over the last decade, the average annual net domestic migration has been -110,000. In 2018, roughly 698,300 people left California, the most popular destinations being Texas (12%), Arizona (10%), and Washington (7.5%).

San Bernardino County's migration patterns are similar to California's. Domestic migration has been negative for the past few years, while foreign migration has been largely positive. So how is it that an exceptionally affordable region has seen negative domestic migration? One reason is the different economic composition and workforce development opportunities in San Bernardino County compared to other regions. Given the rapid economic growth in Texas and Arizona, some Californians are opting to move there to take advantage of housing affordability and a lower cost of living. Alongside Riverside, San Bernardino is without doubt a powerhouse in the Logistics and Leisure industries. However, those sectors offer relatively low paying jobs. Cost of living and diverse economic opportunities are persuading many Californians to resettle out-of-state.

There's no doubt that housing affordability has its advantages in attracting migrants. However, in order to compete with states such as Arizona and Texas, San Bernardino County would also have to offer economic and workforce development opportunities to attract people to various industries. With population forecasts being revised down as birth rates across all races and ethnicities are expected to drop or flatten, it will ultimately be migration patterns that drive population growth.

MOJAVE WATER AGENCY POPULATION FORECAST

In 2019, the Mojave Water Agency (MWA) service area was estimated to include roughly 487,923 people, or 22.3% of the total estimated San Bernardino County population. At the turn of the 21st century, the MWA region accounted for only 16.0% of the San Bernardino County population. Movement to the MWA region grew significantly in the early 2000s, specifically in its incorporated cities and towns. The average year-over-year growth for San Bernardino County between 2000 and 2010 was 1.9%, lower than Adelanto (5.9%), Apple Valley (2.5%), Hesperia (3.6%), and Victorville (5.8%). However, in the last ten years, these growth levels have flattened out. Between 2011 and 2019, average year-over-year growth in the county was 0.8%, lower than Adelanto (1.1%) and Victorville (1.0%).

Statewide population trends have been revised down in accordance with changes in birth rates and migration patterns. San Bernardino County is no different, but the MWA region has many advantages that could attract migrants given the right economic opportunities. This section explores the housing supply and affordability patterns of the MWA region, as well as how its economic indicators shape up future population estimates.

In terms of home prices, the MWA region is one of the most affordable areas in Southern California. While San Bernardino's home values are already far lower than neighboring counties, the incorporated cities and towns of the MWA service areas offer even lower home prices. In fact, as of December 2019, all of the incorporated cities and towns offer home prices below $300,000, while the county average hovers well above that.

HOME PRICES IN SAN BERNARDINO COUNTY AND MWA INCORPORATED CITIES/TOWNS

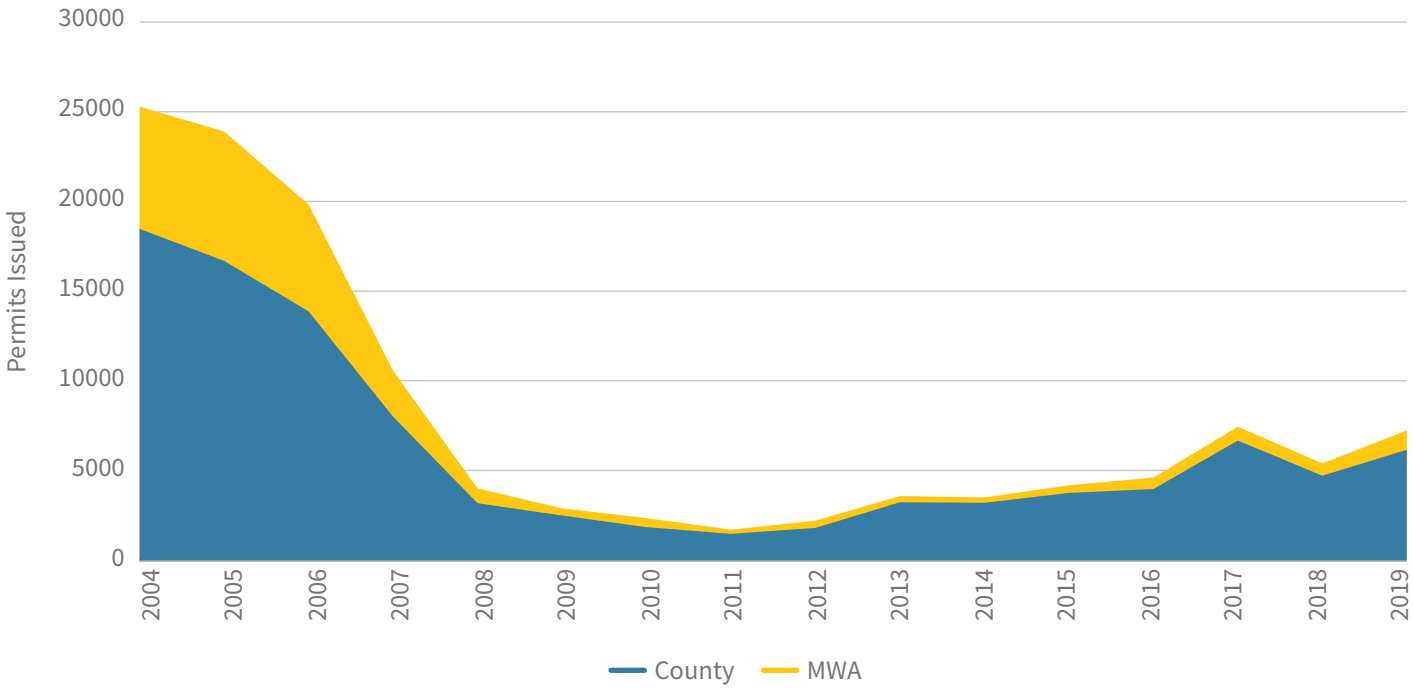
	Dec-2019 Value ($, 000s)	1-Year % Growth	9-Year % Growth
San Bernardino County	360.6	3.3%	89.7%
Hesperia	279.3	3.5%	119.5%
Apple Valley	265.9	3.3%	95.4%
Victorville	264.6	4.1%	116.0%
Adelanto	235.8	4.1%	139.0%
Yucca Valley	215.5	6.9%	80.0%
Barstow	144.6	3.3%	107.5%

Source:Zillow; Analysis by The Center for Economic Forecasting

Growth in home prices in the incorporated cities and towns of the MWA service area has been significant. Between December 2010 and 2019, home values doubled in four of the incorporated cities and towns in the MWA service area (Hesperia, Victorville, Adelanto, and Barstow), and of the six incorporated cities, only Yucca Valley's home value growth between 2010 and 2019 was lower than the San Bernardino County average. More recently, home value growth in the MWA service area has generally been higher than the San Bernardino County average, with only Barstow and Apple Valley on the same level as the county at 3.3%. The increase in home value growth over the past ten years is indicative of both increased demand for housing in the MWA service area, and of the tight available supply.

TOTAL PERMITS

MWA VS SAN BERNARDINO COUNTY



Source: CIRB; Analysis by The Center for Economic Forecasting

In 2004, at the pre-Recession peak of housing permit activity, San Bernardino County issued over 18,400 permits, of which 36.9% came from the MWA incorporated towns and cities. Fast forward to 2019, and county's permit issuance is down to just over 6,150, while only 17.5% of them originate from MWA incorporated towns and cities. In fact, the MWA service area issued more housing permits in 2004 than the total issued by the region between 2010 and 2019. Nonetheless, things are slowly starting to pick up. In 2019, a total of 1,081 home permits were issued in the MWA service area, the highest annual figure in twelve years.

Compared to the county overall, economic activity, specifically consumption and spending, has been slow in the MWA service area over the past few years. Between 2009 and 2019, taxable sales in San Bernardino County grew by 76.6%. In comparison, incorporated cities in the MWA service area have lagged behind. At 77.1%, Hesperia is the only city to have achieved a growth rate higher than the county, while Barstow and Yucca Valley had significantly lower growth rates at 19.1% and 31.0% respectively. This indicates that most regions of the MWA service area are not yet experiencing the spending patterns associated with most of San Bernardino County, or Southern California as a whole.

PRE-COVID TAXABLE SALES | SAN BERNARDINO COUNTY AND MWA INCORPORATED CITIES/TOWNS

Region	2019 Taxable Sales ($, Millions)	10-year % Growth
County Total	41,770.3	76.6
Victorville	2,040.4	54.1
Hesperia	889.7	77.1
Barstow	619.5	19.1
Apple Valley	602.5	40.0
Yucca Valley	327.4	31.0
Adelanto	177.0	50.9

Source: California Department of Tax and Fee Administration ; Analysis by The Center for Economic Forecasting

In terms of taxable sales, early damage from COVID-19 has been worse in the MWA service area's incorporated cities relative to San Bernardino County. San Bernardino's taxable sales declined by 5.4% between the first quarter of 2019 and the first quarter of 2020, while certain MWA incorporated cities such as Apple Valley, Barstow, and Hesperia saw drops of 31.2%, 20.3%, and 18.0% respectively. The least damage was seen in Yucca Valley, where taxable sales fell by 16.6% in year-over-year terms, still more than five times the decline seen by the county.

COVID TAXABLE SALES IMPACT

Region	Q1-2020 Taxable Sales ($, Millions)	1-year % Growth
County Total	9,120.1	-5.4
Victorville	387.3	-18.2
Hesperia	168.7	-18.0
Barstow	117.6	-20.3
Apple Valley	103.3	-31.2
Yucca Valley	66.5	-16.6
Adelanto	43.6	-6.5

Source: California Department of Tax and Fee Administration; Analysis by The Center for Economic Forecasting

CONCLUSION

The outlook on population growth across most areas in California has been revised downwards as the trend becomes clear that there are fewer births and less people moving into the state – especially domestically. This pattern is also seen in regional demographic forecasts. The MWA service area has a lot to offer, specifically affordable housing in a region where affordability is scarce. However, given the overall sociodemographic trends – lower home prices will not be enough to accelerate population growth.

While population forecasts in the MWA service area have been revised down compared to previous iterations, the region's population growth is nonetheless expected to outpace those of both San Bernardino County and California between 2020 and 2060, driven primarily by strong increases in larger cities such as Victorville and Hesperia.

APPENDIX A

MWA SERVICE AREA TOTAL AND MWA INCORPORATED CITIES/TOWNS FORECASTS

Year	MWA Service Area Total	Adelanto	Apple Valley	Barstow	Hesperia	Victorville	Yucca Valley
1990	266,232	6,751	46,159	24,260	50,705	50,579	16,442
2000	321,264	17,895	54,240	22,699	62,740	64,165	16,855
2010	453,649	31,760	69,144	22,757	90,170	115,913	20,656
2011	457,776	31,786	69,770	22,939	90,968	117,447	20,920
2012	462,455	31,351	70,319	23,251	91,597	119,992	21,077
2013	467,393	31,904	70,643	23,571	91,714	122,329	21,222
2014	470,748	33,282	71,016	23,574	91,728	123,106	21,222
2015	473,810	33,791	71,765	23,663	92,459	123,465	21,543
2016	477,940	34,367	72,234	23,875	93,173	124,600	21,672
2017	481,932	35,192	72,412	24,037	94,233	125,338	21,859
2018	484,593	35,162	72,891	24,075	95,127	125,782	21,905
2019	487,923	35,136	73,464	24,150	96,362	126,543	22,050
2020	492,319	35,811	74,205	24,193	97,846	127,696	22,230
2025	533,170	39,238	78,616	24,497	107,564	148,196	23,128
2030	567,855	41,958	82,169	24,813	115,845	165,513	23,887
2035	592,849	44,242	84,990	25,115	122,562	176,241	24,551
2040	614,931	46,159	87,601	25,390	128,858	185,270	25,136
2045	634,934	47,770	89,923	25,630	134,578	193,580	25,651
2050	653,017	49,125	91,967	25,840	139,698	201,298	26,105
2055	669,424	50,269	93,791	26,025	144,324	208,430	26,505
2060	684,247	51,238	95,409	26,185	148,478	214,977	26,858
2065	697,603	52,062	96,843	26,326	152,196	220,954	27,169

Forecast by The Center for Economic Forecasting

APPENDIX B

MWA SUB AREA FORECASTS

Year	Alto	Alto Transition Zone	Baja	Centro	Este	Morongo	Oeste
1990	165,100	17,468	5,782	35,046	5,167	31,001	5,501
2000	222,012	14,636	5,035	33,392	5,822	31,375	7,838
2010	334,862	23,366	4,729	34,167	7,370	38,177	10,595
2011	338,235	23,514	4,779	34,470	7,448	38,623	10,707
2012	341,966	23,530	4,821	34,884	7,514	38,937	10,802
2013	345,491	23,905	4,874	35,331	7,596	39,277	10,920
2014	347,856	24,486	4,911	35,424	7,654	39,415	11,003
2015	350,137	24,704	4,925	35,546	7,676	39,788	11,034
2016	353,161	25,019	4,966	35,858	7,740	40,069	11,127
2017	355,998	25,403	5,005	36,113	7,800	40,399	11,213
2018	358,116	25,466	5,041	36,239	7,857	40,580	11,295
2019	360,879	25,528	5,067	36,376	7,897	40,822	11,353
2020	364,694	25,826	5,073	36,432	7,906	41,022	11,366
2025	401,345	28,025	5,146	36,913	8,020	42,191	11,530
2030	432,258	29,848	5,226	37,422	8,145	43,247	11,709
2035	454,174	31,218	5,294	37,888	8,251	44,163	11,861
2040	473,548	32,379	5,357	38,315	8,349	44,980	12,002
2045	491,137	33,393	5,416	38,698	8,441	45,714	12,135
2050	507,071	34,285	5,471	39,040	8,526	46,370	12,256
2055	521,557	35,070	5,521	39,345	8,604	46,957	12,369
2060	534,661	35,763	5,568	39,620	8,677	47,483	12,475
2065	546,475	36,376	5,612	39,866	8,745	47,956	12,572

Forecast by The Center for Economic Forecasting

APPENDIX C

MWA WATER PURVEYOR FORECASTS

Year	Liberty Utilities - Apple Valley Water Company	Bighorn-Desert View Water Agency	City of Adelanto Water District	County Service Area 64	County Service Area 70 J	Golden State Water Company – Barstow System
1990	37,228	1,200	6,751	5,353	3,328	29,905
2000	45,207	2,892	17,895	7,595	5,652	29,337
2010	57,847	3,839	31,760	9,075	9,467	30,173
2011	58,372	3,880	31,781	10,552	9,566	30,435
2012	58,831	3,914	31,346	10,666	9,650	30,811
2013	59,106	3,957	31,899	10,792	9,750	31,211
2014	59,419	3,987	33,277	10,871	9,821	31,277
2015	60,042	3,998	33,786	10,907	9,851	31,388
2016	60,435	4,032	34,362	10,998	9,933	31,664
2017	60,587	4,063	35,186	11,077	10,013	31,887
2018	60,988	4,093	35,156	11,151	10,087	31,986
2019	61,466	4,114	35,130	11,212	10,143	32,103
2020	62,081	4,118	35,811	11,244	10,162	32,154
2025	65,745	4,178	39,238	11,691	10,356	32,574
2030	68,699	4,243	41,958	12,099	10,554	33,017
2035	71,045	4,298	44,242	12,390	10,721	33,427
2040	73,215	4,349	46,159	12,646	10,876	33,801
2045	75,146	4,397	47,770	12,884	11,021	34,135
2050	76,847	4,441	49,125	13,103	11,153	34,432
2055	78,364	4,482	50,269	13,304	11,275	34,697
2060	79,710	4,520	51,238	13,490	11,387	34,934
2065	80,904	4,555	52,062	13,661	11,491	35,145

Forecast by The Center for Economic Forecasting

Year	Helendale Community Services District	Hesperia Water District	Hi-Desert Water District	Joshua Basin County Water District	Phelan Pinon Hills Community Services District	Victorville Water District
1990	3,273	50,976	19,060	7,515	9,688	54,539
2000	4,704	62,592	19,198	8,062	13,770	69,095
2010	6,180	89,742	23,760	9,534	19,423	122,051
2011	6,245	90,536	24,145	9,635	19,628	123,649
2012	6,301	91,163	24,330	9,720	19,803	126,246
2013	6,369	91,280	24,511	9,826	20,018	128,649
2014	6,418	91,294	24,536	9,901	20,171	129,475
2015	6,436	92,022	24,866	9,929	20,229	129,852
2016	6,490	92,732	25,023	10,012	20,398	131,040
2017	6,541	93,787	25,236	10,090	20,557	131,829
2018	6,588	94,676	25,307	10,164	20,706	132,321
2019	6,622	95,905	25,469	10,216	20,813	133,115
2020	6,629	97,380	25,653	10,227	20,836	134,273
2025	6,725	107,045	26,600	10,375	21,136	154,831
2030	6,830	115,279	27,414	10,536	21,465	172,220
2035	6,919	121,959	28,124	10,673	21,744	183,018
2040	7,001	128,221	28,751	10,800	22,003	192,113
2045	7,078	133,910	29,306	10,919	22,245	200,486
2050	7,149	139,001	29,796	11,029	22,469	208,262
2055	7,215	143,602	30,231	11,131	22,676	215,447
2060	7,276	147,734	30,615	11,225	22,869	222,044
2065	7,333	151,431	30,956	11,313	23,048	228,069

Forecast by The Center for Economic Forecasting

UC RIVERSIDE | School of Business
CENTER FOR ECONOMIC FORECASTING & DEVELOPMENT

MOJAVE WATER AGENCY

POPULATION FORECAST | 2020 EDITION

Mojave Water Agency

F

AWWA Water Audits

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: San Bernardino County Service Area 64 - Spring Valley Lake (3610121)
Reporting Year: 2018 | 7/2017 - 6/2018

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.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	5	2,772.400	acre-ft/yr	3			acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 2,772.400 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	5	2,382.630	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:		34.655	acre-ft/yr	1.25%		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 2,417.285 acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

355.115 acre-ft/yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		6.931	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	24.067	acre-ft/yr	1.00%	acre-ft/yr
Systematic data handling errors:		5.957	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: 36.955 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 318.160 acre-ft/yr

WATER LOSSES: 355.115 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 389.770 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	40.4	miles
Number of active AND inactive service connections:	9	3,890	
Service connection density:		96	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:	3	75.0	psi

COST DATA

Total annual cost of operating water system:	10	$2,408,456	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$1.03	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$101.45	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 57 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: San Bernardino County Service Area 64 - Spring Valley Lake (3610121)
Reporting Year: 2018 | 7/2017 - 6/2018

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 57 out of 100 ***

System Attributes:

	Apparent Losses:	36.955	acre-ft/yr
+	Real Losses:	318.160	acre-ft/yr
=	Water Losses:	355.115	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	67.38	acre-ft/yr
	Annual cost of Apparent Losses:	$16,580	
	Annual cost of Real Losses:	$32,277	Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	14.1%	
	Non-revenue water as percent by cost of operating system:	2.2%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	8.48	gallons/connection/day
	Real Losses per service connection per day:	73.02	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.97	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	318.16	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	4.72	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	San Bernardino County Service Area 64 - Spring Valley Lake (3610121)	
Reporting Year:	2018	7/2017 - 6/2018
Data Validity Score:	57	

Own Sources (Adjusted for known errors): *2,772.400*

Water Imported: *0.000*

System Input: *2,772.400*

Water Exported: *0.000*

Water Supplied: *2,772.400*

Authorized Consumption: *2,417.285*

Billed Authorized Consumption: *2,382.630*

- **Billed Metered Consumption (water exported is removed)**: *2,382.630*
- **Billed Unmetered Consumption**: *0.000*

Billed Water Exported

Revenue Water: 0.000

Unbilled Authorized Consumption: *34.655*

- **Unbilled Metered Consumption**: *0.000*
- **Unbilled Unmetered Consumption**: *34.655*

Water Losses: *355.115*

Apparent Losses: *36.955*

- **Unauthorized Consumption**: *6.931*
- **Customer Metering Inaccuracies**: *24.067*
- **Systematic Data Handling Errors**: *5.957*

Real Losses: *318.160*

- **Leakage on Transmission and/or Distribution Mains**: *Not broken down*
- **Leakage and Overflows at Utility's Storage Tanks**: *Not broken down*
- **Leakage on Service Connections**: *Not broken down*

Revenue Water: 2,382.630

Non-Revenue Water (NRW): *389.770*

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: San Bernardino County Service Area 64 - Spring Valley Lake (3610121)
Reporting Year: 2019 7/2018 - 6/2019

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.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

						Pcnt:	Value:	
Volume from own sources:	5	2,646.740	acre-ft/yr	3				acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr					acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr					acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 2,646.740 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	5	2,245.510	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:		33.084	acre-ft/yr	1.25%		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 2,278.594 acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 368.146 acre-ft/yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		6.617	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	22.682	acre-ft/yr	1.00%	acre-ft/yr
Systematic data handling errors:		5.614	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: 34.913 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 333.233 acre-ft/yr

WATER LOSSES: 368.146 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 401.230 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	40.4	miles
Number of active AND inactive service connections:	9	3,934	
Service connection density:		97	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: 3 75.0 psi

COST DATA

Total annual cost of operating water system:	10	$3,208,187	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$0.88	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$162.18	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 57 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: San Bernardino County Service Area 64 - Spring Valley Lake (3610121)
Reporting Year: 2019 7/2018 - 6/2019

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 57 out of 100 ***

System Attributes:

	Apparent Losses:	34.913	acre-ft/yr
+	Real Losses:	333.233	acre-ft/yr
=	Water Losses:	368.146	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	67.94	acre-ft/yr
	Annual cost of Apparent Losses:	$13,383	
	Annual cost of Real Losses:	$54,044	Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	15.2%	
	Non-revenue water as percent by cost of operating system:	2.3%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	7.92	gallons/connection/day
	Real Losses per service connection per day:	75.62	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	1.01	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	333.23	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	4.91	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	San Bernardino County Service Area 64 - Spring Valley Lake (3610121)	
Reporting Year:	2019	7/2018 - 6/2019
Data Validity Score:	57	

Own Sources (Adjusted for known errors)
2,646.740

Water Imported
0.000

System Input
2,646.740

Water Exported
0.000

Water Supplied
2,646.740

Authorized Consumption
2,278.594

Billed Authorized Consumption
2,245.510

Billed Water Exported

Billed Metered Consumption (water exported is removed)
2,245.510

Billed Unmetered Consumption
0.000

Revenue Water
0.000

Revenue Water
2,245.510

Unbilled Authorized Consumption
33.084

Unbilled Metered Consumption
0.000

Unbilled Unmetered Consumption
33.084

Non-Revenue Water (NRW)
401.230

Water Losses
368.146

Apparent Losses
34.913

Unauthorized Consumption
6.617

Customer Metering Inaccuracies
22.682

Systematic Data Handling Errors
5.614

Real Losses
333.233

Leakage on Transmission and/or Distribution Mains
Not broken down

Leakage and Overflows at Utility's Storage Tanks
Not broken down

Leakage on Service Connections
Not broken down

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: San Bernardino County Service Area 64 - Spring Valley Lake (3610121)
Reporting Year: 2020 | 7/2019 - 6/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	5	2,665.220	acre-ft/yr	3			acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 2,665.220 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	5	2,189.690	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	33.315	acre-ft/yr	1.25%		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 2,223.005 acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 442.215 acre-ft/yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		6.663	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	22.118	acre-ft/yr	1.00%	acre-ft/yr
Systematic data handling errors:		5.474	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: 34.255 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 407.959 acre-ft/yr

WATER LOSSES: 442.215 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 475.530 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	40.4	miles
Number of active AND inactive service connections:	9	3,976	
Service connection density:		98	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: 3 | 75.0 psi

COST DATA

Total annual cost of operating water system:	10	$1,733,537	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$1.19	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$65.62	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 57 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: San Bernardino County Service Area 64 - Spring Valley Lake (3610121)
Reporting Year: 2020 | 7/2019 - 6/2020

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 57 out of 100 ***

System Attributes:

	Apparent Losses:	34.255	acre-ft/yr
+	Real Losses:	407.959	acre-ft/yr
=	Water Losses:	442.215	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	68.47	acre-ft/yr
	Annual cost of Apparent Losses:	$17,757	
	Annual cost of Real Losses:	$26,770	Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	17.8%	
	Non-revenue water as percent by cost of operating system:	2.7%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	7.69	gallons/connection/day
	Real Losses per service connection per day:	91.60	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	1.22	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	407.96	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	5.96	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	San Bernardino County Service Area 64 - Spring Valley Lake (3610121)	
Reporting Year:	2020	7/2019 - 6/2020
Data Validity Score:	57	

Water Exported
0.000

Billed Water Exported

Own Sources
(Adjusted for known errors)
2,665.220

Water Supplied
2,665.220

Authorized Consumption
2,223.005

Billed Authorized Consumption
2,189.690

Billed Metered Consumption (water exported is removed)
2,189.690

Billed Unmetered Consumption
0.000

Revenue Water
2,189.690

Unbilled Authorized Consumption
33.315

Unbilled Metered Consumption
0.000

Unbilled Unmetered Consumption
33.315

Non-Revenue Water (NRW)
475.530

Water Losses
442.215

Apparent Losses
34.255

Unauthorized Consumption
6.663

Customer Metering Inaccuracies
22.118

Systematic Data Handling Errors
5.474

Real Losses
407.959

Leakage on Transmission and/or Distribution Mains
Not broken down

Leakage and Overflows at Utility's Storage Tanks
Not broken down

Leakage on Service Connections
Not broken down

Water Imported
0.000

G

SB X7-7 Forms

SB-X7 Compliance Form

Appendix G Table 1. SB X7-7 Table 2 Method for Population Estimates

Optional subtitle goes here.

	METHOD FOR POPULATION ESTIMATES
X	1. Department of Finance (DOF) or American Community Survey (ACS)
	2. Persons-per-Connection Method
	3. DWR Population Tool
	4. Other DWR recommends pre-review

Appendix G Table 2. SB X7-7 Table 3 Service Area Population

Optional subtitle goes here.

YEAR	POPULATION
2020 COMPLIANCE YEAR POPULATION	
2020	11,244

Appendix G Table 3. SB X7-7 Table 4 Annual Gross Water Use

Optional subtitle goes here.

BASELINE YEAR *FROM SB X7-3*	VOLUME INTO DISTRIBUTION SYSTEM *FROM SB X7-4A*	DEDUCTIONS					ANNUAL GROSS WATER USE
		EXPORTED WATER	CHANGE IN DISTRIBUTION SYSTEM STORAGE (+/-)	INDIRECT RECYCLED WATER *FROM SB X7-4B*	WATER DELIVERED FOR AGRICULTURAL USE	PROCESS WATER *FROM SB X7-4D*	
2020 COMPLIANCE YEAR - GROSS WATER USE							
2020	**2,701**			**0**		**-**	**2,701**

Appendix G Table 4. SB X7-7 Table 4A Volume Entering the Distribution System(s): Source 1

The Supplier's Own Source

Name of Source:	Groundwater Free Production Allowance		
BASELINE YEAR FROM SB X7-3	**VOLUME ENTERING DISTRIBUTION SYSTEM**	**METER ERROR ADJUSTMENT (+/-)**	**CORRECTED VOLUME ENTERING DISTRIBUTION SYSTEM**
2020 COMPLIANCE YEAR - WATER INTO DISTRIBUTION SYSTEM			
2020	2,701		2,701

Appendix G Table 5. SB X7-7 Table 4C Process Water Deduction Eligibility

Select Only One	
No	**CRITERIA 1 - INDUSTRIAL WATER USE IS EQUAL TO OR GREATER THAN 12% OF GROSS WATER USE. COMPLETE SB X7-4-C.1 BELOW.**
No	**CRITERIA 2 - INDUSTRIAL WATER USE IS EQUAL TO OR GREATER THAN 15 GPCD. COMPLETE SB X7-4-C.2 BELOW.**
No	**CRITERIA 3 - NON-INDUSTRIAL USE IS EQUAL TO OR LESS THAN 120 GPCD. COMPLETE SB X7-4-C.3 BELOW.**
No	**CRITERIA 4 - DISADVANTAGED COMMUNITY. COMPLETE SB X7-4-C.4 BELOW.**

Appendix G Table 6. SB X7-7 Table 5 Gallons Per Capita Per Day (GPCD)

BASELINE YEAR FROM SB X7-3	SERVICE AREA POPULATION FROM SB X7-3	ANNUAL GROSS WATER USE FROM SB X7-4	DAILY PER CAPITA WATER USE (GPCD)
2020 COMPLIANCE YEAR GPCD			
2020	11,244	2,701	214

Appendix G Table 7. SB X7-7 Table 9 2020 Compliance

ACTUAL 2020 GPCD	2020 INTERIM TARGET GPCD	OPTIONAL ADJUSTMENTS (IN GPCD)					2020 GPCD (ADJUSTED IF APPLICABLE)	DID SUPPLIER ACHIEVE TARGETED REDUCTION FOR 2020?
		EXTRAORDINARY EVENTS	WEATHER NORMALIZATION	ECONOMIC ADJUSTMENT	TOTAL ADJUSTMENTS	ADJUSTED 2020 GPCD		
214	0				0	-	-	YES