



2025 Urban Water Management Plan

Adopted June 16, 2026





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2025 Urban Water Management Plan

Adopted June 16, 2026

Resolution No. 517

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ACRONYMS

ACS	American Community Survey
AMI	Advanced Meter Infrastructure
AWWA	American Water Works Association
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CDP	Census Designated Place
CEC	California Energy Commission
CIMIS	California Irrigation Management Information System
CLAWA	Crestline-Lake Arrowhead Water Agency
CSD	Crestline Sanitation District
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Crestline Village Water District
CWC	California Water Code
CWP	California Water Plan
DAC	Disadvantaged Community
DCR	Delivery Capability Report
DDW	Division of Drinking Water
DMM	Demand Management Measure
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
GAC	Granulated Activated Carbon
HMP	Hazard Mitigation Plan
IGC	Independent Geo-Environmental Consultants
ILI	Infrastructure Leaking Index
LACSD	Lake Arrowhead Community Services District
LAFCO	Local Agency Formation Commission (of San Bernardino County)
LGWC	Lake Gregory Water Company
MHI	Median Household Income
MOU	Memorandum of Understanding
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
N/A	Not Applicable
NOAA	National Oceanic and Atmospheric Administration
PWS	Public Water System
PWSS	Public Water System Statistics
RWQCB	Regional Water Quality Control Board
SB	California Senate Bill
SBVMWD	San Bernardino Valley Municipal Water District

ACRONYMS

SGMA	2014 Sustainable Groundwater Management Act
SGPWA	San Geronio Pass Water Agency
SWP	State Water Project
SWRCB	State Water Resources Control Board
THMs	Trihalomethanes
UWMP	Urban Water Management Plan
WEBB	Albert A. Webb Associates
WRCC	Western Regional Climate Center
WSCP	Water Shortage Contingency Plan
WUE	Water Use Efficiency

UNITS OF MEASUREMENT AND CHEMICAL SYMBOLS

AF	Acre Feet
AF/Yr	Acre Feet per Year
°C	Celsius
CCF	Hundred Cubic Feet
CF	Cubic Feet
CY	Calendar Year
ET _o	Reference Evapotranspiration Rate
°F	Fahrenheit
FY	Fiscal Year
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
MGD	Million Gallons per Day

CHAPTER 1 INTRODUCTION AND LAY DESCRIPTION

1.1 REGULATORY BACKGROUND

California Water Code (CWC or Water Code) Sections 10608-10656 specify that each Urban Water Supplier is required to submit to the California Department of Water Resources (DWR) an Urban Water Management Plan (UWMP or Plan) once every five years pursuant to the Urban Water Management Planning Act of 1983. DWR staff will then review the submitted plans to ensure they meet the requirements identified in the Water Code. This review results in a report that DWR submits to the Legislature summarizing the status of the plans on a statewide basis. An Urban Water Supplier may be publicly or privately owned, and providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually.

The intent of the UWMP is to support long-term resource planning by urban water suppliers, and to ensure adequate water supplies are available to meet existing and future water demands. Identifying future potential water supply opportunities in the UWMP does not commit the water supplier to any stated endeavor, nor does it preclude them from exploring different projects that may not be identified in the UWMP.

Specifically, the sections of the CWC that apply to UWMPs require water suppliers to report, describe, and evaluate:

- Water deliveries;
- Water supply sources;
- Reasonable and practical water uses;
- Demand management measures; and
- Water shortage contingency planning.

Having a current UWMP that has been determined by DWR to address requirements of the CWC is also an eligibility requirement for obtaining any water management grant or loan

administered by DWR. A current UWMP must also be maintained by urban water suppliers throughout the term of any grant or loan administered by DWR.¹

The Water Conservation Act of 2009 (SB X7-7) required every urban water supplier to report its progress toward a 20-percent reduction in per-capita urban water consumption by the year 2020. Retail water suppliers must document in the UWMP how they have complied with the water conservation requirements in SB X7-7 in order to be eligible for State water grants or loans (CWC §10608.56(a)).

Another purpose of this document is to inform Crestline-Lake Arrowhead Water Agency (CLAWA)—the District’s wholesale water supplier—about future District needs. Likewise, this document is also intended to communicate forecasted growth to the wastewater services provider, Crestline Sanitation District (CSD).

Albert A. Webb Associates (WEBB) is the District Engineer for Crestline Village Water District (CVWD) and has prepared this Plan with staff guidance and submits this document on their behalf with the review and approval of the CVWD Board of Directors. A copy of the resolution to adopt this UWMP by the CVWD Board of Directors on June 16, 2026, is provided in **Appendix A**.

1.2 SIMPLE LAY DESCRIPTION OF 2020 UWMP FINDINGS

In accordance with Water Code Section 10630.5, urban water suppliers are required to provide a simple lay description that describes their plans for water availability and strategies for meeting future requirements and needs. This requirement is met in the following simple description.

CVWD was organized on January 19, 1954, and was originally known as the Crestline Village County Water District. At the time, the District served only the immediate Crestline area, with approximately 1,600 service connections. By the end of CY 2025, there were 5,012 active connections in the District, the vast majority of which (4,738) were Single Family Residential. All of CVWD’s water supplies were from local groundwater sources until 1972, when CLAWA

¹ A UWMP may also be required in order to be eligible for other State funding sources other than DWR, depending on the conditions that are specified in the funding guidelines.

began delivering imported State Water Project water to local suppliers. (Imported water in this report implies water from the Sacramento/San Joaquin Delta and delivered to CLAWA via the State Water Project (SWP) facility, Silverwood Lake.) Since then, CVWD has relied on both local groundwater and imported water supplies. The area served by CVWD has grown over the years and now covers 2,840 acres (4.4 square miles) of unincorporated San Bernardino County and includes the mountain communities of Crestline, Lake Gregory, and portions of Twin Peaks and Valley of Enchantment. To illustrate the CVWD service area boundary in relation to surrounding features, a regional vicinity map is provided in **Figure 1-1**, a city/community vicinity map in **Figure 1-2**, and a topographic map in **Figure 1-3** (all figures are located at the end of the chapter).

A five-member Board of Directors governs the District. Directors are elected by the registered voters of the District and serve four-year terms. The General Manager oversees day-to-day operations and leads a staff of approximately 13 people. The Mission Statement of Crestline Village Water District (CVWD or District) states: “To provide our community with a reliable water system that delivers high quality water for its health and safety needs.”

Over the past five years since the 2020 UWMP was adopted, CVWD has been successful in meeting the goals and intent of the Urban Water Management Planning Act of 1983 and the Water Conservation Act of 2009. During that time, the District accomplished the following:

- Supplied 264,862 hundred cubic feet (CCF) of potable drinking water to 5,012 service connections serving an estimated population of 11,650 people in CY 2025.
- Achieved 47 gallons per capita per day (GPCD) for CY 2025 and met the District’s SB X7-7 target water use goal of 161 GPCD for 2020, thus the target reduction has been met, and the District is compliant with SB X7-7.
- Updated the Emergency Response Plan in 2022, including information on the risks and mitigation of seismic hazards. The District was a participating special district with San Bernardino County’s *Multi-Jurisdictional Hazard Mitigation Plan (2022)*.
- Adopted a new water rate schedule in May 2024 for the next five years, which provides financial disincentives for water waste in the form of surcharges through successive declared drought phases, serving to promote water conservation in dry years.

- Coordinated with CLAWA with regard to water supply reliability aspects of this UWMP.
- Coordinated with the San Bernardino County Land Use Services Department to determine current and projected land uses within the existing or anticipated service area affecting the District's water management planning, pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

1.2.1 District Population, Water Supply, and Water Demand

Using U.S. Census data, this Plan estimates the District's full-time 2025 population at 11,650 persons and, based on CVWD's assessment, forecasts that it will rise by an additional 120 full-time residents to 11,770 by 2050, an approximately 1-percent increase. Water use in the Crestline community is highly seasonal, with many residences used intermittently as short-term rentals or vacation homes such that on a holiday weekend for example, the population can quickly double (HMP). In 2025, full-time residents constitute 55 percent of total connections, which is close to the 25-year average of 58 percent. By 2050, the District's normal year total water demand is estimated to be approximately 294,850 CCF (676.9 AF), an increase of 29,988 CCF (68.8 AF) from 2025.

CVWD produces water locally from 35 wells located on 22 individual sites. Historically, the District has had as many as 50 wells. These wells are in fractured rock aquifers typical of the mountain region, so they are dependent on and responsive to annual precipitation. When local well production is not sufficient to meet local demand, CVWD purchases supplemental water supply from CLAWA, which is a SWP Contractor and the water wholesaler to the San Bernardino Mountains area. CVWD has eight connections to the CLAWA water system; so, depending on their location, customers may receive a mixture of well water and imported water, just well water or just imported water. Based on average well production and purchased water from the past 20 years, approximately half of the District's annual supply has come from wells and the remainder from purchased imported water.

Imported water purchased from CLAWA makes up a considerable proportion of the total water supply during years of extreme drought. For example, in 1990 CVWD purchased more than 84 percent of its total annual water supply from CLAWA. On the other hand, several times over the

past 20 years local CVWD wells have been able to meet nearly 80 percent of annual customer demands. This is due in part to CVWD adding several wells from 1994 through 2004. In CY 2025, which was considered a below-average rainfall year (70 percent of average in the past 20 years), CVWD wells provided 66 percent of the total, while supplies purchased from CLAWA made up 34 percent of the total water supply.

This Plan considers both statewide and local drought conditions and the potential effects of climate change on water supplies and demands because of the District's reliance on local sources of water and imported water.

Supplemental imported water purchased from CLAWA is treated at CLAWA's water treatment facility at Silverwood Lake. Water produced locally from CVWD's wells meets applicable drinking water standards and does not require treatment, other than chlorination of some wells. CVWD chlorinates water from its Pioneer, Horst, Wilson, and Old Mill Springs wells and monitors water quality at all wells, thus, the District does not operate a treatment facility. The District's existing Chamois (vertical) well and the new Electra well (which came online in 2021) show elevated levels of gross alpha radiation, which are removed by a separate, onsite process.

As of 2025, the District has 14 water storage tanks at 11 locations, with a total storage capacity of 8.677 million gallons (11,599 CCF). The distribution system has 11 water pressure zones, 13 pump stations, and approximately 73 miles of pipelines moving water through the system. Pumping and pressure-reducing facilities are used where needed.

Based on the growth assumptions contained in this Plan, the one additional well planned for 2028 would be sufficient to meet the District's projected water demands over the next 25 years, assuming a conservative growth rate, historical rainfall amounts, and considering the potential future effects of climate change. Assumptions used herein for future reliability of imported water supplies are based on DWR's projections in the 2023 *Delivery Capability Report*. Further, this plan assumes up to 30 percent of the SWP water delivered to CLAWA each year is available to CVWD based on the District's recorded purchases and CLAWA's actual average SWP deliveries.

1.2.2 Fundamental Determinations of the Plan

This Plan projects that from current and planned sources, CVWD will be able to meet projected customer demands over the next 20 years in normal-year, single-dry-year, and multiple-dry-year (five-year) scenarios, considering potential effects of climate change and water conservation efforts. Ongoing conservation efforts will be necessary, because the District water supplies from fractured bedrock aquifers are contingent on precipitation. In light of anticipated future drought conditions, which decrease local well production, and spikes in water use that can vary seasonally, meeting 100 percent of customer water demands will continue to be predicated on delivery of imported water purchased from the wholesale supplier, CLAWA. In turn, CLAWA's ability to supply water to CVWD will depend on the future reliability of supplies from the State Water Project including carryover and exchange agreements.

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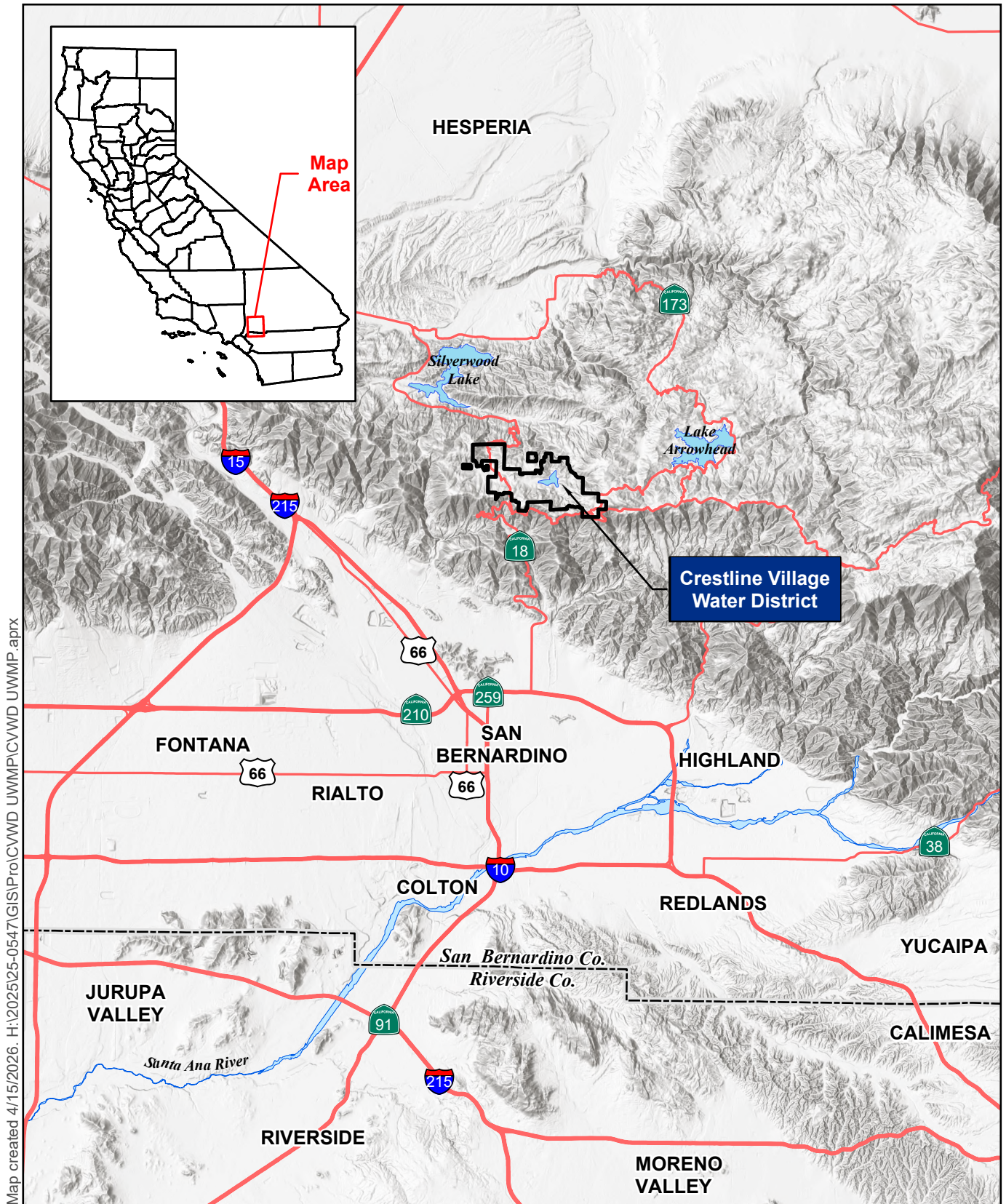
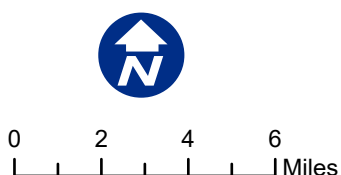


Figure 1-1 Regional Vicinity
Crestline Village Water District Urban Water Management Plan 2025



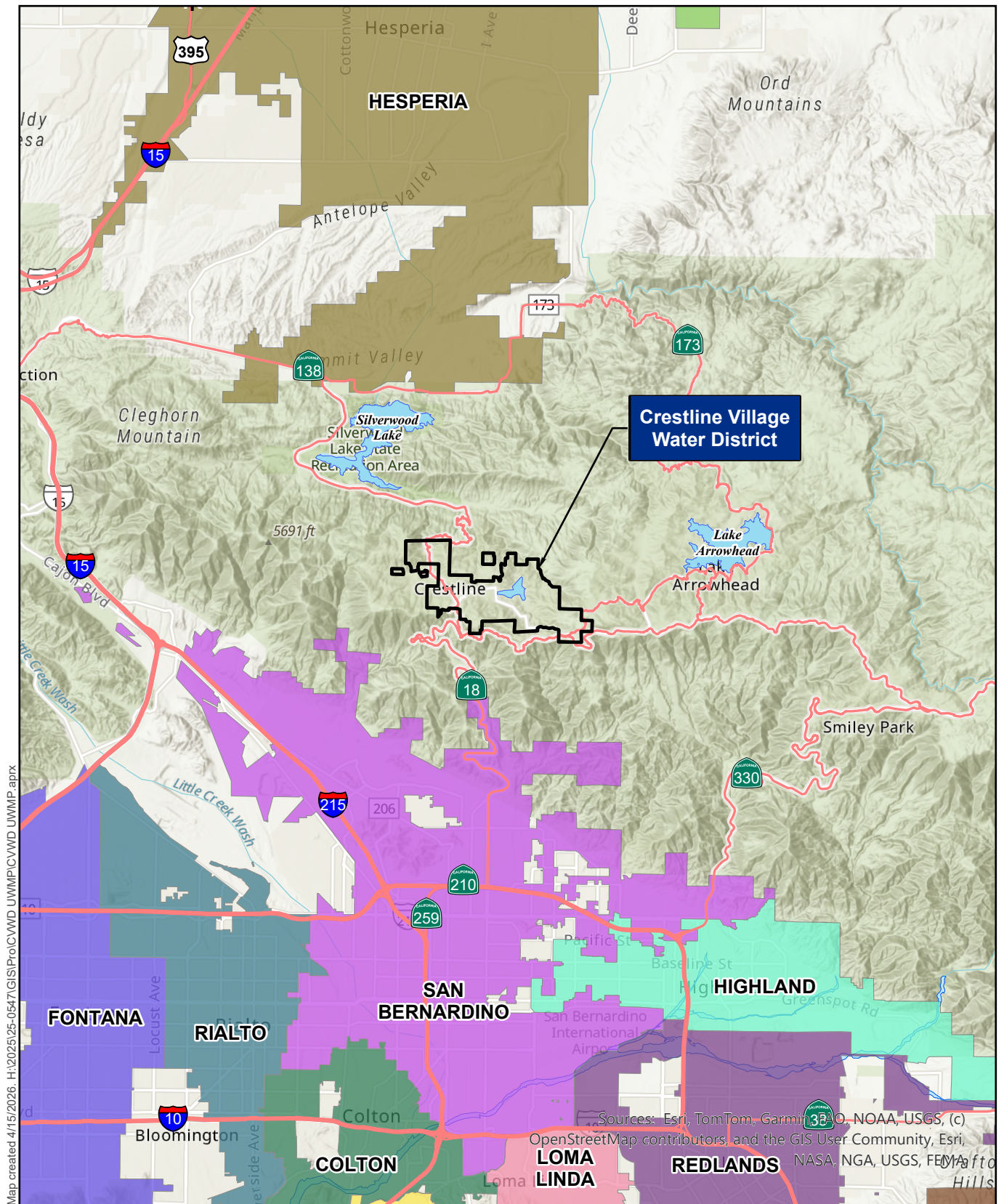
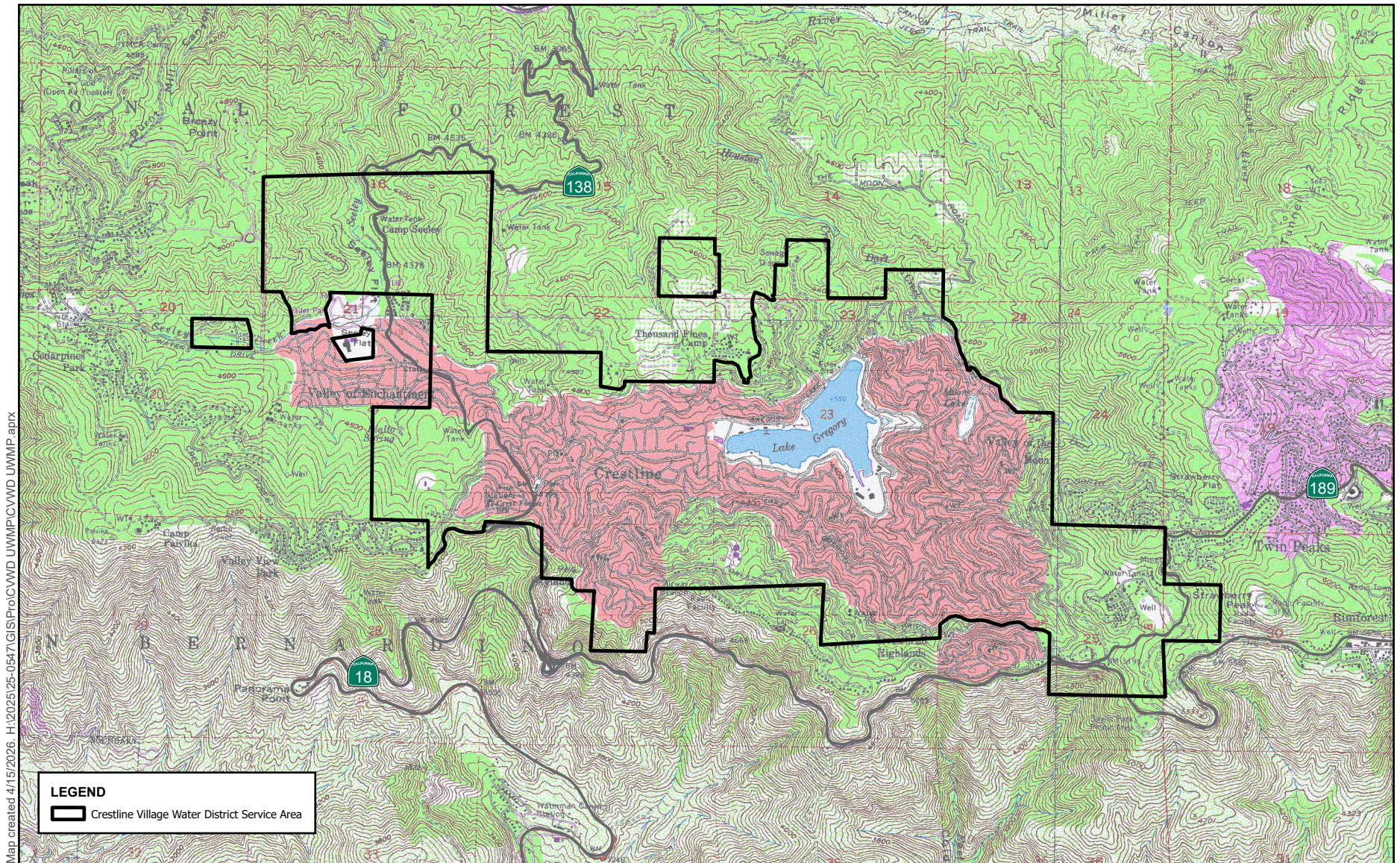


Figure 1-2 Neighboring Cities and Waterbodies
Crestline Village Water District Urban Water Management Plan 2025



0 2 4 Miles





Sources: ESRI / USGS 7.5min Quad

Figure 1-3 Topographic Features

Crestline Village Water District Urban Water Management Plan 2025



0 2,000 4,000 6,000 Feet



CHAPTER 2 PLAN PREPARATION

2.1 PLAN PREPARATION

This chapter provides information on the organization, format, and metrics used in the UWMP, along with basic definitions of the retail and wholesale water suppliers that serve the District population. It also outlines some of the processes, including coordination and outreach, that were employed to gather data for the document and provide transparency and inclusion for affected entities and the general public in development of this Plan.

Water Code Section 10620(b) states: *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.*² Crestline Village Water District (CVWD or “District”) is considered an “urban retail water supplier” because it directly provides potable municipal water to more than 3,000 connections. The District is not a “wholesale” supplier. Therefore, the tables and information provided in the subject UWMP follow the requirements for “retail” water suppliers. A checklist to ensure compliance of this Plan with the UWMP Act requirements is provided in **Appendix B**.

This UWMP follows the chapter organization outlined in the DWR UWMP Guidebook (January 2026) and utilizes data kept and maintained by CVWD, as well as supplemental data from Crestline-Lake Arrowhead Water Agency (CLAWA), Crestline Sanitation District (CSD), and the San Bernardino County Land Use Services Department. The UWMP tables that are required by DWR are included in shades of blue and titled, “Submittal Table 2-1,” for example. The additional tables created during the writing of this report are grey and white and contain letters after the Table number (e.g., “Table 2A”).

Public Water Systems (PWSs) are the systems that provide drinking water for human consumption. These are regulated by the State Water Resources Control Board (SWRCB or State Water Board), Division of Drinking Water (DDW). The PWS name and number, the total number of active connections and volume of water supplied to all CVWD customers as of December 31, 2025, is shown in **Submittal Table 2-1**.

² “Person” means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity (CWC §10614).

Submittal Table 2-1: Public Water Systems

Submittal Table 2-1 Retail: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (CCF)
CA3610015	Crestline Village Water District	5,012	264,862
Total		5,012	264,862
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.			
NOTES: Volume Supplied from "California State Water Resources Control Board Drought Report 2025." Number of connections from CVWD "State Water Board EAR Summary 2025."			

DWR guidelines require the water use and planning data for the entire year of 2025, and because CVWD reports on a calendar year (CY) basis, data included in this UWMP is through December 31, 2025. During CY 2025, CVWD delivered 264,862 hundred cubic feet (CCF) of water to 5,012 active connections (Submittal Table 2-1).

Submittal Tables 2-2 and **2-3** below identify the District as a water retailer and this Plan as an individual UWMP, because the District is an individual water retailer rather than a member of a regional alliance or regional UWMP. Submittal Table 2-2 further indicates the data provided herein is based on CY reporting, with volumes calculated in units of “hundred cubic feet” or CCF.

Submittal Table 2-2: Plan Identification

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

Submittal Table 2-3: Supplier Identification

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

2.2 PLAN COORDINATION

Retail agencies, such as CVWD, that receive a water supply from one or more wholesalers, such as CLAWA, are required to coordinate information for the UWMP with their wholesaler(s) and provide their wholesaler(s) with their projected water demand from that source, in five-year

increments for 20 years. **Submittal Table 2-4** identifies CLAWA as the District's wholesale supplier and acknowledges that CLAWA has been notified of this Plan.

Submittal Table 2-4: Water Supplier Information Exchange

Submittal Table 2-4 Retail: Water Supplier Information Exchange Water Code Section 10631(h)
The retail Supplier has informed the following wholesale supplier(s) of projected water use.
Wholesale Water Supplier Name
Add additional rows as needed
Crestline-Lake Arrowhead Water Agency

Documentation that CVWD has provided CLAWA with **Submittal Table 4-2: Total Uses for Potable and Non-Potable Water - Projected**, and **Submittal Table 6-9: Water Supplies-Projected to CLAWA on June 5, 2026**, is provided in **Appendix C**.

Since one of the goals of this UWMP, as stated in Chapter 1.2, is to inform CLAWA of the future increases in demand for imported water supplies, CVWD hopes this plan will foster future collaboration with CLAWA and other mountain water suppliers. CVWD has notified and solicited input from the following pertinent agencies for preparation of this Plan:

- Alpine Water Users Association
- Arrowbear Park County Water District
- Cedarpines Park Mutual Water Company
- County of San Bernardino Land Use Services Department
- Crestline-Lake Arrowhead Water Agency
- Crestline/Lake Gregory Chamber of Commerce
- Crestline Sanitation District
- Division of Drinking Water, San Bernardino District
- Lahontan Regional Water Quality Control Board
- Lake Arrowhead Community Services District
- Mojave Water Agency
- Rim of the World Recreation & Park District
- Rim of the World Unified School District
- Running Springs Water District
- San Bernardino County Fire
- Santa Ana Regional Water Quality Control Board
- Santa Ana Watershed Project Authority
- Save Our Forest Association
- Sierra Club, Big Bear Group
- Strawberry Lodge Mutual Water Company
- U.S. Department of Agriculture Forest Service
- Valley of Enchantment Mutual Water Company
- Valley View Park Mutual Water Company

At least 60 days before the public hearing on the Plan, the District is required to notify every city or county to whom they provide water that they are reviewing and considering changes to the Plan. CVWD issued a notification letter to the County and agencies listed above on April 7, 2026, and then issued a second letter on May 12, 2026, which included the exact date, time, and location of the public hearing held on June 16, 2026. The draft UWMP was provided for public review on the CVWD Web site, and a hard copy was posted at the District offices beginning June 1, 2026. Copies of the required letters and public notification of the public hearing in *The Alpine Mountaineer* newspaper are included in **Appendix D**. Chapter 10 includes detailed information regarding notifications and Plan adoption proceedings.

2.2.1 Land Use Agency Coordination

In addition to providing notice to the County of San Bernardino regarding preparation of the 2025 UWMP, CVWD also coordinated with the County's Land Use Services Department to gather information related to past, current, and future land use in the District area. The San Bernardino County Land Use Services Department was contacted on April 23, 2026, to request current land use information specifically for this UWMP, including, but not limited to, answers to the following questions:

- Is the County preparing for any large-scale projects proposed within the District service area?
- Does the County have information on recent or pending permits for accessory dwelling units (ADUs)?
- Does the County have any other land use-related information that may affect the District's projections for future water use in the next 20-25 years?

The San Bernardino County Land Use Services Department responded on April 28, 2026, to CVWD with the requested information.

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CHAPTER 3 SYSTEM DESCRIPTION

3.1 GENERAL DESCRIPTION

The Crestline and Lake Gregory communities in unincorporated San Bernardino County, California, receive their domestic water service from Crestline Village Water District (CVWD). Crestline is located about 10 miles north of the City of San Bernardino in the San Bernardino Mountains, where most of the land surrounding the community is within the Mountaintop Ranger District of the San Bernardino National Forest. Crestline and its neighboring mountain communities occupy islands of private land surrounded by National Forest lands. Located along the crest of the San Bernardino Mountains and in adjacent valleys high on the mountains' north slopes, the terrain in the CVWD service area is rugged, with moderate-to-steep slopes and elevations ranging from about 4,000 feet to over 5,600 feet. The elevation at Lake Gregory, located at roughly the center of the District, is 4,550 feet (USGS datum). Unlike Southern California's valleys, the mountains experience a four-season climate. The District's service area lies predominantly on the north side of State Highway 18 (Rim of the World Drive) and is served by State Highways 138 and 18.

On January 19, 1954, the citizens of Crestline organized CVWD under the authority of the County Water District Law (Water Code Sections 31000, et seq.). CVWD was originally known as the Crestline Village County Water District and served only the immediate Crestline area, with approximately 1,600 service connections. For nearly two decades, all of CVWD's water supplies were from local sources until Crestline-Lake Arrowhead Water Agency (CLAWA) began delivering imported water in 1972. Since then, CVWD has been able to rely on a combination of local and imported water supplies to meet demand. The area served by CVWD has grown over the years, as additional land has been annexed. The largest change occurred on October 1, 1979, when CVWD acquired the facilities of the Lake Gregory Water Company (LGWC) and accepted responsibility for providing retail water service in the area immediately surrounding the lake. By acquiring the LGWC, the District almost doubled in size.

As a public agency, CVWD has an elected five-person Board of Directors that serves as its legislative governing body with responsibility for developing and implementing laws that govern the community services provided within its jurisdiction. Each of the five board members is elected to four-year terms by registered voters who reside within the CVWD service territory.

The Board of Directors conducts public meetings on the 3rd Tuesday of each month at the CVWD office located at 777 Cottonwood Drive in Crestline.

3.2 SERVICE AREA BOUNDARY

The CVWD service area includes the mountain communities of Crestline and Lake Gregory, covering 2,840 acres (4.4 square miles) of unincorporated San Bernardino County. Refer to **Figures 1-1, 1-2, and 1-3** for vicinity maps. The District's service area is generally bounded by Highway 18 and the south face of the San Bernardino Mountains to the south, the community surrounding Lake Arrowhead to the east, very rural National Forest land to the west and generally uninhabited north slope of the mountains and start of the 'high desert' to the north. The service area generally surrounds Lake Gregory and its surrounding community.

CVWD's Sphere of Influence is determined by the Local Agency Formation Commission of San Bernardino County (LAFCO) and is shown on **Figure 3-1 – Sphere of Influence**. A Sphere of Influence is defined as, "A plan for the probable physical boundaries and service area of a local agency, as determined by the commission." The CVWD Sphere of Influence covers approximately 12 square miles and encompasses the CVWD service area. The most recent update to the Sphere of Influence for CVWD was adopted January 19, 2011.³ Although designation of a Sphere of Influence is a legal requirement for public agency water suppliers, it does not affect pre-existing service arrangements by others within the sphere. Also, inclusion in the Sphere of Influence does not mean that land will inevitably become annexed to CVWD. CVWD may consider annexing property into its service area only if requested by the property owner. The District is not actively pursuing any annexations at this time.

As shown on **Figure 3-2 – National Forest Boundary**, there are three non-contiguous portions of the CVWD service area, as described from west to east: first, an isolated residential area called Stewart Ranch; second, the Valley of Enchantment Elementary School, and third, an isolated residential area just north of Thousand Pines Christian Camp. Each of the non-contiguous areas in the service area was served previously by private wells or small mutual water companies that could not continue service and asked CVWD to annex them into the

³ LAFCO, County of San Bernardino Resolution No. 3122, available at https://sbclafco.org/wp-content/uploads/sites/60/items/201101/item_7.pdf

District service area. The land immediately outside the service area are served by either private wells or small mutual water companies.

CVWD produced water locally from 35 wells located on 22 individual sites in 2025. There are currently 11 inactive wells. When local well production does not meet demand, CVWD purchases supplemental water supply from CLAWA, which is the State Water Project (SWP) contractor and water wholesaler to the San Bernardino Mountains area. CVWD has eight connections to the CLAWA water system at several different locations in the system; therefore, customers may receive a mixture of well and imported water, just well water or just imported water.

Supplemental water purchased from CLAWA has been treated at CLAWA's water treatment facility at Silverwood Lake. Water produced locally from CVWD's wells meets applicable drinking water standards and does not require treatment, other than chlorination of some wells. CVWD chlorinates water from its Pioneer, Horst, and Wilson wells and monitors water quality at all wells. The District's existing Chamois and Electra wells show elevated levels of gross alpha radiation, which is a treatable type of energy released when radioactive elements from naturally occurring uranium in the rocks decay or break down, and they are treated through a separate, onsite process. Thus, the District operates no centralized, complete water treatment facilities of its own.

As of 2025, the District has 14 water storage tanks at 11 locations, with a total storage capacity of 8.677 million gallons (11,599 CCF). Pumping and pressure-reducing facilities are used where needed. The distribution system has 11 water pressure zones in one contiguous area, 13 pump stations and approximately 73 miles of pipelines moving water through the system. The system contains many miles of pipelines of varying ages, types, and conditions.

3.2.1 Annexations

There have been no annexations, consolidations, or other changes to the service area since the 2020 UWMP.

3.3 SERVICE AREA CLIMATE

When considering the analysis in this section and in the “Climate Change Considerations” section that follows, it is important to differentiate between the terms, “weather” and “climate.” Weather is defined as how the atmosphere behaves over short periods, (i.e., days and weeks), while climate refers to how the atmosphere behaves over the long term. When looking at climate and long-term potential effects of climate change, we consider averages of temperature, rainfall, snowfall water equivalent, humidity, evaporation, and other metrics over a period of years and decades.

The mountainous climate of the CVWD service area is generally cooler than the surrounding lower elevations. As shown on proceeding tables, summers are dry with average temperatures as high as 81°F, and winters are wet and cool, with average temperatures as low as 25°F. The average evapotranspiration rate (ET_o), maximum and minimum temperature data and rainfall data gathered from the Lake Arrowhead CIMIS (California Irrigation Management Information System) station for years 2005 (the year after the station was established) through 2025 are provided in **Table 3A**.

**Table 3A: Evapotranspiration, Temperature and Precipitation Data
for the District Service Area, 2005-2025**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Standard Monthly Average ET _o (inches)	1.7	2.2	3.6	5.0	6.2	7.2	7.5	7.0	5.2	3.7	2.4	1.6	
Average Max. Temperature (°F)	50	51	54	60	67	75	81	80	76	67	58	51	
Average Min. Temperature (°F)	26	26	30	33	37	42	49	48	43	35	29	25	
Average Total Precipitation (inches)	3.7	3.1	2.7	1.5	0.8	0.5	0.5	0.4	0.6	0.8	1.6	3.6	19.9

Source: CIMIS Station 192 Lake Arrowhead-San Bernardino (<http://www.cimis.water.ca.gov/Default.aspx>)

As shown in Table 3A, the average annual rainfall from 2005 to 2025 totaled approximately 20 inches. The average monthly snowfall data from the National Oceanic and Atmospheric Administration (NOAA) Crestline weather station from 2010 to 2015 are presented in **Table 3B**. The average annual snowfall was approximately 12 inches. (Reporting of snowfall data for the years 2016 through 2025 from this station and other local stations contains considerable gaps in data, therefore only the most recent full six-year data is presented here.)

Table 3B: Average Monthly Snowfall for the District Service Area, 2010-2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Average Total Snowfall ¹ (inches)	4.0	4.5	2.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	12.2

Source: NOAA National Environmental Satellite, Data, and Information Service. <https://www.ncei.noaa.gov/access/past-weather/34.6703354,-117.5580464,34.1703354,-117.0580464> Station: CRESTLINE 0.2 WSW, CA US GHCND:US1CASR0019. Values in table represent rounded averages, thus, values reported as zero may not actually be equal to zero.

¹ Snowfall: Maximum amount of new snow that has fallen since the previous observation.

The entire State, and in particular Southern California recently experienced a severe multi-year drought, so for comparison the recorded average rainfall and snowfall amounts from the Western Regional Climate Center (WRCC) are also provided in **Table 3C**, below. These recorded average values represent averages from 1941 through 2011 at Lake Arrowhead, which is located nearly five miles to the east but maintains approximately the same elevation and geographic position on the mountain ridge (data from 2012-2025 is not available from this station).

**Table 3C: Recorded Monthly Rain and Snowfall Data
for the District Service Area, 1941-2011**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Recorded Average Total Precipitation (inches)	8.6	7.9	6.5	2.9	1.1	0.2	0.1	0.4	0.8	1.6	4.2	5.7	40
Recorded Average Total Snowfall (inches)	10.8	11.4	11.7	5.1	0.8	0.0	0.0	0.0	0.0	0.2	2.1	5.6	47.7

Source: WRCC Station 044671, Lake Arrowhead, CA. (<http://www.wrcc.dri.edu>.)
(This station's period of record only contains the years 1941 through 2011.)

Average rainfall and snowfall from the past 15 years compared to recorded averages illustrate recent drought conditions, with less than half the rain and snow received. The annual rainfall and, in particular, the snowfall has a great influence on well production in a fractured bedrock aquifer. With the changing climate there are also anomalies, such as the winter of 2022-2023, when the CVWD service area received more than 12 feet of snow, creating many perennial seep springs where they were usually seasonal, and some of those flowed for two years or more.

3.3.1 Summary of Climate Change Considerations

Water Code now requires water suppliers to account for how climate change might impact water supplies and the reliability of those supplies. Although the Water Code has recommended sources and guidance for addressing climate change, it does not require specific methods for considering this issue in the UWMP. We address climate change in several appropriate sections, including here, where we describe potential climate change effects in the District service area. The other sections in which the effects and considerations of climate change will be addressed include Chapter 4 (Water Use Characterization), Chapter 6 (Water Supply Characterization), and Chapter 7 (Water Service Reliability and Drought Risk Assessment).

Measures the District has taken over the past decade to improve resilience and reduce vulnerabilities to potential effects of climate change include increasing storage capacity, implementing conservation programs, taking steps to prevent fire damage to facilities, and

ensuring backup energy supply and onsite energy generation. The District also has ongoing processes for enhancing its water quality monitoring program, drilling new wells, and modifying existing wells to enhance local water supply.

The analysis of climate change considerations throughout this document is guided in part by the “Urban Water Management Plan Guidebook 2025” and partly relies, as recommended in the Guidebook, on the tools and resources available on the Cal-Adapt Website (<https://cal-adapt.org/>), which synthesizes volumes of downscaled climate change projections and climate impact research from California's scientific community (<https://v2.cal-adapt.org/tools/local-climate-change-snapshot/>).

The Cal-Adapt model data should not be considered as predictions of how the weather will behave on a certain future date, or when heavy snowfall, heat waves, low rainfall, or other events will occur. The data, however, can tell us how much more often or less often we could expect these events to occur in the future.

The Cal-Adapt models presented below include predictions for the period of 2006 to 2100 and provide modeled recorded values from 1950 through 2005. Two climate change scenarios form the basis for these projections—medium and high greenhouse gas emissions. Called Representative Concentration Pathways (RCPs), each represents standard assumptions for the medium and high greenhouse gas aerosol emissions scenarios. In RCP 4.5 (the medium-emissions scenario) global carbon dioxide (CO₂) emissions peak by 2040 and then start to decline. In this scenario, statewide average temperature is expected to increase 2-4 Celsius (°C) by the year 2100 (3.6-7.2 degrees Fahrenheit [°F]). In RCP 8.5 (the high-emissions scenario) global carbon dioxide (CO₂) emissions continue to rise throughout this entire century. In this scenario, the statewide average temperature expected to increase 4-7°C for this scenario by the year 2100 (7.2-12.6°F). Cal-Adapt does not provide a low emissions scenario.

Cal-Adapt’s “Local Climate Change Snapshot” tool provides the following climate projections for temperature, precipitation, and wildfire for the District’s service area. A location on Zurich Drive in Crestline was selected as the representative location in the middle of the District’s service area. The main climate change-related concerns in the District area for supply and demand, according to Cal-Adapt data, are drought, groundwater depletion, reliance on water

diverted from the San Joaquin Delta, peak demand volume surges from extreme heat or temperature trends, and increased risk of fire.

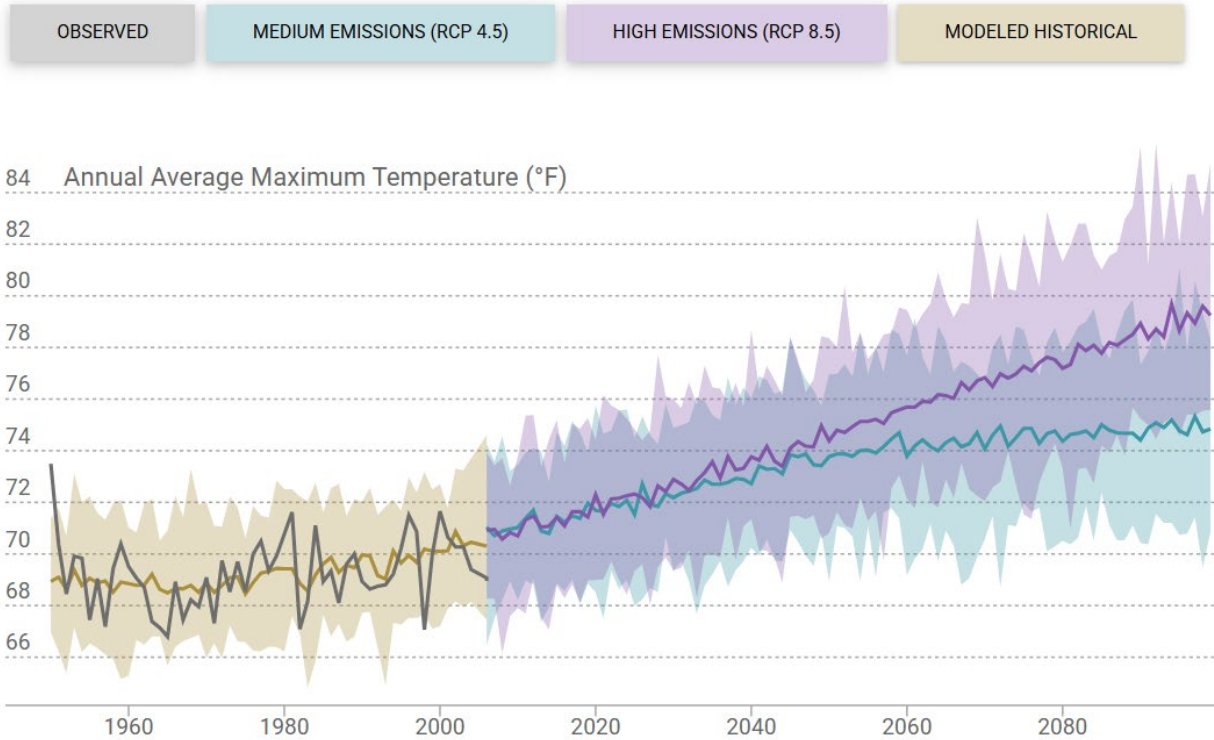
Pursuant to Water Code, the District's level of analysis of the potential effects of climate change on its supplies and demands has been done at a level commensurate with the size of the distribution system. Because of its size and analytical resources, CVWD looked to Western Municipal Water District (WMWD or Western), a large wholesale and retail water supplier in adjacent Western Riverside County with a service area of 527 square miles. Western was able to conduct a comprehensive analysis of a large array of climate change models as part of its 2022 Regional Drought Contingency Plan (WMWD). A copy of Western's Climate Change Vulnerability Assessment is provided in **Appendix E**. Their source data was climate models gathered by DWR for water resources planning. Although Western's service area does not include the San Bernardino Mountains, the trends they identified in future effects to water supply and demand from climate change are commensurate with the summary of anticipated climate changes from Cal-Adapt for the Crestline area provided below. Those trends from Cal-Adapt of increasing temperatures and decreasing rainfall do not conflict with Western's analysis. Therefore, the climate change factors from Western's analysis are used here in Chapters 4, 6, and 7 to account for climate change effects to CVWD's water supply and demand projections.

Cal-Adapt Temperature Projections

Generally, over the course of the 21st Century, temperatures throughout the state are projected to rise. Still, local impacts will vary greatly. Four separate climate indicators are reported by Cal-Adapt for temperature changes: Annual Average Maximum Temperature, Annual Average Minimum Temperature, Extreme Heat Days, and Warm Nights.

Annual Average Maximum Temperature reports the average of all the hottest daily temperatures in a year. Shown on **Chart 3-1** is the most likely outcome and range of future projections of Annual Average Maximum Temperature in the District area.

Chart 3-1 – Cal-Adapt Projections for Annual Average Maximum Temperature (°F)



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Cal-Adapt baseline and mid-century projections for Annual Average Maximum Temperature are summarized in **Table 3D** below. This is the average of all the hottest daily high temperatures in a year.

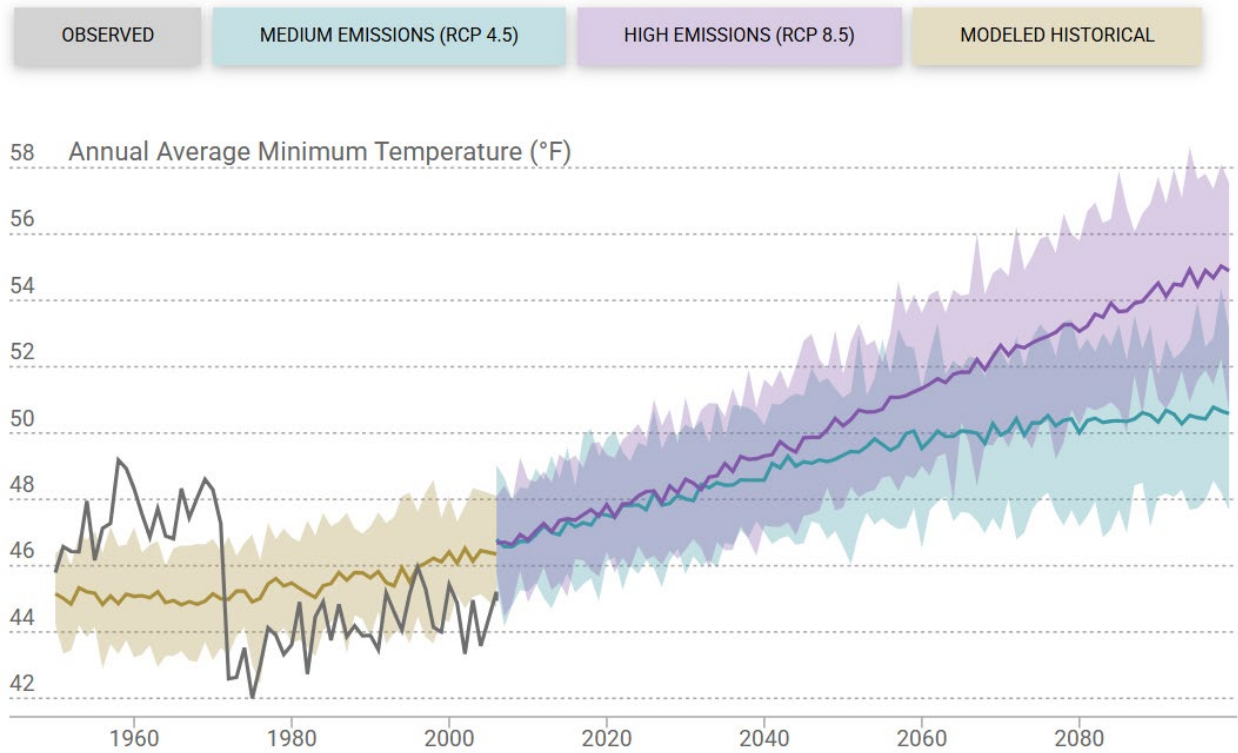
Table 3D: Annual Average Maximum Temperature (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-Year Range
Baseline (1961-1990)	--	69.0 °F	68.7 – 69.5 °F
Mid-century (2035-2064)			
RCP 4.5	+4.6 °F	73.6 °F	71.3 – 76.1 °F
RCP 8.5	+5.6 °F	74.6 °F	72.0 – 76.8 °F

Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Annual Average Minimum Temperature reports the average of all the coldest daily temperatures in a year, shown on **Chart 3-2** is the most likely outcome and range of future projections of Annual Average Minimum Temperature in the Crestline area.

Chart 3-2 – Cal-Adapt Projections for Annual Average Minimum Temperature (°F)



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Table 3E below summarizes Cal-Adapt baseline (1961-1990) and mid-century projections (2035-2064) for Annual Average Minimum Temperature in the Crestline area.

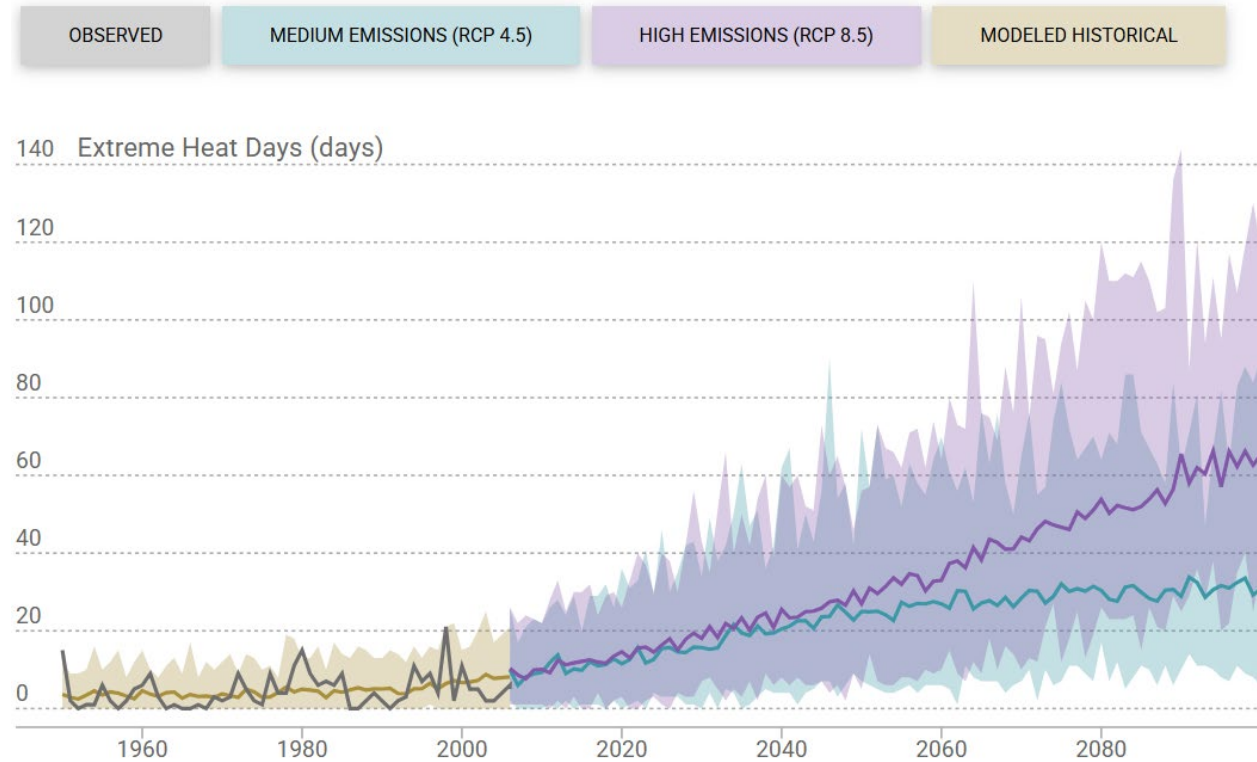
Table 3E: Annual Average Minimum Temperature (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	45.2 °F	45.1 – 45.4 °F
Mid-century (2035-2064)			
RCP 4.5	+4.1 °F	49.3 °F	47.7 – 50.6 °F
RCP 8.5	+5.1 °F	50.3 °F	48.4 – 51.7 °F

Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Extreme Heat Days reflects the number of days in a year when daily maximum temperature is above a threshold temperature of 95.1 °F. **Chart 3-3** shows the most likely outcome and range of future projections of Extreme Heat Days in the Crestline area.⁴

Chart 3-3 – Cal-Adapt Projections for Number of Extreme Heat Days



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Cal-Adapt projections of Extreme Heat days for baseline (1961-1990) and mid-century (2035-2064) time periods in the District area are summarized below in **Table 3F**.

⁴ Note the threshold temperature used in Cal-Adapt is location specific. It is defined as the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at a location.

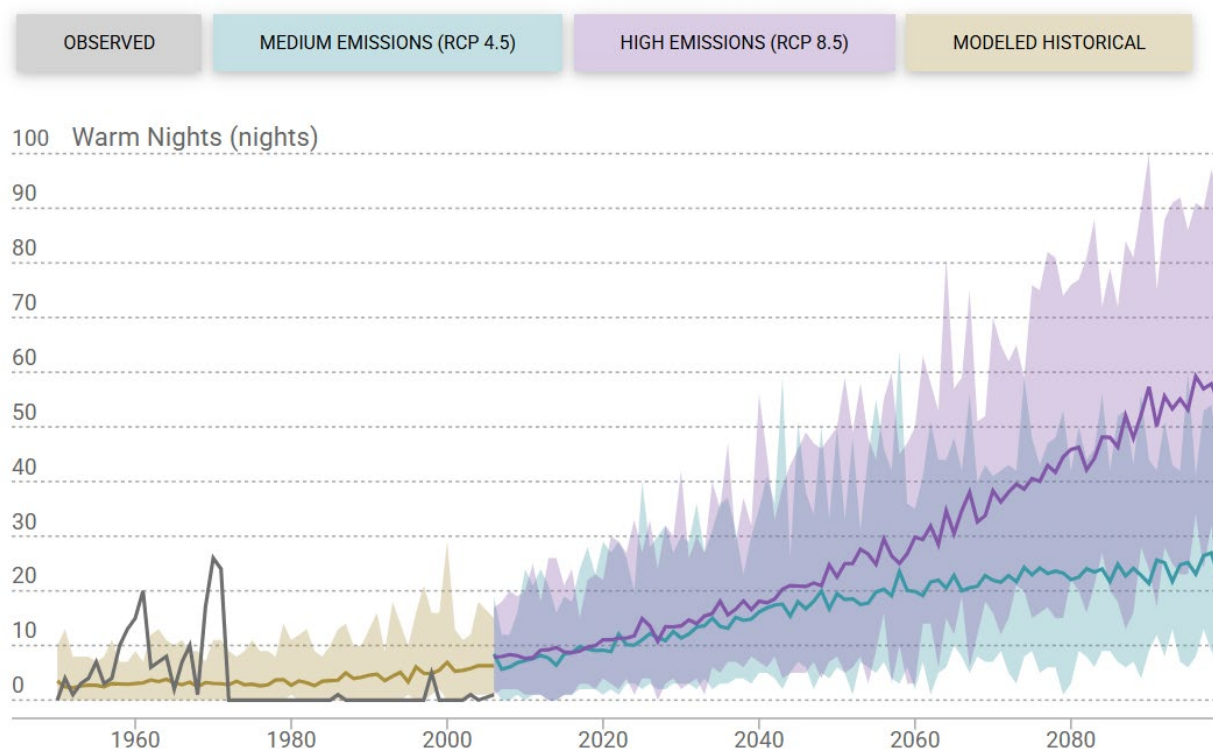
Table 3F: Extreme Heat Days (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	4 days	3 – 5 days
Mid-century (2035-2064)			
RCP 4.5	+20 days	24 days	13 – 54 days
RCP 8.5	+25 days	29 days	16 – 58 days

Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Warm Nights reports the number of days in a year when daily minimum temperature is above a threshold temperature of 68.5 °F.⁵ **Chart 3-4** shows the most likely outcome and range of future projections of Warm Nights in the CVWD area.

Chart 3-4 – Cal-Adapt Projections for Number of Warm Nights



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

⁵ Note the threshold temperature used in Cal-Adapt is location specific. It is defined as the 98th percentile value of recorded daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at a location.

Table 3G below summarizes Cal-Adapt baseline and mid-century projections for Warm Nights, for baseline (1961-1990) and mid-century (2035-2064) time periods in the Crestline area.

Table 3G: Warm Nights (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	3 nights	3 – 5 nights
Mid-century (2035-2064)			
RCP 4.5	+15 nights	18 nights	9 – 33 nights
RCP 8.5	+20 nights	23 nights	13 – 40 nights

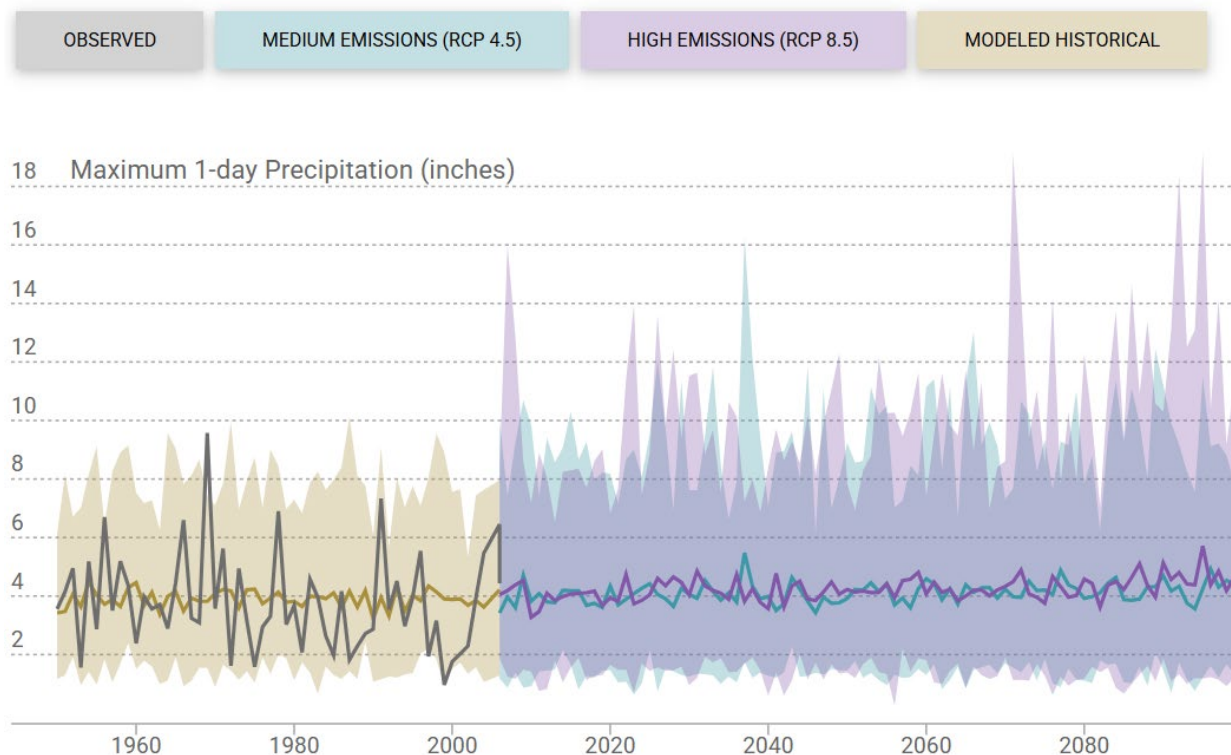
Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Cal-Adapt Precipitation Projections

According to Cal-Adapt, for much of California going forward, wet years will become wetter, and the dry years will become drier. Drought risk will increase because dry years are likely to be followed by dry years, increasing the risk of drought. The amount of average annual precipitation is not projected to change significantly through the end of this century, but precipitation will likely come in more intense storms within a shorter wet season. Three separate climate indicators are reported for precipitation changes: Maximum 1-day Precipitation, Maximum Length of Dry Spell, and Annual Precipitation.

The ***Maximum 1-Day Precipitation*** amount for each year is the greatest amount of daily rain or snow (over a 24-hour period) for each year. **Chart 3-5** shows the most likely outcome and range of future projections of Maximum 1-Day Precipitation in the Crestline area.

Chart 3-5 – Cal-Adapt Projections for Maximum 1-day Precipitation



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Table 3H below summarizes Cal-Adapt baseline and mid-century projections for Maximum 1-day Precipitation, which is the maximum daily amount of rain or snow over a 24-hour period.

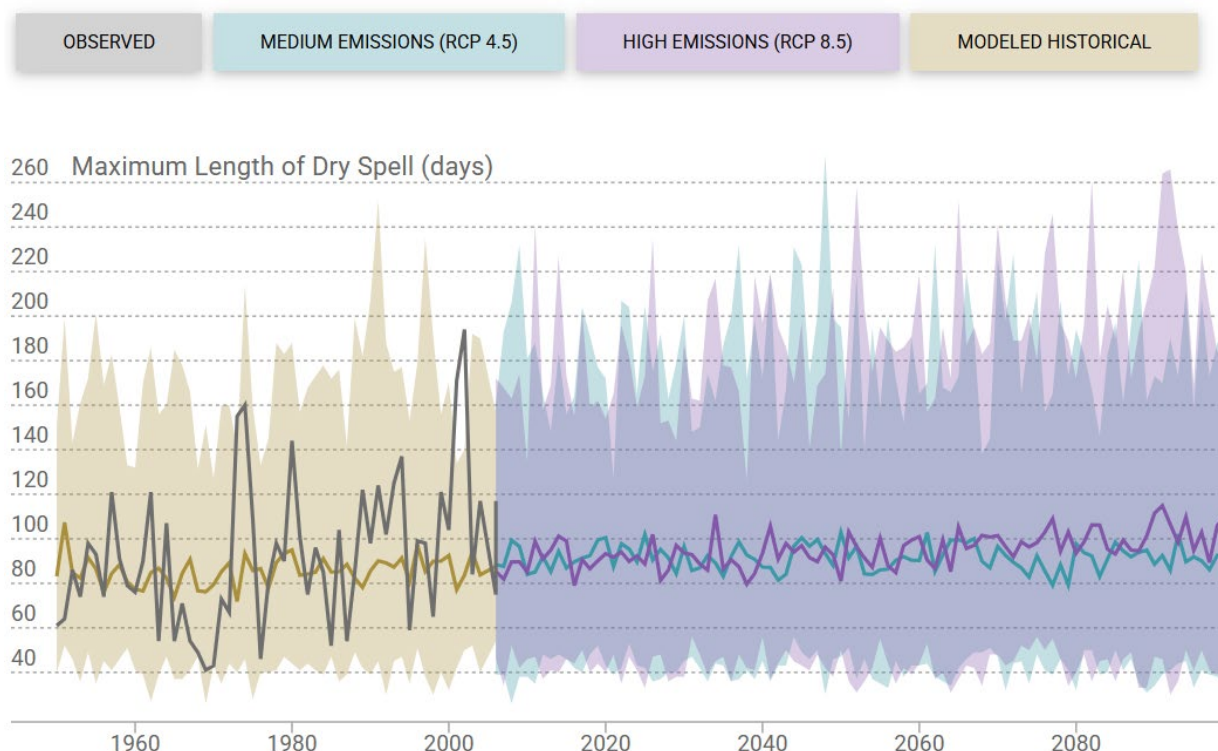
Table 3H: Maximum 1-day Precipitation (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	3.892 inches	3.399 – 4.338 inches
Mid-century (2035-2064)			
RCP 4.5	+0.181 inches	4.073 inches	3.337 – 4.819 inches
RCP 8.5	+0.293 inches	4.185 inches	3.445 – 5.107 inches

Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Maximum Length of Dry Spell is the maximum length of dry spell for each year. In other words, the maximum number of consecutive days with precipitation less than one millimeter each year. **Chart 3-6** shows the most likely outcome and range of future projections of Maximum Length of Dry Spell in the Crestline area.

Chart 3-6 – Cal-Adapt Projections for Maximum Length of Dry Spell



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Table 3I below summarizes Cal-Adapt baseline and mid-century projections for Maximum Length of Dry Spell, which is maximum number of consecutive days with precipitation less than 1 millimeter for each year.

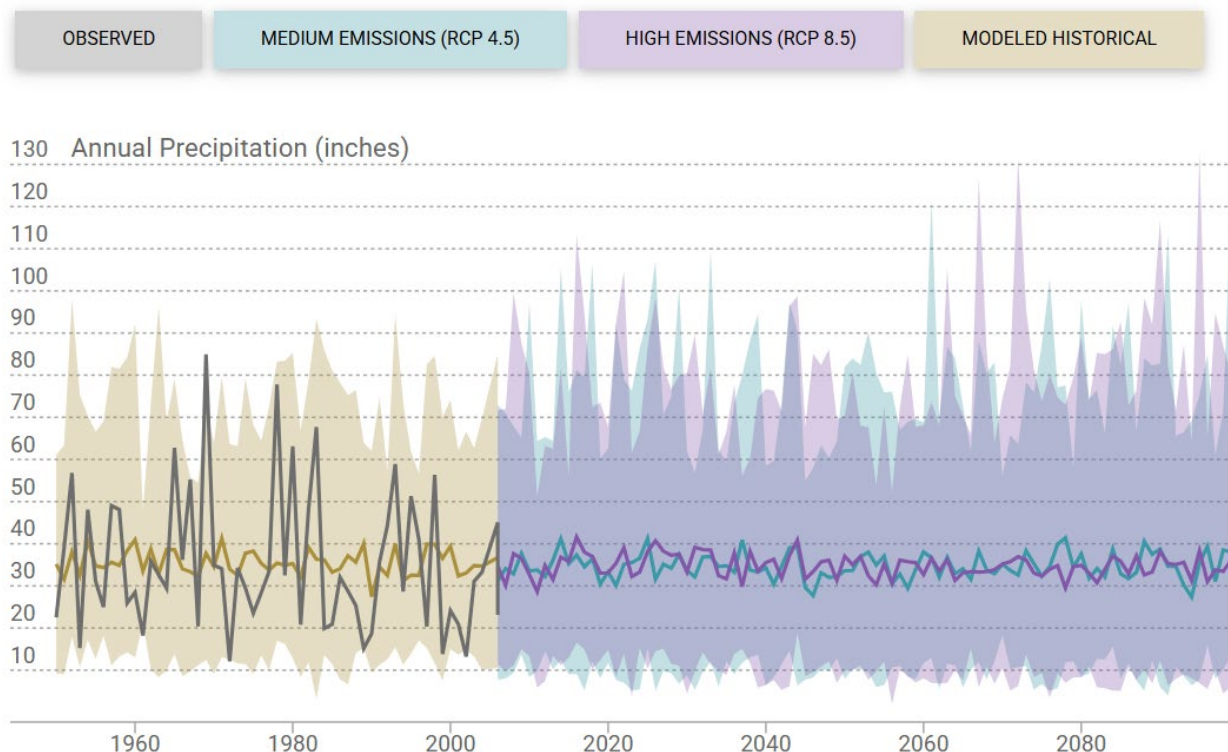
Table 3I: Maximum Length of Dry Spell (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	84 days	74 – 96 days
Mid-century (2035-2064)			
RCP 4.5	+ 8 days	92 days	71 – 121 days
RCP 8.5	+ 8 days	92 days	65 – 122 days

Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Annual Precipitation is the total precipitation projected for a year. **Chart 3-7** shows the most likely outcome and range of future projections of Annual Precipitation in the Crestline area.

Chart 3-7 – Cal-Adapt Projections for Annual Precipitation



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Table 3J below summarizes Cal-Adapt baseline and mid-century projections for Annual Precipitation in the Crestline area, which is the total precipitation in a year.

Table 3J: Annual Precipitation (Cal-Adapt Projections)

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	35.5 inches	31.1 – 38.5 inches
Mid-century (2035-2064)			
RCP 4.5	-1.3 inches	34.2 inches	26.3 – 44.4 inches
RCP 8.5	-1.0 inches	34.5 inches	26.6 – 44.9 inches

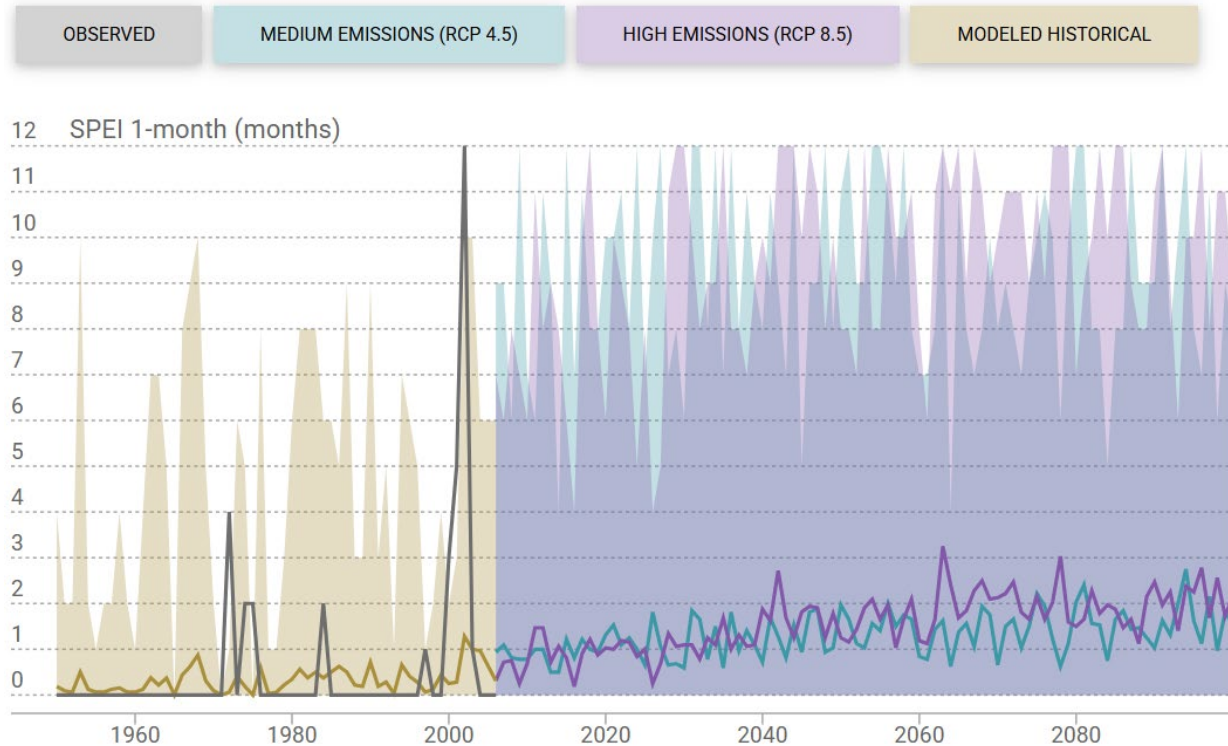
Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

The Standardized Precipitation-Evaporation Index (SPEI)—new in the 2025 CVWD

UWMP—depicts the combined impacts of precipitation deficits and potential evapotranspiration on soil moisture. SPEI does not include impacts from effects like wind speed, relative humidity or solar radiation impacts (typically short-term forcing), making it more

reflective of long-term hydrological and ecological drought conditions. A value less than -1 implies the drought is at least moderate in intensity, with more negative values representing more severe droughts. **Chart 3-8** shows the most likely outcome and range of future projections of SPEI in the Crestline area.

Chart 3-8 – Cal-Adapt Projections for Standardized Precipitation-Evapotranspiration Index (SPEI)



(Source: Cal-Adapt, Local Climate Snapshot for Crestline)

Table 3K below summarizes Cal-Adapt baseline and mid-century projections for SPEI 1-month in the Crestline area.

Table 3K: SPEI, 1-Month

Time Period	Change from Baseline	30-Year Average	30-year Range
Baseline (1961-1990)	--	0.3 months	0.0 – 1.1 months
Mid-century (2035-2064)			
RCP 4.5	+1.0 months	1.3 months	0.2 – 2.7 months
RCP 8.5	-1.0 inches	1.7 months	0.5 – 3.5 months

Source: Cal-Adapt, Local Climate Snapshot for Crestline. From California's Fourth Climate Change Assessment. RCP: representative concentration pathway; 4.5: medium emissions scenario; 8.5: high emissions scenario.

Uncertainty Inherent in Climate Projections

All climate projections, regardless of source, are meant to approximate future climate conditions. As with any projections of the future, some degree of uncertainty is inherent. "Uncertainty" in this case is meant scientifically—that there is a range of possible future outcomes. This is graphically illustrated in the charts above. Sources of uncertainty in these projections include the degree of greenhouse gas emissions on which the models are based, how various models and tools around the world represent different aspects of climate systems, and how well those aspects of the climate systems are understood.

Climate scientists are constantly striving to improve climate theory and the tools they employ to develop and present projections for future climate. Looking at projections from as many different models as possible is one way to get a range of possible outcomes that averages into a more likely outcome as opposed to simply looking at one model. The concept that climate change is occurring and is caused by human activity is the consensus of the overwhelming majority of climate scientists throughout the world. The uncertainty lies within how much climate will change in the future and what its impact will be on humans, nature, and water systems.

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

3.4.1 Service Area Population

The CVWD service area includes residential, commercial, and institutional customers. The existing commercial businesses are oriented to tourists, seasonal, and permanent residents. The development pattern in the CVWD service area is primarily detached single-family residential, which is expected to continue for the duration of the planning period. Spikes in population, and therefore water use, occur seasonally and during times of economic growth.

The unincorporated community of Crestline including the community of Lake Gregory makes up a majority of the District's service area. A portion of the Valley of Enchantment and a portion of the Twin Peaks communities are also included in the service area. Crestline and neighboring communities are part of a mountain resort area that experiences significant tourism. There is a

large seasonal population component as well as a substantial influx of visitors, which can quickly double the population. The seasonal population is not reflected in available demographic statistics that count only year-round residents. Seasonal changes in water demand in the mountain area are different from the normal seasonal variation in water use by customers in non-mountain areas, which reflect spikes in water demand for landscape irrigation, swimming pools, car washing, space cooling, etc. By contrast, Crestline and neighboring mountain resort areas experience significant seasonal swings in the number of people served, with peaks in both summer and winter due to the abundance of recreational activities within the mountain communities. CVWD estimates a 2025 District population of 11,650 persons, as shown in **Submittal Table 3-1**.

Submittal Table 3-1: Population – Current and Projected

Submittal Table 3-1 Retail: Population - Current and Projected Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050(opt)
	11,650	11,675	11,700	11,725	11,750	11,775
NOTES: The 2030-2050 projection starts in 2025 with the latest U.S. Census population for the District. CVWD then projects an additional 2 residential units per year over the 25-year period at the current 2.39 persons per single-family connection.						

Population Projection 2025-2050

The Water Code does not require a specific method for projecting future population in the UWMP, but it does require that the estimates of future population be based upon data from state, regional, or local service agency population projections. First, CVWD looked to the most recent Transportation Analysis Zone (TAZ) GIS data from the Southern California Association of Governments (SCAG). The TAZ data provides an estimate of total households in 2019, 2035, and 2050. This data generated an annual growth rate within the CVWD boundary that was unrealistic.

Therefore, to estimate future growth over the 25-year period, the District took several aspects of the community into account:

- the limited potential for growth in this mountainous community due to lack of developable land
- the District is surrounded by the San Bernardino National Forest on all sides
- historical almost non-existent growth over the past few decades
- a high percentage of part-time residents

Based on the District's knowledge of its community, future population growth is based on two additional residential units per year over the next 25 years at the current persons-per-household ratio of 2.39,⁶ which is a growth rate of 0.43 percent per year.⁷ This would result in an increase over 25 years of 50 more residential units and an increase in the population of approximately 120 people.

Accessory Dwelling Units

Accessory dwelling units (ADUs) are also known as “granny flats,” second units, or in-law units. They can be for one or more people and can be detached, attached, existing space converted into an independent living unit, or a Junior ADU contained entirely within an existing or proposed single-family residence. ADUs are being encouraged by the State to increase residential infill and help meet the increasing statewide demand for affordable housing. Because the ADU laws (Gov. Code 65852.2) change each year, readers should refer to the California Department of Housing and Community Development (www.hcd.ca.gov) for the latest changes to the law.

An increase in ADUs in existing residential areas may densify them more than what had been planned for previously by CVWD. Particularly in areas that are considered currently “built-out” with infrastructure that is already sized at “ultimate” design capacity, an increase in ADUs may

⁶ Persons per household ratio of 2.39 is from the U.S. Census QuickFacts for Crestline Census Designated Place 2020-2024 American Community Survey 5-year estimate (<https://www.census.gov/quickfacts/fact/table/crestlinecdpcalifornia/LND110210>).

⁷ This is consistent with 2020 SCAG Demographics and Growth Forecast Technical Report, which estimates an annual population growth rate for unincorporated San Bernardino County of 0.44 percent from 2016 to 2045.

trigger capital projects to upsize existing pipes or replace degrading infrastructure earlier than expected.

As presented below in Section 3.5, WEBB requested land use data for this UWMP from the San Bernardino County Land Use Services Department. According to a 4/28/2026 email from County Land Use Services Director Miguel Figueroa, there were six new ADUs being reviewed at the time by County Land Use Services staff. The additional water demand associated with ADUs being constructed currently is considered minimal and within the margin of error of water demands between the permanent full-time residents and the temporary part-time residents. Therefore, the projected water demands in this plan do not include an inflator for water demands from potential future ADU's.

3.4.2 Other Social, Economic, and Demographic Factors

The CVWD service area is within the San Bernardino County the Crest Forest Communities, which encompasses Crestline, Cedarpines Park, Lake Gregory, and Valley of Enchantment.

In the 1840s, the mountains became popular for timber harvesting and as a summer vacation spot, and by 1906 Henry Guernsey had developed what is now Crestline as a second home community. Completion of the 101-mile Rim of the World Highway in 1915 improved access to the mountains, and in 1923 summer and winter resorts were opened in Skyland. During the 1920s, the Valley of Enchantment, Crestline, Skyland, and Cedarpines Park were further developed with residential uses, serving primarily as vacation homes. From 1936 to 1938, the Works Progress Administration constructed the dam that created Lake Gregory, and in 1977 Lake Gregory was deeded to the County as a regional park.

Over the years, the Crest Forest area has gradually developed into less of a resort or second-home community and more of a bedroom community, composed of predominantly low-density, single-family residential areas. The area is oriented toward family recreation, with Lake Gregory serving as the main tourist attraction (Crest Forest Communities "Community Profile" Working Draft).

District's Calculation of Current (2025) Full-Time Residents

The District calculates an estimate of the "full-time" population as the number of residential meters with a local billing zip code (92325) multiplied by the number of persons per single-

family meter (2.39), and then an estimation of persons per multi-family meter (estimated from water use compared as a percentage from that of single family meters—3%). According to District records, the percentage of full-time customers currently constitutes 55 percent of total connections, which is close to the average percentage over the past 25 years, but this has fluctuated considerably over time in response to economic up/downturns. Over the past 25 years, the proportion of full-time residents has been as high as 61.5 percent in 2004, and as low as 53.3 percent in 1995.

3.4.3 Disadvantaged Communities

U.S. Census data is gathered at three levels of precision: at the broadest level for unincorporated areas is the Census Designated Place (CDP), followed by Census Tracts that are made up of Block Groups. California Code of Regulations Section 596.1(b)(2) defines a “disadvantaged community (DAC)” as, “A community with an annual median household income (MHI) that is less than 80 percent of the statewide annual MHI.” The statewide MHI according to the Census American Community Survey (ACS) 2019-2023 dataset is \$96,334; thus, 80 percent and 60 percent of that value represents the DAC and Severely DAC (SDAC) thresholds, respectively. Therefore, a community where the MHI is less than \$77,067 meets the DAC threshold and a MHI less than \$57,800 meets the SDAC threshold (ACS). According to the U.S. Census Bureau “QuickFacts,” the Crestline Census Designated Place as a whole has a medium household income from 2020-2024 of \$70,563 (in 2019 dollars) (USCB).

The Census Block Groups that qualify as “disadvantaged” and “severely disadvantaged” are shown in **Figure 3-3 – Disadvantaged Community by Census Block Group**. The information contained in Figure 3-3 is taken directly from the DWR Web site feature called, “Disadvantaged Communities (DAC) Mapping Tool.” The mapping tool is a reference to assist local agencies to evaluate DAC status. Having areas that qualify as a DAC opens the District to the possibility of applying for State grant funding to assist with the implementation, planning, and disadvantaged community involvement efforts.

3.5 SERVICE AREA LAND USE

Development in the San Bernardino Mountains is naturally constrained by the terrain, limited access, and lack of support infrastructure, as well as policies that place much of the area off-

limits to significant development. Most of the mountain area, including the majority of CVWD's service area, is surrounded by or within the San Bernardino National Forest (Figure 3-2). Forest lands are devoted primarily to resource protection and recreational use; however, they do become available for development from time to time, but it is extremely rare.

3.5.1 Coordination with the Land Use Authority

CVWD does not have land use authority within its service area. Because the CVWD service area is located within the unincorporated territory of San Bernardino County, land use authority rests with San Bernardino County. On behalf of CVWD, WEBB contacted the San Bernardino County Land Use Services Department on April 23, 2026, specifically for the purpose of coordinating for this UWMP to request current land use information. Said email requested data from the County on the following questions:

- Is the County preparing for any large-scale projects proposed within the District service area?
- Does the County have information on recent or pending permits for accessory dwelling units (ADUs)?
- Does the County have any other land use-related information that may affect the District's projections for future water use in the next 20-25 years?

The County Land Use Services Department responded on April 28, 2026, with the following information: There are no large-scale projects currently planned within the District. Also, only six (6) ADUs have been approved during the previous six months, and those are currently in process. In addition, "No additional information to provide regarding projects/initiatives that may affect the District's projections for future water use in the next 20-25 years."

3.5.2 Community of Crestline Demographics

Crestline is an unincorporated census-designated community within the San Bernardino Mountains. According to the U.S. Census Bureau "QuickFacts" Web site, as of 2024 (the latest date for which Census data is available), the majority of the residents are white, not Hispanic or Latino (approximately 75%) and between the ages of 18 and 64 (approximately 60%). The majority of housing units are owner occupied (approximately 65%) and the average

household size in Crestline from 2020 through 2024 was 2.53 persons. The median value of owner-occupied housing units is approximately \$332,700 and the median gross rent is approximately \$1,400. Median household income (in 2024 dollars) is approximately \$80,700 and median income per capita (also in 2024 dollars) is approximately \$44,700.

San Bernardino County’s General Plan, called the Countywide Plan (November 2020) uses a two-map system, under which there is a separate General Plan land use map and a separate zoning map. Refer to **Figure 3-4 – Land Use Designations** and **Figure 3-5 – Zoning Designations**. Land use designations within Crestline include residential, commercial, industrial, public facility, open space, and resource land management uses. As shown in **Table 3L** and Figure 3-4, the predominant land use in Crestline is residential. Based on maximum and mid-range projected number of dwelling units and 2.39 persons per dwelling unit, the maximum and mid-range population projections for the water service area are 18,850 and 13,071, respectively. Note that these projections are significantly higher than the population projections through 2050 shown in Submittal Table 3-1.

**Table 3L: Summary of Maximum and Mid-Point Projected Buildouts
Based on Countywide Plan Land Use Designations**

Countywide Plan Land Use Designation	Acres in CVWD Service Area	Maximum Projected DUs or SF of Non- Residential Uses	Mid-Point Projected DUs	Maximum Projected Population ⁽¹⁾	Mid-Range Projected Population ⁽¹⁾
Residential	1,958	7,774 DUs	5,469 DUs	18,850	13,071
Commercial ¹⁾	94	3,067,713 SF	N/A	N/A	N/A
Industrial	5	103,019 SF	N/A	N/A	N/A
Open Space	596	N/A	N/A	N/A	N/A
Public Facility	181	N/A	N/A	N/A	N/A
Totals	2,834	N/A	5,469	18,850	13,071

Notes: DU = dwelling unit, SF = square feet.

(1) CVWD estimates persons per dwelling unit of 2.39.

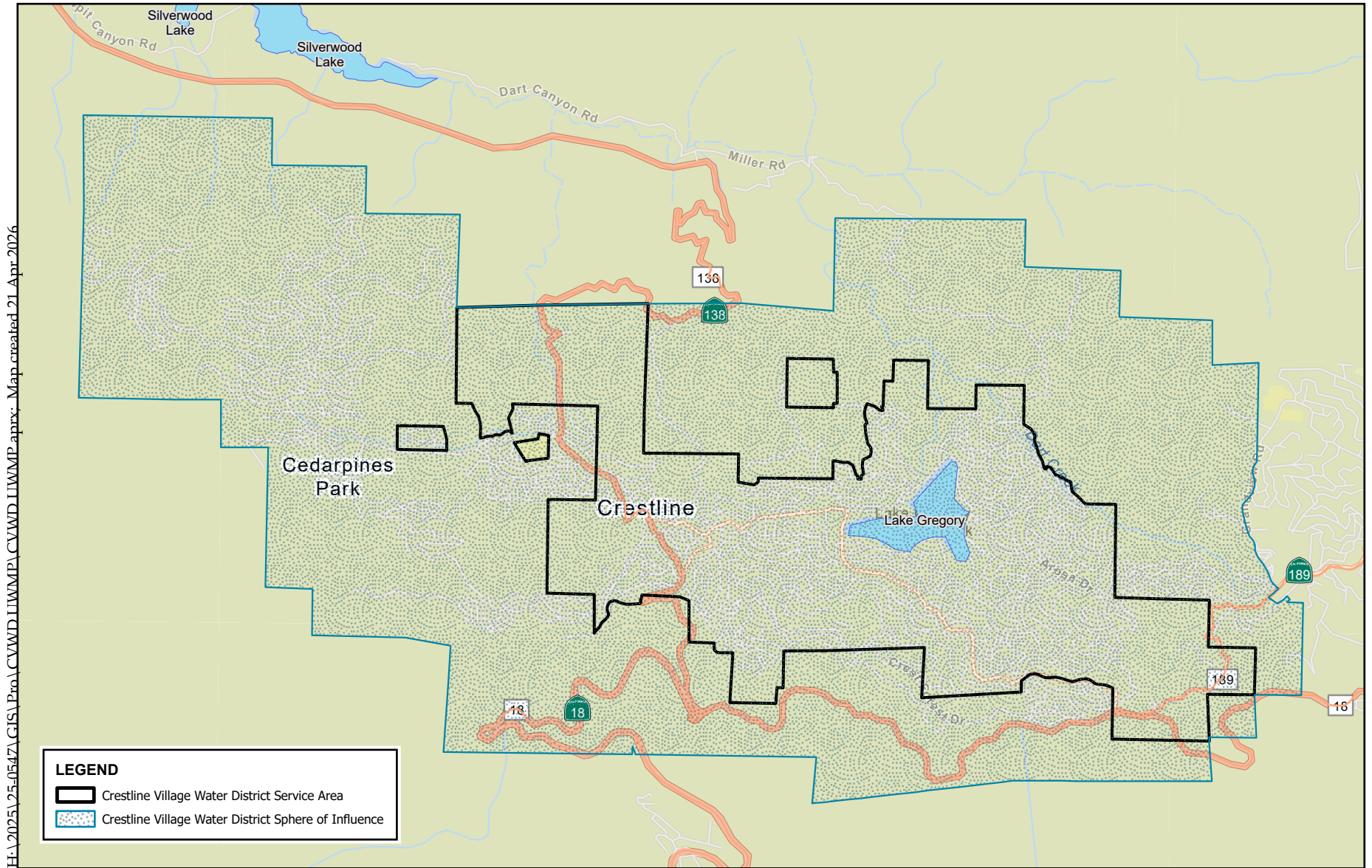
County Zoning or Land Use Districts within Crestline include residential, agricultural and resource management (i.e., floodway, open space, and resource conservation), commercial, industrial, and special purpose (i.e., specific development and institutional). As shown in **Table 3M** and Figure 3-5, the predominant zoning in Crestline is residential. Based on maximum and mid-range projected number of dwelling units and 2.39 persons per dwelling unit, the maximum and mid-range population projections for the water service area are 16,773 and 13,071, respectively. Note that these projections are somewhat lower than the projections based on Countywide land use designations (shown in Table 3L) and are significantly higher than the population projections through 2045 shown in Submittal Table 3-1.

**Table 3M: Summary of Maximum and Mid-Point Projected Buildouts
Based on Land Use Districts per County Development Code**

Zoning (Land Use) District Per County Development Code (Title 8)	Acres within District Service Area	Maximum Projected DUs or SF of Non- Residential Uses	Mid-Point Projected DUs ⁽¹⁾	Maximum Projected Population ⁽⁴⁾	Mid-Range Projected Population ⁽⁴⁾
Residential	1,883	7,018 DUs	5,469 DUs	16,773	13,071
Commercial ¹⁾	83	1,766,576 SF	N/A	N/A	N/A
Industrial	5	82,416 SF	N/A	N/A	N/A
Agricultural and Resource Management ⁽²⁾	499	10	10	25	25
Special Purpose ⁽³⁾	364	1,328,580 SF	N/A	N/A	N/A
Totals	2,834	N/A	5,469	16,773	13,071

Notes: DU = dwelling unit, SF = square feet.

- (1) The County Development Code does not identify density ranges. The calculated mid-range density used for Single Residential and Multiple Residential is 2 DU/ac and 12.5 DU/ac, respectively.
- (2) The Agricultural and Resource Management category includes Floodway, Open Space, and Resource Conservation. The Resource Conservation Land Use District allows 1 DU per 40 acres. Of the 499 acres in the Agricultural and Resource Management category, 361 acres are designated Resource Conservation.
- (3) The Special Purpose category includes Specific Development and Institutional. The Institutional Land Use District allows a maximum FAR of 0.5. Of the 364 acres in the Special Purpose Category, 81 acres are designated Institutional.
- (4) U.S. Census Bureau *Quickfacts* for Crestline from 2020-2024 estimates persons per dwelling unit of 2.39.

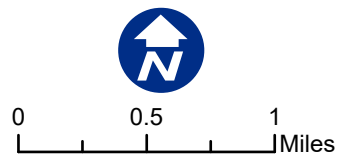


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Sources: CVWD AGOL, 2016.

Figure 3-1 Sphere of Influence

Crestline Village Water District Urban Water Management Plan 2025



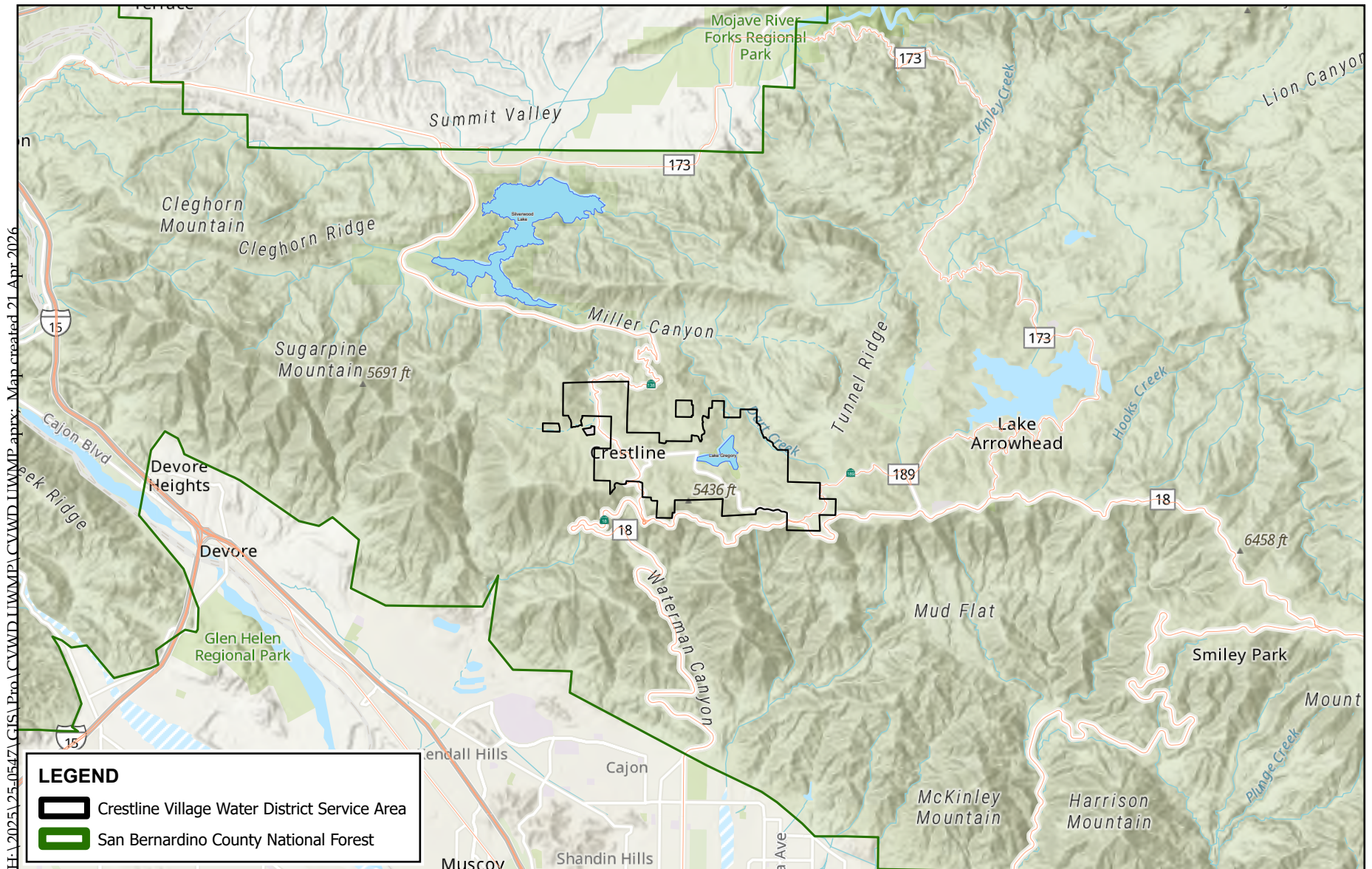


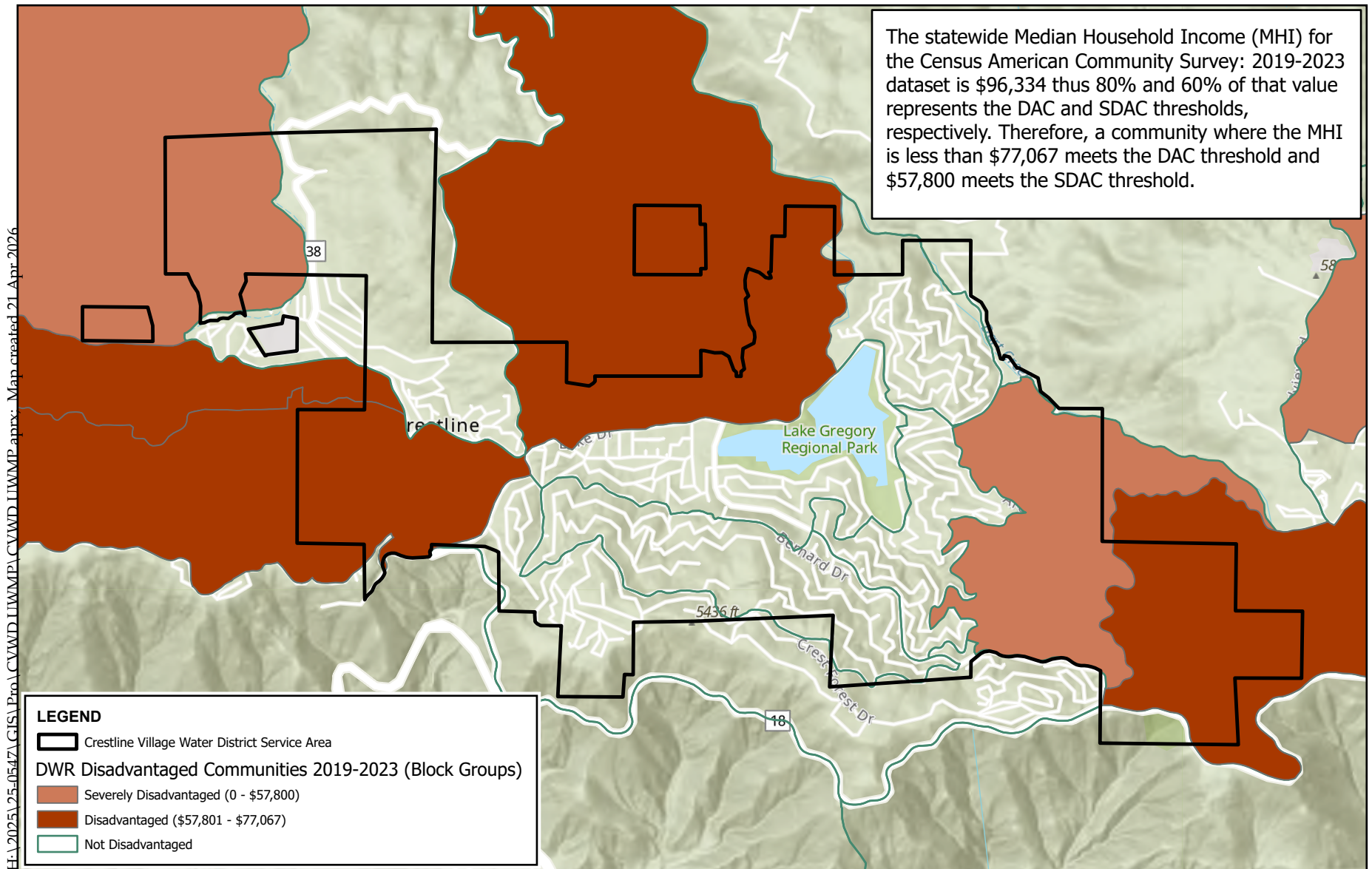
Figure 3-2 National Forest Boundary

Crestline Village Water District Urban Water Management Plan 2025



0 2 4 Miles

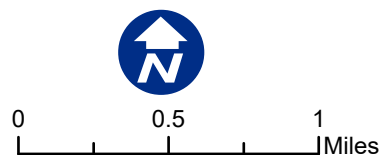


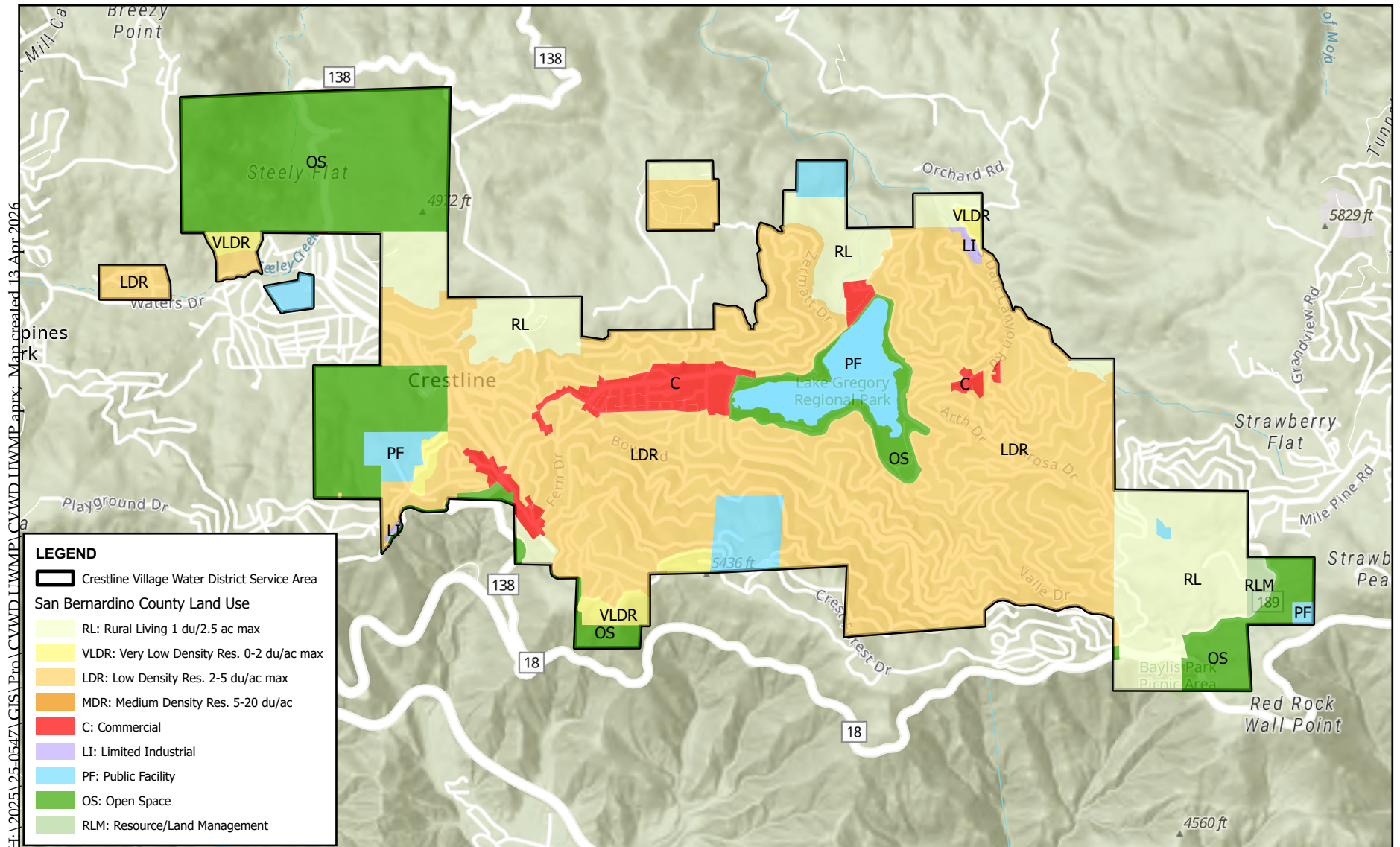


Sources: DWR DAC TOOL 2019-2023

Figure 3-3 Disadvantaged Community by Census Block Group

Crestline Village Water District Urban Water Management Plan 2025





Sources: San Bernardino Co. Land Use Services, 2025; ESRI.

Figure 3-4 San Bernardino County Land Use Designations

Crestline Village Water District Urban Water Management Plan 2025



0 2,000 4,000 6,000 Feet



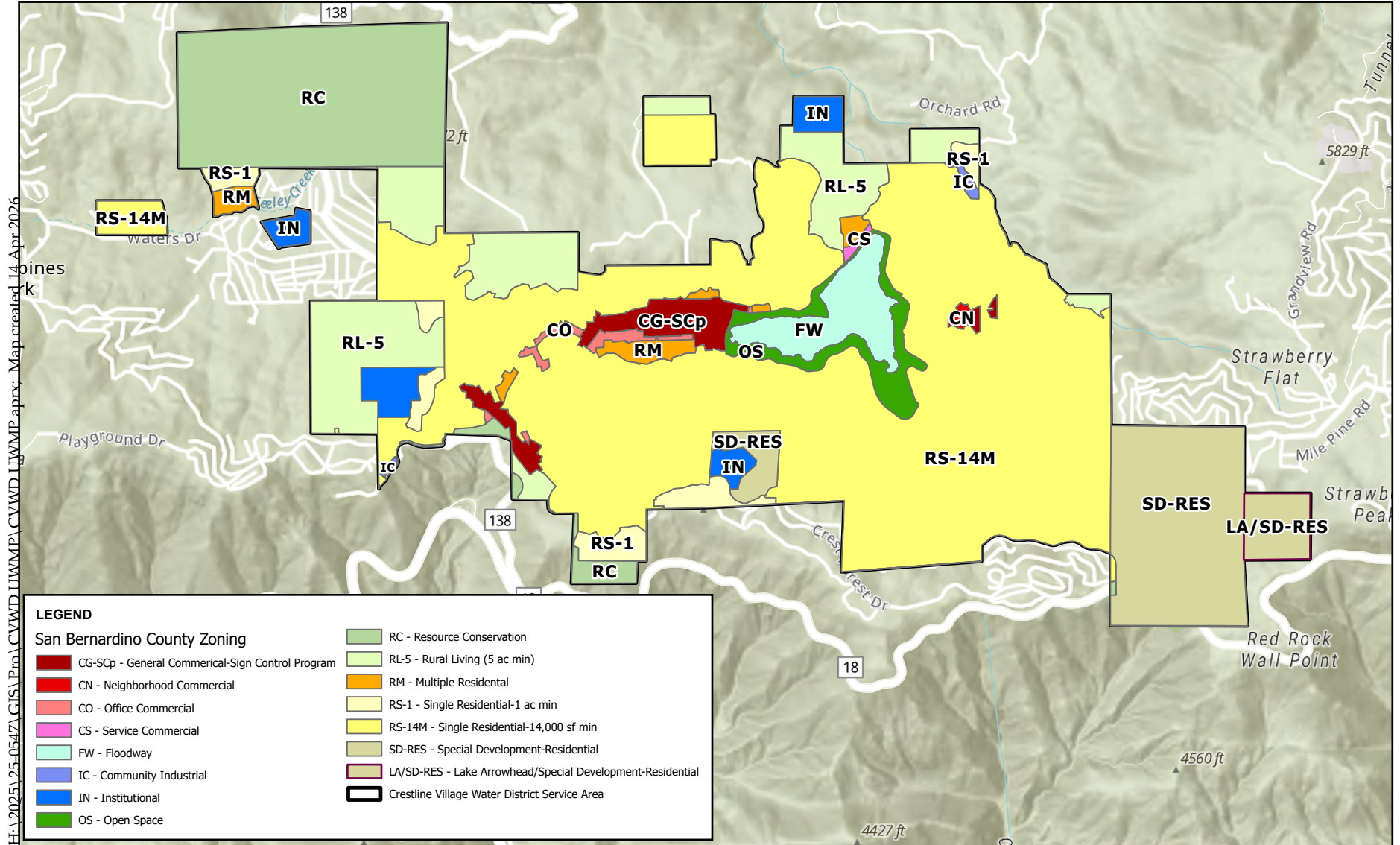


Figure 3-5 San Bernardino County Zoning Categories

Crestline Village Water District Urban Water Management Plan 2025



0 2,000 4,000 6,000 Feet



CHAPTER 4 WATER USE CHARACTERIZATION

This chapter describes and quantifies CVWD’s past, current, and projected potable water use by sector through the year 2050, including distribution system water loss, to the extent information is available.⁸

4.1 PAST AND CURRENT WATER USE

At approximately 4,600 feet elevation, the CVWD service area, encompassing the unincorporated communities of Crestline and Lake Gregory within the San Bernardino National Forest, has distinct characteristics compared to other water suppliers within Southern California. “Mountain living” and “mountain communities” inherently use water differently from communities in the valleys. Property owners rarely incorporate water-intensive landscaping such as lawns or large manicured frontage features. For the purposes of this UWMP, it is crucial to understand that water conservation is standard practice in this mountain community.

The number of metered connections by sector from CY 2021 to CY 2025 is shown in **Table 4A**.

Table 4A: Metered Connections by Sector, CY 2021-2025

	2021	2022	2023	2024	2025	Average Percent of Total	Average Annual Growth Rate (%)
Single-Family Residential	4,712	4,748	4,633	4,730	4,738	95.2%	0.1%
Multifamily Residential	54	54	56	57	57	1.1%	1.4%
Commercial/ Institutional	152	152	203	216	217	3.7%	9.3%
Total	4,918	4,954	4,892	4,813	5,012	--	0.5%

Source: CVWD Electronic Annual Report to the Drinking Water Program (SWRCB).

The District’s water use by sector from CY 2021 to CY 2025 is shown in **Table 4B**.

⁸ The terms “water use” and “water demand” are used interchangeably in the UWMP per DWR guidelines.

Table 4B: Recorded Water Use by Sector (CCF), 2021-2025

	2021 ^(a)	2022 ^(a)	2023 ^(b)	2024 ^(b)	2025 ^(b)
Single-Family Residential	232,606	214,103	204,997	213,588	207,440
Multifamily Residential	6,661	6,608	7,410	6,535	6,887
Commercial/Institutional	32,999	41,025	36,542	35,171	32,031
Other (Hydrant Water)	88	-	285	-	5,336
Other (Irrigation)	-	-	-	411	-
Total Losses	32,897	32,220	79,343 ^(c)	23,695	13,168
Total (CCF)	305,251	293,956	328,577	279,400	264,862

Units in hundred cubic feet (CCF)

- (a) Source 2021-2022: CVWD Annual Report to the Drinking Water Program (SWRCB) and AWWA Water Audits.
- (b) Source 2023-2025: CVWD Annual Report to the Drinking Water Program (SWRCB); losses for 2023-2025 are estimated as the difference between supply and demand.
- (c) Water loss in CY 2023 increased significantly relative to the other years primarily due to an extraordinary series of storms in February and March that dropped more than 12 feet of snow on the District area, severely restricting access at a time when numerous leaks occurred.

As illustrated in Table 4B, total water demand has decreased gradually during the past five years, most notably in the Single-Family Residential and Commercial/Institutional sectors. Total water usage in 2025 is 15.2 percent lower than total use in 2021. The average annual rate of decrease in total water use from 2021 to 2025 is -3.5 percent. This reflects a pattern of demonstrated water conservation consciousness in the District population and has provided a paradigm for the District in projecting its future water demands.

As of December 31, 2025, CVWD delivered 251,694 CCF (579 AF) of potable water and CY 2025 system losses are estimated at 13,168 CCF for a total of 264,862 CCF (608 AF). The 2020 UWMP projected a total water demand volume of 324,768 CCF for 2025, which means actual water demand in 2025 was 18.5 percent lower than projected for 2025. However, the District met (and considerably surpassed) its 2020 Water Use Target goal for use reduction pursuant to the Water Conservation Act of 2009 (SB X7-7). See Chapter 5 for detailed information. As shown in **Submittal Table 4-1**, the actual metered water use for CVWD in CY 2025 is divided into five sectors: single-family residential, multifamily residential, commercial/institutional/Industrial-Fire (hydrant water) and losses. The majority of customer accounts are single-family residential.

Landscape irrigation is not separately metered at any locations. The District does not sell or purchase non-potable or recycled water. System losses from 2021-2024 are reported separately from this discussion in Section 4.3.

Submittal Table 4-1: Total Uses for Potable and Non-Potable Water

Submittal Table 4-1 Retail: Total Uses for Potable and Non-Potable Water — Actual Water Code Section 10631(d)(1)			
Use Type	Additional Description (as needed)	2025 Actual Water Use	
Drop down list May select each use multiple times These are the only use types that will be recognized by the WUEdata online submittal tool		Potable or Non-Potable (OPTIONAL) Drop down list	Volume (CCF)
Add additional rows as needed			
Single Family	Residential	Potable	207,440
Multi-Family	Multi-Family	Potable	6,887
Commercial	Commercial (includes Institutional)	Potable	32,031
Industrial	Fire (hydrant water)	Potable	5,336
Distribution System Water Loss	Estimated as 2025 actual supply (Table 6-8) minus 2025 consumption	Potable	13,168
Subtotal Potable			264862
Subtotal Non-Potable			0
Total			264,862
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.			
NOTES: 2025 Water use data supplied from "California State Water Resources Control Board Drought Report 2025." Water loss is estimated as total supply (Table 6-8) minus demand.			

4.2 PROJECTED WATER USE

To appropriately manage their water supply and plan their infrastructure investments, water agencies must be able to estimate their future water demand as accurately as possible. Factors they must consider are current and future land uses, numbers of dwelling units and their occupants, potential effects of climate change, and typical water demand-generation factors.

As previously mentioned, the mountainous Crestline community has different water use characteristics than those exhibited by typical urban areas in Southern California. The absence of large lots with expansive landscaped areas, the high cost of locally produced water due to its scarcity, and higher pricing of imported water typically combine to create much lower per capita use. Both historically and recently, the population served by CVWD has done an

excellent job of conserving water. Many of the conservation measures presented in this Plan are already in effect, following public input and with public support. In other words, much of the water management planning process for CVWD has already taken place through past District actions, with full public involvement and review.

CVWD analyzed its recorded full-time population data and calculated an average annual growth rate of two new residential units per year, or 0.43 percent, which has been applied to the District's water consumption projections shown below in **Submittal Table 4-2**. In order to conservatively account for non-residential growth, this percentage was applied across all connection types. Please refer to Submittal Table 3-1 in Chapter 3 for population projections.

Submittal Table 4-2: Total Uses for Potable and Non-Potable Water - Projected

Submittal Table 4-2 Retail: Total Uses for Potable, and Non-Potable Water — Projected Water Code Section 10631(d)(1)							
Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		Potable or Non- Potable (OPTIONAL) Drop down list	2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 opt (CCF)
Add additional rows as needed.							
Single Family	Residential	Potable	211,940	216,540	221,240	226,040	230,940
Multi-Family	Multi-Family	Potable	7,040	7,190	7,350	7,510	7,670
Commercial	Commercial	Potable	32,730	33,440	34,170	34,910	35,670
Other (optional)	Fire Service	Potable	5,450	5,570	5,690	5,810	5,940
Distribution System Water Loss		Potable	13,450	13,740	14,040	14,340	14,650
Subtotal Potable			270,610	276,480	282,490	288,610	294,870
Subtotal Non-Potable			0	0	0	0	0
Total			270,610	276,480	282,490	288,610	294,870
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES: Commercial includes institutional. Because these are projections, all values are rounded to nearest 10 CCF.							

Using this projection methodology, water consumption is projected to increase from 264,862 CCF in 2025 to 294,850 CCF in 2050, an increase of 29,988 CCF or roughly 11 percent. Over the next 25 years, this is an average annual increase of 1,200 CCF. CVWD water demand projections are conservative in that they continue to increase across all land use types. This projection for water demand is for what is considered a “normal” year, rather than a single dry year or one in a succession of multiple dry years. However, as noted before, the Crestline

community historically exhibits relatively low per capita water use in comparison with water users in neighboring non-mountain communities. This is not intended to downplay future water demands and subsequent need for more local wells and increased dependency on CLAWA supplies when local well production is limited. Rather, it is intended to only be an accurate reflection of current conditions and for planning purposes.

In its projections of future demand, the District does not include future water savings (or “passive savings”) from codes, standards, ordinances, or transportation and land use plans; nor does it directly consider lower income residential demands in its projections of water use, as noted in **Submittal Table 4-3**.

Submittal Table 4-3: Inclusion in Water Use Projections

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

4.2.1 Climate Change Considerations

Beginning with the 2020 UWMP, the Water Code requires the District to consider climate change in its water use projections, which are shown before in Submittal Table 4-2.

Considerations for climate change impacts began with using the *Climate Change Vulnerability Screening Form for Urban Water Management Planning* located in the DWR Guidebook for

2025 UWMPs. Pursuant to Water Code, the District's planning for climate change impacts was commensurate with the number of customers served and the volume of water supplied. The type and degree to which climate change impacts were considered in the District's water use projections, and the basis for those assumptions are described below.

As described in Chapter 3, Western Municipal Water District (Western) prepared a Technical Memorandum dated Sept. 6, 2022 describing an analysis performed as part of its final 2022 Drought Contingency Plan and Climate Change Vulnerability Assessment (WMWD). A copy of the memorandum is located in **Appendix E**. The results of the analysis included factors that reflect the trends in rainfall and temperature expected from an average of many climate change models. The trends are commensurate with the Cal-Adapt projections for Crestline. If applied to water supply and demand projections, the factors can illustrate the projected effects of climate change to supply and demand within Western's service area. Although Western's service area does not include CVWD, it does include much of the neighboring Inland Empire valley region. Because CVWD is located at a much higher elevation than Western's service area, it receives more precipitation and has less outdoor water use than what would be expected in the valley; therefore, the factors reflect conservative assumptions for the CVWD service area. CVWD has used these factors herein where noted (see **Table 4C**). The results of the analysis that pertain to water demands are provided below:

The impacts of climate change on outdoor water demand are projected to be similar during normal and drought years over the next two decades. This is because climate change datasets show that temperatures are projected to increase over time, regardless of hydrologic conditions. These projected increases in temperature are estimated to increase ET rates for landscaping, irrigated agriculture, and native vegetation. For all year types, outdoor water use is projected to increase...during the next two decades. (WMWD, p. 19.)

Therefore, because of the relatively low water demand for landscaping, the absence of irrigated agriculture and prevalent use of native vegetation, climate change effects on water demand are not expected to be significant in the CVWD service area.

Table 4C: Water Demand Climate Change Factors

Beginning Year	Normal Year	Single-Dry Year	Five-Year Dry Period
2025	100.7%	100.6%	100.7%
2030	101.4%	100.9%	101.5%
2035	102.0%	101.9%	102.1%
2040	102.2%	102.6%	102.8%
2045	103.4%	103.3%	103.5%

Source: Western Municipal Water District, *Technical Memorandum: Western Drought Contingency Plan – Climate Change Vulnerability Assessment*, September 6, 2022 (WMWD), Table A11, Median Scenario).

To account for the potential effects of climate change to water demands, and the uncertainty therein, CVWD has conservatively applied the normal year factors from Western’s analysis in Table 4C to the demand projections of Submittal Table 4-2 beginning in 2025 through 2045, even though some of CVWD demand is indoor use that is not sensitive to climate change. The results are shown below in **Table 4D**.

Table 4D: Potential Effect of Climate Change to Projected Demands

	2025	2030	2035	2040	2045
Total Demands (CCF) ⁽¹⁾	264,862	270,603	276,471	282,467	288,592
Water Demand Climate Change Factor ⁽²⁾	100.7%	101.4%	102.0%	102.2%	103.4%
Total Demands with Climate Change Factor (CCF)	266,716	274,391	282,000	288,681	298,404
Potential Increase in Water Demand from Climate Change (CCF)	+1,854	+3,788	+5,529	+6,214	+9,812

Notes: Units in hundred cubic feet (CCF).

(1) From Submittal Table 4-2.

(2) Normal Year Climate change factors from Table 4C (WMWD).

According to Cal-Adapt and Western’s technical memorandum and climate change analysis, higher temperatures and less rainfall are anticipated to occur as a result of climate change, and these are the factors that may affect water demand the most. Customer demands increase in

summer; therefore, an increase in average annual temperatures and the frequency and duration of heat waves as the result of climate change is expected to increase existing customer demands for water, particularly outdoor use.

As of 2025, the District does not serve any industrial or agricultural end users, whose water use might be significantly affected by higher temperatures, nor does it sell water to other agencies, which might experience increases in demand. The mountainous Crestline community has different water use characteristics from those exhibited by typical urban areas in that outdoor water usage is minimal. For example, large lots with expansive landscaped areas are nonexistent, so significant increases in landscape irrigation in response to extended drought conditions caused by climate change are not anticipated. Further, the District does not supply water for saline water intrusion barriers, groundwater recharge, conjunctive use, exchanges, surface water augmentation, transfers, or wetlands/wildlife habitat, which are all uses that could be affected by higher temperatures and drought as a result of climate change.

4.3 DISTRIBUTION SYSTEM WATER LOSSES

Distribution system water losses include “apparent” losses and “real” losses. Apparent water loss includes water theft, metering inaccuracies, and data handling errors. Real losses are the physical water losses from the water distribution system and the supplier’s storage facilities, up to the point of customer consumption. Real losses can occur because of leaking or broken pipes, leaks or overflows at storage tanks, or leaks at service connections.

California Senate Bill No. 1420 (SB 1420) requires water utilities that submit UWMPs to calculate annual system water losses using the water audit methodology developed by the American Water Works Association (AWWA). SB 1420 also requires that utilities submit these annual audits every five years as part of their respective UWMP. To facilitate user-friendly and consistent water auditing practices, AWWA has developed the AWWA Free Water Audit Software, which is based on the principles of the AWWA M36 Water Audit methodology. Per DWR guidelines, utilities must use this software to complete their audit. Losses from CY 2025 are estimated as the difference between total production and consumption because the 2025 AWWA Water Audit was not due until after this report was completed. The losses from CY 2020 through 2022 are from the District’s validated water loss audits. The losses from CY 2023 and 2024 are also estimated as the difference between production and consumption because

CVWD submitted their water loss audits, but then was asked to resubmit them and they were still under review at the time this report was completed and submitted as shown in Submittal **Table 4-4**. The complete audits from CY 2020 through 2022 may be found in **Appendix F**.

Submittal Table 4-4: Water Loss Audit Reporting

Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)		
Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. Add rows as needed		
CA3610015	2020	Yes
	2021	Yes
	2022	Yes
	2023	No
	2024	No
DWR NOTES: Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports.		
NOTES: All audits can be found at https://wuedata.water.ca.gov/awwa_plans		

The water audits performed on the CVWD data considered the water supplied, the water consumed, pipeline system details, and cost data to arrive at a “Water Audit Data Validity Score” on a 100-point scale. For CY 2020 and 2021, the completed audits showed the District at scores of 46 and 45, respectively, out of 100. Those scores put CVWD’s water audit data within “Level II” on a five-level rating scale.⁹ DWR provided suggestions for data improvement for each Level to control water loss in five focus areas, as shown below for Level II in **Table 4E**. In CY 2022, the District improved considerably on the Water Audit Validity Score due to improvements to the system, putting CVWD’s water audit data within Level IV. Suggestions for improvement in Level IV are shown in **Table 4F**.

⁹ The AWWA Water Audit provides another performance indicator in addition to the Data Validity Score called the Infrastructure Leakage Index (ILI). However, the ILI is not discussed here since the Water Audit manual located in the DWR Guidebook, Appendix L, advises not to use the ILI for small systems or those that operate at low pressure.

Table 4E: DWR Water Loss Control Recommendations Level II

	Audit Data Collection	Short-Term Loss Control	Long-Term Loss Control	Target-Setting	Benchmarking
Level II (score 26-50)	Analyze business process for customer metering and billing functions and water supply operations, identify data gaps, improve supply metering	Conduct loss assessment investigations on a sample portion of the system: customer meter testing, leak survey, unauthorized consumption, etc.	Begin to assess long-term needs requiring long-term expenditure: customer meter replacement, water main replacement program, new customer billing system or AMR/AMI system.	No comment	No comment.

Table 4F: DWR Water Loss Control Recommendations Level IV

	Audit Data Collection	Short-Term Loss Control	Long-Term Loss Control	Target-Setting	Benchmarking
Level IV (score 71-90)	Refine data collection practices and establish as routine business practices.	Refine, enhance or expand ongoing programs based upon economic justification.	Conduct detailed planning, budgeting and launch of comprehensive improvements for metering, billing, or infrastructure management	Establish mid-range (5-year horizon) apparent and real loss reduction goals.	Performance Benchmarking with Pls is meaningful in comparing real loss standing.

According to District records, the system loss for the past 37 years of data has been less than 9 percent, on average. For the past 28 years, system loss has been kept at an average of 6 percent of total supply (CVWD Annual Sources of Supply/System Loss/Rainfall spreadsheet).

4.3.1 Progress Toward Meeting the Water Loss Performance Standard

Pursuant to Water Code section 10631(d)(3)(C), CVWD is required to provide data demonstrating whether it met the water loss performance standard adopted by the State Water Resources Control Board. Pursuant to this law, urban retail water suppliers have submitted annual water loss audits to DWR since October 2017. (Copies of validated water audits for the

past five years are located in **Appendix F** and summarized in Submittal Table 4-5 shown above.) Based on the annual water loss audits submitted from 2017 to 2020, a water loss standard for each urban retail water supplier was developed through a rulemaking by the State Water Resources Control Board that became effective in 2023.

CVWD's real water loss standard is 6.0 gallons per service connection per day (GPSCD).¹⁰

CVWD will be required to meet its water loss standard shown in **Submittal Table 4-5** by January 1, 2028 (or by 2031 in some cases), using annual water audit data submitted for 2025, 2026, or 2027. Ongoing compliance will be on a three-year average basis.

Submittal Table 4-6: Progress Toward 2028 Water Loss Standard

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard Water Code Section 10631(d)(3)(C)												
Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss					
		State Water Board Standard		Most Recent AWWA Water Loss Audit			Real Water Loss Per Unit per Day	State Water Board Standard		Most Recent AWWA Water Loss Audit		Apparent Water Loss Per Unit per Day
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss Drop down list	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit) (CCF)	2028 Apparent Water Loss Standard per Unit per Day		Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit) (CCF)		
Add additional rows as needed.												
CA3610015	Yes	6	Gallons per Service Connection per Day (GPSCD)	4973	28213	11.6	2.7	Gallons per Service Connection per Day (GPSCD)	4973	4009	1.7	
Water Board's Calculated Water Loss Standards												
DWR NOTES: Units of measure (AF, CCF, MG) for Water Loss MUST remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations.												
NOTES: Most recent AWWA Water Loss Audit is for Audit Year CY 2022												

Even though the real water loss standard does not have to be met until 2028, Water Code still requires this UWMP to contain data showing whether it was met. Therefore, to demonstrate that CVWD is expected to meet its water loss standard, refer to Submittal Table 4-6 that shows the District reported in its most recent AWWA water loss audit (CY 2022) a real water loss of 11.6 per unit per day and apparent water loss of 1.7 per unit per day that DID exceed the District's 2028 real water loss standard of 6.0 per unit per day but did NOT exceed the 2028 apparent water loss standard of 2.7 per unit per day.

¹⁰ Standard released by SWRCB December 8, 2025 (<https://www.waterboards.ca.gov/conservation/docs/waterlosscontrol/standards-released.xlsx>). The standard can be adjusted by a water supplier if data becomes available to support the change.

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CHAPTER 5 SB X7-7 BASELINES, 2020 TARGETS, AND 2025 REPORTING

With the adoption of the Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, the State is required to reduce urban per capita water use by 20 percent by the year 2020. To help the State reach this legislative requirement, SB X7-7 required each Supplier to determine their baseline water use during the baseline period and their target water use for the years 2015 and 2020. The cumulative efforts of each Supplier to meet their respective target water use would result in the State achieving the legislative water reduction requirement. The purpose of this chapter is to report on the District's progress toward meeting the 2020 urban water use target pursuant to Water Code section 10608.40 (there is no end date in the Water Code for reporting on this progress).

5.1 CALCULATION OF 2020 TARGET

In the 2010 UWMP, the District calculated its 2020 Urban Water Use Target with "Target Method 3," which is "95 percent of Hydrologic Regional Target from the 20 x 2020 Water Conservation Plan (draft, April 30, 2009)." The District's reported Target for 2020 was 162 gallons per capita per day (GPCD);¹¹ however, the baselines were updated for the 2015 UWMP using the DWR Population Tool. Therefore, as allowed by DWR guidelines, CVWD revised its water use baselines and targets for 2015 and 2020 in the 2015 Plan.

The 2015 Interim Water Use Target for CVWD was calculated at 131 gallons per capita per day (GPCD) and the 2020 target was set at 95 GPCD. In 2020, water use in the District was 77 GPCD, which was 45 percent less than the 2015 target and 19 percent less than the 2020 target. Compliance in 2020 was verified by DWR reviewing the SB X7-7 Verification Forms submitted with the 2020 UWMP.

¹¹ GPCD Terminology: Two terms are often used interchangeably; Daily per Capita Water Use and Gallons per Capita per Day (GPCD). Daily per Capita Water Use is the amount of water used per person per day. In the UWMP, this is total water use within a service area, divided by population and is measured in gallons. GPCD is Daily per Capita Water Use measured in gallons. These are different from R-GPCD, which is solely the residential water use divided by population and is used in drought reporting to the State Water Resources Control Board.

5.2 PROGRESS TOWARD 2020 TARGET

As stated in the 2020 UWMP and shown in **Submittal Table 5-1**, CVWD met its water use target with an actual 2020 water use of 77 GPCD. Therefore, the District does not need to report its 2025 GPCD and no further analysis is required.

Submittal Table 5-1: SB X7-7 2020 Target Progress

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress Water Code Section 10608.40						
☐	Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.					
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	Only for suppliers that did not meet the Target in 2020 See DWR NOTES below.	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	95	77	Yes		NA
DWR NOTES: Suppliers calculating a 2025 GPCD will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies. Suppliers that were part of a merger or consolidation since 2020 see Chapter 5 and Appendix P for guidance. NA=Not Applicable						
NOTES: Supplier did meet the target in 2020.						

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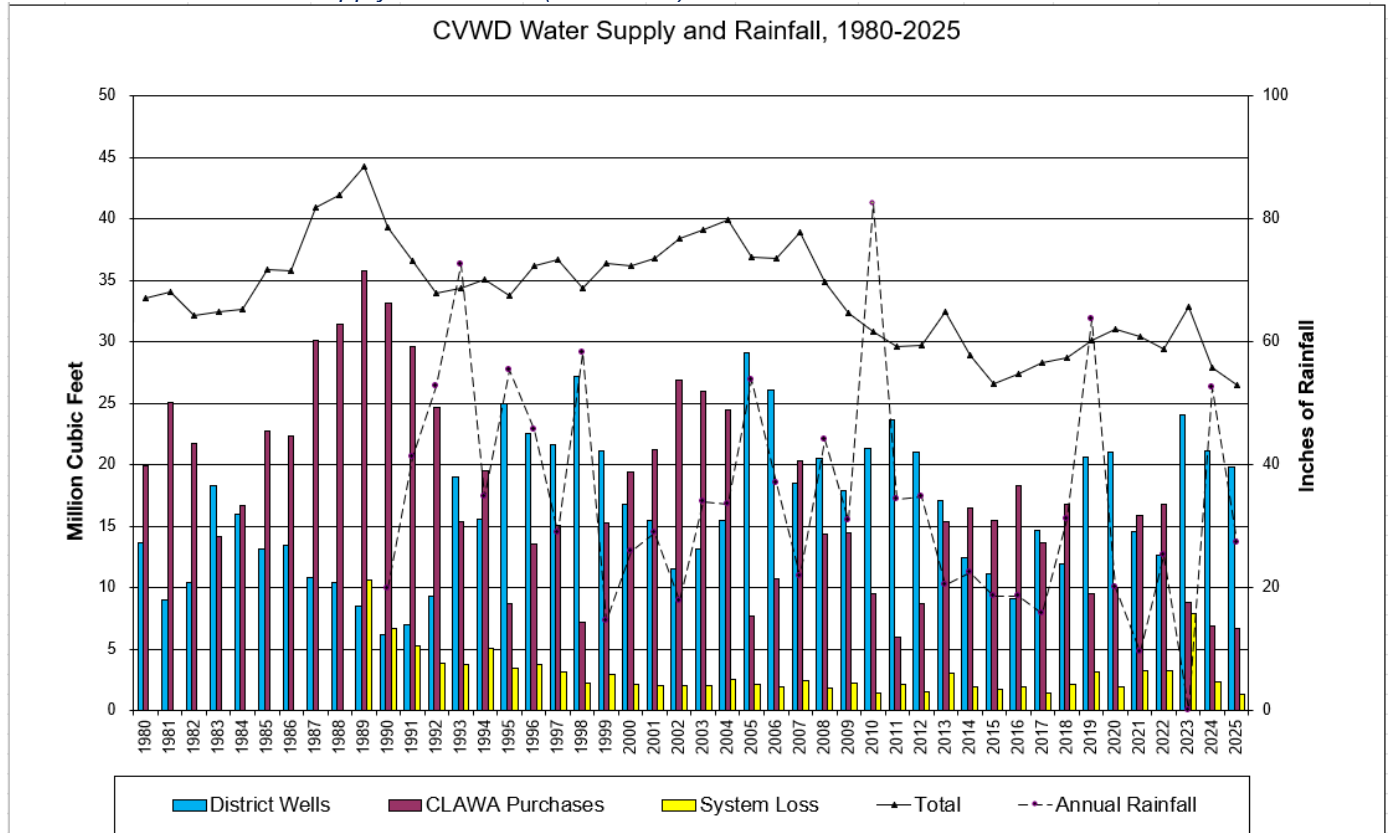
CHAPTER 6 NORMAL YEAR WATER SUPPLY CHARACTERIZATION

In this chapter we quantify and describe the water sources available to CVWD, which include the District's wells and purchased imported water supplies from CLAWA, the local wholesaler. Surface water, recycled water, desalinated water, water transfers and water exchanges, and conjunctive use are not included in the District's supply portfolio. Each water source is described below including future actions or projects anticipated to meet future water demands. This chapter examines water volumes reflecting expectations for "average year" conditions. Single-dry and multiple-dry year conditions and catastrophic interruptions are considered in the supply reliability examination in Chapter 7 and in the Water Shortage Contingency Plan (Chapter 8).

6.1 PURCHASED OR IMPORTED WATER

In periods when production from CVWD wells is insufficient to meet current water demands, the District purchases supplemental water supplies from CLAWA—a State Water Project (SWP) contractor and the local wholesale supplier of imported water to the western San Bernardino Mountains. CLAWA has been delivering imported water to CVWD since 1972. **Chart 6-1** illustrates the relationships between well production, purchased water, and annual rainfall from 1980 to 2025.

Chart 6-8 - CVWD Water Supply and Rainfall (1980-2025)

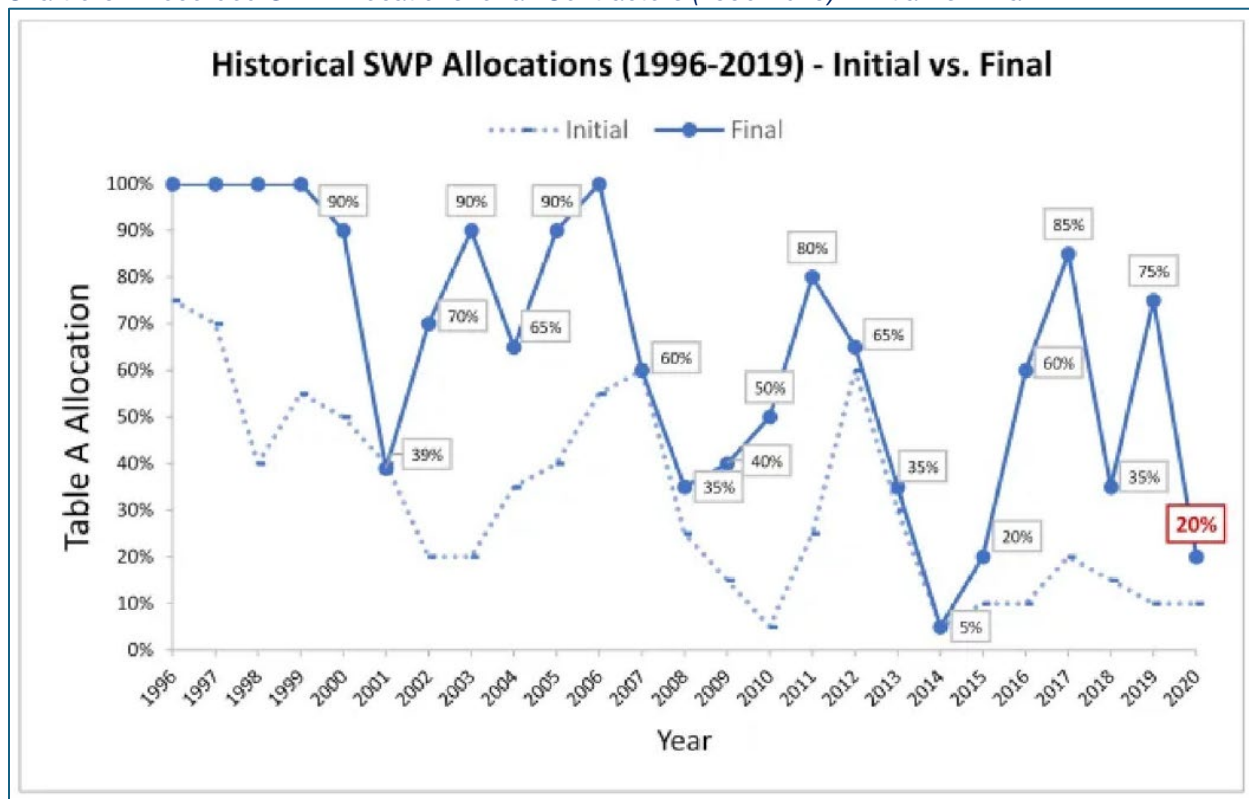


(Source: CVWD Records)

Surface water from Silverwood Lake, which is part of the East Branch of the SWP, comprises CLAWA’s primary source of supply. Pursuant to a contract with DWR, CLAWA is among 29 agencies authorized to receive direct water deliveries from the SWP. Under that contract, CLAWA’s current SWP “Table A” allocation is 5,800 acre-feet (AF) per year, which is just 0.1 percent of the current total maximum Table A (4,172,786 AF). According to the DWR: “The maximum Table A amount is the basis for apportioning water supply and costs to the SWP contractors. Once the total amount of water to be delivered is determined for the year, all available water is allocated in proportion to each contractor’s annual maximum SWP.” (DWR, 2024). It is the maximum amount of water that each contractor is entitled to receive on an annual basis from the SWP and that amount is set forth in “Table A” of each contract with DWR. It is rare that DWR will raise SWP Table A allocations to 100 percent of deliveries, but it did so recently in 2023 due to exceptionally high precipitation, allocating the full amount of 4,172,786 acre feet. (Before 2023, 2006 was the most recent 100-percent allocation year (Osorio, 2020).) Although 2006 was also a 100-percent allocation year, CLAWA’s deliveries

were just 11.1 percent of its Table A allocation (Osorio, 2020). Furthermore, while Table A identifies the maximum amount of SWP supplies that the contractors may receive in a year, the actual amount available depends on a variety of hydrologic, operational, environmental, regulatory, legal, and other factors. **Chart 6-2** illustrates how different the initial statewide allocation to all SWP Contractors can be from the final SWP allocation, from 1996 to 2020 (Osorio, 2020).

Chart 6-9 - Recorded SWP Allocations for all Contractors (1996-2019) – Initial vs. Final



(Source: Osorio, 2020)

DWR prepares a biennial SWP Delivery Capability Report, which accounts for the many factors affecting the SWP. The report forecasts the long-term annual availability of SWP supplies during normal/wet, single-dry, and multiple-dry year (6-year) periods over the next 20-year forecast. The latest SWP report was considered in this chapter, in the supply reliability presentation in Chapter 7, and in the Water Shortage Contingency Plan in Chapter 8.

CLAWA also indirectly obtains some of its supply from Huston Creek,¹² which flows into Silverwood Lake when seasonal weather permits. Diversions from this source vary depending on annual precipitation and are limited to the amount of return flow to the Mojave watershed each year. Diversion of water from Huston Creek is subject to two diversion permits, which combined authorize the appropriation of up to 566,280 CCF (1,300 AF) per year to CLAWA.¹³ CLAWA's permits for appropriative rights to Huston Creek together with SWP deliveries creates a more reliable water supply in that Huston Creek is able to supplement CLAWA's total water supply. As an example, in 1992-93 an extended drought in Northern California forced the DWR to reduce its SWP deliveries to CLAWA, who in turn was able to use water from Huston Creek to supplement its supply. However, due to the unpredictable nature of local hydrology, CLAWA's appropriated water from Huston Creek is not as reliable as SWP deliveries (CLAWA 2010 UWMP, August 2011).

CLAWA's supply portfolio includes a 2005 agreement with Lake Arrowhead Community Services District (LACSD) and San Bernardino Valley Municipal Water District (SBVMWD). During normal years, this arrangement mainly affects LACSD however, during years of low SWP allocation (i.e., drought years) CLAWA has the right to utilize a portion of the water purchased from SBVMWD to satisfy any demands anywhere in CLAWA's service area. The amount purchased from SBVMWD in any year is limited to 15 percent of SBVMWD's SWP allocation (CLAWA 2010 UWMP, August 2011).

Similarly in 2010, CLAWA entered into a water exchange agreement with San Geronio Pass Water Agency (SGPWA), which stipulated that SGPWA shall deliver to CLAWA up to a total of 1,300 AF of water when requested by CLAWA, between the years 2012 and 2020, subject to the conditions of their 2010 agreement. In 2017 a new exchange agreement was implemented that increased the amount owed to CLAWA from SGPWA to 566,279 CCF (1,300 AF). In 2023 Amendment 1 extended the agreement to the end of 2026 for return of the outstanding water.

CLAWA intends to continue to negotiate further exchange agreements with other Contractors as opportunities arise and also continue to "carry over" water in the SWP that was allocated in a given year to CLAWA but not used. (CLAWA UWMP Response Letter, May 6, 2026,

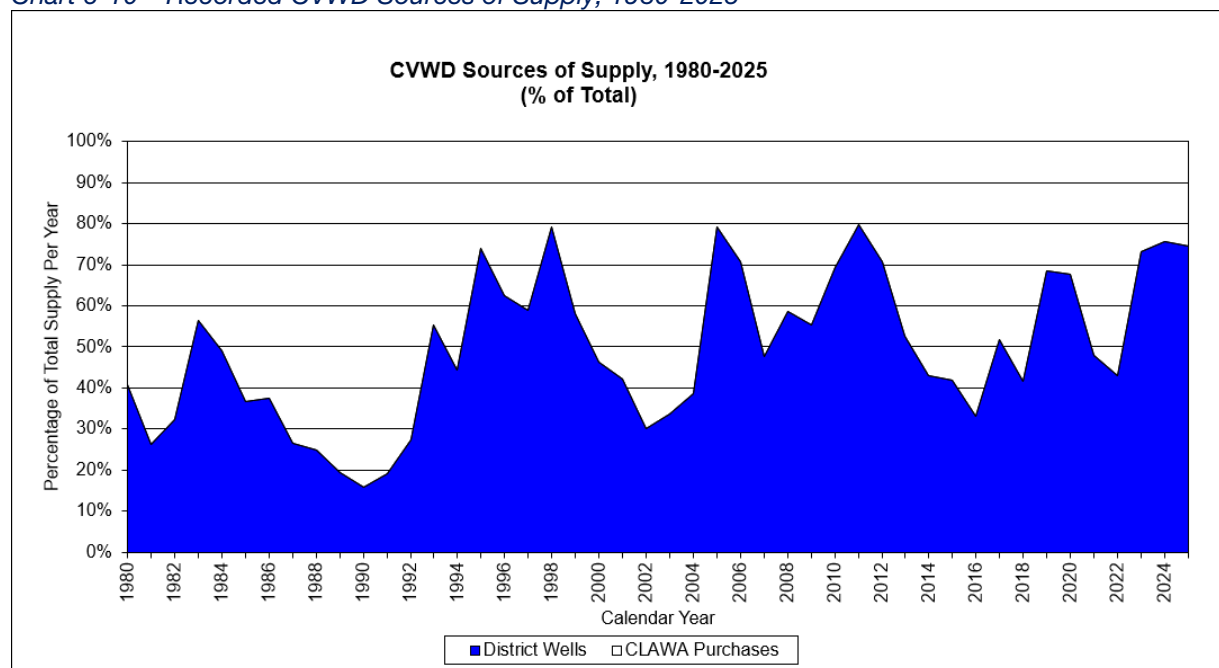
¹² Sometimes spelled "Houston."

¹³ Permits issued by SWRCB in 1991. One permit authorizes the diversion of up to 1,000 AF per year, the other up to 300 AF per year. Prior to issuance of these permits, this water was un-appropriated.

Appendix C). Carryover water is a portion of Table A water that contractors may save for next year’s delivery. When carryover is requested for next year’s delivery, that water is stored in the SWP’s share of San Luis reservoir in Merced County. However, SWP contractors can lose this stored carryover water when San Luis Reservoir fills. For example, in 2017, a wet year, three contractors including CLAWA needed to transfer their carryover water from San Luis to another non-SWP facility to prevent losing their carryover storage. (Osorio, 2020)

A representation of the District’s recorded fluctuating dependence on imported supplies from CLAWA beginning in 1980 is provided in **Chart 6-3**. As shown, during years of drought, purchased water from CLAWA makes up a considerable difference between District wells and 100 percent of supply (i.e., the area in white). For example, in 1990 more than 84 percent of CVWD supplies came from imported water purchased from CLAWA. On the other hand, local CVWD wells have been able to meet nearly 80 percent of customer demand several times over the past 25 years. As Chart 6-3 shows, over the three most recent years, CVWD well water has been able to meet more than 70 percent of customer demand.

Chart 6-10 – Recorded CVWD Sources of Supply, 1980-2025



(Source: CVWD Records)

6.1.1 Purchased Water Quality

SWP water is considered high-quality water and is used statewide to serve 25 million residents as a supplemental water source. Chemical, physical, and biological parameters are routinely monitored throughout the SWP from the Feather River drainage in the north to Lake Perris in the south including more than 40 sites and over 200 individual chemicals (MWA, 2016).

CLAWA's water supplies are treated at the Lake Silverwood Water Treatment Plant near the South Shore. After treatment, the water is then pumped uphill to CLAWA's storage and pipeline distribution system, which extends from Job's Peak (near Cedarpines Park) eastward to Green Valley Lake. CLAWA maintains consistent compliance with all water quality standards and regulations. The results of each year's water quality sampling are reported in CLAWA's annual Consumer Confidence Report, the most recent of which (CY 2025) is provided in

Appendix G.

6.2 GROUNDWATER

Currently, CVWD produces water locally from 35 groundwater wells in a fractured rock aquifer system (2025 CVWD Annual Report to the SWRCB). The District has had as many as 50 wells in the past. This portion of the San Bernardino Mountains is not included on the California Statewide Groundwater Elevation Monitoring (CASGEM) priority list, or subject to the basin management requirements of the 2014 Sustainable Groundwater Management Act (SGMA) because DWR classifies it as "non-water-bearing." The area is also not included in DWR's "Bulletin 118" list of groundwater basin data.

A complex of crystalline granitic rocks that have intruded metaplutonic and metasedimentary rocks make up the San Bernardino Mountains (IGC, 1997). Thus, there are no unconsolidated sediments or traditional groundwater basins in this mountainous area. Instead, groundwater is confined to open fractures in the hard metamorphic and granitic mountain rocks underlying CVWD's service area. Groundwater is fed by rainfall and snow seeping into fractures along drainage courses, and may discharge down-gradient as a spring, enter the bottom of a drainage feeding a flow, or continue to move down-gradient beneath the surface (USGS, 2002).

The fractured rock aquifers are very different from traditional alluvial groundwater basins in that they yield far smaller volumes, are tightly correlated with precipitation, and there is no "basin" of water to measure in order to calculate metrics such as "safe yield" or "overdraft." Water is

transmitted only through cracks and fractures from the folding and faulting of the rock over time; thus, explaining the difficulty in their ability to collect and store water (Banks & Robins, 2002).

Wells are often placed where groundwater accumulates behind a fault or fracture. Barriers to groundwater flow consist primarily of westerly and northwesterly-trending faults that represent many of the contacts between the different igneous and metamorphic rocks in the San Bernardino Mountains (IGC, 1997). When the flow-path of groundwater is interrupted, for example, due to the presence of a fault, the downslope-moving groundwater accumulates behind the barrier. This causes the water table to rise until it reaches the surface, where it can resume its downslope path as surface water (USGS, 2002). Evidence of groundwater can generally be seen in numerous streams and seeps throughout the area. An recent extraordinary example of this was seen after Crestline received more than 12 feet of snow in 2023 and District personnel witnessed some seeps in the downtown area flowing strongly for more than two years afterward.

6.2.1 Groundwater Quality

The water from CVWD's wells is of high quality and requires little treatment. CVWD wells are sampled as required by the State Water Board monthly, weekly, and annually. The District maintains consistent compliance with all water quality standards and regulations. The District publishes the results of annual water quality sampling in Annual Consumer Confidence Reports, the most recent of which are located in **Appendix G**. The District has four chlorination locations for disinfection and five locations where phosphate is injected for corrosive control purposes. One well, Chamois, has higher levels of uranium; however, it is treated by blending with other water sources at the Chamois tank. Water from the recently implemented Electra well shows elevated levels of Gross Alpha radiation, which is a treatable type of energy released when radioactive elements from uranium in the rocks decay or break down. The District added an ion-exchange uranium removal system for this well.

6.2.2 Groundwater Management

Approximately 94 percent of the CVWD service area is within the South Lahontan Hydrologic Region and therefore within the local jurisdiction of the California Regional Water Quality

Control Board - Lahontan Region (RWQCB). The remainder of the District is within the South Coast Hydrologic Region under the local jurisdiction of the RWQCB – Santa Ana Region.

CVWD is not located within an adjudicated groundwater basin, nor does CVWD have an adopted groundwater management plan. However, groundwater management actions are ongoing; for example, at the vertical wells the District regularly monitors static water levels and pumping water levels. In CY 2025, levels were reported in the Annual Report as steady over the course of the year with some change according to the season. Horizontal wells are not monitored for static water levels or pumping levels. Well production rates and water quality are also monitored regularly. Likewise, water conservation is encouraged year-round as standard practice.

6.2.3 Overdraft Conditions

Overdraft conditions do not apply in this circumstance because CVWD obtains its local water supply from fractured rock aquifers and not a groundwater basin. However, unlike traditional groundwater basins, fractured bedrock does not typically convey or store large quantities of water. This means that fractured bedrock groundwater supplies are more reliant on local precipitation for recharge. Therefore, CVWD's local water supply will be diminished in periods when drought conditions persist.

6.2.4 Recorded Groundwater Pumping

The well production from 1980 to 2025 is shown previously in **Chart 6-1**. The groundwater volumes pumped in the past five years (2021-2025) are shown in **Submittal Table 6-1**, below.

Submittal Table 6-1: Groundwater Volume Pumped

Submittal Table 6-1 Retail: Groundwater Volume Pumped Water Code Section 10631(4) and 10631(4)(c)							
☐	Check the box if the Supplier does not pump groundwater. Proceed to the next table.						
☐	Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)						
Groundwater Type Drop Down List May use each category multiple times	Potable or Non-Potable (OPTIONAL) Drop down list	Location or Basin Name	2021 (CCF)	2022 (CCF)	2023 (CCF)	2024 (CCF)	2025 (CCF)
Add additional rows as needed							
Fractured Rock	Potable	Crestline/San Bernardino Mountains	145,761	126,218	240,436	210,997	197,778
Total			145,761	126,218	240,436	210,997	197,778
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES: Volumes in hundred cubic feet. From CVWD State Waterboard EAR Reports, 2021-2022, and SAFER Reports, 2023-2025							

6.3 SURFACE WATER

The District currently does not have direct access to nor plans to use self-supplied surface water as part of its water supply portfolio. Lake Gregory is located within the District and is a predominant feature of the Crestline community. Lake Gregory is a man-made lake and recreation area created with the construction of Lake Gregory dam in 1936. A nearly \$25 million seismic retrofit was completed in 2019, adding an average 40 feet of thickness to the earthen dam. CVWD does not have rights to use the lake water, which is fed by Huston Creek and managed by San Bernardino County Special Districts.

6.4 STORMWATER

Currently, the District does not have plans to use or divert stormwater for beneficial use as part of its water supply portfolio.

6.5 WASTEWATER AND RECYCLED WATER

Crestline Sanitation District (CSD) collects, treats, and discharges all wastewater generated within CVWD's service area. CVWD does not operate any wastewater or recycled water facilities. CSD's service area covers nearly all of CVWD's service area, as shown in **Figure 6-1 – Crestline Sanitation District**. Recycled water is not distributed in the Crestline area.

6.5.1 Wastewater Collection, Treatment, and Disposal

CSD operates three small wastewater treatment plants with a combined capacity of 1.4 million gallons per day (MGD) in the San Bernardino National Forest (see **Figure 6-2 – Wastewater Treatment and Discharge**). CSD does not contract operation of its plants to a third party. The Huston Creek wastewater treatment plant (WWTP) is located within CVWD's service area north of Lake Gregory and has a permitted treatment capacity of 0.7 MGD. Most of the wastewater generated within CVWD, except for wastewater from the Valley of Enchantment (VOE) is treated at the Huston Creek WWTP. Wastewater from the VOE is treated by CSD outside of the CVWD service area at CSD's Seeley Creek WWTP, which has a capacity of 0.5 MGD. The Huston Creek WWTP treats the wastewater from approximately 50 percent of the sewered area, and the Seeley Creek plant serves the other 50 percent.

CSD operates a third facility (Cleghorn WWTP) that is located outside of CVWD's service area. CSD also disposes of effluent from the Pilot Rock WWTP, also located outside of CVWD's service area, which is owned by the California Department of Forestry and has a treatment capacity of 0.01 MGD. No wastewater from the CVWD service area is treated at the Cleghorn or Pilot Rock treatment plants and they are not discussed further.

Treated effluent from the CSD treatment plants is conveyed through a single 14-mile outfall pipeline, which flows from the Huston Creek Treatment Plant, down Miller Canyon, to a junction point with the Seeley Creek outfall pipeline. The outfall passes around the south and west boundaries of Silverwood Lake, through Cleghorn Creek, into Summit Valley. The effluent is discharged just below Cedar Springs Dam, near Las Flores Ranch in the high-desert city of Hesperia and is disposed onto the land for irrigation of a nearby pasture area. This effluent land disposal site is located within the Upper Mojave River Valley Basin (Basin No. 6-42).

The Las Flores Ranch has been the effluent disposal site for CSD for over 50 years. CSD currently has no interest in pursuing tertiary treatment or reuse in the mountain area. Wastewater generated in the mountain area can be put to use; however, due to the order issued by the Lahontan RWQCB prohibiting the use of reclaimed water in the Silverwood Lake watershed and above 3,200 feet in the Mojave Hydrologic Unit, wastewater generated in Crestline must be used elsewhere. The wastewater collected by CSD from within CVWD's service area in CY 2025 is provided in **Submittal Table 6-2**.

Submittal Table 6-2: Wastewater Collected Within Service Area

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area				
Water Code Section 10633(a)				
☐	Check the box if there is no wastewater collection system. Proceed to the next table.			
	Percentage of 2025 service area served by wastewater collection system (OPTIONAL)			
	Percentage of 2025 service area population served by wastewater collection system (OPTIONAL)			
Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? OPTIONAL Drop Down List	Volume of Wastewater Collected from UWMP Service Area 2025 (CCF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number Drop down list	Is WWTP Located Within UWMP Area? Drop Down List
Add additional rows as needed				
Crestline Sanitation District	Metered	159,705	Other (provide name and ID in "NOTES" field)	Yes
Crestline Sanitation District	Metered	87,941	Other (provide name and ID in "NOTES" field)	No
Total Wastewater Received from UWMP Service Area in 2025:		247,646		
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.				
NOTES: Name #1: Huston Creek WWTP, operated by Crestline Sanitation District, handles most of wastewater treatment for the CVWD Service Area except for Valley of Enchantment (VOE). Name #2: Seeley Creek WWTP, also operated by Crestline Sanitation District, handles all wastewater treatment for the VOE Mutual Water Company, which is located within the CVWD service area. Waste Discharge Requirements (WDR) for the Crestline Sanitation are found in Board Order No. 6-94-57 issued by the Lahontan Regional Water Quality Control Board in 1994. The Crestline Sanitation District sewer system is WDID No. 6B360106001 issued by the State Water Resources Control Board. Source: CSD 2025 Annual Report.				

The Huston Creek and Seeley Creek WWTPs provide primary treatment, fixed-film (i.e. trickling filter), secondary treatment, and chlorine disinfection.¹⁴ Sludge thickening and dewatering of solids is performed at the Huston Creek WWTP, which also accepts septic tank discharge, treating approximately 160,000 gallons of septage per year. CSD's treated effluent meets the discharge monitoring requirements issued by the Lahontan RWQCB.

The wastewater volume treated within the CVWD service area in 2025 by CSD facilities is provided in **Submittal Table 6-3**.

¹⁴ Huston and Seeley Creek plants treatment level is "Secondary, Disinfected – 23" (CCR §60301.225).

Submittal Table 6-3: Wastewater Treatment and Outcomes Within UWMP Service Area

Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area														
Water Code Section 10633(b)														
☐ Check the box if no wastewater is treated or disposed of within the UWMP service area. Proceed to the next table.														
Wastewater Treatment Plant Name and Place ID Number Drop down list	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL) Drop down list	2025 Volume of Wastewater Received from UWMP Service Area (As Reported in Submittal Table 6-2 R) (CCF) Drop down list	Total 2025 Volume of Water Treated (CCF)	2025 Outcomes of Treated Wastewater										
				Water Recycled Within UWMP Service Area (enter data as applicable)		Water Recycled Outside of UWMP Service Area (enter data as applicable)		Effluent Discharge that is not a Permitted Recycled Water Use (enter data as applicable)		Required Discharge for Instream Flow (enter data as applicable)		Delivered to Another Entity for Additional Treatment (enter data as applicable)		
				Treatment Level Drop down list	Volume (CCF)	Treatment Level Drop down list	Volume (CCF)	Treatment Level Drop down list	Volume (CCF)	Treatment Level Drop down list	Volume (CCF)	Treatment Level Drop down list	Volume (CCF)	Name of other entity
Add additional rows as needed														
Other (provide name and ID in "NOTES" field)	No	159705	159,705		0		0	Secondary, Disinfected - 23	159705		0		0	
Total		159,705	159,705		0		0		159,705		0		0	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. IPR: Indirect Potable Reuse would have the treatment level of its end use requirement in the Level of Treatment drop-down. Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.														
NOTES: Huston Creek WWTP, operated by Crestline Sanitation District, is located within the CVWD service area and provides wastewater treatment for most of the CVWD Service Area except for Valley of Enchantment (VOE). The effluent goes to Las Flores Ranch in Hesperia for land disposal for irrigation. VOE wastewater from within the CVWD service area goes to Crestline Sanitation District's Seeley Creek WWTP, which is located outside the CVWD service area and is therefore not shown in this table. This effluent also goes to Las Flores Ranch for land disposal for irrigation. Waste Discharge Requirements (WDR) for Crestline Sanitation are found in Board Order No. 6-94-57 issued by the Lahontan Regional Water Quality Control Board in 1994. The Crestline Sanitation District sewer system is WDID No. 6B360106001 issued by the State Water Resources Control Board. Source: CSD 2025 Annual Report.														

6.5.2 Recycled Water Coordination

The CSD and CVWD service areas are subject to several prohibitions against using recycled water. The Lahontan RWQCB prohibits discharging waste to land or water within the Silverwood Lake watershed (Basin Plan, Ch.4). In addition, discharging waste to land or water is also prohibited above 3,200 feet elevation (approximate elevation of Mojave Forks Dam) in the Deep Creek and Grass Valley Creek watersheds as well as discharging waste to surface water above 3,200 feet in areas tributary to the West Fork Mojave River or Deep Creek. "The discharge of waste from new leaching or percolation systems is also prohibited in the Silverwood Lake watershed, Deep Creek and Grass Valley Creek watersheds above elevation 3,200 feet (for this prohibition, "new" systems are any installed after May 15, 1975)" (Basin Plan, p. 4.1-21). The RWQCB may grant exemptions in situations where discharging waste will not individually or collectively, directly or indirectly, result in exceeding the water quality objectives or unreasonably affecting the water for its beneficial uses.

Further, CSD and CVWD service areas are tributary to Silverwood Lake, which is a source of public drinking water supply. It is not known whether the RWQCB would grant an exemption

for discharge of reclaimed wastewater under these circumstances. In the absence of an exemption, no reuse of recycled water is possible at this time.

In the District's service area, there are no other potential sources of reclaimed water. Although Lake Arrowhead Community Services District (LACSD produces tertiary-treated wastewater effluent, and adjoins CVWD to the east, transporting it from the LACSD treatment facility to CVWD's service area would require extensive pumping and lengthy pipelines, along with regulatory approvals. Therefore, this plan has been developed under the assumption that no reclaimed water supply will be available for use within CVWD.

6.5.3 Recycled Water System

In addition to the aforementioned regulatory limitations and lack of financial incentive for CSD, there is relatively low potential for recycled water use in the future on the basis of the topography of CVWD's service area and development patterns. The terrain is steep, winters are severe, and preservation of natural forest conditions is preferred, which means that there are few irrigated areas within the service area. In addition, there are no industrial uses within the service area and commercial uses are fairly small; therefore, the dearth of potential major users of recycled water makes use of recycled water not economically feasible at this time. Because CSD is the only wastewater treatment provider within CVWD's service area, there will be no current or planned discharge of treated effluent within CVWD's service area.

6.5.4 Recycled Water Beneficial Uses

Although there are abstractly several beneficial uses of recycled water within the service area, the regulatory and financial constraints create a low potential for actual implementation. As indicated in **Submittal Table 6-4**, recycled water is not used and is not planned for use in CVWD's service area.

Submittal Table 6-4: Recycled Water Direct Beneficial Uses Withing Service Area

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area										
Water Code Section 10633 (c),(d),(e)										
☒	Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.									
Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL) :										
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL)										
Volume of Supplemental Water Added in 2025 (OPTIONAL) :			-							
Source of 2025 Supplemental Water (OPTIONAL) :			-							
Use Type Drop down list	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop down list	Additional Information (as needed)	2025 (CCF)	2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 (CCF)	Potential Recycled Water Use	
									Volume	Narrative page number (OPTIONAL)
Add additional rows as needed										
									0	Section 6.5.2
Subtotal Potable			0	0	0	0	0	0	0	
Subtotal Non-Potable			0	0	0	0	0	0	0	
Total			0	0	0	0	0	0	0	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.										
NOTES: Although there are abstractly several beneficial uses of recycled water within the service area, the regulatory and financial constraints create a low potential for actual implementation. Recycled water is not currently used, and is not planned for use in CVWD's service area.										

There is also little to no agriculture, irrigation, or industrial uses within CVWD's service area. Thus, the economic feasibility is low. It could be possible to apply for exceptions to the RWQCB restrictions on recycled water use; however, as there is no market for recycled water within the service area, this option will not be pursued at this time. The 2020 UWMP for CVWD also indicated that recycled water is not expected for use in the future, as shown in **Submittal Table 6-5**.

Submittal Table 6-5: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual Water Code Section 10633(e)		
☒	Check the box if recycled water was not used in 2025 nor previously projected for use in 2020. Proceed to the next table.	
Use Type Drop Down list	2020 Projection for 2025 (CCF)	2025 Actual Use (CCF)
Add additional rows as needed		
Total	0	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.		
NOTES: Recycled water use in CVWD's service area was not projected through 2025 in the 2020 UWMP.		

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

In consultations related to this plan, CSD has indicated that it intends to continue disposing its treated effluent in locations outside of CVWD's service area. As shown in **Submittal Table 6-6**, there is no current or planned use of recycled water within CVWD's service area.

Submittal Table 6-6: Methods to Encourage Future Recycled Water Use

Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use Water Code Section 10633 (f)			
☒	Check the box if the Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in the UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (CCF)
Add additional rows as needed			
Total (CCF)			0
Unit Conversion to AF			0

6.6 DESALINATED WATER OPPORTUNITIES

The District's service area is remote from any desalinated water supply sources such as the ocean, brackish surface water, and brackish groundwater. As such, there is no need or opportunity to implement desalinization as a water supply source.

6.7 WATER EXCHANGES OR TRANSFERS

Due to the geographically disseminated locations of local area water purveyors, coupled with the limited availability of local water supply sources, exchanges and/or transfers are not very feasible. Imported water purchased from the local wholesaler, CLAWA, is the most reliable source of supply for many local water purveyors to fill the gap between the difference in local supplies and peak water demands. CLAWA does participate in exchange agreements and water banking and will continue to do so as described earlier in this chapter.

6.8 FUTURE WATER SUPPLY PROJECTS

The District plans to construct one new water supply well within the next five years (i.e., Pinecrest Vertical Well II), as shown in **Submittal Table 6-7**. Pinecrest II has a projected yield of approximately 30,000 to 56,000 CCF per year (or 43 gpm to 80 gpm). This well is deemed to be potentially more productive due to a combination of its hydrologic properties. In addition, it will be located at the top of the District, which allows the District to move the water with gravity to nearly all of the other zones, and take advantage of the well's proximity to the District's two largest tanks for short-term storage. The pumps CVWD intends to use with this setup will also have the ability to adjust output to accommodate demand.

Should the targeted yields of the proposed Pinecrest II well come to fruition, the increase in water supply would easily outpace the estimated growth in water demands shown on **Submittal Table 4-3**. However, even with the most hydrogeologic investigative information, the nature of fractured hard rock wells along with their reliance upon annual precipitation makes it very difficult to predict a constant dependable flow 24 hours a day, 365 days per year.

Submittal Table 6-7: Expected Future Water Supply Projects or Programs

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs							
Water Code Section 10631(f)							
☐	Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Proceed to the next table.						
☒	Check the box if some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.						
Section 6.11	Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop Down list	Planned Implementation Year	Planned for Use in Year Type Drop Down List	Expected Increase in Water Supply to Supplier (This may be a range) (CCF)
	Drop Down List (yes/no)	If Yes, Supplier Name					
Add additional rows as needed							
Pinecrest II	No	-	Vertical Well	Potable	2028	All Year Types	30,000 to 56,000
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3. NOTES:							

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

A summary of the actual sources and volumes of water produced from CVWD wells and purchases of imported water from CLAWA for CY 2025 is provided in **Submittal Table 6-8**.

Submittal Table 6-8: Water Supplies—Actual

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Code Section 10631 (b)				
Water Supply	Additional Description (as needed)	2025		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop Down list	Actual Volume (CCF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (CCF)
Add additional rows as needed				
Groundwater (not desalinated)	District Wells	Potable	197,779	-
Purchased or Imported Water	Imported Water purchased from CLAWA	Potable	67,083	-
Subtotal Potable			264,862	0
Subtotal Non-Potable			0	0
Total			264,862	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount. NOTES: From CY 2025 SWRCB Drought Report.				

Future water supplies are projected in **Submittal Table 6-9**, which take into account future supply projects from Submittal Table 6-7 beginning with actual CY 2025 supplies from Submittal Table 6-8, all of which assumes a normal rainfall year.

Submittal Table 6-9: Water Supplies—Projected

Submittal Table 6-9 Retail: Water Supplies — Projected Water Code Section 10631 (b)							
Water Supply Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop Down list	Projected Water Supply (Report to the Extent Practicable)				
			2030	2035	2040	2045	2050 (opt)
			Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)
Add additional rows as needed							
Groundwater (not desalinated)	Fractured bedrock wells. San Bernardino Mountains. (District wells)	Potable	253,800	253,800	253,800	253,800	253,800
Purchased or Imported Water	State Water Project direct deliveries via Crestline-Lake Arrowhead Water Agency (CLAWA).	Potable	321,400	321,400	321,400	321,400	321,400
Subtotal Potable			575,200	575,200	575,200	575,200	575,200
Subtotal Non-Potable			0	0	0	0	0
Total			575,200	575,200	575,200	575,200	575,200
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.							
NOTES: Groundwater assumes implementation of Pinecrest II Vertical Well in 2028. Imported water assumes 53% of Table A and then 24% of that being available, on average. Because these are projections, the values are rounded to nearest 100.							

The calculation of District well production supply projections in Submittal Table 6-9 begins with the CY 2025 actual production volume of 197,779 CCF (608 AF) plus the addition of one well by 2028 adding 56,000 CCF (129 AF). Assuming the top range of production, CVWD could produce up to an additional 56,000 CCF by the 2030 projection year and throughout the projection period.

Imported water projections in Table 6-9 are based on DWR's projected SWP percentage of Table A in a normal year under current conditions (53% of 5,800 AF) but just 24 percent of that is considered reasonably available supply to CVWD. The amount of water shown in Table 6-9 from this source is not an amount the District is committed to using. The future amounts purchased from CLAWA will be only those which are required to meet demand after local wells are fully utilized.

In order to continue meeting customer demand for water, including during shortages, so that the District can ensure at a bare minimum an amount of water to meet the basic health and

safety needs of its customers, at least some portion of the District's future supplies will come from imported water purchased from CLAWA. That amount varies from year to year based on the factors described herein. Over the past 40 years, the balance of supply is on average 50/50. Over the past 26 years (2000-2025), due to the District's expansion of local groundwater sources, local supplies have averaged approximately 54 percent of total supply. However, the percentage of CVWD supply could reasonably increase to as much as 70 percent depending on climatic conditions. CVWD's supply projections are predicated on CLAWA's ability to supply, no matter how the District's wells are producing. The reliability of both CVWD local supplies and purchased imported water supplies is addressed further in Chapter 7 - Water Service Reliability and Drought Risk Assessment.

6.10 SPECIAL CONDITIONS

6.10.1 Climate Change Effects

Water Code requires the District to consider the impacts of climate change in its water supply projections, which are shown in Submittal Table 6-9. The District's considerations for climate change impacts began with using the *Climate Change Vulnerability Screening Form for Urban Water Management Planning* located in Appendix I to the DWR Guidebook for 2025 UWMPs. Pursuant to Water Code, the District's planning for climate change impacts is commensurate with the size of the system and its anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five consecutive years, as described below.

As described in Chapters 3 and 4, an analysis of DWR climate data was performed by a large water district located nearby with the ample resources to investigate and analyze climatological models and summarize the potential effects of changes in precipitation and outdoor water use. Western prepared said analysis in a Technical Memorandum dated September 6, 2022, which included the development of water supply change factors (**Appendix E**).

The water supply factors developed by Western and used herein are provided in **Table 6A** below. As shown in the factors, the analysis of climate change models found that:

Under all scenarios [Dry Hot, Median, and Wet Warm], changes become more extreme by 2045. The Dry Hot and Median Scenario predict a decline in annual precipitation while the Wet Warm scenario projects a higher annual precipitation.

The annual rainfall is predicted to decrease by 7.2 and 2.7 percent by 2045 under the Dry Hot and Median scenarios, respectively. However, the Wet Warm scenario predicts a 5 percent increase for the same timeline. Investigating the relative changes, all the projections indicate a lower precipitation during April and May, with the Dry Hot scenario exhibiting the greatest deviation from currently monthly rainfall (77 percent 2045). All projections show a higher precipitation in September. (WMWD(a), p. 12.)

Indeed, Western was focusing on its service area in the Inland Empire valley located about 2,000 feet below the elevation of Crestline; therefore, the factors in **Table 6A** may be conservative in their effect of reducing precipitation given that the mountains receive more rain and far more snow than the valley, are almost always cooler in temperature, and have significantly less outdoor water use.

Table 6A: Water Supply Climate Change Factors

Beginning Year	Normal Year	Single-Dry Year	Five-Year Dry Period
2025	99.2%	99.3%	98.7%
2030	98.4%	98.5%	97.6%
2035	98.0%	97.7%	96.8%
2040	97.7%	97.0%	96.2%
2045	97.3%	96.0%	95.6%

Source: Western Municipal Water District, *Technical Memorandum: Western Drought Contingency Plan – Climate Change Vulnerability Assessment*, September 6, 2022, Table A2 (WMWD).

To account for the potential effects of climate change to water supplies, and the uncertainty therein, CVWD has conservatively applied the normal year factors from Western’s analysis in Table 6A to the groundwater supply projections of Submittal Table 6-9 beginning in 2025 through 2040. The results are shown below in **Table 6B**.

Table 6B: Potential Effect of Climate Change to Normal Year Projected Supplies

	2025	2030	2035	2040	2045
TOTAL SUPPLY (CCF) ⁽¹⁾	575,200	575,200	575,200	575,200	575,200
Supply from Groundwater (CCF) ⁽¹⁾	253,800	253,800	253,800	253,800	253,800
Water Supply Climate Change Factor (Groundwater) ⁽²⁾	99.20%	98.40%	98.00%	97.70%	97.30%
Groundwater Supply with Climate Change Factor (CCF)	251,770	249,739	248,724	247,963	246,947
Potential Change in Total Supply from Climate Change Effects (CCF)	-2,030	-4,061	-5,076	-5,837	-6,853
Total Supply with Climate Change Factor (CCF)	573,170	571,139	570,124	569,363	568,347

Notes: Units in hundred cubic feet (CCF).

⁽¹⁾ From Submittal Table 6-9.

⁽²⁾ Climate change factors from Table A2 (WMWD).

6.10.2 Regulatory Conditions and Project Development

Constraints to the District's water supplies are discussed in Chapter 7. In summary, wells in fractured bedrock are constrained by limited production rates compared to wells in alluvial soils, and they are constrained by responsiveness to rainfall. Constraints to imported water supplies include reductions made by DWR in annual allocations as a result of varying hydrological, regulatory, and environmental factors. Further, all supplies are constrained by infrastructure limitations or failures of pipelines or pumps. All supplies can also be constrained due to water quality issues. Regulations for yet-to-be determined emerging contaminants in water may influence existing and future water supplies to some degree. Said effects could include how future well sites are located and what wellhead treatment(s) and/or blending are needed and subsequent costs to do so.

6.10.3 Other Locally Applicable Criteria

Wildfires are always a threat to the mountainous region of Crestline, particularly in times of extended drought exacerbated by climate change. The mountain vegetation may be drier and more vulnerable to become fuel if a spark occurs as temperatures increase. The primary concern from fires on CVWD's local water supply is disruption of power, thereby requiring the

use of standby generators. CVWD maintains a system of water tanks throughout its service area that have storage volumes sized for providing adequate fire flows. To protect this equipment, the District maintains a regular schedule of clearing vegetation around its above-ground structures. CVWD also relies on purchases of imported SWP water from Silverwood Lake. When large areas of the forest surrounding the lake burned in 2003, mulch was laid down to limit erosion (CLAWA 2010 UWMP).

Although the District does not experience an exaggerated risk of flooding resulting from the after-effects of wildfires, some flooding is anticipated in certain canyons during rain events. As growth continues, the District will evaluate each pressure zone and the fire flow requirements to determine if and when additional tanks are necessary and locating them in places where flooding is not anticipated.

There are no other locally applicable criteria that would affect characterization and availability of the District's existing or future water supply.

6.11 ENERGY USE

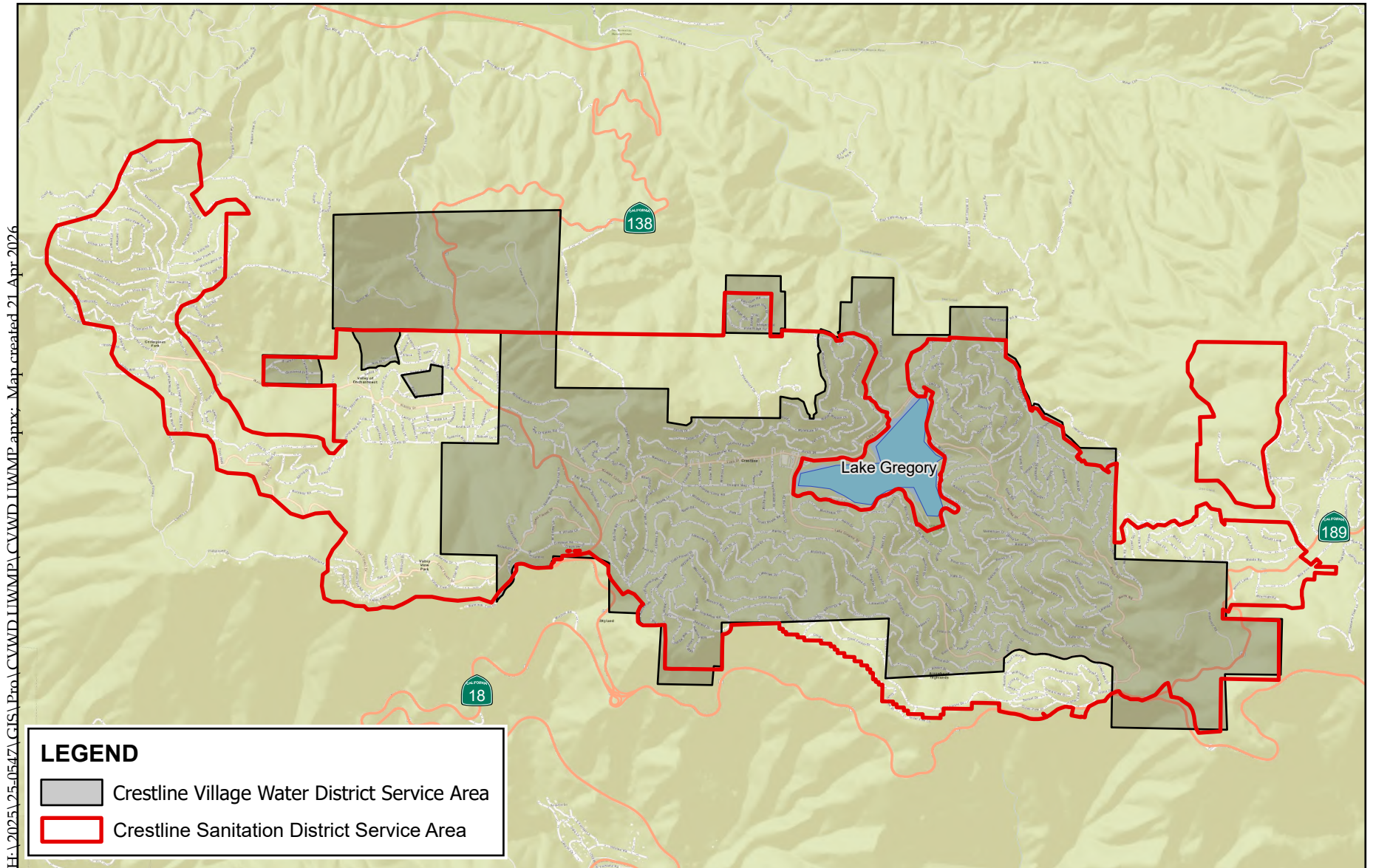
Energy is required to operate a water supply system, including the energy needed to pump, treat, store, and deliver water to the end consumer. Water Code Section 10631.2(a) requires that the UWMP report estimates of the energy used for the water distribution system that is within the District's operational control.

CVWD obtained electricity usage data from its electricity supplier, Southern California Edison for CY 2025 for each electrical meter located at each of the District's facilities. This includes CVWD water wells, booster stations, tanks, and pressure reducing stations. Total electricity used for the water distribution system in CY 2025 was 455,671 kilowatt hours (kWh), as shown in **Table 6-O1B**.¹⁵ Energy intensity based on water supplied in CY 2025 was calculated to be 2,300 kWh per CCF supplied. The District does not use solar power or other self-generated renewable energy, nor hydropower.

¹⁵ A kilowatt-hour (kWh) equals the amount of energy used by keeping a 1,000-watt appliance running for one hour.

Submittal Table O-1B: Recommended Energy Reporting – Single Delivery Product – Total Utility Approach

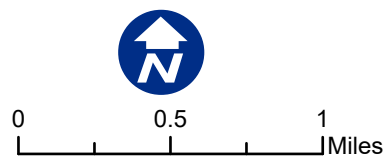
Optional Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH				
Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	Only for Water Delivery Products Under the Urban Water Supplier's Operational Control		
Start Date of Reporting Period	1/1/2025	Sum of All Water Management Processes	Non-Consequential Hydropower	
End Date of Reporting Period	12/31/2025			
Is upstream embedded energy in the values reported?	No	Total Utility See DWR NOTES	Hydropower	Net Utility
Units of Measure for Water	CCF			
Volume of Water Entering Process		264,862		264,862
Energy Consumed (kWh)		455,671		455,671
Energy Intensity (kWh/vol. converted to MG)		2,300	-	2,300
DWR NOTES: Total Utility: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.				
Quantity of Self-Generated Renewable Energy 0 kWh				
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data) Metered Data				
Data Quality Narrative: Energy Consumed (kWh) is from a Billing and Usage Report provided by Southern California Edison (SCE). This report provides billing and usage history (Usage/Demand by TOU buckets such as On/Mid/Off peaks) for active and closed service accounts for one				
Narrative: The energy-consuming water management systems included in Energy Consumed (kWh) are: monitoring systems, groundwater pumps, storage tanks, treatment systems, and pump stations.				
NOTES:				

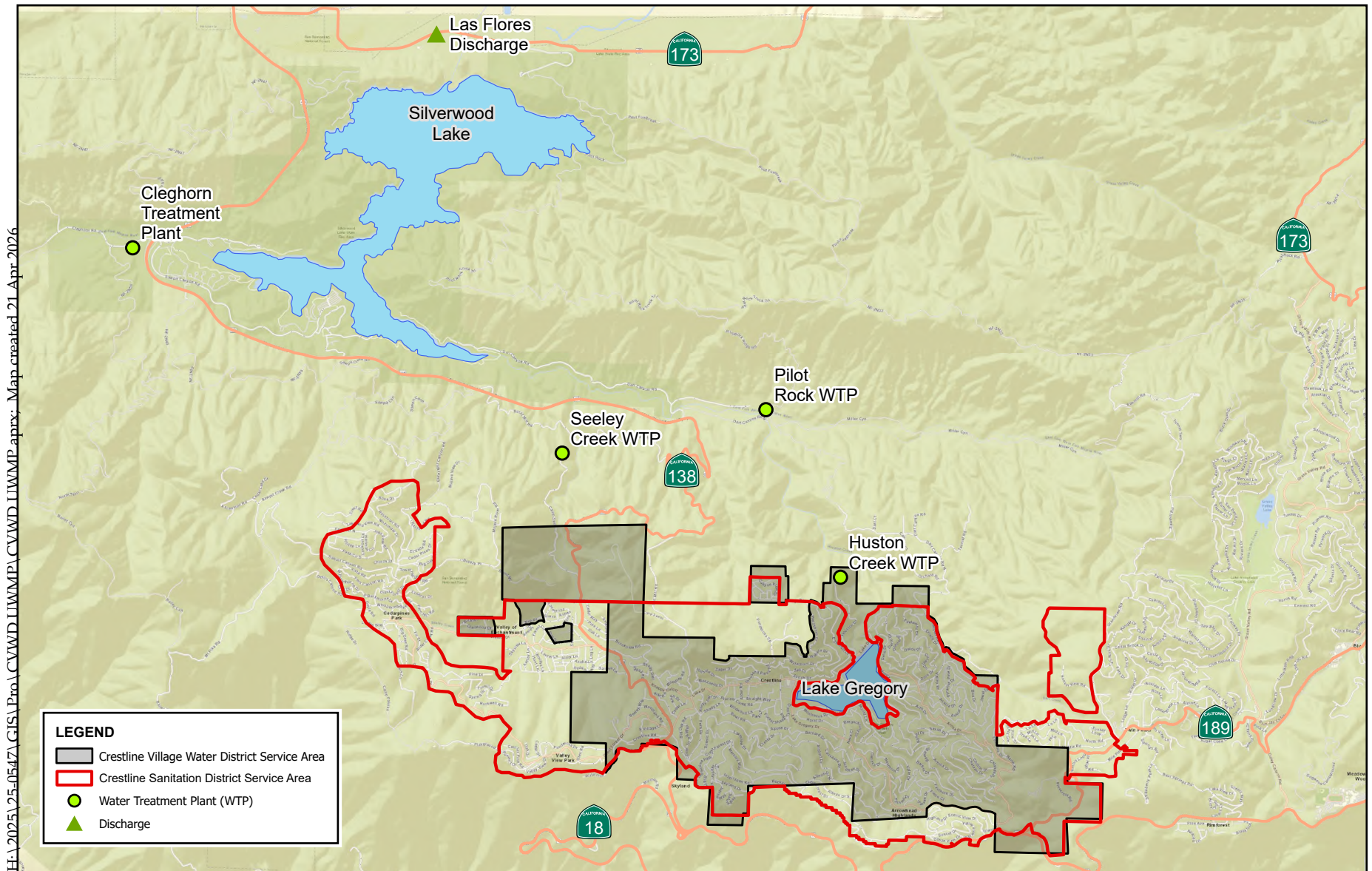


Sources: San Bernardino Co. ISD, 2015

Figure 6-1 Crestline Sanitation District

Crestline Village Water District Urban Water Management Plan 2025





Sources: San Bernardino Co. ISD, 2015

Figure 6-2 Wastewater Treatment and Discharge

Crestline Village Water District Urban Water Management Plan 2025



0 1 2 Miles



CHAPTER 7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

Properly assessing water supply reliability is complex and dependent upon numerous factors, including the number and types of water sources, regulatory and legal constraints, climate change, expected growth, and others. In this chapter, the District provides its best determination of the long-term reliability of water supplies available to CVWD under varying conditions over the next 20 years. This chapter also includes a near-term drought risk assessment (DRA) of a severe drought period lasting for the next five consecutive years (2026-2030).

7.1 WATER SERVICE RELIABILITY ASSESSMENT

Pursuant to Water Code, this reliability assessment will compare the total water supply sources available to the District with the long-term projected water use over the next 20 years, in five-year increments during normal, single-dry, and multiple-dry years. This assessment combines the findings in Chapter 4, Water Use Characterization, and Chapter 6, Water Supply Characterization, to help direct management actions for the future.

7.1.1 Summary of Water Use and Water Supply

As described in Chapter 4, water is used in CVWD primarily for residential customers. In CY 2025, 81% of total water consumption was attributable to single-family and multi-family accounts. Commercial/Institutional connections accounted for 12% of total demand, while fire hydrants used 2% (Table 4A). Landscape irrigation is not separately metered at any location and the District does not sell or purchase non-potable or recycled water. Water losses in 2025 accounted for 5% of total demand. Outdoor water use is minimal in this unincorporated mountain community and water conservation is a long-term standard operating practice for local residents. The water rate structure includes an excess water use surcharge. Water use can spike, however, during holidays and weekends because of a significant amount of second homes (cabins) and short-term rentals. Customers with local billing zip codes make up approximately 55 percent of all customers. Refer to Submittal Tables 4-1, 4-2, 4-3, and 4-4 for current (2025) and future (2030-2050) water use in normal years, as well as water losses.

As described in Chapter 6, CVWD obtains its water from local wells in fractured bedrock. When the well supply cannot meet demands, imported water supplies are purchased from CLAWA, a State Water Project (SWP) Contractor and local retail and wholesale water supplier to the mountain area. All of the water which CLAWA delivers comes from Silverwood Lake, a facility of the SWP. CLAWA has entitlement of up to 5,800 acre-feet (AF) of water annually from the SWP pursuant to its contract with DWR. In addition, CLAWA supplements its SWP supply by surface water diversions in Huston Creek, which flows naturally into Silverwood Lake. On average, imported water makes up one-half of the District's annual supply. Neither recycled water nor non-potable water will be a part of the District's supply because these uses are prohibited by the Lahontan Regional Water Quality Control Board. CVWD plans to bring one new well online by 2028. Refer to Submittal Table 6-7 for planned water supply projects, Submittal Table 6-8 for current (2025) water supplies, and Submittal Table 6-9 for projected supplies during normal conditions through 2050.

7.1.2 Constraints on Water Sources

Three factors can affect the reliability of water supplies: sufficient source capacity (i.e., wells and pumps); sustainability of the resource to meet demand on a renewable basis; and protection of water sources from known contamination, or provisions for treatment in the event of contamination. The constraints to the two water sources available to CVWD are presented below; first, potential constraints to District well production and secondly, constraints to imported water supplies purchased from CLAWA.

District Well Production

CVWD generally pumps its local wells at maximum capacity and then, if the demand is still not met, purchases additional water from CLAWA. From 2000 to 2025, water produced from District wells accounted for approximately 55 percent of total supplies, on average. However, between CY 2020 and 2025, District wells produced an average of 64% of total water supply. The amount of well water that can be pumped is limited by well capacity, the amount of precipitation that has infiltrated into the fractured rock zone, and the likely limited amount of water stored within the fractured-rock aquifer. Due to the highly variable nature of the void spaces within fractured-rock aquifers, wells drawing from fractured-rock aquifers tend to have less capacity and less reliability than wells drawing from alluvial aquifers. On average, wells

drawing from fractured-rock aquifers yield 10 gallons per minute (gpm) or less (CWP, p. SL-21). Decreased rainfall and snowpack would constrain District well production.

Water quality can be another constraint for District wells. Currently, the District operates no centralized, complete water treatment facilities of its own. CVWD chlorinates water from its Pioneer, Horst, Wilson, and Old Mill Springs wells and monitors water quality at all wells. The District's existing Chamois and Electra wells show elevated levels of gross alpha radiation, which is a treatable type of energy released when radioactive elements from naturally occurring uranium in the rocks decay or break down, and they are treated through a separate, onsite ion-exchange process. Water from CVWD's wells meets applicable drinking water standards after treatment, as shown in the District's most recently published Consumer Confidence Report in **Appendix G**.

CVWD intends to develop one additional high-yield local well by 2028, as described in Submittal Table 6-7. The District maintains interconnects with CLAWA at eight locations but does not currently have mutual aid agreements with other neighboring water suppliers.

Although not currently anticipated, other constraints to District well production could arise from regulatory constraints or environmental regulations that would somehow limit construction of future wells, or require additional treatment, or impose some sort of limit on production volume. None of these constraints are expected at this time.

Purchased Imported Water

From 2000 to 2025, approximately 45 percent of the District's water supply on average was purchased water from CLAWA. CLAWA is one of the authorized SWP Contractors to receive direct water deliveries from the SWP pursuant to a contract with DWR. The SWP is a massive statewide water and power conveyance system that includes facilities such as pumping and power plants, reservoirs, storage tanks, canals, tunnels, and pipelines that capture, store, and convey water to 29 different water agencies. The failure of any one of these elements could constrain the delivery of SWP water.

During preparation of this UWMP, CLAWA provided the following general information on its water supply and demand projections (**Appendix C**). Since CLAWA does not pump from wells and has no other reliable source of water supply, it is assumed that CLAWA's only supply will

be the imported water available from the SWP (Letter 05/06/26). CLAWA does not prepare an UWMP; however, if it were to prepare an UWMP, the *2023 State Water Project Delivery Capability Report* (DCR) prepared by DWR would be the source document. The DCR assesses the water supply that can be delivered from the SWP under wet and drought conditions.

CLAWA's contract with DWR states the maximum annual SWP "Table A" water delivery amount to CLAWA is 5,800 AF per year (DWR, 2023). "Table A" supplies refer to the maximum amount of water that each contractor is entitled to receive on an annual basis from the SWP and that amount is set forth in "Table A" of each contract with DWR. Table A is used in determining each contractor's proportionate share of the total amount of SWP supplies available in a given year. As originally conceived, the SWP was planned to have a delivery capability of 4,171,000 AF per year of Table A supplies. Although Table A identifies the maximum amount of SWP supplies that the contractors may receive in a given year, the amount available depends upon a variety of hydrologic, operational, environmental, regulatory, legal, and other factors that constrain SWP deliveries.

The additional water occasionally appropriated from Huston Creek can be unavailable during periods of local drought. Water from the SWP can be reduced due to drought and other constraints in Northern California. Because SWP water normally comprises CLAWA's entire water supply, such an event would force CLAWA to significantly reduce deliveries to all customers. However, during periods of extreme drought when other SWP Contractors did not receive Table A water, DWR has been able to provide through several different sources an adequate supply to meet minimum health, sanitation, and fire protection levels (CLAWA(a)). CLAWA Ordinance No. 59 describes a water allocation plan for wholesale customers including CVWD to be implemented during a water shortage (a copy of Ord. No. 59 is located in **Appendix H**).

According to the DCR, DWR can deliver an average of 53% of the total Contract amounts for all Contractors under current conditions. Although DWR proposes to construct the Delta Conveyance (Tunnel) Project, which would help increase that percentage, it cannot be counted on due to ongoing legal challenges and the potential for delays as State policies change (Letter 05/06/2026). However, carryover and transfer agreements between SWP Contractors also provide CLAWA supplies when the SWP deliveries are reduced by DWR. The SWP is a massive statewide water and power conveyance system that includes facilities such as

pumping and power plants, reservoirs, storage tanks, canals, tunnels, and pipelines that capture, store, and convey water to 29 different water agencies. The failure of any one of these elements could constrain the delivery of SWP water.

As indicated in CLAWA's response letter to CVWD for coordination on this UWMP: "total demand for CLAWA in any year is not expected to exceed 2,400 AF. Thus, the Agency anticipates that a 41% allocation should be sufficient to supply customer demand throughout the 20-year planning period." CLAWA's concern is when demand is greater from its customers and the SWP Table A allocation is less than 41 percent. In such years, CLAWA can "carry over" water in the SWP that CLAWA was allocated in a given year but did not use. CLAWA can also use water from exchange agreements with other contractors wherein CLAWA can take back water in years of lean SWP allocations. The letter cited the example of 2026, in which the SWP allocation was only 30% (1,740 AF), but the addition of carryover water and exchange agreement water will be able to cover customer demand. CLAWA intends to continue to carry-over water in the SWP when it can and also negotiate additional exchange agreements with other Contractors as opportunities arise. However, the letter noted that carryover water and exchange agreements may not always be available and that CLAWA's customers, including the District, must assume and plan accordingly that in some years, all of the demand for imported water may not be met. (Letter 05/06/2026)

Imported water supplies can be highly variable; for example, in January 2014, allocations of SWP water to all Contractors was reduced to 0 percent due to persistent drought conditions. CLAWA had access to 1,882 AF of 2014 carryover water, according to the *Notice to SWP Contractors* issued by DWR (Notice 14-02). However, the water delivered to CLAWA from SWP in 2014 was 741 AF. CVWD then purchased 51 percent of that volume to meet 57 percent of the demands of CVWD customers. Meanwhile, CVWD wells produced sufficient water for 43 percent of customer demand. By utilizing local wells and significant water conservation in conjunction with purchases from CLAWA and its continued ability to secure water supplies in a severe drought when other SWP Contractors may not receive any water, CVWD had sufficient supplies to meet the demands of its customers during a significant ongoing dry period.

Recorded SWP deliveries to CLAWA, and the amount purchased by CVWD from 2005-2025 are provided in **Table 7A**.

**Table 7A: Recorded SWP Deliveries to CLAWA
and CVWD Purchases (AF), 2005-2020**

Calendar Year	SWP Delivery to CLAWA (AF) ⁽¹⁾	SWP Delivery as Percent of Table A Amount ⁽²⁾	Volume Purchased by CVWD (AF) ⁽⁴⁾	CVWD Purchase as Percent of CLAWA's SWP Delivery
2005	805	14%	177	22%
2006	641	11%	248	39%
2007	1,768	30%	467	26%
2008	1,848	32%	331	18%
2009	1,893	33%	332	18%
2010	1,357	23%	217	16%
2011	474	8%	138	29%
2012	624	11%	199	32%
2013	1,300	22%	353	27%
2014	741	13%	379	51%
2015	1,279	22%	355	28%
2016	1,580	27%	420	27%
2017	1,521	26%	313	21%
2018	1,680	29%	384	23%
2019	1,109	19%	218	20%
2020	1,264	22%	230	18%
2021	1,708	29%	364	21%
2022	1,513	26%	385	25%
2023	1,114	19%	202	18%
2024	1,275	22%	157	12%
2025 ⁽³⁾	1,157	20%	154	13%
Average	1,269	22%	287	24%

Source:

(1) For years 2005-2014, *2015 DWR State Water Project Delivery Capacity Report*. For years 2015-2025, *CLAWA Monitoring Report on the Return Flows of Water Diverted from Silverwood Lake for Water Years 14/15-24/25*.

(2) CLAWA "Table A" allocation is 5,800 AF per year.

(3) 2025 deliveries are missing Oct. through Dec. which will be available when the 2025/26 Monitoring Report is published.

(4) Source: CVWD data.

As shown in **Table 7A**, SWP deliveries to CLAWA have ranged from 8 to 33 percent of the Table A allocation, and CVWD's annual purchase has ranged from 12 to 51 percent of CLAWA's actual SWP delivery in that year, with an average of 24 percent. This demonstrates

recent variability in imported water from year to year; nonetheless, water demands from CVWD was met.

As described in Chapter 6, the water purchased from CLAWA is generally of high quality. Water quality of this supply source is not expected to affect supply reliability for CVWD. The most recent Consumer Confidence Reports are provided in **Appendix G**.

CVWD is unable to influence the planned management activities of CLAWA and therefore, will continue to pursue the District's planned management strategy of installing a new well in 2028. In addition, the District will continue encouraging water conservation measures as described in Chapters 8 (Water Shortage Contingency Plan) and 9 (Demand Management Measures).

7.1.3 Reliability by Type of Year

CVWD has had a reliable water supply to meet demands during normal, single-dry, and multiple-dry years. Notably, the District had sufficient local water supplies during the statewide drought from 2013 to 2017. During wet years, CVWD's local wells have met the majority of water demands. For example, during CY 2010, the District recorded an unusually large annual rainfall depth of 82.45 inches and subsequently, well production met nearly 80 percent of demand during CY 2011.

The Water Code requires each water supplier to determine three types of years and how much supply is expected to be available for each: normal (or average),¹⁶ single-dry,¹⁷ and multiple-dry years for five years.¹⁸ The "Base Years" provided in **Submittal Table 7-1** are based upon recorded local well production data. CVWD calculates its Average (Normal) Year as the year when well production was closest to the average of well production from 1994 to 2025, which was 2007. The Single-Dry Year is represented by the year with the lowest well production between 1994 and 2025, which was during 2016, and the multiple-dry year period is the lowest average five consecutive year well production from 2014 to 2018.¹⁹

¹⁶ A year, or an averaged range of years, that most closely represents the average water supply available to the agency. The UWMP Act uses the term "normal".

¹⁷ The single-dry year is the year that represents the lowest water supply available to the agency.

¹⁸ The multiple-dry year period that represents the lowest average water supply availability to the agency for a consecutive multiple-dry year period (three years or more).

¹⁹ In the "Volume Available" column, CVWD specifies the volume of water supply expected if there were to be a repeat of the hydrology from that type of year. The "Percent of Average Supply" is the volume that would be available if the dry year hydrology were repeated.

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

Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type for District Wells	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available (CCF)	% of Average Supply
Average Year	2007	185,162	100%
Single-Dry Year	2016	91,167	49%
Consecutive Dry Years 1st Year	2014	124,266	67%
Consecutive Dry Years 2nd Year	2015	111,151	60%
Consecutive Dry Years 3rd Year	2016	91,167	49%
Consecutive Dry Years 4th Year	2017	146,218	79%
Consecutive Dry Years 5th Year	2018	119,550	64%
DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table. Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.			
NOTES: Units in hundred cubic feet (CCF). This table represents actual District well production in these years. Two versions of Table 7-1 are used herein; one for District wells and one for purchased imported water supplies.			

The period from 1994-2025 is considered representative of the District's average well field because it includes the many vertical wells that were drilled from 1994 through 2004. The additional wells drilled during that 10-year period increased the local water supply source and reduced the volume of imported water from CLAWA significantly. Therefore, well production figures from before 1994 would not be useful in this analysis.

Base years for imported water supplies are shown in **Submittal Table 7-1A**, below. The % of Average Supply column is taken from the DCR (Table 6-9, *Estimated Average Dry-Period SWP South of Delta Allocation (Existing Conditions)*). The DCR identifies 1977 as a Single Dry Year

with 3% of the SWP available and 1987-1992 as a multiple dry year period with 6% available. The Volume Available in the Average Year is calculated as CVWD's average portion (24% from Table 7A) of DCR's long-term average of Table A delivery (55%) of CLAWA's Table A amount (5,800 AF) converted to CCF. The Volume Available entries for Single and Multiple Dry Years are the percentages of Average Supply from DCR multiplied by the Average Year volume available to CVWD (333,495 CCF).

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

Optional Submittal Table 7-1A Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type for Imported Water	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: [insert location from UWMP]
			Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available (CCF)	% of Average Supply
Average Year	1922-2021	333495.4	100%
Single-Dry Year	1977	10004.9	3%
Consecutive Dry Years 1st Year	1987	20009.7	6%
Consecutive Dry Years 2nd Year	1988	20009.7	6%
Consecutive Dry Years 3rd Year	1989	20009.7	6%
Consecutive Dry Years 4th Year	1990	20009.7	6%
Consecutive Dry Years 5th Year	1991	20009.7	6%
DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table. Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.			
NOTES: Units in hundred cubic feet (CCF). This version of Table 7-1 represents the imported water supply available to CVWD. The % of Average Supply is from the Estimated Average Dry-Period State Water Project South of Delta Allocation (Existing Conditions) Adjusted, DCR 2023, Table 6-9. The Volume Available is 24% (from Table 7A) of (% of Average Supply (from DCR Table 6-9)* Table A amount) converted to CCF.			

While the data in Submittal Table 7-1A shows limited percentages of total average imported SWP supplies under very conservative assumptions, the following must be noted and reiterated: from 1990-2025, the approved SWP allocations have always met or exceeded CLAWA's recorded deliveries to its retail customers. A dry period affecting Northern California does not necessarily mean that the same dry conditions are affecting Southern California. For example, in the Single Dry Year of 2016 when well production was at its lowest, the supply from CLAWA was double that amount. This relationship and mix of resources available to CLAWA, as described in Chapter 6, provides an added element of reliability to the Agency's overall water supply portfolio.

In addition to the factors discussed above which help ensure a sufficient water supply to CLAWA during potential shortage periods, it should be noted that in critical dry years, DWR has organized a program known as the Drought Water Bank or the Dry Year Water Purchase Program. Under the program, DWR purchases water from willing sellers (primarily from water suppliers upstream of the Delta) and makes those supplies available for purchase by water agencies that are at risk of experiencing water shortages and require supplemental water supplies to meet anticipated demands. Although the Drought Water Bank has not been used since 2009, it is available from DWR as needed in the future.

7.2 SUPPLY AND DEMAND ASSESSMENT

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

7.2.1 Normal Year Reliability

Normal Year. This condition represents the water supplies a supplier considers available during normal conditions.

The projected supply volumes for CVWD in a normal year are presented in Chapter 6 (Table 6-9) and projected normal year water demands are discussed in Chapter 4 (Table 4-3). The

Normal Year supply and demand projections are compared in **Submittal Table 7-2**. A surplus of supply is projected under these conditions for years 2030, 2035, 2040, 2045 and 2050.

Submittal Table 7-2: Normal Year Supply and Use Comparison

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 (CCF)
Supply totals (autofill from Submittal Table 6-9 R)	575,200	575,200	575,200	575,200	575,200
Use totals (autofill from Submittal Table 4-2 R)	270,610	276,480	282,490	288,610	294,870
Surplus/(shortfall)	304,590	298,720	292,710	286,590	280,330
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

The following assumptions have been made to estimate supply and demand during a Normal Year:

- The amount of water available to CVWD of CLAWA's annual imported water supply in a normal year is 24 percent of DWR's estimated delivery, which is 53 percent of CLAWA's Table A allocation (5,800 AF).
- The District well supply in a normal year begins with CY 2025 supply plus one new well at the upper range of production (56,000 CCF).

Climate Change Considerations for Normal Year

The climate change factors for water supplies located in Table 6A suggest a potential reduction of overall supply during a normal year of 1.6% in 2030 to 2.7% in 2045. The climate change factors for outdoor water demands located in Table 4C suggest a potential increase in outdoor water demands of 1.4% in 2030 to 3.4% in 2045 during a normal year. Both of these trends are consistent with the Cal-Adapt projections in Chapter 3. The net result may be a deficit in water supply as a result of climate change. However, the increase in water demands is likely

overstated given that the factor reflects outdoor water use, which is minimal in the District's service area.

7.2.2 Single-Dry Year

Single-Dry Year. The year that represents the lowest water supply available to the Supplier.

The year 2016 has been chosen to represent the single-dry year for CVWD because that is the year when well production was at its lowest between 1994 and 2025. The year 1977 is the single-dry year for imported water supplies according to the DCR. The methodology for calculating the District's Single-Dry Year supply from local wells and imported supplies is shown in **Table 7B**.

Table 7B: Calculation of Single Dry Year Supply Projections for CVWD

CLAWA's Table A Allocation (CCF)	2,526,480
SWP Single-Dry Year Deliveries (% of Table A) ⁽¹⁾	3%
SWP Single-Dry Year Delivery to CLAWA (CCF) ⁽²⁾	75,794.40
CLAWA Exchange Agreements (CCF) ⁽³⁾	392,040
Average Proportion of CLAWA's SWP Annual Delivery Purchased by CVWD ⁽⁴⁾	24%
Subtotal Imported Water (CCF)	112,280.26
CVWD SDY Supply from Wells (CCF) ⁽⁵⁾	91,167
Additional Planned Well at 50% Capacity (CCF) ⁽⁶⁾	28,000.0
Subtotal Well Supply (CCF)	119,167.0
Total SDY Supply (CCF)	231,450 (rounded)

Notes: SWP: State Water Project; SDY: Single Dry Year; CY: calendar year; CCF: hundred cubic feet.

(1) From 2023 *Delivery Capability Report* (DWR), Table 6-9 where 3% is the Single Year (1977) adjusted Estimated Average Dry-Period SWP South of Delta Allocation (existing conditions).

(2) Product of SDY percentage and CLAWA's Table A allocation.

(3) From *CLAWA Water Supply Reliability Certification 2017-2019*. Estimated as 500 AF from San Geronio Pass Water Agency and 400 AF from San Bernardino Valley Municipal Water District.

(4) From Table 7A.

(5) From Submittal Table 7-1 (91,167 CCF in 2016).

(6) Refer to Submittal Table 6-7 for schedule of additional planned wells (one more by 2028). Single-dry year production rate for the future well is assumed at 50% of 65 AF (28,000 CCF).

Based on the Single-Dry Year supply assumptions in Table 7B, the projected supply and demand totals in a Single-Dry Year scenario (without climate change factors) are compared in **Submittal Table 7-3**.

Submittal Table 7-3: Single Dry Year Supply and Demand Comparison

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 (CCF)
Supply totals	231,450	231,450	231,450	231,450	231,450
Use totals	243,550	248,830	254,240	259,750	265,380
Surplus/(shortfall)	(12,100)	(17,380)	(22,790)	(28,300)	(33,930)
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit	8,067	11,587	15,193	18,867	22,620
WSCP - use reduction savings benefit	4,033	5,793	7,597	9,433	11,310
Revised Surplus/(shortfall)	0	0	0	0	0
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: Refer to Table 7C for SDY water supply methodology. SDY water demand is a 10% reduction from normal year demand (Table 4-2). Does not include climate change factors. Projections are rounded to nearest 10 CCF.					

Submittal Table 7-3 represents a worst-case single-dry year scenario with an initial shortfall in each year based on the assumptions in Table 7B. However, the records show that despite years with very low Table A allocations or years with very low well production, CLAWA purchases have made up the difference. Therefore, the WSCP supply augmentation benefit in Table 7-3 shows additional supply from CLAWA making up two-thirds of the shortfall, and demand management actions making up the remaining one-third. This assumption is supported by records going back to 1980.

Climate Considerations for Single Dry Year

The climate change factors for water supplies located in Table 6A suggest a potential reduction of overall supply of 1.5% in 2030 to 4.0% in 2045. The climate change factors for outdoor water demands located in Table 4C suggest a potential increase in water demands of 0.9% in 2030 to 3.3% in 2045. Both of these trends are consistent with the Cal-Adapt projections in

Chapter 3. With these changes in both supply and demand, a net deficit in water supply may be expected. However, the increase in water demands is likely overstated given that the factor reflects outdoor water use, which is minimal in the service area.

7.2.3 Multiple-Dry Year

Five-Consecutive-Year Drought. The driest five-year historical sequence for the Supplier.

From 1994 to 2025, the five-consecutive year drought period with the lowest well production was between 2014 and 2018. The projected water supplies for years 1 through 5 of a multiple dry year drought are based on the actual water supply during those years from wells (Submittal Table 7-1) and from the DCR's estimate for the SWP imported water purchases (Submittal Table 7-1A [20,009.72 CCF]) plus one-half the production of the proposed new well (28,000 CCF) plus 24% of the 900 AF of CLAWA carryover/agreement supplies. This is consistent with the approach taken in Table 7B for single dry year supplies.

The projected water demands for a multiple dry year drought are based on a 10% decrease in normal year water demands in years 1 and 2, which is increased to 15% reduction in demand in years 3, 4 and 5.

The District's Multiple-Dry Year supply and demand comparisons are provided in **Submittal Table 7-4** (next page).

Submittal Table 7-4: Multiple Dry Year Supply and Demand Comparison

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison						
Water Code Section 10635(a)						
		2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 (CCF)
First year	Supply totals	266,370	266,370	266,370	266,370	266,370
	Use totals	243,550	248,830	254,240	259,750	265,380
	Surplus/(shortfall)	22,820	17,540	12,130	6,620	990
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals	253,250	253,250	253,250	253,250	253,250
	Use totals	243,550	248,830	254,240	259,750	265,380
	Surplus/(shortfall)	9,700	4,420	(990)	(6,500)	(12,130)
	OPTIONAL WSCP Actions					
	WSCP - supply augmentation benefit			660	4,333	8,087
	WSCP - use reduction savings benefit			330	2,167	4,043
	Revised Surplus/(shortfall)			0	0	0
Third year	Supply totals	233,270	233,270	233,270	233,270	233,270
	Use totals	230,020	235,010	240,120	245,320	250,640
	Surplus/(shortfall)	3,250	(1,740)	(6,850)	(12,050)	(17,370)
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit		1,160	4,567	8,033	11,580
	WSCP - use reduction savings benefit		580	2,283	4,017	5,790
	Revised Surplus/(shortfall)		0	0	0	0
Fourth year	Supply totals	288,320	288,320	288,320	288,320	288,320
	Use totals	230,020	235,010	240,120	245,320	250,640
	Surplus/(shortfall)	58,300	53,310	48,200	43,000	37,680
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals	261,650	261,650	261,650	261,650	261,650
	Use totals	230,020	235,010	240,120	245,320	250,640
	Surplus/(shortfall)	31,630	26,640	21,530	16,330	11,010
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.						
NOTES:						

In certain years, water supply deficits are seen, which could be augmented through additional supplies from CLAWA and additional demand management measures. Again, the historic record of supplies utilized by the District show that demands have always been met regardless of the SWP allocation going to zero or wells producing at their lowest.

Climate Considerations for Multiple Dry Year

The climate change factors for water supplies located in Table 6A suggest a potential reduction of overall supply of 2.4% in 2030 to 4.4% in 2045 during a five-year drought. The climate change factors for outdoor water demands located in Table 4C suggest a potential increase in water demands of 1.5% in 2030 to 3.5% in 2045 during a five year drought. Both of these trends are consistent with the Cal-Adapt projections in Chapter 3. With these changes in both supply and demand, a net deficit in water supply may be expected. However, the increase in water demands is likely overstated given that the factor reflects outdoor water use, which is minimal in the service area.

7.2.4 Management Tools and Options for Reliability

Although CVWD will continue utilizing local water supplies to the maximum extent practicable following the intent of Water Code Section 10620 to minimize the need to import water from other regions, the water demands of the District since 1972 have required supplemental water purchased from the local SWP wholesaler, CLAWA. CVWD will continue to rely on imported water supplies to meet future demands. Annual purchases will continue to vary depending on well production, which is very responsive to rainfall in the prior year(s). As previously discussed, the District intends to add one new well by 2028 to increase its local water supply, which is projected to outpace community growth and therefore reduce dependency on imported water during normal and wet years. This increase in local supply in combination with the District's AML system to minimize water losses, and the community's significant response to water conservation measures will maximize the use of local water resources. Nonetheless, CVWD remains dependent on CLAWA's assurance of available supply to provide the balance between demand and District well production, regardless of climatic conditions, changes in population, or fluctuations in the economy.

This remainder of this page is blank to allow the Drought Risk Assessment to be swapped out without affecting other sections in the event it is updated before the next UWMP cycle.

7.3 DROUGHT RISK ASSESSMENT

The Drought Risk Assessment (DRA) is based on the five driest consecutive years on record taking into account any extra effects to water supplies from plausible changes in climate, regulations, and other locally applicable criteria. If there is a shortage, the DRA identifies what the effects to the shortage would be from increasing supply and/or reducing demand. Water Code requires that the DRA include a description of the data and methods used, the basis for the supply shortage conditions, determination of the reliability of each source, and comparison of total water supplies and uses during the drought, which are described below. This DRA can be updated before the next UWMP cycle (i.e., 2025); however, the notification and approval procedures in Chapter 10 of the UWMP would be required for any interim changes. An update to the DRA may be needed as result of new information becoming available, changes in water supply or water use, or in the event of unforeseen circumstances.

7.3.1 DRA Data, Methods, and Basis for Water Shortage Conditions

During a hypothetical drought period from 2026-2030, the DRA follows the same patterns for water supplies and water demands as observed during the District's driest five-year period of 2014-2018.

7.3.2 DRA Individual Water Source Reliability

As shown in **Submittal Table 7-5**, water demands may increase annually by 0.43% from the 2025 actual water demand, consistent with the growth methodology used for Submittal Table 4-2. Well water supplies are projected to match water demands over the next five years because well water supplies in 2025 were just 7% higher than the 31-year average of well production, and provided 75% of the District's total water supply. The remaining 25% was available and purchased from CLAWA. As the drought proceeds, the well production will reduce, and the difference made up with purchased water.

The uncertainty in the aforementioned assumptions include the water supplied by projects that have not been fully implemented yet. Production rates of new wells are estimated and have some uncertainty because they have not been drilled, equipped, and tested yet. There is also inherent uncertainty in the availability of imported water supplies, even though when other SWP Contractors received no SWP water during severe droughts, CLAWA was provided

sufficient supplies for the minimum health, sanitation and fire protection needs of its retail and wholesale customers. Again, CLAWA is in a unique situation compared to other SWP Contractors in that the SWP is their singular supply source and DWR has recognized this and has been able to provide deliveries using various sources.

7.3.3 DRA Total Water Supply and Use Comparison

When a water supplier cannot meet the demands of its customers for whatever reason, this DRA assumes two things can happen: the District can mandate customers to conserve water, thus reducing demand; and/or the District can augment or supplement its normal supplies with an emergency source of water.

CVWD customers have shown themselves to be responsive to water conservation mandates. Between 2013 and 2015, water use in the District reduced by 21.7 percent according to State Water Board records on drought reporting.

Supply augmentation for CVWD comes from the District's ability to purchase imported water supplies from CLAWA. Because wells take several years to design, construct, test, and bring online, drilling new wells is not a supply augmentation herein. The DWR *2023 Delivery Capability Report* estimates that Contractors will receive about 56 percent of the maximum Table A allotment under existing conditions, which may decrease to 53 percent under future conditions.

Assuming the next five years—2026 through 2030—are a five-consecutive year drought, and taking into account the assumptions in this DRA, the District's potential water supply surplus (or shortage) is provided in **Submittal Table 7-5** (next page). If there is a shortage, then the benefit of a supply augmentation or use reduction action is shown to address the shortage. As shown in Submittal Table 7-5, surplus supply is expected in all five years primarily because of the additional water from planned wells (albeit reduced because of drought) and the reduction in demand as a result of demand management and supply made up of an increasing proportion of imported water as the drought goes on.

Submittal Table 7-5: Five-Year Drought Risk Assessment

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)	
2026	Total
Total Water Use (CCF)	266,000
Total Supplies (CCF)	266,000
Surplus/Shortfall w/o WSCP Action	0
2027	Total
Total Water Use (CCF)	267,140
Total Supplies (CCF)	267,140
Surplus/Shortfall w/o WSCP Action	0
2028	Total
Total Water Use (CCF)	268,290
Total Supplies (CCF)	268,290
Surplus/Shortfall w/o WSCP Action	0
2029	Total
Total Water Use (CCF)	269,440
Total Supplies (CCF)	269,440
Surplus/Shortfall w/o WSCP Action	0
2030	Total
Total Water Use (CCF)	270,600
Total Supplies (CCF)	270,600
Surplus/Shortfall w/o WSCP Action	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES: Because these are projections, values are rounded.	

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CHAPTER 8 WATER SHORTAGE CONTINGENCY PLAN

Adoption Date and Resolution: June 16, 2026, CVWD Resolution No. 516, located in

Appendix A.

This Water Shortage Contingency Plan (WSCP) details CVWD's actions in the event of an actual water shortage condition. A water shortage means that the water supply available is insufficient to meet the normally expected customer water use at a given point in time. In 2018, the State Legislature modified the UWMP laws to require a WSCP with the specific elements contained herein. The District may modify this WSCP at any time independent of updates to the UWMP; however, the same steps to notify and hold a public hearing are required with each modification as described herein. This chapter is written as a stand-alone document and therefore repeats many elements from the other chapters in the UWMP.

8.1 WATER SUPPLY RELIABILITY ANALYSIS

Pursuant to Water Code Section 10632(a)(1), the following is a summary of the Water Service Reliability Assessment and Drought Risk Assessment located in Chapter 7 of this UWMP.

CVWD has assessed the reliability of its water service during normal, single-dry, and multiple-dry years by comparing total projected water supplies with total projected water demand over the next 20 years, in five-year increments. Future water supplies listed herein for CVWD include all reasonably foreseeable and quantifiable future water supply projects that the District is either currently undertaking or is in the process of implementing. This includes a new well planned for 2028—Pinecrest II Vertical Well— with a projected yield of 30,000 and 56,000 CCF per year.

Approximately half of CVWD's average annual supply comes from imported water purchased from Crestline-Lake Arrowhead Water Agency (CLAWA), the local water wholesaler.

Assumptions for future supplies of imported water are based on DWR's *2023 SWP Delivery Capability Report*; specifically, delivery of SWP water in a normal year is expected to be of 53 percent of CLAWA's Table A allocation, 4 percent in a single-dry year, and 26 percent each year in a five-consecutive year drought. It was assumed that 30 percent of those amounts could be supplied to CVWD. Future water demands for CVWD reflect an annual growth rate of 0.43 percent per year. This is consistent with the population growth for the service area

according to the Southern California Association of Governments (SCAG) 2020 forecast for unincorporated San Bernardino County at 0.44 percent year (SCAG). According to the 2020 U.S. Census, the current population of the service area is approximately 11,650 persons. Based on the land use data provided by the County for the UWMP, projected mid-range buildout population for the service area is 13,071 persons. Maximum density buildout population ranges from 16,773 to 18,850 persons.

The potential effects of climate change on water supply and water demand projections were incorporated using factors that increase or decrease the volume depending on the expected climate change effect on outdoor water use and precipitation/natural recharge. The factors suggest reductions in water supplies during normal and five-year dry periods beginning by 2030 and increases in supplies during a single-dry year beginning by 2030. The factors suggest water demand will increase in normal, single-dry, and multiple-dry year periods. Although indoor water use is likely unaffected by climate change, the District is unable to measure it separately from total water use, therefore all demand was conservatively assumed to be increased as a result of climate change. In summary, the District is projected to have sufficient water supplies to meet expected customer demands in normal years, single-dry years and multiple-dry years occurring anytime between 2030 and 2050. with the addition of one well in 2028

CVWD has prepared a five-consecutive-year Drought Risk Assessment (DRA) for a drought beginning in 2026 and continuing through 2030. The DRA assumes a sequential reduction in customer water use with each passing year to reflect mandated conservation beginning in drought year 2. These projected reductions in water use are deemed realistic given the observed reductions that CVWD customers made during the five-year drought from 2013 to 2017. Further, the DRA assumes imported water supplies from CLAWA would be available to the District to make up declines in well production beginning in drought year one through drought year five. Local groundwater supplies from District wells are expected to decline beginning in Year 2 of the DRA, which is consistent with what was observed during the five-year drought from 2013 to 2017.

Groundwater reliability is based on decades of recorded observations made by the District. Because the District obtains groundwater from fractured bedrock, the amount available in storage cannot be quantified, nor can a sustainable yield be determined. Although well yields

are responsive to precipitation patterns, the wells continue to produce through multiple-dry year periods. Combined with significant customer conservation efforts and reliance on imported water purchased from CLAWA, which has always been able to deliver, customer demands have always been met and service reliability maintained.

Depending on the local and statewide hydrology in any given year, constraints to water service reliability for CVWD can include decreased well production and/or reduced imported water supply. The District's facilities are sufficient, but it is plausible that system failures and catastrophic interruptions can occur. Water quality limitations that take supply offline and require additional treatment are ongoing for at least one proposed well. There is also the possibility of future yet-to-be determined testing requirements for emerging contaminants the District is not aware of yet that could affect supplies. Because of said reliability of the imported water supplies and District wells providing a proportion of supply through a previous five consecutive year drought, coupled with the District's intentions to develop another well and demonstrated customer conservation efforts, the DRA shows that in the event of a five-consecutive year drought beginning in 2026, expected water demands would be met with expected supply.

8.2 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Beginning in 2022, CVWD began preparing an annual water supply and demand assessment (or, Annual Assessment) and submitting an Annual Water Shortage Assessment Report to DWR. The Annual Assessment is a determination of the near-term outlook for supplies and demands and how a perceived shortage may relate to WSCP shortage stage response actions in the next 12-month period; this determination is based on known circumstances and information available to CVWD at the time of analysis. The Annual Assessment is due by July 1 of each year pursuant to Water Code Section 10632.1.²⁰

8.2.1 Decision-Making Process for Annual Assessment

The Annual Assessment and related reporting are to be conducted based on the District's procedures described in this WSCP. The Annual Assessment is based on the District's ongoing water supply and water demand tracking and monitoring process performed by staff; the

²⁰ Guidance is located on the Annual Water Supply and Demand Assessments web page at: <https://water.ca.gov/Programs/Water-Use-And-Efficiency/Water-Supply-and-Demand-Assessment>

results and analysis of which is presented monthly to the Board of Directors. The Annual Assessment involves water demand and supply conditions for the next 12 months, as well as considerations for potential actions consistent with the WSCP. In June when an Annual Assessment is presented to the Board of Directors, it may include a request to trigger specific shortage response actions. Upon approval, CVWD staff will then submit the Annual Assessment to DWR by July 1.

8.2.2 Data and Methodologies for Annual Assessment

The Annual Assessment will be based on the available water supplies, unconstrained water demand, and infrastructure considerations.²¹ Because the WSCP shortage stages are defined in terms of shortage percentages, shortage percentages for the current year and one dry year conditions would be calculated for the Annual Assessment. The characteristics of “one dry year” according to the District will be at the discretion of the District, which may be refined and changed over time based on ongoing data collection. The 2025 UWMP suggests the conditions of a single-dry year for District wells would be consistent with the conditions observed in 2015, which was approximately 60 percent of the 1994-2020 average production rate (Submittal Table 7-1). The 2025 UWMP also assumes the conditions of a single-dry year for imported water from the SWP would be that which was observed in 1977 or 4 percent of Table A, consistent with DWR’s *2023 SWP Delivery Capability Report*.

The District focuses the Annual Assessment based on actual forecasted near-term water supply conditions to ensure appropriate shortage response actions are triggered in a timely manner with expected outcomes. The primary data sources that could be used by the District to evaluate the water reliability for the current year and one dry year are detailed below pursuant to Water Code Section 10632(a)(2).

²¹ For the Annual Assessment and WSCP, Water Code Section 10632(a)(2)(B)(i) directs the District to use current year “unconstrained demand” when assessing water supply reliability. Unconstrained demand is defined as expected water use in the upcoming year, based on recent water use, and before any projected shortage response actions that may be taken under the WSCP. Unconstrained demand may be differentiated from observed demand, which may be constrained by preceding, ongoing, or future actions, such as emergency actions taken as part of a multi-year drought. Routine activities such as ongoing conservation programs and regular operational adjustments are not considered to be constraints on demands.

1. Evaluation Criteria.

For each Annual Assessment, the District characterizes current year and one dry year scenarios based on best-available data. CVWD will consult with CLAWA with regard to any limitations on imported water deliveries. Said consult will focus on estimates for the next 12 months and estimates if a single-dry year condition occurs. The District will make an estimation of available core supplies and unconstrained demands for the next 12-month period and a dry-year scenario to calculate shortage percentages.²² These findings will be given additional context and influenced by infrastructure considerations (discussed below in Step 5), which will differ from year to year.

2. Water Supply.

For each Annual Assessment, the District will quantify each source of the core water supply for the next 12 months and in a single-dry year condition based at least in part on the consultations described in step 1 (Evaluation Criteria). Quantification of core water supplies will differentiate from the District's water supplies that are expected to be used in a supply augmentation situation.

3. Current Year Unconstrained Customer Demand.

For each Annual Assessment, the District will gather data to forecast near-term demands, and may take into consideration historical water usage trends, weather trends, and water-use efficiency trends. Additionally, factors such as the number of service availability letters issued recently, and knowledge about planned development projects may be referenced to gauge demand. Because these would be "constrained" demands rather than unconstrained demands, the District would adjust its near-term water demand forecast for the Annual Assessment to account for extraordinary demand management measures that the District may intend or have already put into effect for the current year.

4. Current Year Available Supply.

²² Core Supplies is not a defined term in the Water Code. It is used here to infer water supplies that are regularly available and to distinguish between water supplies slated for use in emergencies or severe shortage conditions as part of supply augmentation efforts.

For each Annual Assessment, the District will make two estimates of the available annual water supply using, (1) current year conditions for the next 12 months and, (2) one dry year conditions. Because the definition of one dry year is at the discretion of the District, CVWD will be able to refine and update its assumptions for a dry year scenario in each Annual Assessment as information becomes available.

5. Infrastructure Considerations.

For each Annual Assessment, the District will describe infrastructure constraints that would influence the ability to obtain the water supply as expected and/or the ability to distribute normally to customers. Projects in the next 12 months that would influence capabilities would be quantified with the volume of water becoming available or unavailable and the duration of said projects or constraints.

Each year, CVWD regularly carries out preventative and corrective maintenance of its facilities to inspect and repair pipelines and facilities and support capital improvement projects. These shutdowns involve a high level of planning and coordination; they are scheduled to ensure that major portions of the distribution system are not out of service at the same time. Operational flexibility within CVWD's system allows shutdowns to be successfully completed while continuing to meet all system demands.

6. Other Factors.

For each Annual Assessment, the District can describe locally applicable factors that can influence or disrupt supplies, along with other unique local considerations that should be a part of the Annual Assessment.

8.3 SIX STANDARD WATER SHORTAGE STAGES

The Water Code requires six standard water shortage stages in the WSCP that correspond to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than a 50 percent shortage. Each stage represents an increasing gap between CVWD's water supplies and water demands as determined in the Annual Assessment. As described above, shortage percentages will be calculated as percent shortfall of core supplies against unconstrained demands for anticipated current year conditions and assumed dry year conditions. Shortage

levels also apply to catastrophic interruption of water supplies, including but not limited to a regional power outage or earthquake. The District’s WSCP and water waste prevention ordinances match the six state-mandated shortage levels as shown in **Submittal Table 8-1**.

Submittal Table 8-1: Water Shortage Contingency Plan Levels

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels Water Code Section 10632(a)(3)(B)			
☒ Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.			
Standard Shortage Levels	Percent Shortage Range	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		
NOTES: (Source: CVWD Ord. No. 35) Exceptions to the basic allocation may be granted by the District Manager or his/her designee, upon written request for the following reasons: (i) substantiated medical requirements, (ii) multiple family units served by a single meter, (iii) single-family household exceeding 6 residents, and (iv) unnecessary and undue hardship to the consumer.			

CVWD Ordinance No. 35 was adopted by the CVWD Board of Directors on August 19, 2014 and describes the District’s six-phase Water Conservation Program to be invoked when determined by resolution of the Board of Directors. Currently, the District is in Phase 1A pursuant to Resolution No. 490 adopted on May 17, 2022. Copies of Ordinance No. 35 and Resolution No. 490 are located in **Appendix H**.

8.4 WATER SHORTAGE RESPONSE ACTIONS

The water shortage response actions the District can take that align with the defined shortage levels and shortage percentages in Submittal Table 8-1 include demand reduction actions, supply augmentation actions, operational changes, and additional mandatory prohibitions. The authority to determine shortage conditions and to select appropriate shortage response actions remains with the District.

8.4.1 Water Supply Augmentation

The District can augment or supplement its water supplies by utilizing its ability to purchase additional water supplies from CLAWA. This augmentation action would not be redundant to the supplies discussed in UWMP Chapter 6 because these actions are above and beyond a normal water supply scenario. This is consistent with past water shortages when imported water met more than half of water demands during significant conservation. As shown in **Submittal Table 8-2**, these supply augmentation measures are not likely to start until a water shortage of approximately 30 percent.

Submittal Table 8-2: Supply Augmentation and Other Actions

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions				
Water Code Section 10632(a)(4)(A),(C) and (E)				
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (CCF)	
Add additional rows as needed				
3	Other Purchases	Percentage	20%	Additional purchase from CLAWA
4	Other Purchases	Percentage	25%	Additional purchase from CLAWA
5	Other Purchases	Percentage	30%	Additional purchase from CLAWA
6	Other Purchases	Percentage	40%	Additional purchase from CLAWA
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in				
NOTES: Percentages represent estimated proportion of shortage gap that will be met by the action. CLAWA: Crestline-Lake Arrowhead Water Agency.				

8.4.2 Water Demand Reduction

There are generally two ways to respond to a water shortage—through either demand reduction actions or supply augmentation. The District’s Water Conservation Program in Ordinance No. 35 focuses on reducing demand for water in response to a water shortage and/or worsening drought conditions. Demand reduction actions have been effective in the past, for example when the District transitioned from Water Conservation Phase I to Phase I.a effective September 1, 2014, water use in the District decreased more than 10 percent from 79.8 gallons per capita per day (GPCD) in 2014 to 71.6 GPCD in 2015 (WEBB(a), p. 8-6).

Table 8A summarizes the demand reduction actions listed in CVWD Ordinance No. 35 and in which stage the action is mandatory. Descriptions of each conservation stage are noted after the table.

Table 8A: CVWD Ord. No. 35 Demand Reduction Actions

Water Use Prohibition	Level When Prohibition is Mandatory ⁽¹⁾					
	Phase I.a	Phase II	Phase III	Phase IV	Phase V	Phase VI
Washing of sidewalks and all hard-surfaced areas by direct hosing is prohibited, except when required for public health.	X	X	X	X	X	X
Use of potable water for any non-essential outdoor use is prohibited.					X	X
Use of potable water for any non-essential use.						X
Each break, leak, or dripping faucet should be corrected within 48 hours of notification.	X	X	X	X	X	X
Using a hose to wash vehicles unless it has a spring-release shut-off nozzle is prohibited.	X	X	X	X	X	X
Vehicles must be washed either (1) using water contained in a 3-gallon maximum bucket or, (2) at a commercial washing facility with water recycling equipment.				X	X	X
Any irrigation which results in runoff or overspray is prohibited.	X	X	X	X	X	X
Any irrigation of landscaping installed after the date that this phase is effective is prohibited.		X	X	X	X	X

Water Use Prohibition	Level When Prohibition is Mandatory ⁽¹⁾					
	Phase I.a	Phase II	Phase III	Phase IV	Phase V	Phase VI
Sprinkling for dust control is prohibited.	X	X	X	X	X	X
Use of potable water for construction is prohibited.				X	X	X
Any water use that results in runoff of water is prohibited.	X	X	X	X	X	X
Lawn or garden, or any other watering beyond what is required to sustain plant life.	X	X	X	X	X	X
Fountains or other decorative features must use a recirculating system.	X	X	X	X	X	X
Using potable water for decorative fountains or filling of pools is prohibited.			X	X	X	X

Notes: (Source: CVWD Ord. No. 35)

(1) Phase I consists of the basic allocation and surface for excess consumption. The District operates in Phase I unless otherwise determined by the Board of Directors.

Phase I – General Water Use Reduction Program

The basic allocation for each single-family residential customer is 1,300 cubic feet (CF)²³ per month for Phase I and Phase I.a. A surcharge of 1.5 the basic rate would be billed for use in excess of the basic allocation.²⁴ Every consumer shall eliminate the waste of potable water from the District in an effort to conserve supplies.

Phase I.a – 5 Percent Water Use Reduction Program

The basic allocation and water waste prohibition from Phase I are still applicable, but in Phase I.a, the District aims to reduce the amount of water used by all consumers during the base calendar year by five percent. In addition, the State emergency drought regulations adopted

²³ One cubic foot equals 7.48 gallons.

²⁴ The customer of record may request an increase in the allocation for the following reasons: (i) substantiated medical requirements; (ii) multiple family units served by a single meter; (iii) a single-family residential household exceeding six residents; or (iv) unnecessary and undue hardship to the consumer or the public, including but not limited to, adverse economic impacts (Ord. 35, Section 3.3.4.1).

by the CVWD Board of Directors in Resolution No. 421 are applied in Phase I.a., as listed in Table 8A.

Phase II – 10 Percent Water Use Reduction Program

The basic allocation is reduced to 1,200 CF per month. For use in excess of the allocation, a surcharge of two times the rate will be billed. Phase II aims to reduce the amount of water used by all consumers by 10 percent over the base calendar year. Beginning with Phase II, irrigation of landscaping is prohibited (Table 8A).

Phase III – 20 Percent Water Use Reduction Program

The basic allocation is reduced further to 1,100 CF per month with a District-wide water reduction goal of 20 percent during the base calendar year. The surcharge for use in excess of the allocation is increased to 2.5 times the rate. In addition to the prohibitions of the previous phases, Phase III also prohibits potable water for the purpose of filling pools, spas, or decorative fountains, lakes, or ponds (Table 8A).

Phase IV – 30 Percent Water Use Reduction Program

The basic allocation is reduced further to 900 CF per month with a District-wide water reduction goal of 30 percent over the course of the base calendar year. The surcharge for use in excess of the allocation is increased to 3 times the rate. In addition to the prohibitions of the previous phases, Phase IV also states it shall be unlawful for consumers: (i) to use potable water for sewer or storm system flushing for normal maintenance and fire department training, except as approved by the District; (ii) use potable water for construction, and (iii) vehicle washing except from a 3-gallon bucket, which excludes commercial vehicle washing facilities that use water recycling systems (Table 8A).

Phase V – 40 Percent Water Use Reduction Program

The basic allocation is reduced to 800 CF per month and all water waste and non-essential use of potable water shall be eliminated to achieve a District-wide reduction of 40 percent over the year. The rate for water used in excess of the basic allocation shall be 3.5 times the rate. In

addition to the prohibited uses in Phases I, I.a, II, III, and IV, Phase V prohibits the use of potable water for any non-essential outdoor use (Table 8A).²⁵

Phase VI – 50 Percent Water Use Reduction Program

The final phase of the Water Use Reduction Program reduces the basic allocation to 700 CF per month. Everyone is required to eliminate water waste and non-essential water use to achieve a District-wide reduction of 50 percent. The surcharge for excess consumption is 4 times the rate for the basic allowance. In addition to the prohibited uses from the previous phases, Phase VI also prohibits any indoor or outdoor water use that is non-essential (Table 8A).

The District's demand reduction actions are provided in **Submittal Table 8-2** (next page) including the estimated proportion of the water shortage gap that the demand reduction action is expected to meet at each level of the WSCP. The percentages in Submittal Table 8-2 are estimates of the observed effectiveness of the demand reduction actions as the District does not quantify the effect of individual water conservation measures.

²⁵ Essential uses of potable water are uses necessary for the health, sanitation, fire protection, or safety of the consumer or public.

Submittal Table 8-3: Demand Reduction Actions

Submittal Table 8-3 Retail: Demand Reduction Actions					
Water Code Section 10632(a)(4)(B),(D), and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (CCF)		
Add additional rows as needed					
Any Level	Moratorium or Net Zero Demand Increase on New Connections	Percentage	10%	The Board, by resolution, may restrict new service commitments and connections based on current and future water availability projections.	Yes
1	Other	Percentage	Negligible, <5%	Every consumer shall eliminate the waste of potable water.	Yes
1	Other	Percentage	10%	Each customer is required to install a shut-off valve on the customer's side of the meter, outside the meter box, to allow onsite plumbing to be drained as necessary to prevent water loss from frozen or broken pipes.	Yes
1	Implement or Modify Drought Rate Structure or Surcharge	Percentage	5%	Basic allocation of 1,300 CF/month per single-family residential customer. Other types of accounts may request an increase in the allocation. Surcharge of 1.5 for water in excess of allocation.	Yes
1	Expand Public Information Campaign	Percentage	5%	(Phase 1.a)	No
1	Other - Prohibit use of potable water for washing hard surfaces	Percentage	5%	(Phase 1.a)	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	Less than 4%, combined with other portions of Phase	(Phase 1.a) Repair leaks within 48 hours of notification.	Yes

Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
1	Other	Percentage	Significant effect, 16% based on full-time vs. part-time population.	(Phase 1.a) Prohibit use of running water during freezing weather to prevent freezing of water lines.	Yes
1	Other - Require automatic shut of hoses	Percentage	3-4%	(Phase 1.a)	Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	10%	(Phase 1.a)	Yes
1	Other - Prohibit use of potable water for construction and dust control	Percentage	No effect.	(Phase 1.a) Prohibit sprinkling for dust control.	Yes
1	Landscape - Other landscape restriction or prohibition	Percentage	8% when combined with other Landscape restriction measures within Phase	(Phase 1.a) Prohibit any water use that results in the runoff of water in the street, gutters, driveways, or waterways.	Yes
1	Landscape - Prohibit certain types of landscape irrigation	Percentage	<4%	(Phase 1.a) Prohibit any lawn or garden watering beyond what is needed to sustain plant life.	Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	<1%	(Phase 1.a) Fountains or features must have a recirculating system.	Yes
2	Other	Percentage	75% toward reducing the shortage gap	All demand reduction actions in Phase 1 and 1a.	Yes

Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
2	Implement or Modify Drought Rate Structure or Surcharge	Percentage	10%	Basic allocation reduced to 1,200 CF/month with surcharge of 2.0 for water used in excess of allocation.	Yes
2	Landscape - Other landscape restriction or prohibition	Percentage	10-15%	Any irrigation, after the date that this phase is effective.	Yes
3	Other	Percentage	65%	All demand reduction actions in Phases 1, 1a, and 2.	Yes
3	Implement or Modify Drought Rate Structure or Surcharge	Percentage	10%	Basic allocation reduced to 1,100 CF/month with surcharge of 2.5 for used in excess of allocation.	Yes
3	Other water feature or swimming pool restriction	Percentage	5%	Prohibit using potable water for decorative fountains or other water features.	Yes
4	Other	Percentage	55%	All demand reduction actions in Phases 1, 1a, 2, and 3.	Yes
4	Implement or Modify Drought Rate Structure or Surcharge	Percentage	10%	Basic allocation reduced to 900 CF/month with surcharge of 3.0 for water used in excess of allocation.	Yes
4	Other - Prohibit use of potable water for construction and dust control	Percentage	1%		Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Percentage	Estimated, 10% dependent on population	Exception: washing vehicles from water contained in a 3-gallon or less bucket.	Yes
5	Other	Percentage	40%	All demand reduction actions in Phases 1, 1a, 2, 3, and 4.	Yes
5	Implement or Modify Drought Rate Structure or Surcharge	Percentage	10%	Basic allocation reduced to 800 CF/month with surcharge of 3.5 for water used in excess of allocation.	Yes

Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
5	Other	Percentage	20-30%	Prohibit use of potable water for any non-essential outdoor use.	Yes
6	Other	Percentage	25%	All demand reduction actions in Phases 1, 1a, 2, 3, 4, and 5.	Yes
6	Implement or Modify Drought Rate Structure or Surcharge	Percentage	5%	Basic allocation reduced to 700 CF/month with surcharge of 4.0 for water used in excess of allocation.	Yes
6	Other	Percentage	Estimated, 30% dependent on population	Prohibit use of potable water for any non-essential use.	Yes

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

NOTES: Percentages represent estimated proportion of shortage gap that will be met by the action. Phase 1 reflects normal conditions; therefore the percent effectiveness of its demand reduction actions is combined with Phase 1a actions to meet the level 1 goal. Customers are always required to eliminate waste of potable water in an effort to conserve water supplies. It is important to note that any prohibited use in each phase is also prohibited in a more restrictive phase. For shortage levels 1 and 2, the sum of the percentages here equal 100% meaning that demand reduction measures are estimated to meet the shortage gaps. For shortage levels 3-6, the sum of the percentages here and in Table 8-3 (Supply Augmentation) equal 100% of meeting the shortage gaps.

8.4.3 Operational Changes

The operational actions that would be undertaken by the District in the various drought scenarios are outlined in Submittal Table 8-3. The District already has a program to monitor, analyze, and track customer usage rates and continues an active pipeline repair and replacement program.

8.4.4 Additional Mandatory Restrictions

All mandatory restrictions developed by the District in addition to state-mandated prohibitions are listed in Table 8A and Submittal Table 8-3. No additional mandatory restrictions are available; however, the Board of Directors has the discretion to develop in the future locally appropriate restrictions as conditions dictate.

8.4.5 Emergency Response Plan

CVWD updated its *Water System Emergency Response Plan* (ERP) on September 16, 2022. The ERP was prepared in accordance with Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety).

CVWD has provided the required certification to the EPA that the 2022 ERP incorporates the results of the vulnerability assessment completed for the system and includes plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist attack on the water system. Applicable excerpts from the document are included herein where noted; the document in its entirety is kept by the District.

The purpose of the ERP is to provide CVWD with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin. The ERP also describes how CVWD will respond to potential threats or actual terrorist scenarios identified in the vulnerability assessment, as well as additional emergency response situations. Included in this ERP are specific Action Plans (APs) that will be utilized to respond to events and incidents. The primary threats identified for CVWD in the ERP are natural disasters (i.e., earthquake, winter storm, and fire) and human-caused, which can damage structures/equipment and/or disrupt service (ERP, p. 71). The following is a summary of pertinent information from the ERP related to water service interruption:

CVWD has one alternate and independent raw water source (well) which can supplement the water supply if the other sources are compromised. There are 3 other water utilities within the regional area, Crestline-Lake Arrowhead Water Agency, Valley of Enchantment Mutual Water Company and Cedarpines Park Mutual Water Company. These water utilities have their own water supply and treatment systems. To enable CVWD to have uninterrupted water service capability, bypass turnout valve connections from CVWD's water distribution system to Crestline-Lake Arrowhead Water Agency are in place and are currently maintained by Crestline-Lake Arrowhead Water Agency. (ERP, p. 68)

ERP Action Plan 9 – Water Supply Interruption describes the District's five levels of severity for a water supply interruption with a series of stages of action corresponding to each level. AP 9 includes how to handle public notifications, locate alternative water supply options, shut-off and restart procedures, regulatory filings, use of backup generators, and when to issue a precautionary boil water order. The District also maintains Action Plans to respond to natural events (i.e., flood, winter storm, hurricane/tropical storm, and earthquake), contamination, structural damage, bomb threats, and power outages (ERP, AP 1A to AP 10C).

CVWD must also consider CLAWA's emergency response plans for an interruption of its supplies, because CVWD does not have sufficient tank storage to supply customers during an extended drought period nor does it have direct access to a reservoir of sufficient capacity (WEBB(a), p. 8-14).

CLAWA has installed permanent natural gas engine-operated standby generators at each of its main treatment, pumping, and operation facilities to avoid water supply interruptions during electrical power outages. In order to minimize potential damages due to earthquakes, CLAWA's facilities have been designed or upgraded in accordance with current building and safety standards and have been conducted with multiple units where feasible to minimize disruption if a single unit is damaged. CLAWA has also stockpiled various materials necessary to repair pipeline breaks and leaks in order to minimize outages during catastrophic events. (WEBB(a), p. 8-14)

CLAWA's water supply comes primarily from the State Water Project supplied by water from the Sacramento-San Joaquin Delta (Delta). According to DWR's 2023 *Delivery Capability*

Report, the Delta faces numerous challenges to its long-term sustainability. For example, climate change poses the threat of increased variability in floods and droughts, and sea level rise complicates efforts to manage salinity levels and preserve water quality in the Delta so that the water remains suitable for urban and agricultural uses. Among the other challenges are continued subsidence of Delta islands, many of which are already below sea level, maintained by relatively unstable levee system, and the related threat of a catastrophic levee failure as water pressure increases on fragile levees. Federal, state, and local agencies have been working to address the hazards that threaten the Delta through implementation of recommendations made by the Sacramento-San Joaquin Delta Multi-Hazard Coordination Task Force (Delta Stewardship Council).

8.4.6 Seismic Risk Assessment and Mitigation Plan

Pursuant to Water Code Section 10632.5, the UWMP shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.²⁶

CVWD participated in the 2022 San Bernardino County *Multi-Jurisdictional Hazard Mitigation Plan* (MJHMP, 2022). The County MJHMP includes information from other local HMPs; all of which were prepared in compliance with the federal Disaster Mitigation Act of 2000 (Public Law 106-390). In 2018, CVWD adopted its own Hazard Mitigation Plan. Applicable excerpts from the District's HMP are included herein where noted, but the entire document is held by the District. Key findings from the 2020 HMP that are pertinent to the UWMP include:

- Natural and man-made hazard considered by the HMP include: Wildfires, Earthquake, Drought, Infestation, Climate Change, Terrorism, Winter Storms, Flooding, and Dam Inundation (p. 16). The following natural hazards were considered not to be a risk to the District's planning team based on geography, topography, elevation, development, or previous occurrence: Extreme Heat, Flash Flooding, High Winds/Straight Line Winds, Lightning, or Severe Thunderstorms (p. 17).

²⁶ Pursuant to Water Code section 10632.5, the assessment herein is based on other sources. Albert A. Webb Associates is not qualified to make its own independent seismic risk assessments or recommend mitigation actions and assumes no responsibility for those recommended herein.

- Earthquake hazards – The area served by CVWD is in close proximity to several major earthquake faults. The San Andreas Fault runs across the foot of the San Bernardino Mountains near Highway 18, Arrowhead Springs Area, less than five miles from Crestline. Additional faults in the San Bernardino area, e.g., San Jacinto, are also within 10 miles of the District. While there have been many earthquakes in and around the District’s service area, none have caused damage to the District’s facilities. (HMP, p. 23)
- HMP Appendix C.1 presents the earthquake profile findings for the District’s service area. The ground motion findings indicate the peak ground acceleration (PGA) within the District’s service area could potentially exceed 80 percent. Typically, any acceleration over 3 percent is considered excessive. (HMP, p. 28)
- Each District vehicle has been provided with a First Aid Kit containing basic first aid supplies. The District office also has two of these kits; one upstairs and one downstairs. The District office has a natural gas-powered generator for the operation of the District’s Administrative Building and one adjoining well. (HMP, p. 57)

To assess risk in the HMP, each potential type of risk was first prioritized based on probability to occur, magnitude of impact, length of warning time before an event occurs, and duration of the disaster event. The CVWD Hazard Assessment Matrix in the HMP identifies earthquakes as the second highest ranking hazard, after wildfire. The HMP earthquake vulnerability analysis estimates that approximately 92 percent of the community’s population is vulnerable to earthquake risks and approximately 100 percent of the community’s critical facilities are vulnerable. Further, all District facilities and 30 percent of District pipelines are at risk if a severe earthquake occurs (HMP, p. 50).

The HMP contains mitigation goals, objectives, and projects for all hazards. Seismic hazard mitigation from the HMP is replicated below. The District HMP estimates the potential costs of damage to District facilities resulting from an earthquake and ranked the seismic mitigation actions of securing alternate power, water main replacement, and tank retrofit as priorities 2-4 among the five top priority actions (HMP, p. 66).

Description: *Goal is to avoid damages to property and prevent loss of life or injuries.* The District agreed that the strengthening of building, mechanical, and fire codes is critical to the protection of property and life and the reduction of seismic risk, fire and flood hazards. These codes help water utilities design and construct tanks, pump stations, groundwater wells, and pipelines that resist the forces of nature and ensure safety.

Objectives:

- Encourage property protection measures for all communities and structures located in hazard areas.
- Reduce or eliminate all repetitive property losses due to flood, fire and earthquake.
- Research, develop, and adopt cost-effective codes and standards to protect properties beyond the minimum of protecting life safety.
- Establish a partnership among all levels of government and the business community to improve and implement methods to protect property.

Mitigation Actions:

- Alternate Power Sources. Install emergency standby generators to provide water pumping in power outage conditions.
- Water Main Replacement. Install 2500' of new water main.
- Tank Retrofit. Retrofit tanks to insure water availability. Continually make improvements to the District's facilities so the water system will continually deliver water.
- Continuous inspection of District facilities.

From CVWD Hazard Mitigation Plan, p. 61.

8.4.7 Shortage Response Action Effectiveness

The District's water shortage response actions are shown in **Submittal Table 8-2** and **Submittal Table 8-3**. Each response action listed has a corresponding percentage of the shortage gap that the action is expected to meet. The percentages in Submittal Table 8-2 are based on the observed effectiveness of demand reduction actions undertaken during the past five years including the drought from 2013-2017. The higher the percentage, the more effective the action is expected to be in reducing demand.

As described previously, the District demonstrated during the drought of 2013-2017 that demand reduction efforts are achievable and effective; for example, average Districtwide consumption decreased more than 10 percent from 79.8 GPCD in 2014 to 71.6 GPCD in 2015 (WEBB(a), p. 8-6). During normal and drought periods, the CVWD operations staff reports weekly production figures to the General Manager, who then prepares a monthly report to the Board of Directors to report on water demands, water supplies, and progress toward the water conservation target if a drought stage has been declared. In doing so, the District does analyze

the efficacy of demand reduction and supply augmentation response actions on a monthly basis. The supply augmentation actions shown in Submittal Table 8-2 have been used in the past and additional supplies have been available from CLAWA so that CVWD can meet customer demands when combined with demand reduction actions.

8.5 COMMUNICATION PROTOCOLS

In the event of a water shortage declaration, or declaration of water shortage response actions, communication protocols to inform the customers, the public, interested parties, and local, regional, and state governments will proceed pursuant to the current 2022 ERP and CVWD Ordinance No. 35, which states in part:

The District shall monitor and evaluate the projected supply and demand for water by its customers, and shall recommend to the Board of Directors any change in customer curtailment as indicated in the respective phases of Section 3.3.3. The Board of Directors shall, by resolution, determine the base calendar year from which the amount of water reduction shall be calculated and order that the appropriate phase of water use reduction be implemented. The effective date of said phase change shall be published once in a local newspaper and a notice shall be mailed to all property owners and customers of record within 10 days after the adoption date of the resolution changing the phase of water use reduction. Said phase shall remain in effect until a different phase is initiated and made effective pursuant to the provisions of this section. The District can, by resolution, order a more stringent phase be implemented, and it need not order one phase at a time.

In the event of an emergency, the District's ERP will provide complete guidance on notification procedures. In general, communications during an emergency response will proceed along the chain of command of the ICS [incident command system]. The number of people notified will increase as the incident expands and decrease as the incident contracts toward its conclusion.

The type and extent of the emergency will dictate the normal and/or alternative methods of communication that will be used. The possibility of a coordinated attack that targets the water, power, and communications systems must be considered. In this case, it would be reasonable to assume that some methods of communication will either be unavailable or limited to certain areas during an emergency. It is anticipated that employees will know upon arrival at their duty

stations which communication systems are functional and which are not. This information should be relayed to the CVWD Information Officer upon discovery. The individual(s) who discover the threat or emergency situation will immediately notify CVWD's 24-hour Call Center. The On-call Person will then notify the Water Utility Emergency Response Manager or WUERM. The remainder of the CVWD staff will be notified according to the tables in the ERP

The ERP provides staff an internal and external notification list that includes critical customers, vendors, local, state, and federal agencies. Public notification channels can include the CVWD Website, media outlets, local radio, and local cable TV. District staff should refer to the ERP for detailed procedures, assumptions and available resources related to communications in an emergency.

8.6 COMPLIANCE AND ENFORCEMENT

Pursuant to Water Code Section 10632(a)(6), the following explains the customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined by the WSCP.

The District will make a reasonable effort to assist customers in complying with the penalties and charges associated with a triggered shortage response action. The District provides each customer with an allocation of water and charges a surcharge for any water used in excess of the allocation compared to the basic rate. This system encourages water efficiency, particularly at the more restrictive phases of water conservation. Additionally, when Phase I.a through Phase VI are in effect, any consumer using more than 125 percent of their allocation, for any billing period, may be warned that such use is considered waste of water, and that a reduction in use is required to avoid being subject to the enforcement provisions shown in **Table 8B**. The District Board of Directors may also restrict new service commitments and connections based on current and future water availability predictions, by act of resolution.

Table 8B: Enforcement Provisions of Water Conservation Program

First Violation	Written Warning
Second Violation	\$50 charge
Third Violation	Up to \$500 for each day in which the violation occurs and may discontinue water service. The reinstatement charge would apply; however, a flow restrictor may be required before service is reinstated. The cost of installing the flow restrictor may be charged to the customer.

Source: CVWD Ord. No. 35.

The District may utilize the enforcement provisions of Section 3.3.6.2 of the District's Administrative Code for violations of temporary restrictions.

8.7 LEGAL AUTHORITIES

This section of the WSCP discloses the legal authorities that CVWD relies upon implementing the shortage response actions in Section 8.4, and to enforce them relative to Section 8.6.

The District maintains legal authority to implement all active CVWD ordinances including the demand reduction actions in Section 8.4.2 and enforcement actions in Section 8.6. Ordinance No. 35 was adopted on May 26, 2015 by the CVWD Board of Directors and enacted in conformity with Section 350, et seq., and Section 31026 of the Water Code.

The following statements have been included herein to demonstrate consistency with Water Code Section 10632(a)(7):

1. Water Code Section Division 1, Section 350 - Declaration of a water shortage emergency condition.

The governing body of the Crestline Village Water District shall declare a water shortage emergency condition to prevail within the area served by the Crestline Village Water District whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the Crestline Village Water District to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

2. California Government Code, California Emergency Services Act (Article 2, Section 8558).

The Crestline Village Water District shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency.

The following is a list of contacts at the county for which the District provides service that can be used in the event of a local emergency as defined in subpart (c) of Gov. Code Section 8558:

- a. San Bernardino County, Office of Emergency Services (909) 356-3998
- b. San Bernardino County Sheriff's Department, Twin Peaks (909) 336-0600
- c. San Bernardino County Fire Department (909) 387-5974

8.8 FINANCIAL CONSEQUENCES OF THE WSCP

The CVWD water rate schedule consists of two parts: first, a flat Monthly Minimum Charge based on the size of the meter; and second, a quantity rate based on a two-tier rate structure of a Basic Allocation Rate and Excess Consumption Rate which are determined by the declared water conservation phase. Most of the residences in the District have a 5/8 x 3/4 inch meter, but some meters can be as large as 3 or 4 inches (Minutes 20.06.16). The basic allocations by water conservation phase, the basic allocation rate, and excess consumption surcharge according to CVWD Resolution No. 460 are shown in **Table 8C**.

Table 8C: CVWD Quantity Rate Structure

Water Conservation Phase	Basic Allocation per Month (CF) ⁽¹⁾	Basic Allocation Rate per Month (per 100 CF) ⁽²⁾	Excess Consumption Surcharge⁽²⁾ (per 100 CF)
Phase 1 / 1.a	1,300	\$5.10	\$7.65
Phase II	1,200		\$10.20
Phase III	1,100		\$12.75
Phase IV	900		\$15.30
Phase V	800		\$17.85
Phase VI	700		\$20.40

Source: CVWD Ord. No. 460, adopted June 16, 2020. Please check website for current adopted rate structure (<https://www.crestlinevillagewaterca.gov/>).

Monthly minimum charge based on meter size is not shown. CF: cubic feet.

(1) Exceptions to Basic Allocation may be granted for reasons outlined in CVWD Ord. No. 35.

(2) Also applicable to commercial fire services. Increases to \$7.65 per 100 CF for 1,301 CF or greater.

The revenues collected by the District because of consumer use in excess of the basic allocation, and the charges added to consumer bills as a result of enforcement actions by the District, are deposited into the operating fund. This reimburses the District's costs and expenses of administration and enforcement of the Water Conservation Program (Ordinance 35), and provides funding to promote, encourage, and implement water conservation programs.

CVWD does not have a written Reserve Policy that specifically addresses revenue fluctuations from water conservation. The total District reserves are currently about 74 percent of the Operating Budget and includes a reserve for purchased water, reserve for future improvements, contingency, and minimum emergency reserve. The "Reserve for Purchased Water" fund of up to \$700,000 helps balance the fluctuations of purchased water from year to year. The reserve builds in wet years and is used in dry years. While the Reserve for Purchased Water is not specifically designed to compensate for fluctuations in water use, it has helped to balance the budget during drought and water conservation efforts.

8.8.1 Financial Impacts and Mitigation Action

During a drought emergency, the District is required to prohibit excessive water use pursuant to Water Code Section 365 et al. Reporting the actions undertaken by the District to do so does not need to be reported in this WSCP; however, reporting the cost of compliance with Section 365 et al. is a required component of this WSCP, pursuant to Water Code Section 10632(a)(8)(C).

For reference, Water Code Section 367 states there are three types of drought emergencies: (1) declared statewide drought emergency; (2) suppliers move to a local stage of requiring mandatory reductions (as part of the WSCP); and (3) declared local drought emergency. During any one of these three types of drought emergencies, Water Code Section 366 states that excessive water use must be prohibited by using either a rate structure or an excessive water use ordinance.

CVWD prohibits water waste at all times, including declared statewide and local drought emergencies. As described previously, the District's rate structure includes an excessive water use surcharge. Violations of water use restrictions are subject to the penalties described in District ordinances and Administrative Code. Revenue collected from penalties issued related to water waste support the District expenses to monitor water use. The District's costs associated with prohibiting excessive water use during a drought emergency are rolled into various operating expenses depending on the staff involved and response actions required. Said expenses include activities like staff effort to announce the drought declaration and conveying expectations to the customers, staff effort to respond to reports of water waste and leaks, and staff effort to enforce penalties.

8.9 MONITORING AND REPORTING

The District will monitor and report on implementation of this WSCP based on key water use metrics to meet state reporting requirements. The District monitors all activities in the water distribution system through a dynamic System Control and Data Acquisition (SCADA) system. The District will continue to monitor and contact high water users and investigate potential leaks. Staff will continue to monitor the system daily and weekly. Reports are provided monthly to the Board of Directors as to the status of water supplies and water demands. At such time

the State Water Board provides the regulations for monthly reporting along with associated enforcement metrics, these will be reviewed and incorporated herein as appropriate.

8.10 REFINEMENT PROCEDURES

Water Code Section 10632(a)(10) requires a description of how this WSCP will be reevaluated and improved upon to ensure water shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.

The WSCP will be periodically reevaluated to ensure that its shortage response actions are effective and up-to-date based on lessons learned from implementing the WSCP. The plan will be revised and updated during the UWMP five-year cycle to incorporate new information. For example, new demand reduction and/or supply augmentation actions may be added. If significant revisions are warranted, then the WSCP will be updated outside of the UWMP five-year update cycle. In the course of preparing the forthcoming Annual Assessments each year, CVWD staff can routinely analyze the functionality of the WSCP and prepare recommendations to modify the WSCP to the Board of Directors for the purpose of improving effectiveness in meeting the intent and goals of the WSCP.

8.11 SPECIAL WATER FEATURE DISTINCTION

Pursuant to Water Code Section 10632(b), water features that are not for human recreation are analyzed and defined separately from swimming pools and spas.

8.11.1 Non-Swimming Pool and Non-Spa Water Features

Water features that are not used for the purpose of human recreation are referred to as “decorative fountains, decorative lakes or ponds” in CVWD Ordinance No. 35. Beginning in Phase I.a, potable water may not be used for such features except where the water is part of a recirculating system. At Phase III, potable water is prohibited from use in these features. Water waste that is found to be related to such features may be enforced pursuant to the penalties in CVWD Ordinance No. 35. Said water waste can be reported to the District by the public and addressed by staff while in the field. The District can also spot a malfunctioning meter or water waste through its AMR system.

8.11.2 Swimming Pools and Spas

Swimming pools and spas that are intended for human recreation must use potable water for health and safety considerations. According to CVWD Ordinance 35, during water conservation Phase III, potable water is prohibited from use to fill pools or spas. Water waste that is found to be related to pools and spas may be enforced pursuant to the penalties in CVWD Ordinance No. 35. Said water waste can be reported to the District by email or phone, as well as by staff. The District can also spot a malfunctioning meter or water waste through its AMR system. Additional demand reduction actions that are triggered during declared droughts can be developed to address swimming pools and spas and incorporated herein during the next update to the WSCP.

8.12 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

The following are the steps to adopt, submit, implement, and amend the WSCP. The WSCP may be amended independently of the UWMP, as needed.

8.12.1 WSCP Adoption or Amendment

To adopt a WSCP or amend an adopted WSCP, the District will provide two required notices to customers and each city and county within which it provides service: (1) notice of a public hearing at least 60 days prior to the public hearing stating that the WSCP is being reviewed and adoption (or amendment) of the WSCP is being considered; (2) notice of the time and place of the public hearing including where the draft document is available for public viewing. Per Government Code Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1, the District must hold the public hearing consistent with the Dymally-Alatorre Bilingual Services Act. Determination of whether language assistance is needed is at the discretion of the District (per Gov. Code Section 7293). The District shall also place the notice containing the date and location of the public hearing and location of where the plan is available for public viewing in a newspaper once a week for two successive weeks (per Gov. Code Section 6066).

The public hearing for the WSCP may take place at the same meeting as the adoption hearing of the Board of Directors; however, the meeting agenda must include the public hearing as an agenda item. Before the District can submit the WSCP to DWR, the Board of Directors must formally adopt the WSCP. The adoption resolution should be included with the WSCP, either

as an attachment or Web address where it can be found online. A copy of the adoption resolution is included in **Appendix A**.

8.12.2 WSCP Submittal and Availability

The WSCP (or amended WSCP) must be submitted to DWR within 30 days of adoption. Submittal must be done electronically using the Water Use Efficiency (WUE) data online submittal tool located online at: <https://wuedata.water.ca.gov/>. Within 30 days of submitting the adopted WSCP to DWR, the District must make the plan available for public review during normal business hours. This can be accomplished by placing a hardcopy at the front desk or by posting copies on the District Web site.

The WSCP (or amended WSCP) must also be submitted to the California State Library within 30 days of adoption. Submittal must be done via compact disc (CD) or hardcopy and mailed to:

California State Library
Government Publications Section
Attn: Coordinator, Urban Water Management Plans
P.O. Box 942837
Sacramento, CA 94237-0001

(If delivered by courier or overnight carrier, the street address should be used instead: 900 N Street, Sacramento, CA 95814.)

The WSCP (or amended WSCP) must also be submitted to each city or county to which the District provides water within 30 days of adoption. It may be submitted in an electronic format. Proof of required submittals are provided in **Appendix I**.

CHAPTER 9 DEMAND MANAGEMENT MEASURES

This chapter describes the water conservation programs that CVWD has implemented, is currently implementing, and plans to implement in the future to meet future urban water use reduction targets. Demand management is an integral part of water resources management. Because the demand for water tends to increase as communities grow and available water supplies can change over time, having water-use demand management measures (DMMs) that help lower demands for water can improve water service reliability.

9.1 DEMAND MANAGEMENT MEASURES FOR RETAIL AGENCIES

Pursuant to the Water Code, seven DMMs are described in this chapter. Each DMM description below includes how the measure has been implemented over the past five years, and how future projects will help the District to meet future water use targets (CWC §10631(1)(B)):

1. Water waste prevention ordinances;
2. Metering;
3. Conservation pricing;
4. Public education and outreach;
5. Programs to assess and manage distribution system real loss;
6. Water conservation program coordination and staffing support; and
7. Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovating measures, if implemented.

9.1.1 Water Waste Prevention Ordinances

Conservation of water supplies has been a priority of the District for decades. The CVWD Board of Directors adopted a Water Waste Prohibition in Resolution No. 200 on March 11, 1982. This Resolution is still in effect today and reads, in part:

No customer shall knowingly permit leaks or waste of water. Where water is wastefully or negligently used on a customer's premises, and such waste seriously affects the general service, the District may discontinue the service if

such conditions are not corrected within five days after giving the customer written notice.

In 1991, the CVWD Board of Directors adopted Ordinance No. 29 containing the District's first Water Conservation Program. The program has since been modified by Ordinance No. 30, in 1992, codified by Ordinance No. 32 in 1998, and updated by Ordinance No. 35 to include the State Water Board's Resolution No. 2014-0038 (Emergency Regulation for Statewide Urban Water Conservation). CVWD Ordinance No. 35 was adopted by the CVWD Board of Directors on August 19, 2014, effective September 1, 2014. The adoption of Ordinance No. 35 was accompanied by the adoption of CVWD Resolution No. 414 to move the District from water conservation program Phase I to Phase I.a, and thus began requiring a 5-percent reduction in water use. Subsequently, CVWD adopted Resolution No. 421 on April 21, 2015 to supplement Resolution No. 414 with the State Water Board's March 2015 Drought Emergency Water Conservation Regulations. On June 16, 2020, the District adopted Resolution No. 460 (Adopting a New Water Rate Schedule) which moved the water conservation program from Phase 1.a. back to Phase 1. On May 17, 2022, the District adopted Resolution No. 490 to revert the water conservation phase to Phase 1.a. Therefore, the District is currently in water conservation Phase 1.a. Copies of Ordinance No. 35 and Resolution No. 490 are in **Appendix H**.

The CVWD Water Conservation Program outlines a seven-phase program to reduce water use. These seven stages range from the most restrictive stage, Phase 6, to the least restrictive stage, Phase 1. The stages reflect increasing levels of prohibitions and consumption reduction methods. The District monitors and evaluates projected water supply and demand for its customers to determine the appropriate phase of water use reduction to be implemented. Phase changes are passed by resolution, and notification is sent via mail to affected customers. Each phase remains in effect until a different phase is initiated and made effective.

The Board of Directors of CLAWA adopted Ordinance No. 59 (Declaring a Water Shortage Emergency and Adopting Rules, Regulations, and Restrictions on the use of Agency Water) on April 3, 2014. Ordinance No. 59 prohibits the waste of water and describes a five-stage water supply allocation plan for CLAWA's wholesale customers that CLAWA could enact at its discretion during a water shortage emergency. Because the District's supplies from CLAWA

may be affected should an allocation plan be enacted, a copy of Ordinance No. 59 is included in **Appendix H**.

➤ **Implementation Over the Past Five Years**

The CVWD water conservation phase was changed from Phase I to Phase 1.a with adoption of Resolution No. 490 on May 17, 2022. CLAWA Ordinance No. 59 has not changed in the past five years. Since 2020, CVWD has actively pursued incidents of water waste, which are investigated by staff and depending on the nature of the situation, are noticed to the property owner, repaired, or disconnected in cases of excessive leakage.

➤ **Planned Implementation to Achieve Water Use Targets**

District staff will continue to respond to incidents of water waste and encourage water conservation in the community. Based on experience with implementing the water conservation ordinances, and future regulations from the State, District staff may make recommendations to the Board of Directors when appropriate to modify or amend the existing water conservation ordinance to improve its effectiveness.

9.1.2 Metering

Beginning in the early 1990s, the District significantly reduced water loss by conducting annual pipeline replacement projects. With incorporation of the District's advanced metering infrastructure (AMI) system beginning in 2011 (detailed below), CVWD can quickly (within 24 hours of a consistently running meter) identify customers that may have leaks, breaks, or other irregular water use situations.

Water losses increased dramatically in 2019 and then began to recede in 2020 and are continuing to recede. Starting in late 2019, the District transitioned between its former customer management software and server to a new Tyler system and server. This transition was particularly difficult because the reports used to preemptively identify leaks were damaged and unable to run for more than six months. This led to a number of unbilled accounts stretching into 2021, and some billed at the wrong rates. Field crews worked through spring 2021 re-certifying the programming on every District meter currently installed and updating the

software. This system transition was also complicated by the interaction between both the AMI and Tyler software, which was finalized in spring 2021.

Widespread failure of District meter transmission units (MTUs) occurred in 2020, due to battery life failing on older units. Since units were installed in a single phase, they all began to fail in order. This resulted in meters not reading, some for months on end. Because of this, the amount of meter maintenance and repair in the District was unusually high through all of 2020 and into 2021. The final MTU replacements were completed in April 2021.

CVWD is fully metered and undertook an impressive smart metering effort in 2011. The District replaced all of its customer meters with Neptune meters, which are part of an Aclara Fixed Network Advanced Metering Infrastructure (AMI) to better monitor water usage throughout the service area. The AMI system relies on data collection units installed throughout the system to process and store diagnostic information and data, which is then transmitted to CVWD's network control computer for further processing. The AMI system can automatically and remotely measure water use, detect tampering, identify any potential water leaks, and connect and disconnect service quickly and efficiently. The system can be combined with customer technologies, such as in-home displays and programmable communicating thermostats. The largest benefit for the District has been targeting water waste with notifications of potential water leaks.

➤ **Implementation Over the Past Five Years**

Over the past five years, the District ensured that all connections are metered and connected to the AMI system, with the final MTU replacements completed in April 2021.

➤ **Planned Implementation to Achieve Water Use Targets**

The District has been awarded a \$1 million grant from the U.S. Department of Housing and Urban Development (HUD) to replace all meter registers. CVWD will continue to use the AMI system and improve software and features as needed. The District has budgeted ongoing meter maintenance and repair efforts for. With this system, the District will be able to conduct long-term analysis of water use trends throughout the service area.

9.1.3 Conservation Pricing

Conservation pricing incentivizes customers regarding their water use. For example, the rates might be tiered at progressively higher prices to encourage efficient water use. Like a water waste ordinance, a conservation pricing structure is always in place and is not dependent upon a water shortage for implementation.

The CVWD water rate schedule consists of two parts: first, a flat Monthly Minimum Charge based on the size of the meter; and second, a quantity rate based on a two-tier rate structure of a Basic Allocation Rate and Excess Consumption Rate, which are determined by the declared water conservation phase. Most of the residences in the District have a 5/8 x 3/4 inch meter, but some meters can be as large as 3 or 4 inches (Minutes 20.06.16)

➤ Implementation Over the Past Five Years

On June 16, 2020, the District adopted Resolution No. 460 (Adopting a New Water Rate Schedule) which increased the Monthly Minimum Charge and Basic Allocation. A copy of Resolution No. 460 is included in **Appendix H**. Pursuant to Resolution No. 460, the Monthly Minimum Charge increased by \$5.00 for all meter sizes over a five-year period. The Basic Allocation Rate will increase to \$5.10 per one hundred cubic feet (CCF) of water for the 0-1,300 CF consumption range effective July 1, 2020. The Excess Consumption Rate will also increase to \$7.65 per 100 CF at 1,301 CF or greater. Use in excess of the Basic Allocation is charged a surcharge (Excess Consumption Rate), which also changes with the current water conservation Phase, as shown in **Table 9A**.

Table 9A: CVWD Quantity Rate Structure

Phase	Basic Allocation per Month (CF)	Basic Allocation Rate (per 100 CF) ⁽¹⁾	Excess Consumption Surcharge (per 100 CF)
Phase I / Phase I.a.	1,300	\$5.10	1.5 x Basic Rate
Phase II	1,200		2 x Basic Rate
Phase III	1,100		2.5 x Basic Rate
Phase IV	900		3 x Basic Rate
Phase V	800		3.5 x Basic Rate
Phase VI	700		4 x Basic Rate

Notes: CF = cubic feet;.

(1) Basic Allocation is 0 to 1,300 CF. Quantity rate increases from \$5.10 per 100 CF to \$7.65 per 100 CF when in excess of 1,300 CF (from CVWD Res. No. 460). Please refer to the website for current adopted rate structure

(<https://www.crestlinevillagewaterca.gov/>).

Based on how the Basic Allocation Rate and Excess Consumption Surcharge are structured, some level of conservation pricing structure is always in effect regardless of drought conditions. In addition, as described in Chapter 8, if the CVWD Board determines that water use reductions are necessary, they can vote to change the water conservation phase, which has the effect of decreasing the monthly allocation to each customer and increasing the surcharges for exceeding the allocation. For example, at the highest water conservation level Phase VI, each customer would receive an allocation of 700 CF per month, and be charged a surcharge of 4.0 times the basic rate ($\$7.65 \times 4 = \30.60 per 100 CF) for any monthly water use exceeding this allocation.

➤ **Planned Implementation to Achieve Future to Achieve Water Use Targets**

The District is considering a new water rate study and will continue to periodically review its water rates and will consider rate increases as necessary.

9.1.4 Public Education and Outreach

CVWD has very limited staff and serves a relatively small and tight-knit community; therefore, its public education and outreach is limited. CVWD offers residential surveys to customers to

identify potential water waste in the home, and to connect customers with resources to repair inefficient appliances or change wasteful habits. CVWD also provides a similar program for large commercial users, involving site visits, evaluation of all water-using apparatuses and processes, and a customer report identifying recommended efficiency measures, paybacks, and agency incentives. The District does not offer a formal school education program; however, it has provided speakers to various classes and groups upon request.

➤ **Implementation Over the Past Five Years**

CVWD published a handout titled, “A Landscape Guide for Mountain Homes,” which is available at the District headquarters. Monthly water bills contain messages on water conservation strategies and show previous water usage to educate and encourage customers to reduce water use. Additionally, the District’s Web site directs customers to other resources that promote water wise use such as H2ouse.org, saveourwater.com, the District’s Water Conservation Program, and the bewaterwise.com Web site sponsored by The Metropolitan Water District of Southern California.

➤ **Planned Implementation to Achieve Water Use Targets**

In terms of public education and outreach for water conservation, CVWD’s efforts have been effective, as evident in the water reduction that has occurred as described in Chapter 5. CVWD hopes to grow its outreach to the community and will continue to communicate to its customers the message of conservation and wise water use through billing notices, the CVWD Website, social media, and community outlets.

9.1.5 Programs to Assess and Manage Distribution System Real Loss

Since 2015, the District has performed an annual Water Loss Audit; copies of the most recent validated losses submitted to DWR are provided in **Appendix F**. The District is fully metered with an AMI system that allows the District to detect and respond to system leaks within 24 hours. The AMI system also facilitates data collection and analysis, allowing the District to better understand water waste and loss throughout the system. The District also conducts annual pipeline replacement projects.

➤ **Implementation Over the Past Five Years**

The meter and main repairs performed by CVWD for the past five years are detailed in **Table 9B**, as evidence of the ongoing efforts to repair leaks and minimize water loss.

Table 9B: CVWD Repairs, 2021-2025

Year	Service Connection (Meter) Breaks or Leaks	Main Breaks or Leaks
2021	36	5
2022	49	9
2023	28	9
2024	26	9
2025	28	3

Source: Annual Report to the Division of Drinking Water for the Years Ending December 31, 2021-2025

➤ **Planned Implementation to Achieve Water Use Targets**

CVWD budgets for annual waterline replacement projects, tank inspections/repairs, meter replacements and upgrades, as needed. The District will continue preparing water loss audits and taking into consideration the recommendations of the audit validator to improve system losses.

Staff will continue to check for leaks in several ways including the AMI system, SCADA, and visually. The District will respond to reports from the public to perform repairs quickly. Staff will continue to monitor the AMI system, as well as consumption and production data to detect a spike in loss and respond accordingly.

9.1.6 Water Conservation Program Coordination and Staffing Support

The CVWD General Manager, Thomas G. Weddle Jr., is CVWD's Conservation Coordinator. He dedicates approximately 5 percent of his time to performing these duties. He can be reached at: 909-338-1727 or tweddle@crestlinevillagewaterca.gov. Additional staff support may be provided on an as-needed basis, budget permitting.

➤ **Implementation Over the Past Five Years**

Over the past five years, the District has communicated effectively to its customers on topics such as water conservation and emergency regulations. Water conservation efforts have been incorporated into the overall work of both the Conservation Coordinator (aka General Manager) and staff members.

➤ **Planned Implementation to Achieve Water Use Targets**

CVWD will continue offering information to customers and speaking engagements as requested. Likewise, the District may investigate participation in grant or rebate programs. CVWD continues to submit annual and monthly reports to the State Water Board and DWR on water usage, amount of conservation achieved, and any enforcement efforts. CVWD will review future State requirements and continue reporting to the State, until determined otherwise.

9.1.7 Other Demand Management Measures

CVWD does not have other DMMs that have a significant impact on water use to report.

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CHAPTER 10 PLAN, ADOPTION, SUBMITTAL, & IMPLEMENTATION

This chapter provides guidance to address the Water Code requirements for a public hearing, the UWMP adoption process, submitting an adopted Plan to DWR, Plan implementation, and the process for amending an adopted Plan.

Beginning in 2020, the Water Code requires that the Water Shortage Contingency Plan (WSCP) must have the same process for public hearing, adoption, submittal, and amendments as the UWMP.

10.1 INCLUSION OF ALL 2020 DATA

The Water Code requires current year water use and planning data to be included in the UWMP. Since CVWD is reporting on a calendar year basis, this UWMP and WSCP includes data through calendar year 2025 (January 1 through December 31). As such, this UWMP and the WSCP could not be completed until after the end of calendar year 2025.

10.2 NOTICE OF PUBLIC HEARING

Water Code requires that a public hearing must be held by the District prior to adopting the UWMP and/or WSCP. All public input shall be considered by the Board of Directors. There are two audiences within the service area that are required to be noticed for the public hearing: cities and counties, and the general public.

10.2.1 Notice to Cities and Counties

60-Day Notification

All cities and counties within which the District provides water supplies must be notified that the District will be reviewing the UWMP and considering amendments or changes to the Plan. This notice must be sent at least 60 days prior to the public hearing. Since CVWD does not serve a City, the first notice was sent to San Bernardino County on April 7, 2026. Copies of all notifications are located in **Appendix D**. (CWC § 10621(b) and §10642)

Notice of Public Hearing

The District delivered a second notice to the county and interested entities on May 12, 2026, to affirm the date, time, and place of the public hearing. The notice also reaffirmed that the Draft UWMP and Draft WSCP would be publicly available for viewing at the District Web site (<http://www.cvwwater.com/>) and a printed hardcopy at the District Headquarters no less than two weeks prior to the public hearing. The draft documents were posted on the District Web site and the District Headquarters beginning on June 1, 2026. Copies of all notifications are located in **Appendix D**. Notifications to the county within the District service area are listed in **Submittal Table 10-1** to confirm delivery of a 60-day notice and notice of public hearing.

Submittal Table 10-1: Notification to Cities and Counties

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

In addition to the county, CVWD also notified the following list of interested agencies and community organizations:

- Alpine Water Users Association
- Arrowbear Park County Water District
- Cedarpines Park Mutual Water Company
- County of San Bernardino Land Use Services Department
- Crestline-Lake Arrowhead Water Agency
- Crestline/Lake Gregory Chamber of Commerce
- Crestline Sanitation District
- Division of Drinking Water, San Bernardino District
- Lahontan Regional Water Quality Control Board
- Lake Arrowhead Community Services District
- Mojave Water Agency
- Rim of the World Recreation & Park District
- Rim of the World Unified School District
- Running Springs Water District
- San Bernardino County Fire

- Santa Ana Regional Water Quality Control Board
- Santa Ana Watershed Project Authority
- Save Our Forest Association
- Sierra Club, Big Bear Group
- Strawberry Lodge Mutual Water Company
- U.S. Department of Agriculture Forest Service
- Valley of Enchantment Mutual Water Company
- Valley View Park Mutual Water Company

Notice to the Public

The public was notified of the public hearing and availability to review the draft UWMP and draft WSCP in the local newspaper (*The Alpine Mountaineer News*) once a week for two successive weeks pursuant to Government Code 6066. The first notice appeared on June 4, 2026, and the second appeared on June 11, 2026. The District also placed notifications on their Web site. CVWD provided a public draft of the UWMP and the WSCP at their offices located at 777 Cottonwood Drive and on their Website, <http://www.cvwater.com/> beginning June 1, 2026. Copies of all notifications are located in **Appendix D**.

10.3 PUBLIC HEARING AND ADOPTION

Pursuant to the Water Code, the CVWD Board of Directors held a public hearing on June 16, 2026, to receive public comment on the draft UWMP and the draft WSCP (CWC §10608.26(a)). The public hearing was included as an agenda item, which is included in **Appendix A**. The public hearing considered the draft WSCP first, followed by the draft UWMP.

10.3.1 Document Adoption

The 2025 UWMP and WSCP were adopted by the CVWD Board of Directors on June 16, 2026 following a public hearing held prior to the adoption vote, which gave CVWD the opportunity to modify the UWMP in response to public input prior to adoption. Copies of the CVWD adoption resolutions are included in **Appendix A**.

10.4 PLAN SUBMITTAL

10.4.1 Document Submittal to DWR

The UWMP including the WSCP, must be submitted to DWR within 30 days of adoption and by July 1, 2026 (CWC §10621(e)). Document submittal to DWR is done electronically through

WUEdata. After the UWMP and WSCP are submitted, DWR will review the plan utilizing the checklist provided in **Appendix B** and decide as to whether or not the documents address the requirements of the Water Code. The DWR reviewer will contact CVWD as needed during the review process. Upon completion of the Plan review, DWR will issue a letter to the District with results of the review.

10.4.2 Electronic Data Submittal

The adopted documents and required submittal tables were submitted to DWR using DWR's WUEdata online submittal tool. The WUEdata online submittal tool is online at <https://wuedata.water.ca.gov.secure/>.

10.4.3 Submitting a UWMP to the California State Library

No later than 30 days after adoption, CVWD shall submit a CD or hardcopy of the adopted 2020 UWMP, including the adopted WSCP, to California State Library at:

California State Library
Government Publications Section
Attention: Coordinator, Urban Water Management Plans
P.O. Box 942837
Sacramento, CA 94237-0001

Or by courier or overnight carrier to the State Library at:

California State Library
Government Publications Section
Attention: Coordinator, Urban Water Management Plans
914 Capitol Mall
Sacramento, CA 95814

Proof of submittal to the California State Library is provided in **Appendix I**.

10.4.4 Submitting a UWMP to Cities and Counties

No later than 30 days after adoption of the 2026 UWMP, including the WSCP, the District shall submit a hard or electronic copy of the documents to San Bernardino County (CWC §10635(c)). Proof of submittal to San Bernardino County is provided in **Appendix I**.

10.5 PUBLIC AVAILABILITY

The adopted 2026 UWMP, including the WSCP, are available for public review at CVWD Headquarters, located at 777 Cottonwood Drive, Crestline, CA 92325-3347 during normal business hours, Monday through Friday, 7:30 AM to 4:30 PM. In addition, a copy of the adopted UWMP can be found on CVWD's Web site, <http://www.cvwater.com/> for public viewing anytime (CWC § 10645(a) and 10645(b)). Proof of the UWMP's public availability is provided in **Appendix I**.

10.6 NOTIFICATION TO PUBLIC UTILITIES COMMISSION

Pursuant to Water Code, those water suppliers that are regulated by the California Public Utilities Commission (CPUC) must submit their UWMP and WSCP to the CPUC as part of its general rate case filings. Because CVWD is not regulated by the CPUC, the District will not be submitting their documents to the CPUC (CWC §10621(c)).

10.7 AMENDING AN ADOPTED UWMP

If CVWD decides to amend the adopted 2020 UWMP, each of the steps for notification, public hearing, adoption, and submittal must also be followed for the amended plan. This includes providing copies of amendments or changes to the plan to DWR, California State Library, and any city or county within which the supplier provides water within 30 days of adoption. (CWC §10644(a)(1))

10.7.1 Amending a Water Shortage Contingency Plan

If CVWD decides to revise the adopted WSCP after DWR approves the 2025 UWMP, then CVWD must submit to DWR an electronic copy through the WUE Data Portal of its revised WSCP within 30 days of its adoption. (CWC § 10644(b))

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Basin Plan	Lahontan Regional Water Quality Control Board. <i>Water Quality Control Plan (Basin Plan) for North and South Basins</i> . Effective March 31, 1995, including amendments effective Aug. 1995 through Oct. 29, 2019.
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ERP	Crestline Village Water District. <i>Water System Emergency Response Plan (ERP)</i> . September 16, 2022.
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Chapter 9	
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APPENDIX

APPENDIX A	Resolutions
APPENDIX B	Checklist
APPENDIX C	Coordination
APPENDIX D	Notices
APPENDIX E	Climate Change Technical Memo
APPENDIX F	Water Loss Audits
APPENDIX G	Consumer Confidence Reports
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APPENDIX I	Plan Submittals

APPENDIX A

CRESTLINE VILLAGE WATER DISTRICT

A G E N D A
REGULAR MEETING

June 16, 2026

A Regular Meeting of the Board of Directors will be held on Tuesday, June 16, 2026, at 3:00 PM, at the office of the District, located at 777 Cottonwood Drive in Crestline, California.

CALL TO ORDER AND FLAG SALUTE

APPROVAL OF MINUTES: May 2026 *

APPROVAL OF CASH DISBURSEMENTS: May 2026 *

MONTHLY FINANCIALS AND INVESTMENT REPORTS: May 2026

PUBLIC COMMENTS:

PUBLIC HEARING:

1. Review of 2025 Water Shortage Contingency Plan. *
2. Review of 2025 Urban Water Management Plan. *

REGULAR SESSION:

1. Consider Adopting Resolution No. 516; Adoption of 2025 Urban Water Management Plan. * 517
2. Consider Adopting Resolution No. 517; Adoption of 2025 Water Shortage Contingency Plan. * 516
3. Consider Adopting Budget for Fiscal Year 2026 - 2027. *
4. Consider Adopting Resolution 518, Intention to Increase Water Rates, Setting a Public Hearing Date and Directing Staff to Proceed with Mailing Notices to all Property Owners and Water Customers in the District. *
5. Consider Adopting Investment Policy for Fiscal Year 2026 – 2027. *
6. Consider Attendance at the CSDA Annual Conference; August 24 – 27, 2026, Palm Desert. *

EXECUTIVE SESSION:

1. CONFERENCE WITH LEGAL COUNSEL—ANTICIPATED LITIGATION

Significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Section 54956.9: (McPartland Claim)

REGULAR SESSION:

7. Consider rejection or allowance of the McPartland Claim. *

MANAGER'S REPORT:

MONTHLY WATER PRODUCTION REPORTS:

DIRECTORS' REPORTS:

1. Director's Report.
2. Requests for Future Agenda Items.
3. Staff Items: Compliment to Andrew Watts and Michael Casas.

NEXT SCHEDULED BOARD MEETING: Tuesday, June 16, 2026, at 3:00 PM.

RESOLUTION NO. 516

RESOLUTION OF THE BOARD OF DIRECTORS OF CRESTLINE VILLAGE WATER DISTRICT ADOPTING THE 2025 WATER SHORTAGE CONTINGENCY PLAN.

WHEREAS, the Urban Water Management Planning Act requires urban water suppliers providing water for municipal purposes to more than 3,000 customers to prepare and adopt, in accordance with prescribed requirements, a water shortage contingency plan; and

WHEREAS, the Urban Water Management Planning Act specifies the requirements and procedures for adopting such Water Shortage Contingency Plans; and

WHEREAS, the Board of Directors of Crestline Village Water District has duly reviewed, discussed, and considered such Water Shortage Contingency Plan and has determined the Water Shortage Contingency Plan to be consistent with the Urban Water Management Planning Act and to be an accurate representation of the planned actions during shortage conditions for Crestline Village Water District.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of Crestline Village Water District hereby approves and adopts the Water Shortage Contingency Plan, as presented to the Board; and

The Board of Directors authorizes the General Manager to incorporate comments from the public hearing as approved by the Board of Directors; and

That the General Manager is authorized and directed to submit a copy of the adopted Water Shortage Contingency Plan, as part of the 2025 Urban Water management Plan in Section 8, to the Department of Water Resources by July 1, 2026, as required by Section 10621 of the

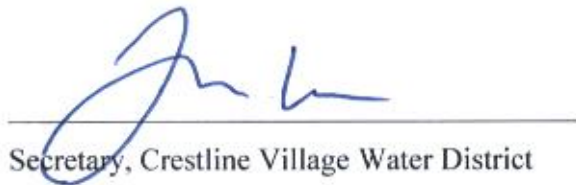
California Water Code, and the California State Library, and the County of San Bernardino within 30 days of its adoption, as required by Section 10644 of the California Water Code.

Dated: June 16, 2026

A handwritten signature in blue ink, appearing to read "Ken C. Snel", written over a horizontal line.

President, Crestline Village Water District

ATTEST:

A handwritten signature in blue ink, appearing to read "John L.", written over a horizontal line.

Secretary, Crestline Village Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, THOMAS G. WEDDLE, JR, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 16th day of June, 2026, and that it was adopted by the following roll call vote:

AYES: Directors Barrera, Brister, Farrell, Hubbell and Stone
NOES: None
ABSENT: None
ABSTAINED: None


Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, Thomas Weddle, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 516 of said Board, and that the same has not been amended or repealed.

DATED: 6/16/26


Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

RESOLUTION NO. 517

**RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESTLINE VILLAGE WATER DISTRICT ADOPTING
THE 2025 URBAN WATER MANAGEMENT PLAN.**

WHEREAS, the District is an urban water supplier providing water to more than 3,000 customers in the Crestline area of the San Bernardino Mountains; and

WHEREAS, in accordance with the Urban Water Management Planning Act (Water Code Sections 10610 *et seq.*), the District desires to update its existing Urban Water Management Plan by preparing a new Urban Water Management Plan (the "Plan") and the District desires to file that Plan with the California Department of Water Resources; and

WHEREAS, the District has made the Plan available for public review and, in compliance with the Urban Water Management Planning Act, the District has properly noticed and held a public hearing to discuss the Plan.

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

Section 1. The District hereby adopts the Urban Water Management Plan dated June 2026 and attached hereto as Exhibit "A". The District's Urban Water Management Plan, dated June 2021 and any and all previously adopted Urban Water Management Plans or portions thereof are hereby repealed and replaced by the Plan dated June 16, 2026.

Section 2. Pursuant to Water Code Section 10621, the District Secretary is hereby authorized and directed to file a copy of the District's Urban Water Management Plan with the California Department of Water Resources.

Section 3. The District General Manager, or his designee, is hereby authorized to implement the Urban Water Management Plan.

Section 4. In accordance with Water Code Section 10652, the District finds that adoption and implementation of the Urban Water Management Plan is statutorily exempt from the provisions of the California Environmental Quality Act (Public Resources Code Sections 21000 *et seq.*).

Dated: June 16, 2026



President, Crestline Village Water District

ATTEST:



Secretary, Crestline Village Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, THOMAS G. WEDDLE, JR., Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 16th day of June, 2026, and that it was adopted by the following roll call vote:

AYES: Directors Barrera, Stone, Brister, Farrell, and Hubbell
NOES: None
ABSENT: None
ABSTAINED: None


Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, THOMAS G. Weddle, Jr., Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 517 of said Board, and that the same has not been amended or repealed.

DATED: 6/16/26


Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

APPENDIX B

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	1	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	n/a	Source of Supply: Section 6.1-6.4; Uses: Section 4.1; Reclamation: Section 6.5; Demand Management Activities: Section 9.1.
x	1	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.	Plan preparation	n/a	Section 1.2
x	2.1	Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Chapter 2
x	2.5	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	Chapter 2: Submittal Table 2-1
x	2.5	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Chapter 2: Submittal Table 2-2
x	2.5	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	Chapter 2: Submittal Table 2-3
x	2.4	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	n/a	Section 2.2, Section 10.2.1, and Appendix D
x	2.4	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	Section 2.2
x	2.4	Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Section 2.1, Appendix C
n/a	2.4	Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	Section 2.1
x	3	Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	n/a	Section 3.1-3.2
x	3.3	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Section 3.3
x	3.4	Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	Section 3.4.1, Submittal Table 3-1
x	3.4	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Section 3.4.2
x	3.5	Section 3.5	10631(a)	Describe the land uses within the service area... include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Section 3.5
x	4.2	Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	Section 4.1 - 4.2
x	4.3	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	Section 4.3
x	4.3	Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Section 4.3.1
x	4.2	Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	Section 4.2
x	4.2	Section 4.2.5.3	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	4-3	Section 4.2; Submittal Table 4-3
x	4.2	Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	N/A because they were not included; Submittal Table 4-3
x	4.2	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall... Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3	Section 4.2, Submittal Table 4-3
x	4.2	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Section 7.3.1
n/a	5.1	Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	Section 5.1
x	5.2	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	Section 5.2, Submittal Table 5-1
x	6.1	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	n/a	Chapter 6
x	6.1	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, including changes in supply due to climate change.	System supplies	n/a	Section 7.2
x	6.2	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Section 6.2
x	6.2	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	Section 6.2.2
x	6.2	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	Section 6.2
x	6.2	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	n/a	Section 3.2.2
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins... (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin...	Water supplies and recycled water	n/a	N/A Fractured Rock
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins... describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	N/A Fractured Rock

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	6.2	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	Section 6.2
x	6.2	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	6-9	Section 6.2.4; Submittal Tables 6-7 and 6-8
x	6.1	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	Existing sources of water: Submittal Table 6-8; Planned sources of water: Submittal Table 6-9.
x	6.2	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	n/a	Section 6.7
x	6.2	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)	6-2	Section 6.5
x	6.2	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)	6-3	Section 6.5.1 to 6.5.2
x	6.2	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	Section 6.5.3
x	6.2	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)	6-4	Section 6.5.4
x	6.2	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 describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	Submittal Table 6-4
x	6.2	Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	6-6	Section 6.5.5
x	6.2	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)	n/a	Section 6.5.5, Submittal Table 6-6
x	6.2	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	Section 6.6
x	6.2	Section 6.2.10	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 five consecutive water years.	System supplies	6-7	Section 6.8, Submittal Table 6-7, Section 6.12, Section 7.2
x	6.3	Section 6.3 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	O-1A, O-1B, O-1C, and O-2	Section 6.11
x	7.1	Section 7.1	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	n/a	Section 7.1.2
x	7.2	Section 7.2	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 Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	Section 7.2.1 - 7.2.3
x	7.2	Section 7.2.3	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	n/a	Section 7.2.4
x	7.3	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	n/a	Section 7.3
x	7.3	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 five consecutive years.	Water supply reliability assessment	n/a	Section 7.3.1
x	7.3	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	n/a	Section 7.3.2
x	7.3	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	Section 7.3.3
x	7.3	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	n/a	Section 7.1, Section 8.4
x	8	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Chapter 8
x	8	Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	Section 8.1
x	8.2	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	n/a	Section 8.2.1
x	8.2	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	n/a	Section 8.2.2
x	8.3	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	n/a	Section 8.3
x	8.3	Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	n/a
x	8.4	Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	Section 8.4.1
x	8.4	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	Section 8.4.2
x	8.4	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	Section 8.4.3

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	8.4	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	Table 8-3	Section 8.4.4
x	8.4	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	8-2 and 8-3	Section 8.4.7
x	8.4	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	n/a	Section 8.4.6
x	8.5	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	n/a	Section 8.5
x	8.5	Section 8.5	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	n/a	Section 8.5
x	8.6	Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	n/a	Section 8.6
x	8.7	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	Section 8.7
x	8.7	Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. <i>Water Shortage Emergencies</i> .	Water shortage contingency planning	n/a	Section 8.7
x	8.7	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	n/a	Section 8.7
x	8.8	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	n/a	Section 8.8
x	8.8	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	n/a	Section 8.8.1
x	8.8	Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, <i>Excessive Residential Water Use During Drought</i> .	Water shortage contingency planning	n/a	Section 8.8
x	8.9	Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	Section 8.9
x	8.10	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	Section 8.10
x	8.11	Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	n/a	Section 8.11
x	8.12	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	Section 8.12
x	9.1	Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	n/a	Section 9.1.1 - 9.1.7
n/a	9.2	Sections 9.2	10631(e)(2)	Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	Demand management measures	n/a	n/a
x	10	Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	n/a	Section 10.2
x	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 Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Section 10.2.1
x	10.4	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 2026.	Plan adoption, submittal, and implementation	n/a	Section 10.4.1
x	10.2	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	Section 10.2
x	10.2	Section 10.2.2	10642	The 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	10-1	Section 10.3
x	10.3	Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	Section 10.3.1
x	10.4	Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	Section 10.4.3
x	10.4	Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	Section 10.4.4
x	10.4	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	Section 10.4.2

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	10.7	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	Section 10.4.3
x	10.5	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 10.5
x	10.5	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 10.5
x	10.6	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 10.6

APPENDIX C



BOARD OF DIRECTORS
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GENERAL MANAGER
Thomas G. Weddle Jr.

April 20, 2026

Jennifer Spindler
General Manager
Crestline-Lake Arrowhead Water Agency
PO Box 3880
Crestline, CA 92325

RE: Crestline Village Water District 2025 Urban Water Management Plan

Dear Jennifer,

Crestline Village Water District (CVWD) is in the process of preparing its 2025 Urban Water Management Plan (UWMP) for submittal to the State Department of Water Resources by July 1, 2021. I am reaching out to you today pursuant to Water Code Section 10631(h), which states:

Water Code Section 10631

(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (§. An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (§.

Although we are not prepared to provide our water use projections at this time, I am reaching out to you today to start the process of data sharing that will be exceedingly important for our 2025 UWMP. I can assure you that CVWD will provide the Agency our water use projections when they are ready, same as we did for the 2020 UWMP cycle.

To the extent that it can provide necessary information for our CLAWA-related data needs, we are using the latest edition (2024) of the State Water Project Delivery Capability Report. For information beyond that, we are respectfully requesting the Agency to review and provide the data as listed on Enclosure 1, to the extent practicable. Due to the limited time frame the District has to comply with DWR we would appreciate receiving the data by Friday, May 1, 2026.

Thank you for your prompt attention to this data request. Please feel free to contact me with any questions or to schedule a teleconference meeting to discuss further.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Tom Weddle', is positioned above the printed name and title.

Thomas G. Weddle, Jr.
General Manager

ENCLOSURE 1

DATA REQUEST FOR 2025 CVWD UWMP CYCLE

I. CLAWA ENTITLEMENTS

A. Our 2020 UWMP states that the Agency has two Houston Creek diversion permits issued by SWRCB in 1991; one for up to 1,000 AFY and the second for up to 302 AFY. Please confirm whether this information has changed.

B. What agreements has CLAWA entered into that are currently in-effect which would supplement the supply allocation from the State Water Project? For example:

1. Our 2020 UWMP states: *"CLAWA's supply portfolio includes a 2005 agreement with Lake Arrowhead Community Services District (LACSD) and San Bernardino Valley Municipal Water District (SBVMWD). During normal years, this arrangement mainly affects LACSD however, during years of low SWP allocation (i.e., drought years) CLAWA has the right to utilize a portion of the water purchased from SBVMWD to satisfy any demands anywhere in CLAWA's service area. The amount purchased from SBVMWD in any year is limited to 15 percent of SBVMWD's SWP allocation (CLAWA 2010 UWMP, August 2011)."*

Please confirm whether this information has changed or an updated agreement has been entered into.

2. Our 2020 UWMP states: *"In addition, CLAWA entered into an amendment to a 2008 exchange agreement with SBVMWD which provides that SBVMWD shall deliver to CLAWA, at Silverwood Lake, up to a total of 718,740 CCF (1,650 AF) of water when requested by CLAWA, between the years 2009 and 2018, subject to the conditions of their 2008 and 2009 agreements."*

Please confirm whether this agreement was extended and/or modified.

3. Our 2020 UWMP states: *"CLAWA entered into an exchange agreement with San Geronio Pass Water Agency (SGPWA) which stipulates that SGPWA shall deliver to CLAWA up to a total of 435,600 CCF (1,000 AF) of water when requested by CLAWA, between the years 2012 and 2020, subject to the conditions of their 2010 agreement."*

Please confirm whether this agreement has been extended and/or modified.

4. Our 2020 UWMP states: *"CLAWA intends to continue to negotiate further exchange agreements with other contractors as opportunities arise and also continue to "carry over" water in the SWP that was allocated in a given year to CLAWA but not used. (CLAWA UWMP Response Letter, April 12, 2021, Appendix C)."*

Please confirm whether this statement is true and whether any new agreements have been entered into since 2020.

II. CLAWA SUPPLY

- A. Please provide any CLAWA Water Supply Reliability Certification reports that cover the period 2020-2025.
- B. Confirm current water treatment methods used at Silverwood Lake; have they changed since 2020?
- C. What future supply projects does the Agency have planned, if any?
- D. Please provide a copy of CLAWA Water Delivery From DWR reports for the most recent water year. For reference, the following is an example for FY 2011-2012 that we received from CLAWA for use in the 2020 UWMP:

TABLE 1
CRESTLINE LAKE ARROWHEAD WATER AGENCY
2011-2012 WATER DELIVERY FROM¹⁷
THE CALIFORNIA DEPARTMENT OF WATER RESOURCES¹⁸
(in Acre-Feet)

MONTH	CLAWA ¹⁷	SILVERWOOD ¹⁸ Department of Parks and Recreation
2011		
OCTOBER	106	8
NOVEMBER	38	3
DECEMBER	34	3
2012		
JANUARY	41	2
FEBRUARY	47	2
MARCH	41	2
APRIL	21	3
MAY	52	8
JUNE	105	12
JULY	137	12
AUGUST	144	15
SEPTEMBER	160	12
TOTAL	930	82

¹⁷ Data from Janet Rutten, California Department of Water Resources (see Appendix A).

¹⁸ Silverwood deliveries are recorded later since CLAWA delivers the water to the California Department of Parks and Recreation. Nevertheless Silverwood deliveries are not counted in CLAWA in calculating return flow to the Mojave River.

III. CLAWA DEMAND

- A. Please provide a copy of the current CLAWA Water Supply Allocation Plan (WSAP) for Wholesale Customers (if it has changed since 2020). What Stage of Allocation are we in currently and can you provide a copy of the corresponding Agency ordinance?
- B. What programs if any are planned for CLAWA to encourage water conservation and/or projects to prepare for potential effects of climate change (e.g., decreased or stopped SWP deliveries due to Delta levee failures, wildfire, landslide, power outage, etc.)

CRESTLINE-LAKE ARROWHEAD WATER AGENCY

A Public Agency
P.O. BOX 3880 PHONE (909) 338-1779
24116 CREST FOREST DRIVE
CRESTLINE, CALIFORNIA 92325

Directors

STEVEN D. WOOD, President
GILBERT FLORES
BRUCE D. RISHER
ROY WATSON
CRAIG CARPENTER

May 6, 2026

General Manager

JENNIFER A. SPINDLER

Board Secretary

KRISTA J. KETTERHAGEN

Thomas G. Weddle, Jr., General Manager
Crestline Village Water District
P.O. Box 3347
Crestline, CA 92325

RE: Crestline Village Water District 2025 Urban Water Management Plan

Mr. Weddle,

In response to your letter dated April 20, 2026, the Crestline-Lake Arrowhead Water Agency does not prepare an Urban Water Management Plan because it delivers less than 3,000-acre feet of water and has fewer than 3,000 urban connections. However, a copy of the 2023 State Water Project Delivery Capability Report is available at www.water.ca.gov by searching "Delivery Capability Report and Studies." This is the document that the Agency would use to prepare its own Urban Water Management Plan if the Agency were required to prepare one. The Delivery Capability Report assesses the water supply that can be delivered from the State Water Project under wet conditions and under drought conditions.

According to the Delivery Capability Report, the Department can deliver an average of 53% of the total Contract amounts for all Contractors under current conditions. Although DWR proposes to construct the Delta Conveyance Project, which could help increase that percentage, we cannot count on that being constructed as that is being challenged legally and potentially could be delayed or abandoned as a matter of politics and State policy changes. Since the Agency does not pump from wells, and has no other reliable source of supply, we should assume that the Agency's only supply will be the imported water available from the State Water Project, and therefore, that the analysis set forth in the Delivery Capability Report will be the governing analysis in assessing the Agency's water supply over the next 20 years.

The demand for supplemental imported water from the Agency is highly variable. The demand for imported water is greater when locally dry conditions reduce the productivity of local wells. The Agency's total Contract amount is 5,800-acre feet per year and the total demand

in any year is not expected to exceed 2,400-acre feet. Thus, the Agency anticipates that a 41% allocation should be sufficient to satisfy customer demand throughout the 20-year planning period. The Agency's concern has to do with those years in which its allocation is less than 41% and the demand from the Agency's customers is greater than normal. The Delivery Capability Report analyzes and projects what the allocations from the State Water Project could be during a dry year and multiple dry years.

In the past, the Agency has been able to protect against dry year shortages by "carrying over" water in the State Water Project that the Agency was allocated in a given year but did not need to take, and from exchange arrangements with other Contractors whereby the Agency delivered water to those Contractors in a year of plenty in exchange for being able to take back water during years of need, when allocations from the State Water Project were not sufficient to satisfy demands for imported water within the Agency's boundaries. For example, this year the Agency's allocation is 30% (1,740-acre feet total), but the Agency has ample carryover water and exchange water available to satisfy the expected demand from its customers this year. The Agency intends to continue to carry over water in the State Water Project when it can, negotiate additional exchange agreements with other Contractors, and investigate participation in water banking projects as opportunities arise. However, we cannot assume that additional carryover water will be available or that additional exchange agreements can be negotiated, and water banking projects still require significant development before they will be in use. Therefore, the Agency's customers must assume that in some years the Agency will not be able to provide all of the imported water its customers might need, and they should plan for that scenario in their own Urban Water Management Plans.

Sincerely,


Jennifer A. Spindler
General Manager



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GENERAL MANAGER
Thomas G. Weddle Jr.

June 5, 2026

Jennifer Spindler
General Manager
Crestline-Lake Arrowhead Water Agency
PO Box 3880
Crestline, CA 92325

RE: Crestline Village Water District 2025 Urban Water Management Plan

Dear Ms. Spindler,

Pursuant to Water Code Section 10631(h), which states the following, please find enclosed the District's projections of water demands and water supplies for your records:

(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types...

Please feel free to contact me with any questions or to schedule a call, and thank you for your assistance in this process.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tom Weddle", is written over a light blue circular background.

Tom Weddle
General Manager

ENCLOSURE 1

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

Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		Potable or Non-Potable (OPTIONAL) Drop down list	2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 opt (CCF)
Add additional rows as needed.							
Single Family	Residential	Potable	211,940	216,540	221,240	226,040	230,940
Multi-Family	Multi-Family	Potable	7,040	7,190	7,350	7,510	7,670
Commercial	Commercial	Potable	32,730	33,440	34,170	34,910	35,670
Other (optional)	Fire Service	Potable	5,450	5,570	5,690	5,810	5,940
Distribution System Water Loss		Potable	13,450	13,740	14,040	14,340	14,650
Subtotal Potable			270,610	276,480	282,490	288,610	294,870
Subtotal Non-Potable			0	0	0	0	0
Total			270,610	276,480	282,490	288,610	294,870
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES: Commercial includes institutional. Because these are projections, all values are rounded to nearest 10 CCF.							

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

Water Supply		Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop Down list	Projected Water Supply (Report to the Extent Practicable)				
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply		2030	2035	2040	2045	2050 (opt)
			Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)
Add additional rows as needed							
Groundwater (not desalinated)	Fractured bedrock wells. San Bernardino Mountains. (District wells)	Potable	253,800	253,800	253,800	253,800	253,800
Purchased or Imported Water	State Water Project direct deliveries via Crestline-Lake Arrowhead Water Agency (CLAWA).	Potable	321,400	321,400	321,400	321,400	321,400
Subtotal Potable			575,200	575,200	575,200	575,200	575,200
Subtotal Non-Potable			0	0	0	0	0
Total			575,200	575,200	575,200	575,200	575,200
DWR NOTES:							
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.							
Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.							
NOTES: Groundwater assumes implementation of Pinecrest II Vertical Well in 2028. Imported water assumes 53% of Table A and then 24% of that being available, on average. Because these are projections, the values are rounded to nearest 100.							



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GENERAL MANAGER
Thomas G. Weddle Jr.

June 5, 2026

Jennifer Spindler
General Manager
Crestline-Lake Arrowhead Water Agency
PO Box 3880
Crestline, CA 92325

RE: Crestline Village Water District 2025 Urban Water Management Plan

Dear Ms. Spindler,

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(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types...

Please feel free to contact me with any questions or to schedule a call, and thank you for your assistance in this process.

Sincerely,

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Tom Weddle
General Manager

ENCLOSURE 1

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

Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		Potable or Non-Potable (OPTIONAL) Drop down list	2030 (CCF)	2035 (CCF)	2040 (CCF)	2045 (CCF)	2050 opt (CCF)
Add additional rows as needed.							
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Multi-Family	Multi-Family	Potable	7,040	7,190	7,350	7,510	7,670
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Submittal Table 6-9 Retail: Water Supplies — Projected
Water Code Section 10631 (b)

Water Supply	Additional Detail on Water Supply	Potable or Non-Potable (after treatment if treated) (OPTIONAL) Drop Down list	Projected Water Supply (Report to the Extent Practicable)				
			2030	2035	2040	2045	2050 (opt)
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool			Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)	Reasonably Available Volume (CCF)
Add additional rows as needed							
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Purchased or Imported Water	State Water Project direct deliveries via Crestline-Lake Arrowhead Water Agency (CLAWA).	Potable	321,400	321,400	321,400	321,400	321,400
Subtotal Potable			575,200	575,200	575,200	575,200	575,200
Subtotal Non-Potable			0	0	0	0	0
Total			575,200	575,200	575,200	575,200	575,200

DWR NOTES:

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

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

NOTES: Groundwater assumes implementation of Pinecrest II Vertical Well in 2028. Imported water assumes 53% of Table A and then 24% of that being available, on average. Because these are projections, the values are rounded to nearest 100.

Autumn DeWoody

From: Lee Reeder
Sent: Thursday, April 23, 2026 2:02 PM
To: 'Figueroa, Miguel'; 'Castillo, Noel - DPW'
Cc: Autumn DeWoody; Julia Archibeque; Josselyn Quine
Subject: Information Request for Crestline Village Water District Urban Water Management Plan (2025)
Attachments: Figure 1-2, Neighboring Cities and Waterbodies.pdf; Figure 3-4, San Bernardino County Land Use Designations.pdf; Figure 3-5, San Bernardino County Zoning Categories.pdf

Dear Mr. Figueroa and Mr. Castillo,

Webb Associates is working with Crestline Village Water District (CVWD) to prepare their 2025 Urban Water Management Plan (UWMP). As required by Water Code Section 10631(a), *CVWD shall coordinate with local and regional land use authorities regarding current and projected land use within their water service area*. For reference, a map of the water service area with each city and county jurisdiction is attached.

Because of our prior interaction with your staff for East Valley Water District, we already have shapefiles with the current zoning and land use mapping from the current General Plan (mapping current as of Jan. 30, 2026). We have already created figures for zoning categories and land use designations for CVWD and those are also attached for your reference. However, to ensure compliance with the intent of Water Code, we want to ask just a couple questions:

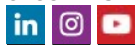
- Is the County preparing for any large-scale projects proposed within the District service area?
- Does the County have information on recent or pending permits for accessory dwelling units (ADUs)?
- Does the County have any other land use-related information that may affect the District's projections for future water use in the next 20-25 years?

We know you are busy and appreciate your assistance in advance.

Thank you!



Lee Reeder
Senior Environmental Analyst
T (909)486-7274 | C (909)486-7274
E Lee.Reeder@webbassociates.com
3788 McCray St | Riverside, CA | 92506



From: [Figueroa, Miguel](#)
To: [Lee Reeder](#); [noel.castillo](#)
Cc: [Autumn DeWoody](#); [Julia Archibeque](#); [Josselyn Quine](#); [Espino, Alcelma](#)
Subject: RE: Information Request for Crestline Village Water District Urban Water Management Plan (2025)
Date: Tuesday, April 28, 2026 12:01:40 PM
Attachments: [image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)
[image010.png](#)
[image011.png](#)
[ADUs in CVWD Area of Interest.xlsx](#)
[ADU Sites in CVWD.pdf](#)

Hello Lee, per your request.

- Large-scale projects within District: 0
- Recently approved (past six months) and in process ADUs in water district: 6
- No additional information to provide regarding projects/initiatives that may affect the district's projections for future water use in the next 20-25 years.

Hope this helps you.

Miguel Figueroa

Director
Land Use Services
Phone: 909-387-4431
Email: Miguel.Figueroa@lus.sbcounty.gov
385 N. Arrowhead Ave, 1st Floor
San Bernardino, CA, 92415

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From: Lee Reeder <Lee.Reeder@webbassociates.com>
Sent: Thursday, April 23, 2026 2:02 PM
To: Figueroa, Miguel <Miguel.Figueroa@lus.sbcounty.gov>; Castillo, Noel - DPW <Noel.Castillo@dpw.sbcounty.gov>
Cc: Autumn DeWoody <autumn.dewoody@webbassociates.com>; Julia Archibeque <julia.archibeque@webbassociates.com>; Josselyn Quine <jmquine@cvwater.com>
Subject: Information Request for Crestline Village Water District Urban Water Management Plan (2025)

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APPENDIX D



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GENERAL MANAGER
Thomas G. Weddle Jr.

CRESTLINE VILLAGE WATER DISTRICT

PUBLIC NOTICE ON URBAN WATER MANAGEMENT PLAN UPDATE

Notice is hereby given that Crestline Village Water District (the District) is in the process of reviewing and updating its **Urban Water Management Plan** and considering changes thereto in compliance with the California Water Code. Any changes will be incorporated into the District's Draft 2025 Urban Water Management Plan which will include a Water Shortage Contingency Plan.

The District intends to hold a public hearing, adopt the 2025 Urban Water Management Plan, and submit it to the California Department of Water Resources by the July 1, 2026 deadline.

The District will hold a public hearing on the Draft 2025 Urban Water Management Plan at a Board of Director's meeting no less than 60 days from the date of this notice.

A printed copy of the District's Draft 2025 Urban Water Management Plan will be available for review at the District Office (777 Cottonwood Drive, Crestline) and on the District's Web site (<https://www.cvwwater.com>) no less than two weeks prior to the public hearing. The District will issue a second notice when the public hearing is scheduled.

All interested parties are now noticed and invited to submit comments and consult with the District regarding its forthcoming 2025 Urban Water Management Plan.

Dated: April 1, 2026

A handwritten signature in blue ink, appearing to read "J. Weddle", is written over a horizontal line.

Thomas Weddle
General Manager
Crestline Village Water District

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Ryan	Gross	General Manager	Lake Arrowhead CSD	rgross@lakearrowheadcsd.com
Dan	Munsey	Fire Chief	San Bernardino County Fire	cotter@sbcfire.org
Nate	Burwell	General Manager	Cedarpines Park Mutual Water Company	nathan@cppmwc.com
Danelle	Harrison	Supervisor	USDA Forest Service, San Bernardino NF	danelle.harrison@usda.gov
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Dawn	Rowe	Supervisor	County of San Bernardino	supervisor.rowe@bos.sbcounty.gov
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Jenny	Hueter	General Manager	Rim of the World Recreation & Park District	jhueter@rim-rec.org
Adnan	Anabtawi	General Manager	Mojave Water Agency	mwaadministration@mojavewater.org
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Louis	Boehle	President	Crestline/Lake Gregory Chamber of Commerce	info@crestlinechamber.org
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Mark	Mazakas	General Manager	Strawberry Lodge Mutual Water Company	Office@SLMWC.org markmazakas@icloud.com
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Christopher	Jones	General Manager	Running Springs Water District	cjones@runningspringswd.com
Sherry	Noone	Group Secretary	Sierra Club, Big Bear Group	chair@sangorgonio.sierraclub.org



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CRESTLINE VILLAGE WATER DISTRICT

NOTICE OF PUBLIC HEARING ON

PROPOSED URBAN WATER MANAGEMENT PLAN AND WATER SHORTAGE CONTINGENCY PLAN

Notice is hereby given that Crestline Village Water District will conduct a public hearing on **Tuesday, June 16, 2026, at 3:00 PM**, at the regular meeting of the Board of Directors, to be held at 777 Cottonwood Drive, Crestline, California, 92325.

The public hearing is set for receiving comments on the District's proposed **2025 Water Shortage Contingency Plan** and then for receiving comments on the proposed **2025 Urban Water Management Plan**. Copies of both plans are available for public viewing beginning June 1, 2026 at the Crestline Village Water District office during normal business hours and online at <https://www.crestlinevillagewaterca.gov>.

All interested parties are invited to attend the public hearings to provide input on these documents. The meeting agenda will be posted on the District's Web site prior to the meeting.

Dated: May 14, 2026

A handwritten signature in blue ink, appearing to be "JL", is written over a horizontal line.

Thomas G. Weddle Jr.
General Manager
Crestline Village Water District



(<https://www.crestlinevillagewaterca.gov/>)

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Urban Water management Plans

📄 [CVWD UWMP Final 2020.pdf \(/files/a20b11cc1/CVWD+UWMP+Final+2020.pdf\)](/files/a20b11cc1/CVWD+UWMP+Final+2020.pdf)

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📄 [Draft 2 Chapter 1 Intro and Overview.docx \(/files/5010358bc/Draft+2+Chapter+1+Intro+and+Overview.docx\)](/files/5010358bc/Draft+2+Chapter+1+Intro+and+Overview.docx)

📄 [Draft 2 Chapter 2 Plan Preparation.docx \(/files/88db5dec1/Draft+2+Chapter+2+Plan+Preparation.docx\)](/files/88db5dec1/Draft+2+Chapter+2+Plan+Preparation.docx)

📄 [Draft 2 Chapter 3 System Description.docx \(/files/36f0ffdd8/Draft+2+Chapter+3+System+Description.docx\)](/files/36f0ffdd8/Draft+2+Chapter+3+System+Description.docx)

- 📎 Draft 2 Chapter 4 Water Use Characterization.docx
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- 📎 Draft Chapter 5 Baselines and Targets.docx
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- 📎 Draft Chapter 6 Water Supply CHaracterization.docx
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- 📎 Draft CHapter 7 Water Supply Reliability.docx
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- 📎 Draft Chapter 8 Water Shortage Contingency Plan.docx
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- 📎 Draft Chapter 9 Demand Management Measures.docx
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- 📎 Draft Chapter 10 Plan Adoption, Submittal, and Implementation.docx
(/files/cc6e08027/Draft+Chapter+10+Plan+Adoption%2C+Submittal%2C+and+Implementation.docx)

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The Alpine Mountaineer
P.O. Box 4572
Crestline, CA 92325-4572
Phone: 909.589.2140
Email: info@thealpinemountaineer.com

Affidavit of Publication
State of California
County of San Bernardino

Cecilia Bolbolian, being duly sworn, deposes and says that she is and at all times herein mentioned was a Citizen of the United States, over the age of twenty-one years, and that she is not party to, nor interested in the above entitled matter, that she is the principal clerk of the printers of The Alpine Mountaineer, a newspaper of general circulation, printed and published in the State of California, County of San Bernardino, and which newspaper at which at all times herein subscription lists of paying subscribers, and which newspaper at regular intervals in the said State of California, County of San Bernardino, for a period exceeding one year next preceding the date of publication of the notice hereinafter referred to, and which newspaper is not devoted to nor published for the interests, entertainment or instruction of a particular class, profession, trade, calling, race or denomination or any number of same: that the notice of which the annexed is a printed copy, had been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates to witness.

06/04/2026, 06/11/2026

I certify and declare under penalty of perjury that the foregoing is true and correct.


Cecilia Bolbolian

Dated 6/22/26

The Alpine Mountaineer was adjudicated a Newspaper of General Circulation on July 17, 2023, in the Superior Court of San Bernardino,
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CRESTLINE VILLAGE WATER DISTRICT
NOTICE OF PUBLIC HEARING ON
PROPOSED URBAN WATER MANAGEMENT PLAN AND WATER SHORTAGE CONTINGENCY PLAN

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The public hearing is set for receiving comments on the District's proposed **2025 Water Shortage Contingency Plan** and then for receiving comments on the proposed **2025 Urban Water Management Plan**. Both plans will be available for public viewing prior to the public hearing at the District website, <https://www.crestlinevillagewaterca.gov>.

All interested parties are invited to attend the public hearings to provide input on these documents. The meeting agenda will be posted on the District's Web site prior to the meeting.

Dated: May 14, 2026



Thomas G. Weddle Jr.
General Manager
Crestline Village Water District

Providing our community with a reliable water system that delivers high quality water for its health and safety needs.
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Urban Water management Plans

[📄 CVWD UWMP Final 2020.pdf \(/files/a20b11cc1/CVWD+UWMP+Final+2020.pdf\)](/files/a20b11cc1/CVWD+UWMP+Final+2020.pdf)[📄 CVWD UWMP Final 2015.pdf \(/files/c5bdcea17/CVWD+UWMP+Final+2015.pdf\)](/files/c5bdcea17/CVWD+UWMP+Final+2015.pdf)[📄 CVWD UWMP Final 2010.pdf \(/files/44e2e9e2b/CVWD+UWMP+Final+2010.pdf\)](/files/44e2e9e2b/CVWD+UWMP+Final+2010.pdf)[📄 CVWD UWMP Draft 2025.pdf \(/files/59eaebo4f/CVWD+UWMP+Draft+2025.pdf\)](/files/59eaebo4f/CVWD+UWMP+Draft+2025.pdf)

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APPENDIX E

Technical Memorandum

To: Drought Contingency Plan Task Force
From: Drought Contingency Plan Development Team
CC: Melissa Matlock, Western Municipal Water District
Date: 9/6/2022
Re: Western Municipal Water District – Climate Change Vulnerability Assessment

Executive Summary

This technical memorandum (TM) describes the retrieval and analysis of climate data provided by the California Department of Water Resources (DWR) to project the impact of climate change on future water supplies and demands within Western Municipal Water District's (Western) service area. The DWR climate data is assembled from the results of 20 global climate models, which best represent California's climate processes. Biases in the climate model results have been adjusted by simulating climate projections in terms of relative change from historical conditions rather than as absolute values. This is achieved by using historical hydrologic data in the state, which spans between 1915 and 2011. The resulting ratio of a simulated future value to the corresponding simulated historical value is referred to as a change factor. DWR projected climate change data is most appropriate for this analysis because it is the only climate projection dataset specifically developed to meet the requirements of water resources planners in California. Western is making this TM available to its retail agencies for their use in their respective water resource planning efforts to reduce the data processing burden on individual agencies. The results are intended for use by Western and Drought Task Force member organizations as they prepare a regional Drought Contingency Plan (DCP). This TM provides:

- A description of the area subject to the vulnerability assessment
- A description of the analysis approach and data sources chosen for the analysis
- Narrative discussions of the climate change factors calculated for local supply and demand conditions in multiple scenarios
- Discussion of the water supply and demand projections resulting from the vulnerability assessment
- Comparison of Western water supply and demand projections resulting from the vulnerability assessment with regional projections prepared through the ongoing Metropolitan Water District of Southern California (MWD) 2020 Integrated Water Resources Plan (IRP) process

Summary of Findings

Projected changes in future water supplies and water demand are analyzed during a normal year, single dry and wet years and multi-year (5-year) dry and wet periods over the next 20 years, using climate projections developed for the water resources planning by DWR. This analysis of future climate impacts on water supplies and demands includes three potential future climate conditions: drier future conditions with extreme warming; median future conditions; and wetter future conditions with moderate warming. The detailed results of this analysis are presented in this TM. In summary, these results show:

- Projected decreases in water supplies from Santa Ana and Santa Margarita river basins under normal and drought (single year and multi-year) conditions relative to baseline conditions in 2020, due to projected decreases in precipitation and projected increases in surface water evaporation caused by increasing temperatures. Annual flows could be reduced by 4 to 7 percent in each basin by 2045. This potential decrease in volume of water available for diversion may require increased attention to understanding the adequacy and operational constraints of existing natural and artificial recharge systems in the service area.
- Projected decreases in precipitation and natural recharge under normal and multi-year drought years. However, a single dry year could still be wetter (up to 15 percent) under wet-warm future conditions compared to baseline conditions with precipitation occurring during a shorter rainy season (three instead of four months) with higher intensities (up to 0.4 inches).
- Projected increases in outdoor water uses under normal, single dry, and multi-year drought conditions, caused by projected temperature increases, which lead to higher evapotranspiration (ET) rates for landscaping, irrigated crops, and native vegetation. Average annual outdoor water use by customers served by Western within Western's wholesale and retail service areas could increase by up to 6 percent (17,198 acre-feet [AF]) under the most severe (Dry Hot) climate change scenario.
- Similar total demand projections based on a comparison of Western's and MWD's projected water budget projections under future climate conditions. If no new mitigation actions are implemented, the region's dependence on imported surface water will increase.

1. INTRODUCTION

The study of climate change impacts on water resources is continuously yielding new models and updated local and regional datasets. This continuous improvement makes it necessary to narrow the selection of data sources and methods of data analysis most applicable to local conditions. The scope of this vulnerability assessment is limited to improving the understanding of climate change impacts on future water demand in Western's wholesale service area and the sources of Western's water supplies during normal and drought periods.

The following section provides the background information for the requirements of both the regional DCP and the Urban Water Management Plan (UWMP), a general description of the impacts analyzed

in the vulnerability assessment, and information about Western's sources of information used in the assessment.

1.1 DCP and UWMP Requirements for Climate Change Analysis

In accordance with Sections 10610 to 10657 of the California Water Code, the UWMP requires the consideration of climate change impacts for drought planning because of the significant duration of recent droughts in California. This includes an analysis of projected future uses and the reliability of anticipated water supplies during a normal year, a single dry year, and drought lasting 5 consecutive dry water years. This drought risk assessment compares projected water supply sources with projected water use over the next 20 years, in 5-year increments.

A vulnerability assessment is required as part of the regional DCP to understand the characteristics and potential risk of future droughts and to develop appropriate mitigation and response actions. Since future droughts cannot be predicted by observed past drought information, the inclusion of a climate change analysis is needed to provide the incorporation of historic and future climate projections to assess the hydrological impacts of climate change on drought conditions, thereby creating a more effective plan. The regional DCP requires either a qualitative and/or quantitative assessment of a range of potential drought conditions derived from climate change information to determine potential the risk to critical resources.

Imported water projections are also required for preparing both the UWMP and regional DCP. However, the imported water projections for Western's service area are being developed by MWD as part of their 2020 UWMP Drought Risk Assessment and the MWD 2020 IRP. MWD's 2020 UWMP Drought Risk Assessment (dated June 2021) indicates that no service reliability concerns are projected for imported water during normal and drought periods before 2045 based on MWD's projected demands for Western. For purposes of the UWMP, imported water supplies to Western can be assumed to be unchanged during normal years, single dry years, and 5-year dry periods.

However, the MWD 2020 IRP considered a range of more extreme potential future scenarios, which include: low demands with stable imported supplies, high demand with stable imported supplies, low demand with reduced imported supplies, and high demand with reduced imported supplies. The analysis found that service reliability issues could occur more frequently and generate increasingly more severe deficits of imported supplies under the high future demand scenarios in the 2045 time period.

The climate change analysis developed for Western, and described herein, supports the generation of alternative imported water supply demand projections, which are similar but slightly higher than MWD's projections for Western. Coupled with the MWD 2020 IRP potential future of supply deficits, these analyses support the need for developing mitigation actions to reduce or eliminate the future deficits.

1.2 Prior Climate Studies

Climate change is primarily caused by increasing global concentrations of greenhouse gases which lead to increases in temperature, disruption of the hydrologic cycle, and increased variability of precipitation. The regional impacts of climate change analyzed in two previous studies for the region, California's Fourth Climate Change Assessment (2018) and the United States Bureau of Reclamation (USBR) Santa Ana Watershed Study (2013), are summarized in this section.

The state of California produces periodic assessments on the potential impacts of climate change in the state and reports on potential adaptation responses as required by Executive Order #S-03-05. California's Fourth Climate Change Assessment includes a Statewide Summary Report (Bedsworth et al., 2018), nine regional summary reports, a climate justice summary report, and over 40 technical reports which translate climate science into actionable adaptation and resilience policies and plans. The Los Angeles Regional Report (Hall et al., 2018) summarizes climate science, impacts, and adaptation information for Ventura, Los Angeles, Orange, and the western parts of San Bernardino and Riverside counties. This study projects regional increases in average maximum temperatures of around 4 to 5 degrees Fahrenheit (°F) by the mid-21st century, and 5 to 8°F by the late 21st century. The hottest days of the year could become up to 10°F warmer for many locations in the region by the late 21st century.

California's report also projects small changes in average annual precipitation, and in the recurrence of extreme dry and wet years. However, rainfall intensification could result in more severe atmospheric river events and rainfall increases of up to 25 to 30 percent on the wettest days of the year. While these assessments provide information on the magnitude of regional climate impacts, they do not provide information about climate change impacts at a scale that is directly applicable to local watersheds, water supplies, and demands.

The USBR conducted a study of local climate change impacts in the Santa Ana River Watershed (USBR, 2013). The study used a groundwater screening tool to simulate monthly water balance changes in the Orange County, Upper Santa Ana Valley, and Elsinore/San Jacinto groundwater basins. Historical monthly time series of precipitation over the groundwater basin as well as municipal and industrial water demand were analyzed for the period 1990 to 2009. Future water supply was analyzed for the Santa Ana River Watershed using a hydrologic model to simulate streamflow using 112 different future climate conditions. The results show future increases in water demand and reservoir evaporation due to increased temperature. Smaller, long-term decreases in precipitation are also projected. The combined impacts of these changes include decreases in annual available surface water and increased reliance on groundwater. In the 2013 USBR study, groundwater was estimated to provide approximately 54 percent of total water supply.

The 2013 USBR study does not account for analysis methods instituted for studying and avoiding adverse impacts under California's Sustainable Groundwater Management Act (SGMA) which was passed by the state legislature in 2014. In particular, the 2013 USBR study used a transient climate change analysis method to generate a continuous future projection from the present through end of century. The results of a such a transient climate analysis cannot be used to analyze extreme events such as a single dry year or a multi-year drought as required under the UWMP regulations.

In summary, prior studies which include statewide and regional climate assessments provide relevant background information. However, they do not provide information on climate change impacts on local water supplies and demands within the Santa Margarita River basin and other service areas outside of the Santa Ana River basin or on the changing severity of future drought periods. This climate change vulnerability assessment aims to provide a uniform analysis of climate impacts for all areas of Western's service area for use in regional water supply and drought planning.

1.3 Study Objectives

The objectives of this vulnerability study are to:

1. Identify the appropriate datasets for use in this analysis,
2. Project the magnitude of climate-driven changes in water supply and demand for Western's service area, and
3. Estimate the projected future impacts using the climate change factors applied to the water supply sources and water demands in the service area.

Temperature increases and changes in precipitation patterns with climate change are expected to shift the balance between local water supply and demand within Western's service area and other parts of the state. Increases in temperature lead to increases in consumptive water use for irrigated agriculture and to maintain landscaping for residential, commercial, and recreational use. This increase in consumptive water use is compounded by increases in the portion of rainfall that is evaporated back into the atmosphere from open spaces and water bodies and consumed by native vegetation outside of urban areas. In addition, population growth within the plan area could also lead to expansion of demand.

Annual precipitation in southern California is highly variable and a significant portion of the regional rainfall is concentrated in winter months from November to April. There are typically years with much greater than average precipitation and years with much less than average precipitation. During wet years, seasonal precipitation replenishes aquifers, streams, rivers, and reservoirs which are the sources of water supply. During dry years, there is increased extraction of groundwater reserves to make up the deficit. Climate change is expected to increase the year-to-year variability in precipitation within the region as well as in other parts of the state from which imported water is sourced.

1.4 Description of Data Sources

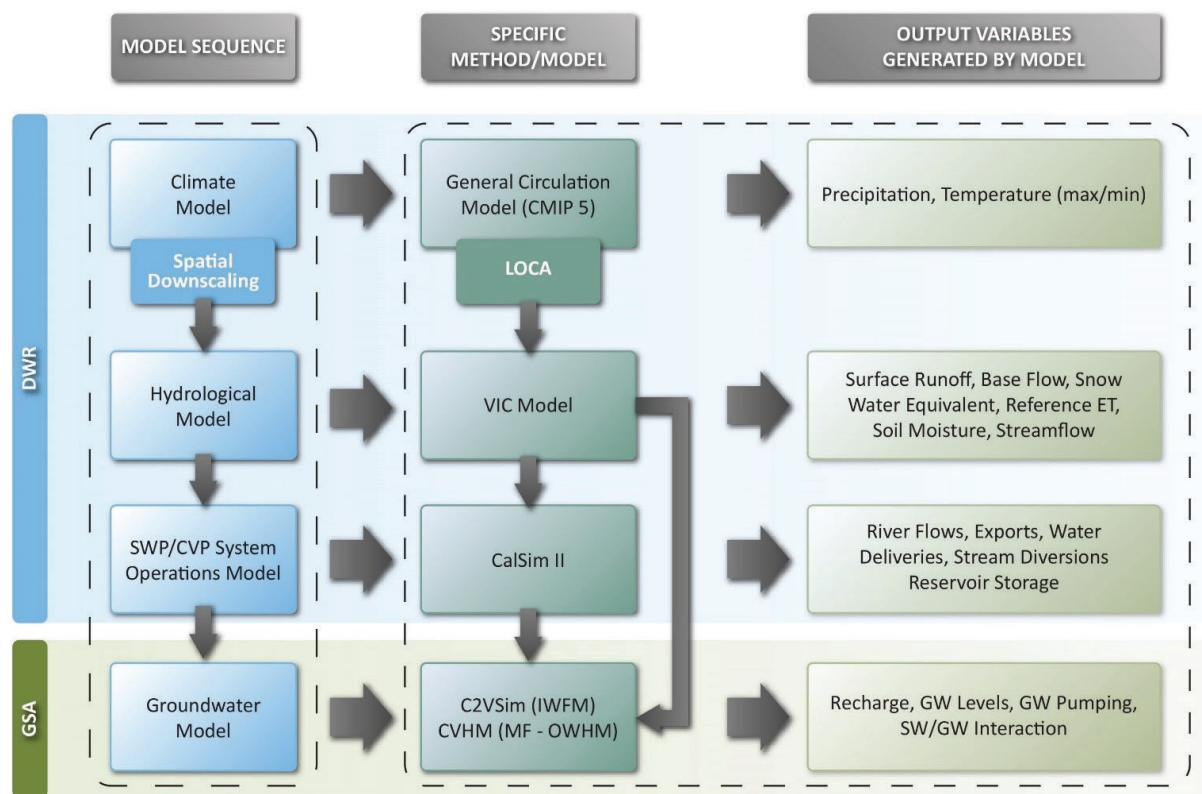
DWR has developed statewide climate change datasets for use in water resource planning. The datasets depict climate conditions in California under historical and future climate conditions which are defined as follows:

- Year 2030 future condition with projected climate and sea level conditions for a 30-year period, centered at 2030
- Year 2070 future condition with projected climate and sea level conditions for a 30-year period, centered at 2070

- Year 1995 historical condition with climate and sea level conditions for a 30-year period, centered at 1995

The 2030 and 2070 climate projections are based on an ensemble of 20 global climate projections selected by the DWR Climate Change Technical Advisory Group (CCTAG) as the most appropriate projections for California water resources evaluation and planning. The datasets are provided at a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells) over California for each calendar month from 1915 through 2011.

Figure 1 shows an overview of the modeling processes used by DWR (highlighted with a blue background) in creating the statewide climate datasets which are used in this study. The bottom row of the image (highlighted with a green background) shows how individual groundwater sustainability agencies are expected to use the data in groundwater models to model groundwater conditions as they collaborate to attain sustainability objectives.



DWR: Department of Water Resources; GSA: Groundwater Sustainability Agency; SWP: State Water Project; CVP: Central Valley Project; LOCA: Localized Constructed Analogs; VIC: Variable Infiltration Capacity; CalSim: SWP & CVP Operations Model; C2VSim: California Central Valley Groundwater - Surface Water Simulation Model; IWFM: Integrated Water Flow Model; CVHM: Central Valley Hydrologic Model; MF - OWHM: MODFLOW One Water Hydrologic Flow Model; ET: Evapotranspiration, SW: Surface Water; GW: Groundwater; CMIP 5: Coupled Model Intercomparison Project

Figure 1: Overview of Modeling Processes Used by DWR in Creating the Statewide Climate Datasets (Source: DWR, 2018)

DWR has also run the climate datasets through a hydrologic model called the Variable Infiltration Capacity (VIC) model to simulate future hydrologic conditions and route runoff to the outlet of subbasins defined by each eight-digit Hydrologic Unit Code (HUC) in California. Streamflow change

projections from the VIC model are provided as monthly time series from 1915 through 2011 for each HUC subbasin. As illustrated in Figure 2, the VIC model takes input climate variables such as precipitation and temperature, and it performs a series of hydrologic computations within each cell to output variables such as soil moisture, ET, and surface runoff within each cell. A streamflow routing algorithm, known as RVIC, is then used to route runoff from each cell to its associated subbasin outlet.

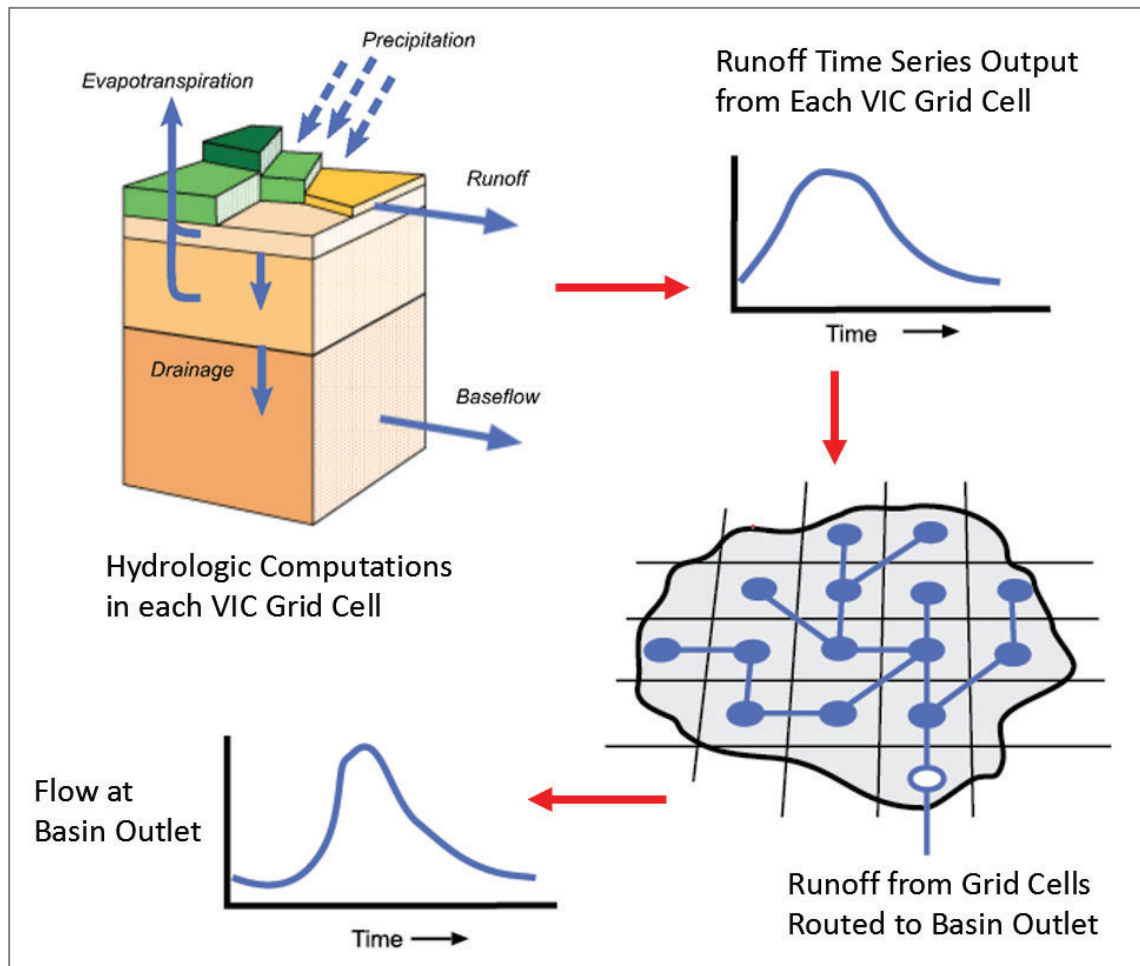


Figure 2: Schematic of the VIC Model Showing Hydrologic Computations Within Each Grid Cell and Runoff Routing (Source: University of Washington Computational Hydrology Group, 2016)

DWR has applied the VIC model to perform hydrologic simulations under historical climate conditions and under projected future climate conditions in 2030 and 2070 over 8,000 grid cells statewide. Runoff from these grid cells have also been routed to the outlet of each eight-digit HUC watersheds in the state for use in the water resource planning.

As previously shown in Figure 1, climate assessments are performed with a chain of models, each of which introduces some biases in the modeling process and derived products. To minimize the impact of such biases in decision processes, DWR presents the simulated climate projections in terms of relative change from historical conditions rather than as absolute values. For example, each monthly precipitation value simulated under 2030 conditions is divided by the precipitation value simulated for the same month under historical conditions, using the same chain of models. The resulting ratio of a

simulated future value to the corresponding simulated historical value is referred to as a change factor. DWR has computed monthly time series of change factors for precipitation and ET in each VIC grid cell and the streamflow for each HUC-8 watershed. The resulting change factor datasets are available for retrieval and use in water resources planning from the publicly accessible SGMA Data Viewer (<https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer>). A more complete description of methods used in computing the climate datasets is provided in a publication entitled “Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development” (DWR, 2018).

2. CLIMATE ANALYSIS APPROACH

2.1. Preprocessing Data for Western’s Service Area

The statewide climate datasets include 57 grid cells each with a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells) for Western’s service area (Figure 3).

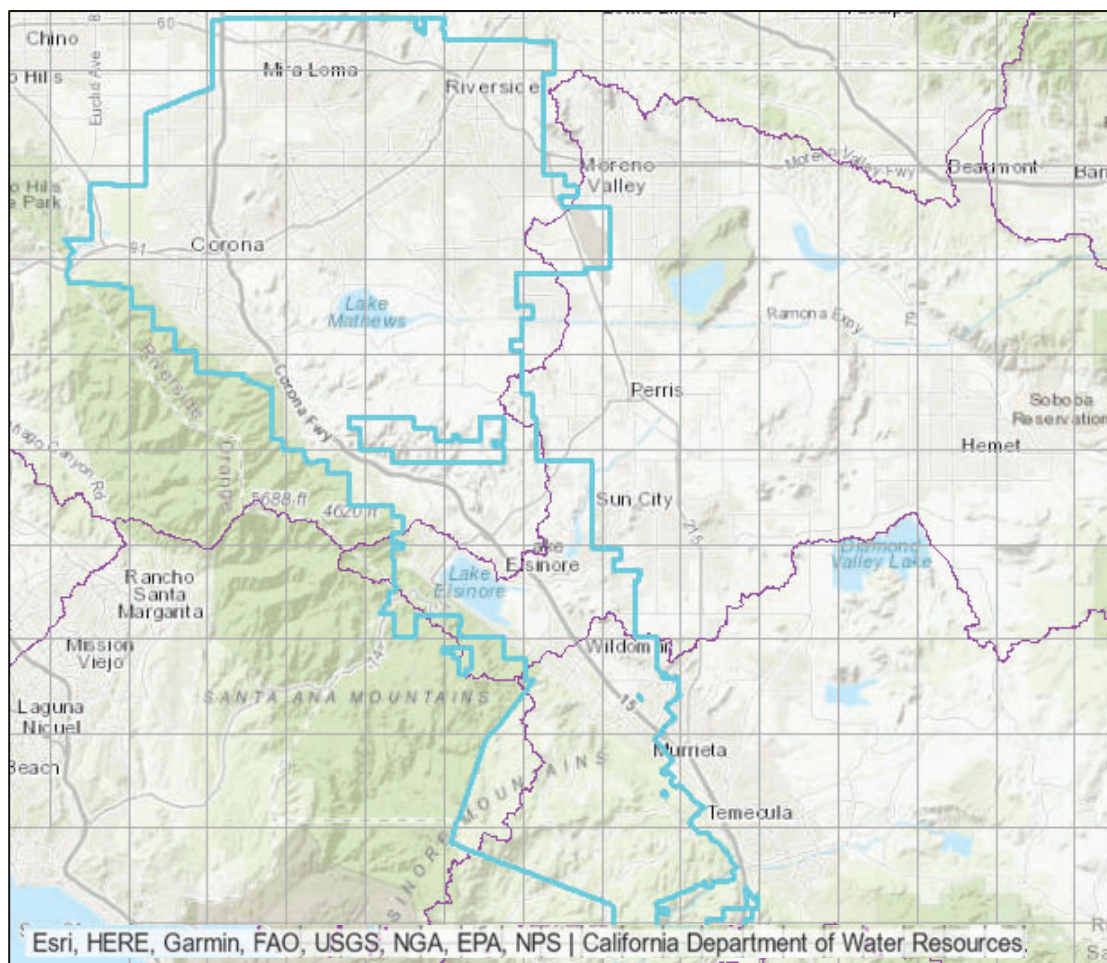


Figure 3: Climate Grid Cells and Watersheds Covering Western’s Service Area

Each grid cell contains 97 years of monthly time series (1915-2011) showing projected precipitation and ET changes under 2030 and 2070 climate conditions relative to 1995 conditions. The area of each grid cell which falls within the service area is estimated by spatially intersecting feature layers of the climate grid and Western’s service area boundary. Regional time series of projected precipitation and ET

changes are computed from the cell time series by using an area-weighted average of data from grid cells which fall wholly or partially within the service area. Projections of future streamflow change were also retrieved for the Santa Ana River (HUC-18070203) and the Santa Margarita River (HUC-18070302) basins which provide surface water supplies to portions of the service area. Three potential climate conditions were considered for this analysis:

- Drier future conditions with Extreme Warming (Dry Hot)
- Median future conditions (Median)
- Wetter future conditions with Moderate Warming (Wet Warm)

The two extreme scenarios (Dry Hot and Wet Warm) are constructed from a set of 10 global climate models. The first extreme scenario (Dry Hot) uses future projections from the 10 global climate models with least warming and least precipitation with the second extreme scenario (Wet Warm) using the 10 global models with the most warming and highest precipitation.

2.2. Analysis of Normal, Single, and Multi-Year Dry and Wet Periods

Every urban water supplier is required to assess water service reliability in normal year, single-dry year, and multiple-dry years lasting 5-years. For imported water supplies, the normal, wet, and dry years used by MWD, based on an historical analysis period of 1922 to 2004, are adopted for Western since it is the largest source of imported water. For local water supplies, year types are selected by reviewing time series data at two local precipitation gauges with extensive historical records. The monthly time series for the gauge at Riverside Fire Station 3 are available online in the DWR Bulletin 195 dating back to 1882 but were last updated in 2007. The California Irrigation Management Information System (CIMIS) #44 gauge has more current data available, extending from 1986 to present. For this analysis, the Riverside FS3 gauge is used because it has full coverage of the normal period of record (1922-2004) used in the imported water analysis. Figure 4 shows the annual and 5-year rainfall from 1923 to 2004 with the wettest and driest 1-year and 5-year periods highlighted in blue and yellow, respectively.

Table 1: Analysis Periods for Normal, Single and Multi-Year Dry, and Wet Periods

Year Type	Imported Supplies	Riverside FS3 Gauge	CIMIS #44 Gauge
Normal	1922-2004	1922-2004	1986-2020
Single Dry-Year	1977	1989	2007
5-Year Dry	1988-1992	1971-1975	2005-2009
Single Wet-Year	1983	1983	-
5-Year Wet	1995-1999	1937-1941	-

The results shown in Table 1 and Figure 4 indicate that 1989 was the single driest year locally with 2.7 inches of rainfall, while 1977 was the driest year for imported water. The driest 5-year period for local supplies was from 1971 to 1975, while imported water supplies were lowest from 1988 to 1992. The single wettest year on record locally occurred in 1983, with 22.9 inches of rainfall. 1983 is also used as the single wettest year by MWD. The wettest 5-year period for local supplies was from 1937 to 1941,

while imported water supplies were highest from 1995 to 1999. The single driest year and the driest 5-year period for the CIMIS #44 gauge are also provided in the table for reference.

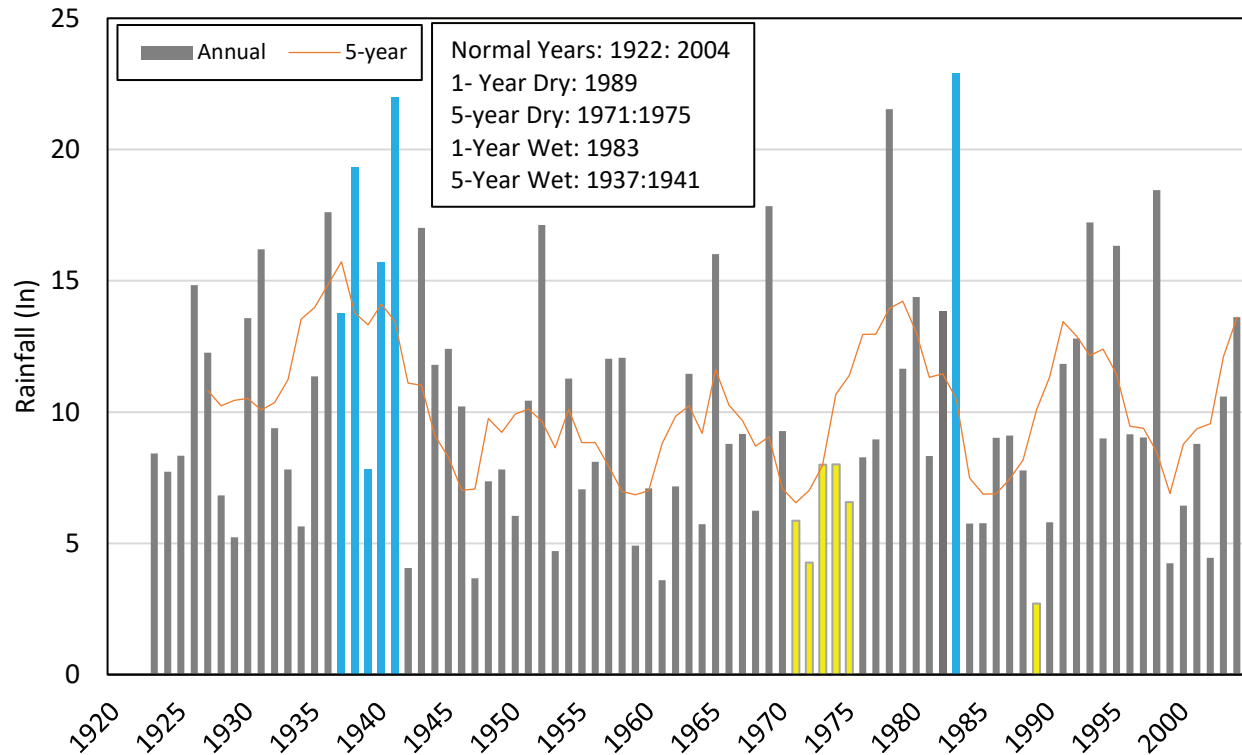


Figure 4: Annual Rainfall at Riverside Fire Station 3

2.3. Computing Water Supply Change Factors

Local water sources used within Western’s service area include local groundwater from 12 different groundwater basins, surface water supplies from the Santa Ana and Santa Margarita river basins, recycled water from indoor water use, and reclaimed groundwater. Groundwater systems are recharged through a variety of water sources. These sources of recharge can be described as:

- Natural recharge is the portion of precipitation that infiltrates to the underlying aquifer within the same grid cell in which precipitation occurs. Changes in natural recharge are directly related to changes in precipitation in the grid cell.
- Artificial recharge (including injection systems) is water that is diverted from rivers and streams for the purpose of replenishing the underlying aquifer. Since artificial recharge relies on surface water and other remotely sourced water supplies, it is influenced by accumulative flow changes in the source watersheds.

Recycled water and reclaimed water can also be a source of supply for recharge of groundwater. Supplies of recycled water and reclaimed water which are sourced from indoor uses are largely insensitive to changes in climate. For this vulnerability assessment, three different sets of climate

change results are computed for use with natural recharge, the Santa Ana River, and the Santa Margarita River sources, respectively.

For characterization of future changes in natural recharge, precipitation change projections from the DWR-provided climate change datasets are used. The 97-year monthly time series of precipitation for Western's service area is used to compute Water Supply Change Factors which show percentage changes in mean monthly and mean annual precipitation under future 2030 and 2070 climate conditions relative to historical conditions under 1995 conditions. The 2030 and 2070 Water Supply Change Factors for natural recharge are computed for normal year, single dry year, single wet year, and 5-year wet and dry periods.

Characterization of future changes in the Santa Ana and Santa Margarita river basins are based on streamflow projections from the VIC model under 2030 and 2070 climate conditions. The streamflow projections are used to compute Water Supply Change Factors which show percentage changes in mean monthly and mean streamflow under future 2030 and 2070 climate conditions relative to historical conditions under 1995 conditions. Change factors are similarly computed for normal year, single dry year, single wet year, and 5-year wet and dry periods.

Each set of Water Supply Change Factors is interpolated at 5-year intervals from 2020 to 2045. The 1995 to 2011 conditions are used to project climate change conditions out to 2030. Linear interpolation is used to determine the climate change factors between 2020 and 2030, based on the historic conditions from 2011 and the projected conditions for 2030. Different climate change conditions are anticipated between 2030 and 2070 because of the implementation of policies and practices that are expected to influence the rate of climate change further out in time. For the years between 2030 and 2070, linear interpolation is used for the 5-year increments based on the difference in projected conditions at 2030 and the projected conditions at 2070. Time series of Water Supply Change Factors are similarly interpolated at 5-year intervals for normal year, single dry year, single wet year, and 5-year wet and dry periods for application to local water sources for 2020 to 2045.

2.4 Computing Water Demand Change Factors

Indoor and outdoor water uses are computed separately when considering climate impacts. Outdoor water use, particularly landscape irrigation, is sensitive to changes in climate while indoor water use is generally not sensitive. Plants require more water to sustain growth in a warmer climate, and users respond to increases in temperature by increasing landscape irrigation to keep their plants alive and flourishing. This increase in water requirement is characterized in climate models using the rate of ET which represents total amount of water released from soil, plants, and water bodies from the land surface to the atmosphere through evaporation and transpiration.

The DWR datasets includes 57 grid cells each with a spatial resolution of 1/16th degree (approximately 3.75-mile grid cells) for Western's service area. Each grid cell contains 96 years of monthly time series (1915 to 2011) showing projected ET changes under 2030 and 2070 climate conditions. An area-weighted average of the ET data from the 57 cells is first computed to generate a single time series for Western's service area. The regional time series is used to compute Water Demand Change Factors which show percentage changes in mean monthly and mean annual ET under future 2030 and 2070

climate conditions relative to historical conditions under 1995 conditions. Similar values of 2030 and 2070 Water Demand Change Factors are computed for normal year, single dry year, single wet year, and 5-year wet and dry periods.

The Water Demand Change Factors are computed for 5-year intervals from 2020 to 2045 by interpolation. The 1995 to 2011 conditions are used to project climate change conditions out to 2030. Linear interpolation is used to determine the climate change factors between 2020 and 2030, based on the historic conditions from 2011 and the projected conditions for 2030. Different climate change conditions are anticipated between 2030 and 2070 because of the implementation of policies and practices that are expected to influence the rate of climate change further out in time. For the years between 2030 and 2070, linear interpolation is used for the 5-year increments based on the difference in projected conditions at 2030 and the projected conditions at 2070. The 5-year time series of Water Demand Change Factors are similarly interpolated for normal year, single dry year, single wet year and 5-year wet and dry periods for application to growth adjusted indoor water use projections for 2020 to 2045.

3. LOCAL CLIMATE CHANGE RESULTS

3.1. Water Supply Change Factor Results

The projected normal year precipitation under Dry Hot, Median and Wet Warm scenarios are presented in Figure 5 through Figure 5Figure 7. Under all scenarios, changes become more extreme by 2045. The Dry Hot and Median scenario predict a decline in annual precipitation while the Wet Warm scenario projects a higher annual precipitation. The annual rainfall is predicted to decrease by 7.2 and 2.7 percent by 2045 under the Dry Hot and Median scenarios, respectively. However, the Wet Warm scenario predicts a 5 percent increase for the same timeline. Investigating the relative changes, all the projections indicate a lower precipitation during April and May, with the Dry Hot scenario exhibiting the greatest deviation from current monthly rainfall (77 percent by 2045). All projections show a higher precipitation in September with the highest projection of 166 percent by 2045 in the Wet Warm scenario. Detailed projected changes for rainfall under all the climate change scenarios are presented in Appendix A (Table A1, Table A2, and Table A3).

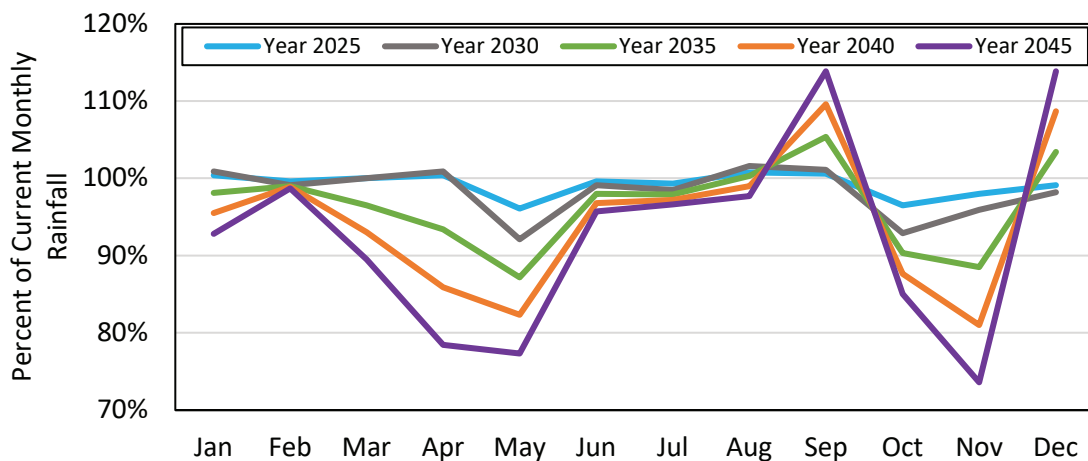


Figure 5: Projected Changes in Rainfall under Dry Hot Future Climate 2025 – 2045

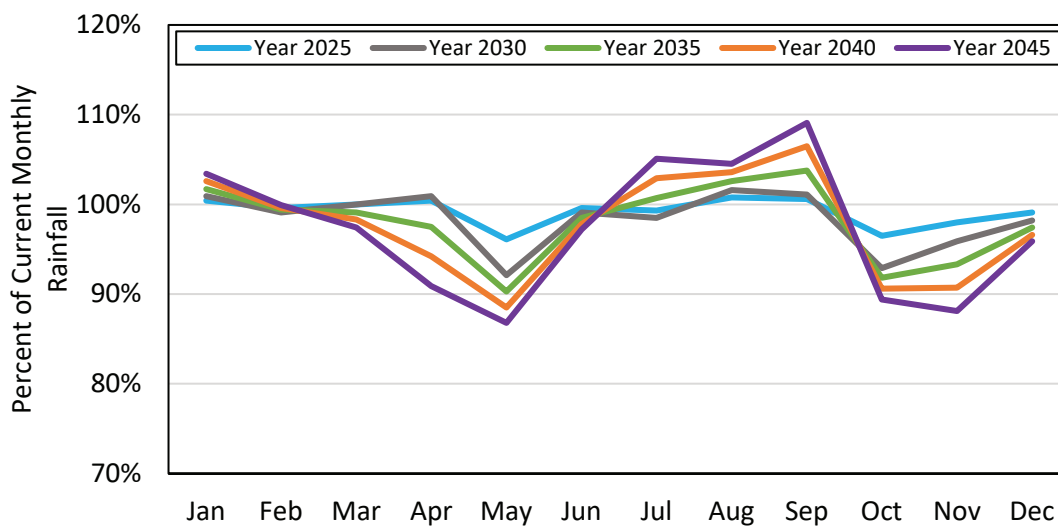


Figure 6: Projected Changes in Rainfall under Median Future Climate 2025 – 2045

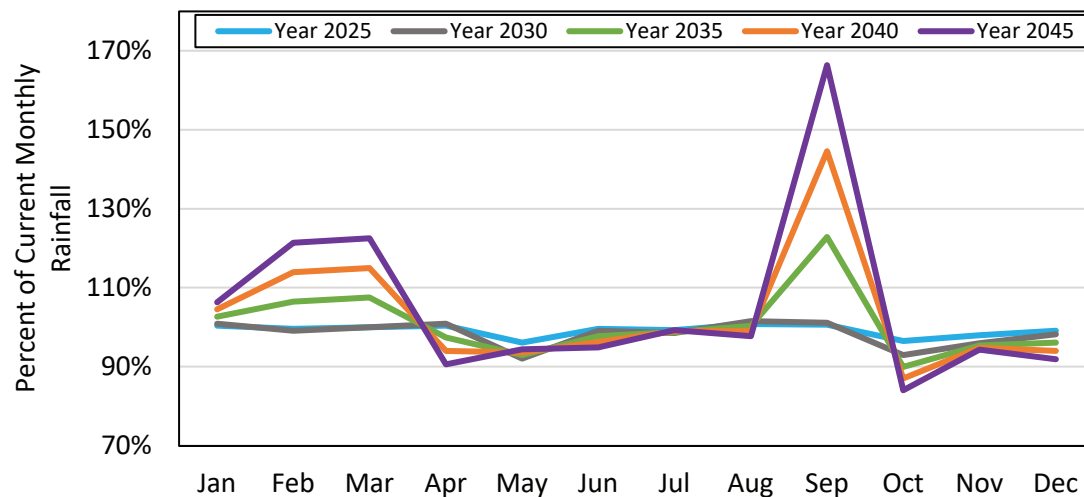


Figure 7: Projected Changes in Rainfall under Wet Warm Future Climate 2025 - 2045

Figure 8 shows the predicted changes in absolute amounts of rainfall under various climate change scenarios in the year 2045. While the biggest relative changes are projected to occur in April, May, and September as shown in the previous Figure 5 through Figure 7, the biggest absolute changes occur during the most humid months of February and March with projections indicating up to a 0.5-inch increase from the current climate during February under the Wet Warm Scenario by 2045.

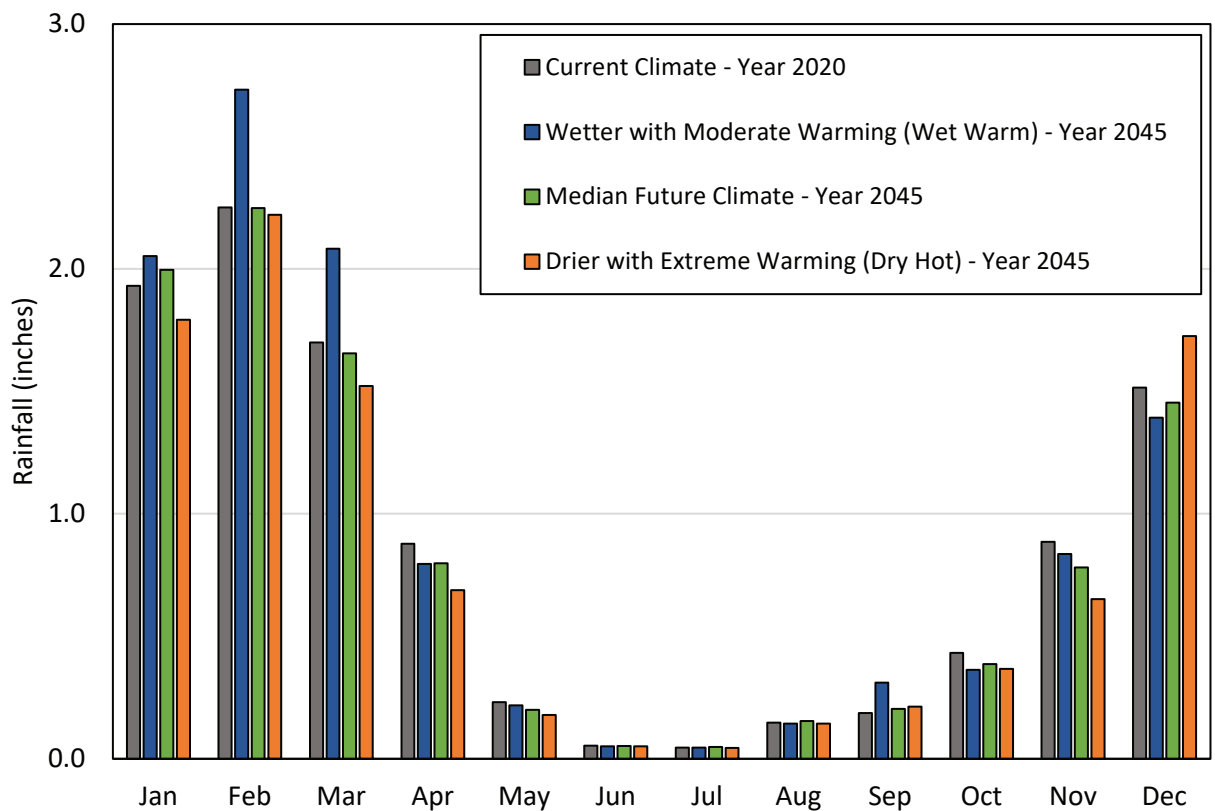


Figure 8: Projected Changes in Normal Year Rainfall – 2045

Figure 9 shows the projected changes in normal year groundwater supply in the year 2045. Figure 9 shows a similar pattern to Figure 8 with the biggest increase in supply during February and March (~8000 AF) under the wet warm scenario compared to current climate conditions. The Dry Hot scenario projects declines during January and March with approximately 2,500 AF less groundwater recharge potential compared to the current conditions. On an annual basis, a total of 147,770 AF of groundwater supply is predicted under the Dry Hot scenario by 2045, while approximately 169,700 AF is predicted under the Wet Warm scenario by 2045, representing an increase of over 20,000 AF. Projections under the Median scenario results in a projected 153,600 AF of annual groundwater supply, which is generally consistent with current climate projections at 157,903 AF.

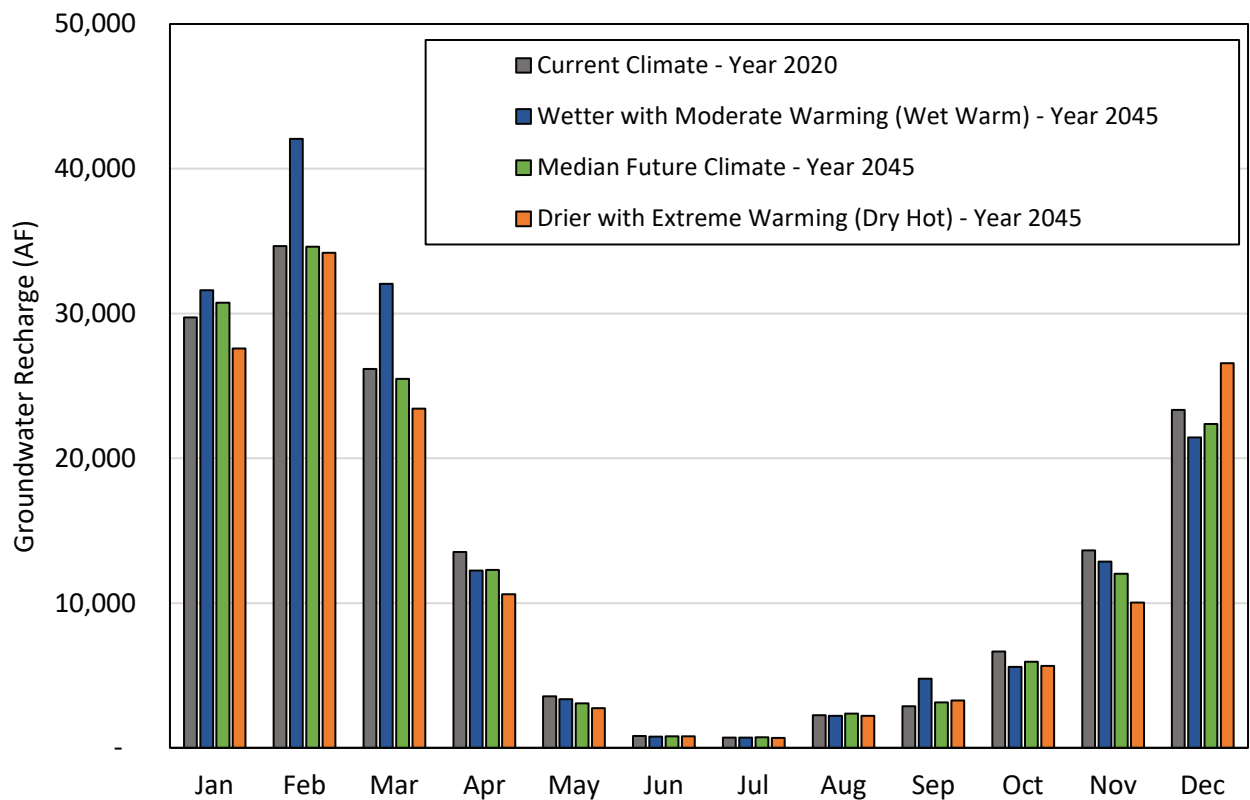


Figure 9: Projected Changes in Normal Year Groundwater Supply – 2045

Figure 10 shows the projected changes in normal year flow for the Santa Ana River by 2045. The Dry Hot and Median scenarios project a 6.8 and 4.1 percent decrease in annual flow by 2045 relative to current climate, respectively, while the Wet Warm scenario projects a 14.8 percent higher annual flow by 2045. The Dry Hot scenario projects lower flow during high-flow months of February and March compared to the current conditions, with discharge decreasing by 32 cubic feet per second (cfs) in February, and 28 cfs in March. Conversely, the Wet Warm scenario projects higher flows during the same period, with discharge increasing by 108 cfs in February and nearly 78 cfs in March. Projected flows under the Median scenario are generally consistent with projected flows under the current climate. No notable deviations in flow from the current climate are projected under any of the climate change scenarios between May to December. Detailed projected changes for Santa Ana River flow under all the climate change scenarios are presented in Appendix A (Table A4, Table A5 and Table A6).

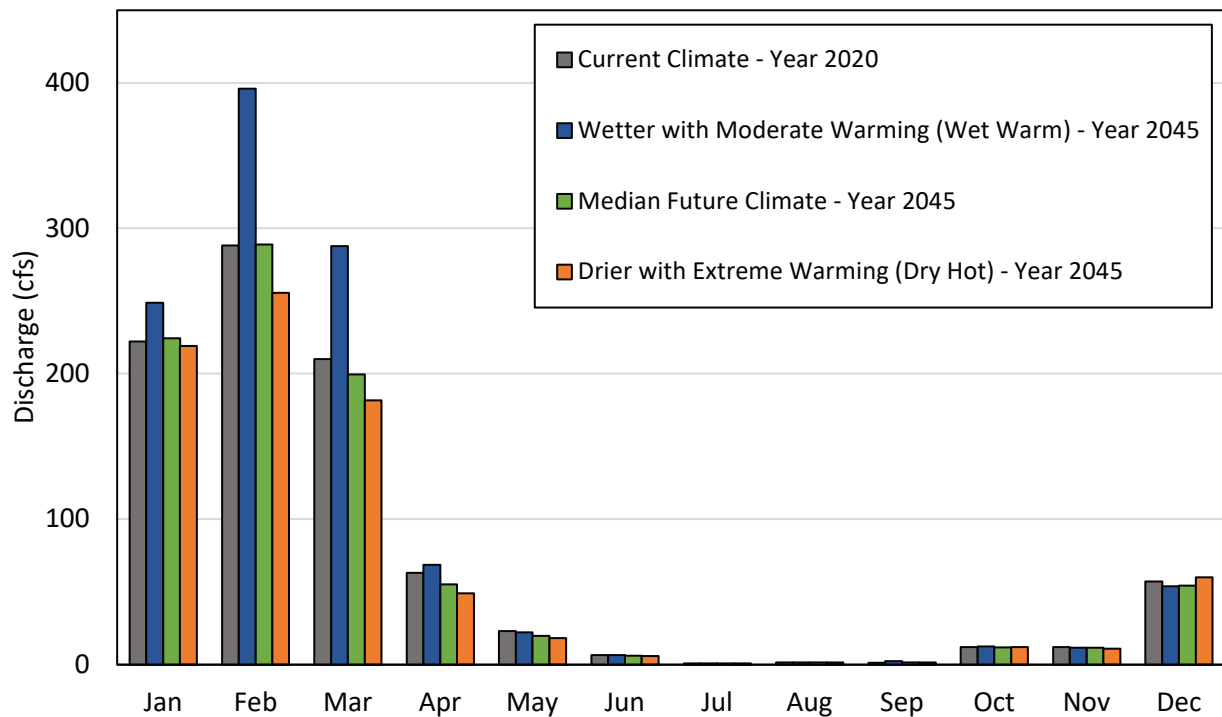


Figure 10: Projected Changes in Normal Year Flow by 2045: Santa Ana River

Figure 11 shows the projected changes in normal year flow for the Santa Margarita River by 2045. While the Wet Warm scenario projects a 12 percent increase in annual flow by 2045, the Dry Hot and Median scenarios project decreases in annual flow of up to 6.8 percent and 4.1 percent respectively by 2045. Projected flows under the Median scenario are generally consistent with projected flows under the current climate. The Dry Hot scenario projects lower flows during February and March compared to the current conditions, with discharge decreasing by 21 cfs in February, and 12 cfs in March. Conversely, the Wet Warm scenario projects higher flows during the first quarter of calendar year with significantly higher flows (+43 cfs) during February and March. Detailed projected changes for Santa Margarita River flow under all the climate change scenarios are presented in Appendix A (Table A7, Table A8, and Table A9).

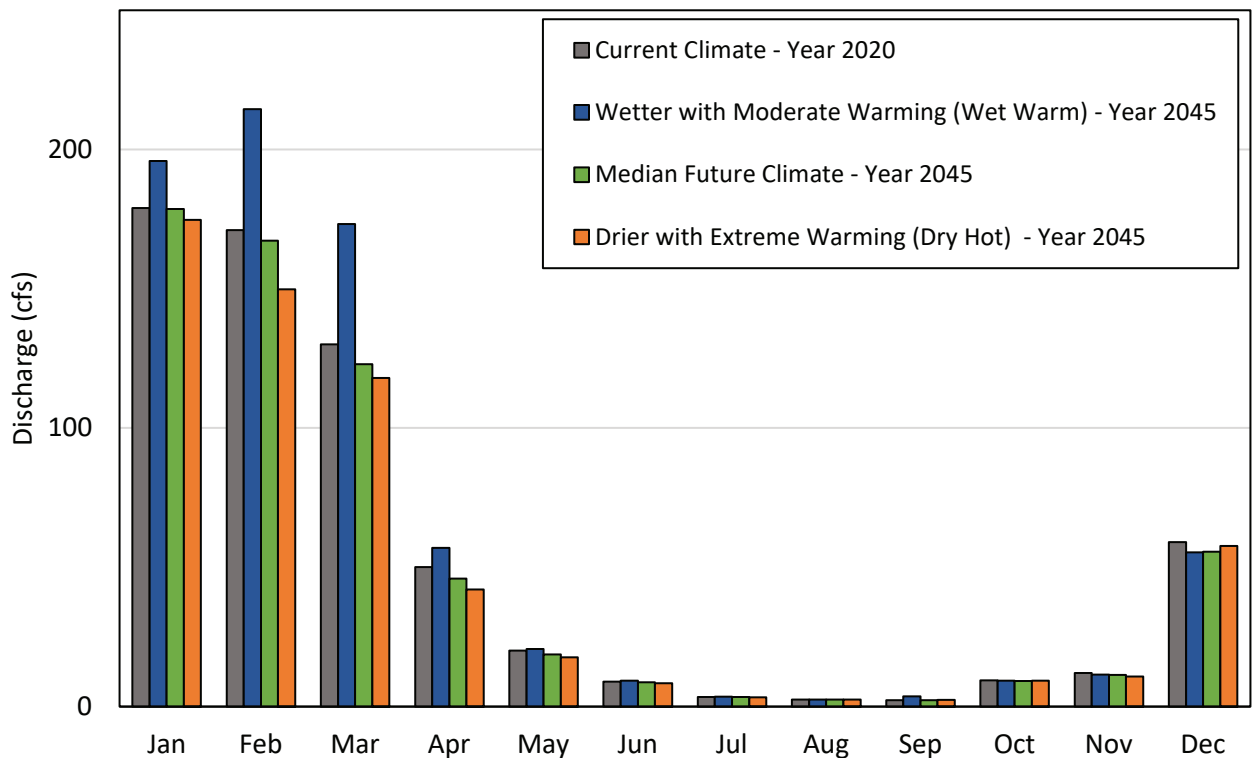


Figure 11: Projected Changes in Normal Year Flow 2045: Santa Margarita River

These water supply change projections indicate that as climate change progresses, local water systems which rely on natural recharge through precipitation are likely to become more reliable water supply sources, while river supplies that are diverted for artificial recharge will continue to see high variability and are likely to become less reliable. Natural groundwater recharge will still occur in normal and dry years, but the timing of available water will change as precipitation will increasingly fall during a shorter rainy season with a longer dry season each year. Furthermore, the increase in temperatures over time will also lead to increases in evaporation from surface water bodies and land surface which will decrease the volume of water available for diversion from rivers. Increased attention should be paid to understanding the adequacy and operational constraints of natural and artificial recharge systems in the service area.

3.2 Water Demand Change Factors Results

Projected changes in outdoor demand from baseline conditions in 2020 under various climate change scenarios are shown in Figure 12, Figure 13, and Figure 14. The water demand change factors are applied to outdoor water uses, which have been adjusted for future population growth and conservation measures. Indoor water uses are assumed to respond to future population growth and conservation as well but are not sensitive to climate change. All scenarios indicate an increase in the annual outdoor water demand, with the average annual outdoor water demand projected to increase by 6 percent for the Dry Hot scenario; 3.4 percent for the Median scenario; and 1.3 percent for the Wet Warm scenario.

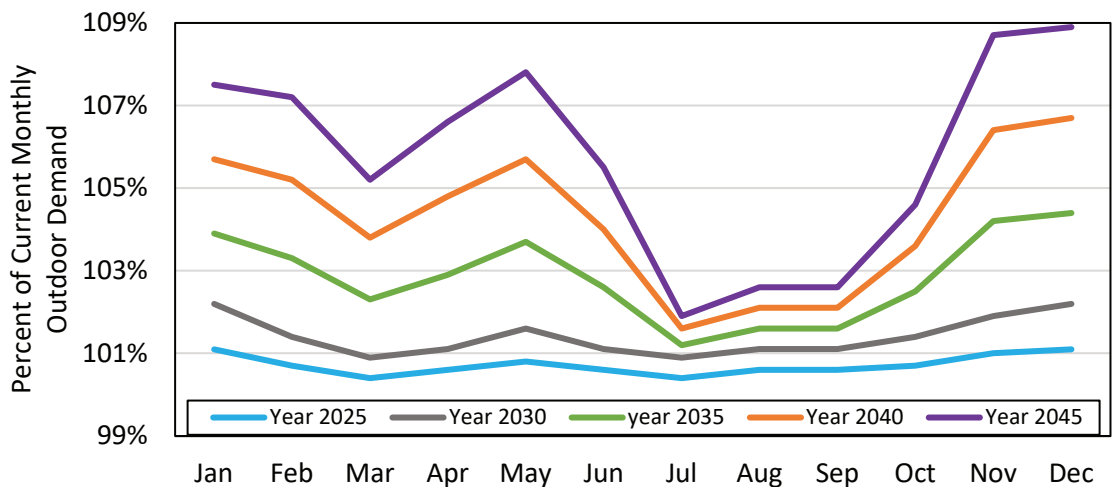


Figure 12: Changes in Outdoor Demand under Dry Hot Future Climate 2025 - 2045

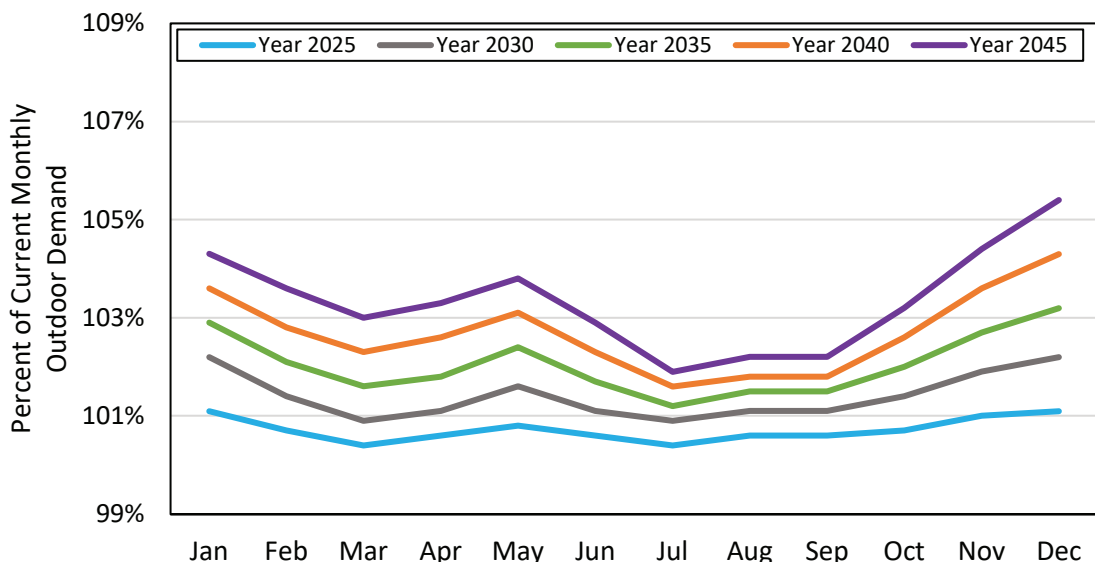


Figure 13: Changes in Normal Year Outdoor Demand under Median Future Climate 2025 - 2045

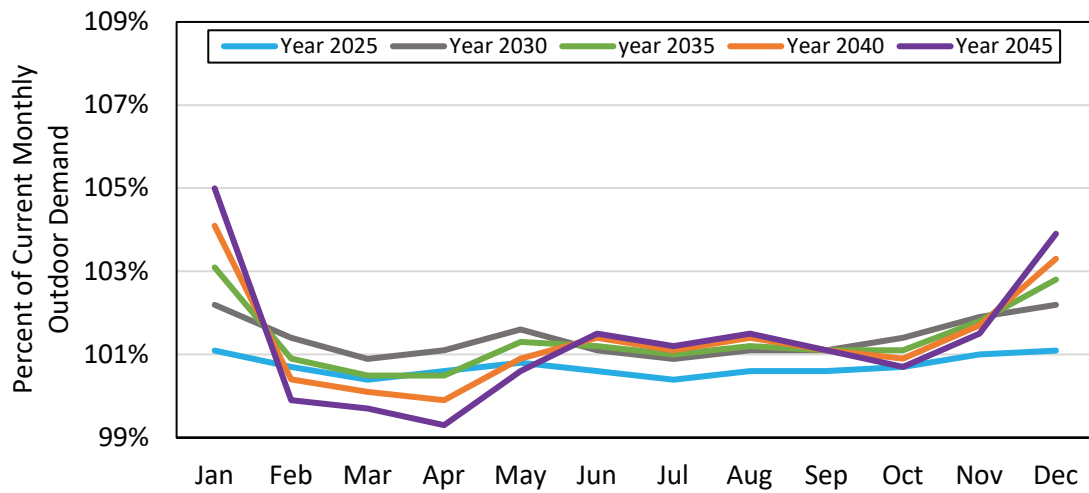


Figure 14: Changes in Outdoor Demand under Wet Warm Future Climate 2025 - 2045

Figure 15 shows the absolute values of the outdoor water demand under various climate change scenarios compared to current conditions and normal conditions in 2045. The impacts of climate change on outdoor water demand are projected to be similar during normal and drought years over the next two decades. This is because climate change datasets show that temperatures are projected to increase over time, regardless of hydrologic conditions. These projected increases in temperature are estimated to increase ET rates for landscaping, irrigated agriculture, and native vegetation. Although the relative changes seem small, the absolute increase during the already high demands month of July and August are notable. On average, projected demand for customers served by Western within Western’s wholesale and retail service areas in 2045 assuming normal conditions is projected to increase by 6,200 AF in July and August from the projected demand under current climate conditions. This average increase in peak monthly demand (July and August) increases to nearly 6,700 AF under the Dry Hot scenario; 6,500 AF under the Wet Warm scenario; and 6,650 AF under the Median scenario. Detailed projected changes for outdoor water demand under all the climate change scenarios are presented in Appendix A (Table A10,

Table A11, and Table A12).

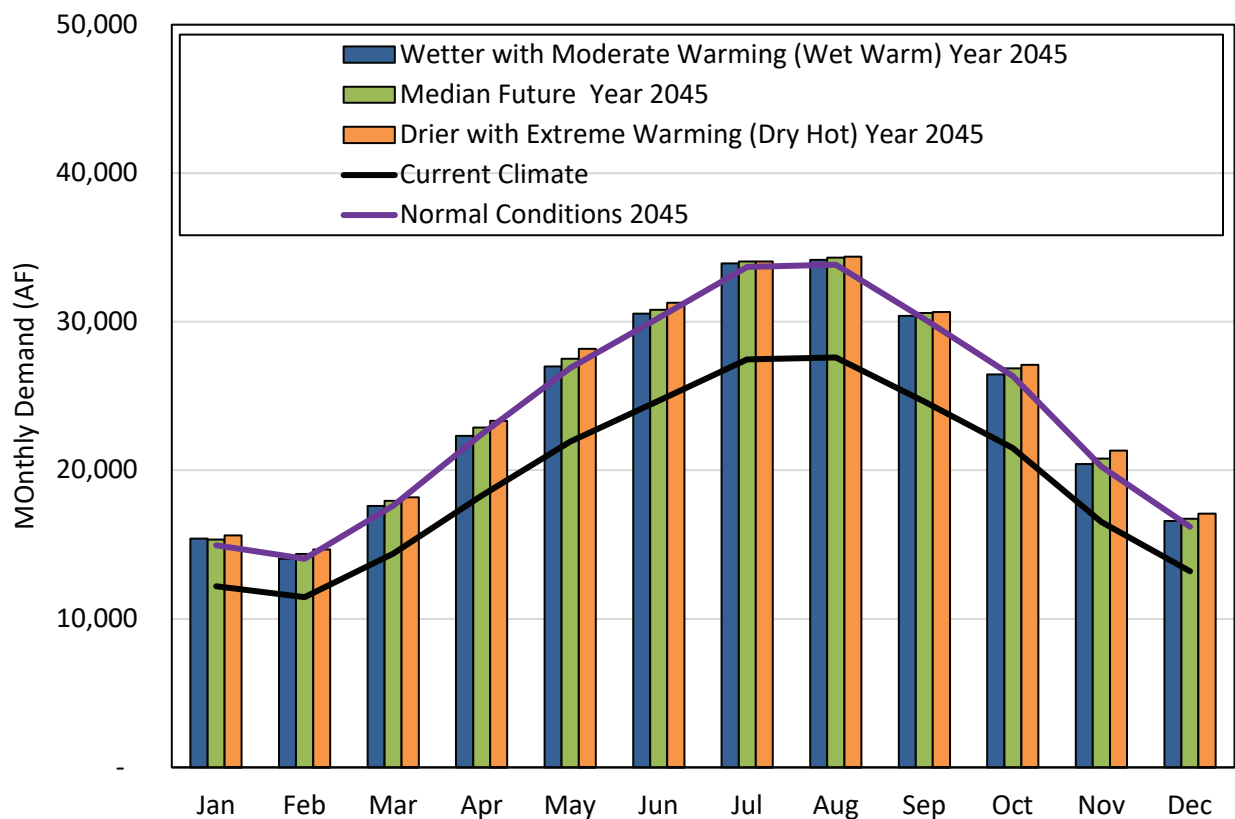


Figure 15: Projected Changes in Normal Year Water Demand 2045

4. FUTURE WATER SUPPLY BUDGETS

Climate change impacts on future water supplies and demands will inform development of the regional DCP.

This TM provides Western and its retail agencies with the ability to utilize the data in the DWR climate change projections and methods of climate change analysis for Western’s service area to develop water budgets and evaluate the impacts of climate change either qualitatively or quantitatively. The water budgets for the entire Western services area for each of the three climate change conditions are shown in Table 2 through Table 4. The water budgets developed for the Western service area include the following assumptions.

- Climate change factors were applied to demand and groundwater production. Baseline demand was collected from Western’s 2020 UWMP. Baseline groundwater production was calculated as the difference between baseline demand and the summation of imported water supplied by MWD plus recycled water use.
- Surface water production and recycling supplies were held constant at 2020 levels to help identify the need for mitigation actions.
- Demand for imported supplies was calculated as the difference between total demand and total local supplies.

Table 2: Western Service Area Water Budget – Drier Future Conditions with Extreme Warming

	2025	2030	2035	2040	2045
Total Demand	245,910	260,841	275,618	281,921	295,777
Groundwater Production	157,111	156,298	153,439	150,638	147,771
Surface Production	2,414	2,414	2,414	2,414	2,414
Recycling	6,908	6,908	6,908	6,908	6,908
Recycling - M&I and Agricultural	6,908	6,908	6,908	6,908	6,908
Total Local Supplies	166,433	165,620	162,761	159,960	157,093
Total Net Demand on Imported Water Supply	79,477	95,220	112,856	121,961	138,685

Table 3: Western Service Area Water Budget – Median Future Climate Conditions

	2025	2030	2035	2040	2045
Total Demand	245,910	258,614	271,889	285,842	300,509
Groundwater Production	157,111	156,298	155,377	154,484	153,591
Surface Production	2,414	2,414	2,414	2,414	2,414
Recycling	6,908	6,908	6,908	6,908	6,908
Recycling - M&I and Agricultural	6,908	6,908	6,908	6,908	6,908
Total Local Supplies	166,433	165,620	164,699	163,806	162,913
Total Net Demand on Imported Water Supply	79,477	92,994	107,190	122,037	137,596

Table 4: Western Service Area Water Budget – Wetter Future Conditions with Moderate Warming

	2025	2030	2035	2040	2045
Total Demand	245,910	258,614	270,834	283,668	297,076
Groundwater Production	157,111	156,298	160,752	165,199	169,694
Surface Production	2,414	2,414	2,414	2,414	2,414
Recycling	6,908	6,908	6,908	6,908	6,908
Recycling – M&I and Agricultural	6,908	6,908	6,908	6,908	6,908
Total Local Supplies	166,433	165,620	170,074	174,521	179,016
Total Net Demand on Imported Water Supply	79,477	92,994	100,760	109,148	118,060

The MWD 2020 IRP also developed projected water supply budgets based on its four projected climate change conditions described previously. Table 5 shows the MWD 2020 IRP projected total demand for Western’s service area and Table 6 shows the MWD 2020 IRP projected imported water supply demand for Western, supplied by MWD, for each of MWD’s 2020 IRP climate change scenarios.

Table 5: MWD 2020 IRP Projection of Western’s Service Area Demand

	2025	2030	2035	2040	2045
Projected Western Total Demand					
Scenario A	230,120	236,761	243,185	246,359	251,194
Scenario B	255,964	270,884	285,736	297,451	310,669
Scenario C	230,243	237,010	243,555	246,637	250,722
Scenario D	256,597	271,855	287,142	299,076	312,220

Table 6: MWD 2020 IRP Projection of Western’s Imported Water Supply Demand

	2025	2030	2035	2040	2045
Projected Western Demand on Imported Water Supply					
Scenario A	12,823	11,851	13,632	13,838	18,057
Scenario B	37,049	43,323	52,626	60,484	73,030
Scenario C	43,930	51,299	59,551	64,284	72,069
Scenario D	69,207	84,621	101,072	114,132	130,938

A comparison of Western and the MWD 2020 IRP total Western service area demand, Figure 16, shows that Western's projections are consistent with the MWD 2020 IRP. The MWD 2020 IRP projections of Western's imported water supply demands are generally higher than the imported water supply demands calculated for Western in this climate change analysis, as illustrated in Figure 17. However, these higher demands are generally attributable to the assumption in Western's water budget that surface and recycled water production is held constant at 2020 levels, while the MWD 2020 IRP assumes growth in those two water supply sources.

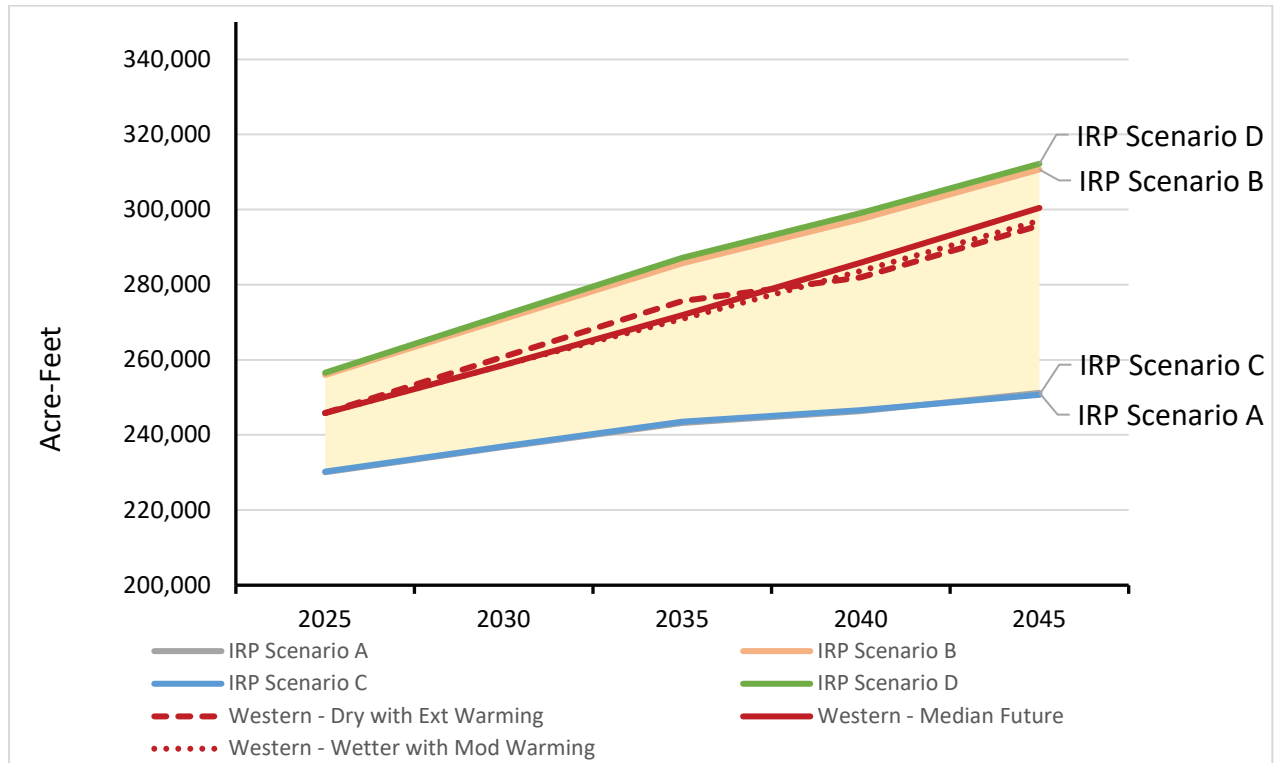


Figure 16: Comparison of MWD 2020 IRP and Western Service Area Total Supply Demands Under Future Climate Scenarios

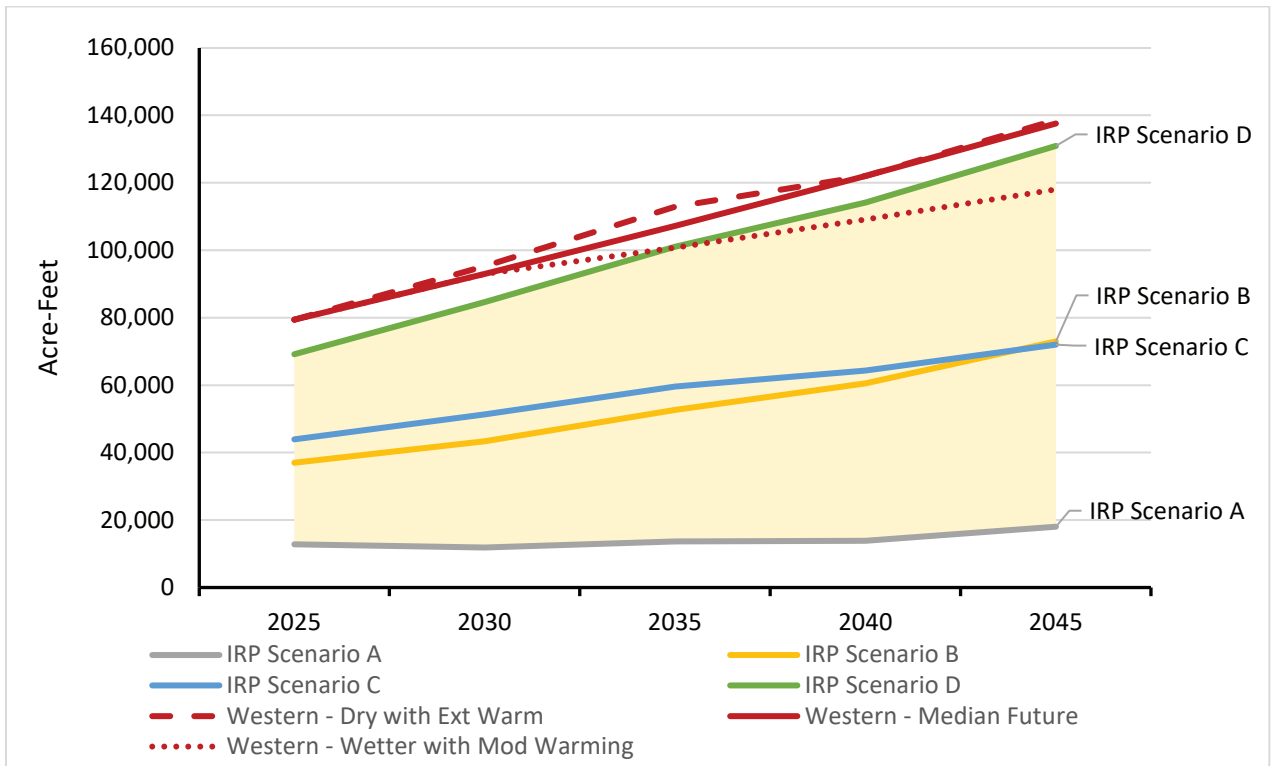


Figure 17: Comparison of MWD 2020 IRP and Western Imported Water Supply Demands Under Future Climate Scenarios

5. APPLYING RESULTS TO LOCAL WATER ANALYSIS

5.1. Computing Future Water Supply and Demand

For Western retail agencies wishing to perform a quantitative assessment of their projected water budgets, the computations needed to convert the percent change results presented in this TM into quantitative estimates of future water supply and demand can be provided as worksheets upon request. Instructions on how to use these worksheets can also be made available upon request.

The monthly change factors developed as part of this analysis are useful for understanding how seasonal changes are contributing to the annual changes discussed in Section 3 of this report. Monthly values are also useful for planning management actions and mitigation actions in the regional DCP. Monthly water supply and demand change factors computed for the service area are presented in Appendix A which consists of the following 12 tables:

- Table A1: Monthly Rainfall Change Factors: Drier with Extreme Warming Scenario
- Table A2: Monthly Rainfall Change Factors: Median Scenario
- Table A3: Monthly Rainfall Change Factors: Wetter with Moderate Warming Scenario
- Table A4: Monthly Santa Ana River Flow Change Factors: Drier with Extreme Warming Scenario
- Table A5: Monthly Santa Ana River Flow Change Factors: Median Scenario

- Table A6: Monthly Santa Ana River Flow Change Factors: Wetter with Moderate Warming Scenario
- Table A7: Monthly Santa Margarita River Flow Change Factors: Drier with Extreme Warming Scenario
- Table A8: Monthly Santa Margarita River Flow Change Factors: Median Scenario
- Table A9: Monthly Santa Margarita River Flow Change Factors: Wetter with Moderate Warming Scenario
- Table A10: Monthly Water Demand Change Factors: Drier with Extreme Warming Scenario
- Table A11: Monthly Water Demand Change Factors: Median Scenario
- Table A12: Monthly Water Demand Change Factors: Wetter with Moderate Warming Scenario

5.2. Constraints and Limitations

This TM presents planning-level projections of climate impacts on water supplies and demand for Western’s service area during normal and drought periods. The results are intended for use by Western in preparing climate-impacted water supply and demand projections for its wholesale UWMP and regional DCP.

The results are not intended for use in other applications such as flood resilience planning, infrastructure design, or for making decisions about operating any specific structure. Flood resilience planning requires analysis of daily or finer temporal resolution using statistical methods to fit frequency distributions to extreme values. Infrastructure design and operations applications require more detailed analysis and ground-truthing of site-specific characteristics, operations and regulations that are not considered in this report.

Climate change can also impact water resources indirectly. For example, wildfire hazards are projected to increase in southern California with climate change. Wildfires can impact water resources by increasing water requirements for firefighting, changing surface vegetation and runoff patterns in burn areas, causing debris flows, and increasing siltation of reservoirs and hydraulic structures. Such secondary impacts of climate change on water resource are not captured in this study.

Future water supplies and demands can also be impacted by policy and regulatory decisions made at the local, state, and federal level. It is difficult to anticipate and quantify the impacts of policy and regulatory considerations that have not yet been made. Therefore, it is not the intention of this report to anticipate future policy or regulatory decisions and their impacts to future water supplies or demands.

5.3. Next Steps

The next step in the planning process is for Western and its member agencies to use the change factors and analysis provided in this TM, if desired, to compute quantitative estimates of future supplies and demands during normal and drought years, incorporating the effects of climate change. The net change in future water supply for each member agency will depend on the percentage of their local water

supply that is sourced from the direct precipitation and natural recharge, Santa Margarita River, or Santa Ana River basins. Similarly, the net change in future water demand will depend on the percentage of outdoor water use and projections of future growth within each member agency's service area. The difference between net future water supply and net future water demand, if any, is the net water deficit that the agency will need to address by developing new management actions and projects. A calculated deficit, if any, would represent the minimum gap that would need to be addressed; however, it is prudent for water managers to consider additional management actions and projects to prepare for uncertain future conditions.

This TM provides Western and its retail agencies with the ability to utilize the data in the DWR climate change projections and methods of climate change analysis for Western's service area to evaluate the impacts of climate change either qualitatively or quantitatively. Should a retail agency choose to use the analysis presented in this TM, the agency may use the change factors provided in Appendix A to compute quantitative estimates of their future water supplies, demands and deficits. As previously noted, worksheets to convert the percent change results presented in this TM into quantitative estimates of future water supply and demand can also be provided upon request.

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**Appendix A: Detailed Projected
Changes in Rainfall, Outdoor Demand,
Santa Margarita River Flow and Santa
Ana River Flow under all scenarios.**

Table A1: Projected Changes in Rainfall under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.4%	99.6%	100.0%	100.4%	96.1%	99.6%	99.3%	100.8%	100.6%	96.5%	98.0%	99.1%
Normal	YR2030	100.9%	99.1%	100.0%	100.9%	92.1%	99.1%	98.5%	101.6%	101.1%	92.9%	95.9%	98.2%
Normal	YR2035	98.1%	99.0%	96.5%	93.4%	87.2%	98.0%	97.9%	100.3%	105.4%	90.3%	88.5%	103.4%
Normal	YR2040	95.5%	98.9%	93.0%	85.9%	82.3%	96.8%	97.2%	99.0%	109.6%	87.6%	81.0%	108.7%
Normal	YR2045	92.8%	98.7%	89.5%	78.4%	77.3%	95.7%	96.6%	97.7%	113.9%	85.0%	73.6%	113.9%
Dry_1Yr	YR2025	101.8%	99.6%	100.7%	103.7%	94.3%	100.0%	100.0%	100.0%	100.6%	93.8%	96.7%	99.9%
Dry_1Yr	YR2030	103.6%	99.1%	101.4%	107.4%	88.6%	100.0%	100.0%	100.0%	101.1%	87.7%	93.3%	99.7%
Dry_1Yr	YR2035	98.2%	96.8%	96.2%	102.4%	83.5%	100.0%	100.0%	100.0%	111.2%	79.2%	83.0%	124.8%
Dry_1Yr	YR2040	92.7%	94.5%	91.0%	97.3%	78.3%	100.0%	100.0%	100.0%	121.3%	70.7%	72.6%	149.8%
Dry_1Yr	YR2045	87.3%	92.2%	85.8%	92.2%	73.2%	100.0%	100.0%	100.0%	131.4%	62.1%	62.3%	174.9%
Dry_5Yr	YR2025	100.0%	97.8%	99.6%	100.4%	94.8%	99.7%	100.0%	101.2%	100.1%	95.2%	97.8%	98.1%
Dry_5Yr	YR2030	100.0%	95.6%	99.1%	100.9%	89.5%	99.4%	100.0%	102.4%	100.3%	90.5%	95.6%	96.3%
Dry_5Yr	YR2035	97.0%	100.1%	97.0%	93.4%	84.3%	97.9%	100.0%	100.8%	101.9%	85.0%	87.2%	105.3%
Dry_5Yr	YR2040	94.0%	104.7%	94.8%	85.9%	79.1%	96.4%	100.0%	99.1%	103.5%	79.6%	78.9%	114.3%
Dry_5Yr	YR2045	91.0%	109.3%	92.6%	78.4%	73.9%	94.9%	100.0%	97.5%	105.1%	74.2%	70.6%	123.3%
Wet_1Yr	YR2025	100.6%	100.4%	98.8%	98.9%	95.4%	100.0%	100.0%	100.0%	98.6%	97.2%	98.6%	101.0%
Wet_1Yr	YR2030	101.1%	100.9%	97.6%	97.9%	90.9%	100.0%	100.0%	100.0%	97.2%	94.4%	97.2%	101.9%
Wet_1Yr	YR2035	102.0%	98.8%	99.0%	94.9%	81.2%	100.0%	100.0%	93.9%	114.6%	96.3%	90.2%	99.5%
Wet_1Yr	YR2040	102.8%	96.7%	100.5%	91.8%	71.5%	100.0%	100.0%	87.7%	132.0%	98.2%	83.1%	97.1%
Wet_1Yr	YR2045	103.7%	94.6%	102.0%	88.8%	61.9%	100.0%	100.0%	81.6%	149.4%	100.0%	76.0%	94.8%
Wet_5Yr	YR2025	100.8%	100.4%	99.9%	100.1%	95.9%	99.9%	99.6%	100.6%	101.5%	96.9%	98.1%	99.3%
Wet_5Yr	YR2030	101.6%	100.9%	99.7%	100.3%	91.7%	99.7%	99.1%	101.1%	102.9%	93.8%	96.3%	98.5%
Wet_5Yr	YR2035	100.0%	98.4%	98.2%	93.8%	84.8%	99.2%	99.6%	100.1%	106.2%	91.5%	87.9%	102.0%
Wet_5Yr	YR2040	98.3%	95.9%	96.7%	87.4%	77.8%	98.7%	100.1%	99.2%	109.4%	89.4%	79.6%	105.5%
Wet_5Yr	YR2045	96.6%	93.5%	95.2%	80.9%	70.9%	98.2%	100.7%	98.2%	112.6%	87.2%	71.2%	109.0%

Table A2: Projected Changes in Rainfall under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.4%	99.6%	100.0%	100.4%	96.1%	99.6%	99.3%	100.8%	100.6%	96.5%	98.0%	99.1%
Normal	YR2030	100.9%	99.1%	100.0%	100.9%	92.1%	99.1%	98.5%	101.6%	101.1%	92.9%	95.9%	98.2%
Normal	YR2035	101.7%	99.4%	99.1%	97.5%	90.3%	98.5%	100.7%	102.6%	103.8%	91.8%	93.3%	97.4%
Normal	YR2040	102.6%	99.6%	98.3%	94.2%	88.5%	97.8%	102.9%	103.6%	106.5%	90.6%	90.7%	96.6%
Normal	YR2045	103.4%	99.9%	97.4%	90.9%	86.8%	97.2%	105.1%	104.5%	109.1%	89.4%	88.1%	95.9%
Dry_1Yr	YR2025	101.8%	99.6%	100.7%	103.7%	94.3%	100.0%	100.0%	100.0%	100.6%	93.8%	96.7%	99.9%
Dry_1Yr	YR2030	103.6%	99.1%	101.4%	107.4%	88.6%	100.0%	100.0%	100.0%	101.1%	87.7%	93.3%	99.7%
Dry_1Yr	YR2035	103.9%	99.1%	100.5%	102.6%	86.2%	100.0%	100.0%	100.0%	106.1%	84.9%	88.8%	100.0%
Dry_1Yr	YR2040	104.1%	99.1%	99.7%	97.7%	83.8%	100.0%	100.0%	100.0%	111.1%	82.1%	84.3%	100.2%
Dry_1Yr	YR2045	104.3%	99.1%	98.8%	92.8%	81.4%	100.0%	100.0%	100.0%	116.1%	79.3%	79.8%	100.5%
Dry_5Yr	YR2025	100.0%	97.8%	99.6%	100.4%	94.8%	99.7%	100.0%	101.2%	100.1%	95.2%	97.8%	98.1%
Dry_5Yr	YR2030	100.0%	95.6%	99.1%	100.9%	89.5%	99.4%	100.0%	102.4%	100.3%	90.5%	95.6%	96.3%
Dry_5Yr	YR2035	100.9%	96.9%	98.2%	97.2%	87.3%	98.9%	100.0%	104.6%	101.0%	88.4%	92.6%	95.7%
Dry_5Yr	YR2040	101.8%	98.3%	97.3%	93.5%	85.1%	98.4%	100.0%	106.9%	101.8%	86.4%	89.7%	95.2%
Dry_5Yr	YR2045	102.6%	99.7%	96.4%	89.8%	82.9%	97.9%	100.0%	109.1%	102.5%	84.4%	86.8%	94.6%
Wet_1Yr	YR2025	100.6%	100.4%	98.8%	98.9%	95.4%	100.0%	100.0%	100.0%	98.6%	97.2%	98.6%	101.0%
Wet_1Yr	YR2030	101.1%	100.9%	97.6%	97.9%	90.9%	100.0%	100.0%	100.0%	97.2%	94.4%	97.2%	101.9%
Wet_1Yr	YR2035	101.8%	101.3%	98.0%	97.0%	87.8%	100.0%	100.0%	98.8%	103.1%	94.3%	97.8%	99.9%
Wet_1Yr	YR2040	102.6%	101.8%	98.4%	96.1%	84.7%	100.0%	100.0%	97.5%	109.0%	94.2%	98.3%	97.9%
Wet_1Yr	YR2045	103.3%	102.3%	98.8%	95.1%	81.7%	100.0%	100.0%	96.3%	114.9%	94.0%	98.9%	95.8%
Wet_5Yr	YR2025	100.8%	100.4%	99.9%	100.1%	95.9%	99.9%	99.6%	100.6%	101.5%	96.9%	98.1%	99.3%
Wet_5Yr	YR2030	101.6%	100.9%	99.7%	100.3%	91.7%	99.7%	99.1%	101.1%	102.9%	93.8%	96.3%	98.5%
Wet_5Yr	YR2035	102.7%	101.1%	99.2%	97.9%	89.3%	99.5%	100.7%	101.1%	105.0%	92.4%	92.1%	97.9%
Wet_5Yr	YR2040	103.8%	101.3%	98.7%	95.6%	86.9%	99.2%	102.2%	101.1%	107.1%	91.1%	88.0%	97.2%
Wet_5Yr	YR2045	104.9%	101.6%	98.2%	93.2%	84.5%	99.0%	103.7%	101.1%	109.2%	89.8%	83.9%	96.6%

Table A3: Projected Changes in Rainfall under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.4%	99.6%	100.0%	100.4%	96.1%	99.6%	99.3%	100.8%	100.6%	96.5%	98.0%	99.1%
Normal	YR2030	100.9%	99.1%	100.0%	100.9%	92.1%	99.1%	98.5%	101.6%	101.1%	92.9%	95.9%	98.2%
Normal	YR2035	102.7%	106.5%	107.5%	97.4%	92.9%	97.7%	98.8%	100.3%	122.9%	90.0%	95.4%	96.1%
Normal	YR2040	104.5%	113.9%	115.0%	94.0%	93.6%	96.3%	99.0%	99.0%	144.6%	87.1%	94.8%	94.0%
Normal	YR2045	106.3%	121.4%	122.5%	90.6%	94.4%	94.9%	99.3%	97.7%	166.4%	84.1%	94.3%	91.9%
Dry_1Yr	YR2025	101.8%	99.6%	100.7%	103.7%	94.3%	100.0%	100.0%	100.0%	100.6%	93.8%	96.7%	99.9%
Dry_1Yr	YR2030	103.6%	99.1%	101.4%	107.4%	88.6%	100.0%	100.0%	100.0%	101.1%	87.7%	93.3%	99.7%
Dry_1Yr	YR2035	106.5%	105.6%	112.5%	101.7%	89.6%	100.0%	100.0%	100.0%	162.5%	86.8%	93.3%	91.7%
Dry_1Yr	YR2040	109.3%	112.2%	123.6%	96.0%	90.6%	100.0%	100.0%	100.0%	223.9%	86.0%	93.3%	83.6%
Dry_1Yr	YR2045	112.2%	118.7%	134.7%	90.3%	91.5%	100.0%	100.0%	100.0%	285.2%	85.2%	93.3%	75.5%
Dry_5Yr	YR2025	100.0%	97.8%	99.6%	100.4%	94.8%	99.7%	100.0%	101.2%	100.1%	95.2%	97.8%	98.1%
Dry_5Yr	YR2030	100.0%	95.6%	99.1%	100.9%	89.5%	99.4%	100.0%	102.4%	100.3%	90.5%	95.6%	96.3%
Dry_5Yr	YR2035	99.4%	111.4%	105.3%	97.0%	90.3%	98.2%	100.0%	100.5%	107.1%	86.9%	94.7%	93.4%
Dry_5Yr	YR2040	98.8%	127.2%	111.4%	93.3%	91.1%	96.9%	100.0%	98.7%	113.9%	83.3%	93.9%	90.5%
Dry_5Yr	YR2045	98.1%	143.1%	117.5%	89.5%	91.9%	95.6%	100.0%	96.8%	120.8%	79.8%	93.1%	87.6%
Wet_1Yr	YR2025	100.6%	100.4%	98.8%	98.9%	95.4%	100.0%	100.0%	100.0%	98.6%	97.2%	98.6%	101.0%
Wet_1Yr	YR2030	101.1%	100.9%	97.6%	97.9%	90.9%	100.0%	100.0%	100.0%	97.2%	94.4%	97.2%	101.9%
Wet_1Yr	YR2035	104.5%	106.0%	101.4%	95.5%	90.7%	100.0%	100.0%	92.7%	173.9%	86.2%	93.4%	98.6%
Wet_1Yr	YR2040	107.9%	111.1%	105.3%	93.2%	90.6%	100.0%	100.0%	85.5%	250.6%	78.0%	89.5%	95.2%
Wet_1Yr	YR2045	111.3%	116.3%	109.1%	90.8%	90.4%	100.0%	100.0%	78.2%	327.3%	69.7%	85.6%	91.9%
Wet_5Yr	YR2025	100.8%	100.4%	99.9%	100.1%	95.9%	99.9%	99.6%	100.6%	101.5%	96.9%	98.1%	99.3%
Wet_5Yr	YR2030	101.6%	100.9%	99.7%	100.3%	91.7%	99.7%	99.1%	101.1%	102.9%	93.8%	96.3%	98.5%
Wet_5Yr	YR2035	106.0%	106.8%	104.6%	97.7%	91.6%	98.7%	98.7%	100.5%	117.5%	89.8%	96.9%	97.0%
Wet_5Yr	YR2040	110.3%	112.8%	109.5%	95.1%	91.4%	97.7%	98.4%	99.9%	132.1%	85.9%	97.6%	95.4%
Wet_5Yr	YR2045	114.6%	118.8%	114.4%	92.5%	91.3%	96.7%	98.0%	99.3%	146.7%	82.0%	98.3%	93.9%

Table A4: Projected Changes in Santa Ana River Flow under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.6%	100.1%	99.3%	97.6%	96.1%	98.0%	99.4%	100.1%	100.4%	99.4%	98.9%	99.7%
Normal	YR2030	101.1%	100.3%	98.5%	95.2%	92.1%	95.9%	98.9%	100.3%	100.9%	98.9%	97.9%	99.4%
Normal	YR2035	100.3%	96.4%	94.5%	89.3%	87.5%	93.6%	97.7%	99.9%	104.4%	98.8%	95.1%	101.3%
Normal	YR2040	99.4%	92.6%	90.5%	83.4%	82.9%	91.2%	96.5%	99.5%	107.9%	98.8%	92.4%	103.2%
Normal	YR2045	98.6%	88.7%	86.5%	77.6%	78.2%	88.9%	95.3%	99.2%	111.5%	98.8%	89.6%	105.1%
Dry_1Yr	YR2025	101.0%	100.4%	97.8%	97.8%	98.6%	99.7%	99.9%	100.0%	100.0%	98.9%	99.1%	99.9%
Dry_1Yr	YR2030	101.9%	100.9%	95.6%	95.6%	97.2%	99.4%	99.7%	100.0%	100.0%	97.9%	98.2%	99.7%
Dry_1Yr	YR2035	96.5%	96.3%	88.2%	90.0%	94.7%	98.2%	99.0%	99.6%	107.8%	98.2%	97.2%	99.7%
Dry_1Yr	YR2040	91.2%	91.8%	80.8%	84.4%	92.2%	96.9%	98.2%	99.2%	115.5%	98.4%	96.1%	99.7%
Dry_1Yr	YR2045	85.8%	87.3%	73.5%	78.9%	89.6%	95.6%	97.4%	98.9%	123.2%	98.7%	95.1%	99.7%
Dry_5Yr	YR2025	100.3%	98.6%	98.5%	97.2%	95.4%	97.6%	99.7%	100.0%	100.0%	99.4%	98.8%	98.9%
Dry_5Yr	YR2030	100.6%	97.2%	96.9%	94.4%	90.9%	95.2%	99.4%	100.0%	100.0%	98.9%	97.6%	97.9%
Dry_5Yr	YR2035	98.7%	93.2%	92.7%	89.2%	87.0%	93.5%	98.5%	99.6%	100.6%	97.8%	94.3%	98.8%
Dry_5Yr	YR2040	96.9%	89.2%	88.6%	83.9%	83.2%	91.8%	97.6%	99.2%	101.2%	96.8%	90.9%	99.7%
Dry_5Yr	YR2045	95.0%	85.2%	84.4%	78.7%	79.4%	90.2%	96.8%	98.9%	101.9%	95.7%	87.6%	100.7%
Wet_1Yr	YR2025	100.3%	101.3%	98.8%	97.4%	94.1%	92.5%	96.7%	100.7%	99.6%	96.5%	98.5%	99.4%
Wet_1Yr	YR2030	100.6%	102.7%	97.6%	94.8%	88.2%	85.0%	93.3%	101.4%	99.1%	92.9%	96.9%	98.9%
Wet_1Yr	YR2035	96.0%	97.2%	98.2%	89.9%	80.9%	81.5%	91.7%	99.6%	106.0%	104.7%	90.6%	101.7%
Wet_1Yr	YR2040	91.4%	91.7%	98.9%	85.0%	73.6%	77.9%	90.1%	97.8%	112.9%	116.5%	84.3%	104.5%
Wet_1Yr	YR2045	86.9%	86.2%	99.6%	80.0%	66.3%	74.3%	88.5%	95.9%	119.8%	128.2%	77.9%	107.3%
Wet_5Yr	YR2025	101.0%	101.1%	99.6%	97.2%	95.0%	96.9%	98.9%	100.4%	102.2%	100.1%	99.3%	99.9%
Wet_5Yr	YR2030	101.9%	102.2%	99.1%	94.4%	90.0%	93.8%	97.9%	100.9%	104.4%	100.3%	98.5%	99.7%
Wet_5Yr	YR2035	100.7%	99.1%	97.0%	88.2%	83.9%	91.3%	97.0%	100.5%	108.6%	100.5%	97.0%	105.9%
Wet_5Yr	YR2040	99.5%	96.0%	94.8%	82.0%	77.8%	88.8%	96.1%	100.1%	112.8%	100.8%	95.4%	112.1%
Wet_5Yr	YR2045	98.3%	92.9%	92.6%	75.7%	71.7%	86.3%	95.1%	99.7%	117.0%	101.0%	93.9%	118.2%

Table A5: Projected Changes in Santa Ana River Flow under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.6%	100.1%	99.3%	97.6%	96.1%	98.0%	99.4%	100.1%	100.4%	99.4%	98.9%	99.7%
Normal	YR2030	101.1%	100.3%	98.5%	95.2%	92.1%	95.9%	98.9%	100.3%	100.9%	98.9%	97.9%	99.4%
Normal	YR2035	101.1%	100.3%	97.4%	92.5%	89.7%	94.9%	98.4%	100.2%	101.7%	98.4%	97.0%	98.0%
Normal	YR2040	101.1%	100.3%	96.2%	89.9%	87.4%	94.0%	98.1%	100.0%	102.6%	98.1%	96.1%	96.6%
Normal	YR2045	101.1%	100.3%	95.0%	87.2%	85.0%	93.0%	97.7%	99.9%	103.4%	97.7%	95.1%	95.2%
Dry_1Yr	YR2025	101.0%	100.4%	97.8%	97.8%	98.6%	99.7%	99.9%	100.0%	100.0%	98.9%	99.1%	99.9%
Dry_1Yr	YR2030	101.9%	100.9%	95.6%	95.6%	97.2%	99.4%	99.7%	100.0%	100.0%	97.9%	98.2%	99.7%
Dry_1Yr	YR2035	99.2%	99.4%	91.8%	92.4%	96.0%	98.9%	99.5%	99.9%	101.0%	97.4%	97.3%	99.6%
Dry_1Yr	YR2040	96.4%	97.9%	88.1%	89.2%	94.8%	98.4%	99.2%	99.8%	102.0%	96.8%	96.4%	99.5%
Dry_1Yr	YR2045	93.7%	96.4%	84.3%	86.0%	93.6%	97.9%	99.0%	99.6%	103.0%	96.3%	95.5%	99.3%
Dry_5Yr	YR2025	100.3%	98.6%	98.5%	97.2%	95.4%	97.6%	99.7%	100.0%	100.0%	99.4%	98.8%	98.9%
Dry_5Yr	YR2030	100.6%	97.2%	96.9%	94.4%	90.9%	95.2%	99.4%	100.0%	100.0%	98.9%	97.6%	97.9%
Dry_5Yr	YR2035	100.1%	96.0%	95.4%	91.8%	88.3%	94.2%	99.0%	99.9%	100.1%	98.2%	96.4%	96.2%
Dry_5Yr	YR2040	99.6%	94.8%	94.0%	89.1%	85.7%	93.2%	98.7%	99.8%	100.2%	97.5%	95.2%	94.5%
Dry_5Yr	YR2045	99.1%	93.6%	92.5%	86.4%	83.0%	92.3%	98.3%	99.6%	100.4%	96.9%	94.0%	92.8%
Wet_1Yr	YR2025	100.3%	101.3%	98.8%	97.4%	94.1%	92.5%	96.7%	100.7%	99.6%	96.5%	98.5%	99.4%
Wet_1Yr	YR2030	100.6%	102.7%	97.6%	94.8%	88.2%	85.0%	93.3%	101.4%	99.1%	92.9%	96.9%	98.9%
Wet_1Yr	YR2035	100.7%	102.7%	98.6%	93.9%	85.2%	83.0%	92.9%	100.8%	100.7%	92.4%	97.9%	95.7%
Wet_1Yr	YR2040	100.8%	102.7%	99.7%	92.9%	82.3%	81.0%	92.5%	100.2%	102.2%	91.8%	98.8%	92.6%
Wet_1Yr	YR2045	100.9%	102.7%	100.8%	91.9%	79.4%	78.9%	92.0%	99.6%	103.7%	91.2%	99.7%	89.6%
Wet_5Yr	YR2025	101.0%	101.1%	99.6%	97.2%	95.0%	96.9%	98.9%	100.4%	102.2%	100.1%	99.3%	99.9%
Wet_5Yr	YR2030	101.9%	102.2%	99.1%	94.4%	90.0%	93.8%	97.9%	100.9%	104.4%	100.3%	98.5%	99.7%
Wet_5Yr	YR2035	102.7%	103.1%	98.6%	91.5%	86.4%	92.4%	97.6%	100.8%	106.8%	100.5%	97.7%	98.2%
Wet_5Yr	YR2040	103.6%	104.1%	98.1%	88.5%	82.8%	91.1%	97.4%	100.8%	109.2%	100.8%	97.0%	96.7%
Wet_5Yr	YR2045	104.4%	105.0%	97.6%	85.5%	79.2%	89.8%	97.1%	100.8%	111.7%	101.0%	96.2%	95.2%

Table A6: Projected Changes in Santa Ana River Flow under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.6%	100.1%	99.3%	97.6%	96.1%	98.0%	99.4%	100.1%	100.4%	99.4%	98.9%	99.7%
Normal	YR2030	101.1%	100.3%	98.5%	95.2%	92.1%	95.9%	98.9%	100.3%	100.9%	98.9%	97.9%	99.4%
Normal	YR2035	104.8%	112.7%	111.4%	99.7%	93.5%	97.0%	99.6%	100.2%	131.8%	100.5%	96.8%	97.6%
Normal	YR2040	108.4%	125.1%	124.2%	104.2%	94.8%	98.1%	100.4%	100.0%	162.8%	102.2%	95.8%	95.9%
Normal	YR2045	112.0%	137.5%	137.0%	108.6%	96.2%	99.2%	101.1%	99.9%	193.7%	103.8%	94.7%	94.1%
Dry_1Yr	YR2025	101.0%	100.4%	97.8%	97.8%	98.6%	99.7%	99.9%	100.0%	100.0%	98.9%	99.1%	99.9%
Dry_1Yr	YR2030	101.9%	100.9%	95.6%	95.6%	97.2%	99.4%	99.7%	100.0%	100.0%	97.9%	98.2%	99.7%
Dry_1Yr	YR2035	103.7%	116.0%	102.6%	101.7%	99.5%	101.2%	100.7%	100.4%	159.8%	107.9%	103.2%	103.1%
Dry_1Yr	YR2040	105.5%	131.2%	109.7%	107.8%	101.8%	103.0%	101.7%	100.8%	219.5%	117.9%	108.1%	106.5%
Dry_1Yr	YR2045	107.3%	146.4%	116.8%	113.9%	104.1%	104.7%	102.7%	101.1%	279.2%	127.9%	113.1%	109.9%
Dry_5Yr	YR2025	100.3%	98.6%	98.5%	97.2%	95.4%	97.6%	99.7%	100.0%	100.0%	99.4%	98.8%	98.9%
Dry_5Yr	YR2030	100.6%	97.2%	96.9%	94.4%	90.9%	95.2%	99.4%	100.0%	100.0%	98.9%	97.6%	97.9%
Dry_5Yr	YR2035	101.8%	104.1%	107.8%	97.9%	92.6%	96.5%	100.1%	100.2%	114.8%	97.4%	96.1%	95.8%
Dry_5Yr	YR2040	103.0%	110.9%	118.7%	101.3%	94.3%	97.7%	100.7%	100.5%	129.5%	96.0%	94.7%	93.7%
Dry_5Yr	YR2045	104.3%	117.7%	129.6%	104.7%	95.9%	99.0%	101.3%	100.8%	144.3%	94.6%	93.2%	91.6%
Wet_1Yr	YR2025	100.3%	101.3%	98.8%	97.4%	94.1%	92.5%	96.7%	100.7%	99.6%	96.5%	98.5%	99.4%
Wet_1Yr	YR2030	100.6%	102.7%	97.6%	94.8%	88.2%	85.0%	93.3%	101.4%	99.1%	92.9%	96.9%	98.9%
Wet_1Yr	YR2035	105.6%	111.5%	107.3%	99.2%	86.2%	85.3%	93.2%	97.8%	161.8%	108.2%	94.9%	94.4%
Wet_1Yr	YR2040	110.7%	120.4%	116.9%	103.6%	84.3%	85.4%	93.0%	94.1%	224.6%	123.5%	92.9%	90.1%
Wet_1Yr	YR2045	115.7%	129.3%	126.6%	108.0%	82.3%	85.6%	92.9%	90.5%	287.3%	138.8%	90.9%	85.7%
Wet_5Yr	YR2025	101.0%	101.1%	99.6%	97.2%	95.0%	96.9%	98.9%	100.4%	102.2%	100.1%	99.3%	99.9%
Wet_5Yr	YR2030	101.9%	102.2%	99.1%	94.4%	90.0%	93.8%	97.9%	100.9%	104.4%	100.3%	98.5%	99.7%
Wet_5Yr	YR2035	106.8%	117.2%	109.7%	98.0%	90.3%	94.6%	98.4%	100.6%	138.3%	104.8%	98.6%	97.1%
Wet_5Yr	YR2040	111.7%	132.2%	120.3%	101.6%	90.6%	95.5%	98.9%	100.3%	172.3%	109.2%	98.8%	94.4%
Wet_5Yr	YR2045	116.5%	147.2%	130.9%	105.1%	90.9%	96.3%	99.5%	100.1%	206.3%	113.7%	98.9%	91.8%

Table A7: Projected Changes in Santa Margarita River Flow under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.6%	99.1%	98.8%	99.4%	99.6%	100.3%	100.3%	99.4%	98.9%	99.6%
Normal	YR2030	100.6%	99.7%	99.1%	98.2%	97.6%	98.9%	99.1%	100.6%	100.6%	98.9%	97.9%	99.1%
Normal	YR2035	99.6%	95.7%	96.3%	93.5%	94.5%	97.2%	98.0%	99.9%	102.9%	98.6%	95.1%	98.6%
Normal	YR2040	98.6%	91.7%	93.5%	88.8%	91.5%	95.5%	96.8%	99.3%	105.2%	98.3%	92.4%	98.1%
Normal	YR2045	97.6%	87.6%	90.7%	84.1%	88.4%	93.8%	95.7%	98.7%	107.6%	98.1%	89.6%	97.6%
Dry_1Yr	YR2025	100.7%	99.4%	100.1%	100.0%	99.6%	99.9%	100.0%	100.0%	100.0%	99.6%	99.9%	99.9%
Dry_1Yr	YR2030	101.4%	98.9%	100.3%	100.0%	99.1%	99.7%	100.0%	100.0%	100.0%	99.1%	99.7%	99.7%
Dry_1Yr	YR2035	96.9%	94.2%	96.1%	97.5%	97.1%	98.7%	99.2%	99.2%	100.4%	98.4%	98.7%	99.0%
Dry_1Yr	YR2040	92.4%	89.6%	91.8%	95.0%	95.0%	97.7%	98.5%	98.5%	100.8%	97.6%	97.7%	98.2%
Dry_1Yr	YR2045	88.0%	84.9%	87.6%	92.5%	93.0%	96.7%	97.8%	97.8%	101.1%	96.8%	96.7%	97.4%
Dry_5Yr	YR2025	100.0%	99.6%	99.1%	98.8%	98.9%	99.4%	99.7%	100.0%	99.9%	99.4%	98.9%	99.3%
Dry_5Yr	YR2030	100.0%	99.1%	98.2%	97.6%	97.9%	98.9%	99.4%	100.0%	99.7%	98.9%	97.9%	98.5%
Dry_5Yr	YR2035	97.6%	95.9%	95.3%	93.3%	95.0%	97.3%	98.5%	99.5%	100.5%	98.7%	95.1%	96.7%
Dry_5Yr	YR2040	95.3%	92.7%	92.5%	89.1%	92.1%	95.7%	97.6%	99.0%	101.2%	98.6%	92.4%	94.9%
Dry_5Yr	YR2045	92.9%	89.5%	89.6%	84.8%	89.2%	94.2%	96.8%	98.5%	102.0%	98.4%	89.6%	93.1%
Wet_1Yr	YR2025	99.9%	99.3%	96.3%	95.9%	92.8%	99.1%	99.4%	102.6%	100.3%	98.3%	97.0%	100.1%
Wet_1Yr	YR2030	99.7%	98.5%	92.5%	91.7%	85.6%	98.2%	98.9%	105.2%	100.6%	96.6%	94.1%	100.3%
Wet_1Yr	YR2035	97.1%	93.7%	94.0%	87.2%	78.8%	96.4%	97.5%	100.9%	100.8%	96.5%	87.5%	99.5%
Wet_1Yr	YR2040	94.4%	88.9%	95.5%	82.7%	72.0%	94.6%	96.2%	96.5%	101.1%	96.3%	80.9%	98.8%
Wet_1Yr	YR2045	91.8%	84.1%	97.0%	78.1%	65.2%	92.7%	95.0%	92.2%	101.3%	96.2%	74.3%	98.0%
Wet_5Yr	YR2025	100.3%	100.1%	98.5%	98.3%	98.3%	99.4%	99.7%	100.1%	101.2%	99.1%	99.1%	99.4%
Wet_5Yr	YR2030	100.6%	100.3%	96.9%	96.6%	96.6%	98.9%	99.4%	100.3%	102.4%	98.2%	98.2%	98.9%
Wet_5Yr	YR2035	97.7%	96.1%	96.1%	91.7%	93.3%	97.3%	98.4%	99.8%	107.0%	98.2%	96.8%	100.4%
Wet_5Yr	YR2040	94.9%	91.8%	95.3%	86.8%	90.1%	95.7%	97.4%	99.3%	111.6%	98.2%	95.3%	101.9%
Wet_5Yr	YR2045	92.1%	87.6%	94.5%	81.9%	86.8%	94.2%	96.4%	98.8%	116.2%	98.2%	93.9%	103.5%

Table A8: Projected Changes in Santa Margarita River Flow under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.6%	99.1%	98.8%	99.4%	99.6%	100.3%	100.3%	99.4%	98.9%	99.6%
Normal	YR2030	100.6%	99.7%	99.1%	98.2%	97.6%	98.9%	99.1%	100.6%	100.6%	98.9%	97.9%	99.1%
Normal	YR2035	100.3%	99.1%	97.6%	96.1%	96.3%	98.2%	99.0%	100.3%	101.3%	98.4%	96.8%	97.5%
Normal	YR2040	100.1%	98.5%	96.1%	94.0%	94.9%	97.5%	98.9%	100.1%	102.0%	98.1%	95.8%	95.8%
Normal	YR2045	99.8%	97.8%	94.5%	91.9%	93.6%	96.9%	98.7%	99.8%	102.8%	97.7%	94.7%	94.1%
Dry_1Yr	YR2025	100.7%	99.4%	100.1%	100.0%	99.6%	99.9%	100.0%	100.0%	100.0%	99.6%	99.9%	99.9%
Dry_1Yr	YR2030	101.4%	98.9%	100.3%	100.0%	99.1%	99.7%	100.0%	100.0%	100.0%	99.1%	99.7%	99.7%
Dry_1Yr	YR2035	99.6%	97.3%	98.2%	98.6%	98.1%	99.2%	99.8%	100.0%	100.2%	98.7%	99.5%	99.5%
Dry_1Yr	YR2040	97.8%	95.7%	96.1%	97.3%	97.1%	98.7%	99.5%	100.0%	100.5%	98.4%	99.2%	99.2%
Dry_1Yr	YR2045	95.9%	94.2%	94.0%	95.9%	96.1%	98.2%	99.2%	100.0%	100.8%	98.0%	99.0%	99.0%
Dry_5Yr	YR2025	100.0%	99.6%	99.1%	98.8%	98.9%	99.4%	99.7%	100.0%	99.9%	99.4%	98.9%	99.3%
Dry_5Yr	YR2030	100.0%	99.1%	98.2%	97.6%	97.9%	98.9%	99.4%	100.0%	99.7%	98.9%	97.9%	98.5%
Dry_5Yr	YR2035	99.5%	98.2%	96.5%	95.6%	96.6%	98.1%	99.2%	99.9%	100.0%	98.4%	97.0%	97.0%
Dry_5Yr	YR2040	99.0%	97.3%	94.8%	93.6%	95.3%	97.3%	98.9%	99.8%	100.2%	98.1%	96.1%	95.4%
Dry_5Yr	YR2045	98.5%	96.4%	93.1%	91.6%	93.9%	96.5%	98.7%	99.6%	100.5%	97.7%	95.1%	93.9%
Wet_1Yr	YR2025	99.9%	99.3%	96.3%	95.9%	92.8%	99.1%	99.4%	102.6%	100.3%	98.3%	97.0%	100.1%
Wet_1Yr	YR2030	99.7%	98.5%	92.5%	91.7%	85.6%	98.2%	98.9%	105.2%	100.6%	96.6%	94.1%	100.3%
Wet_1Yr	YR2035	100.5%	98.1%	91.9%	90.4%	82.4%	97.6%	98.4%	102.0%	101.1%	95.6%	93.5%	97.2%
Wet_1Yr	YR2040	101.2%	97.7%	91.4%	89.0%	79.2%	96.9%	98.1%	98.7%	101.5%	94.7%	93.0%	94.1%
Wet_1Yr	YR2045	102.0%	97.4%	90.8%	87.7%	75.9%	96.3%	97.7%	95.4%	102.0%	93.7%	92.4%	91.0%
Wet_5Yr	YR2025	100.3%	100.1%	98.5%	98.3%	98.3%	99.4%	99.7%	100.1%	101.2%	99.1%	99.1%	99.4%
Wet_5Yr	YR2030	100.6%	100.3%	96.9%	96.6%	96.6%	98.9%	99.4%	100.3%	102.4%	98.2%	98.2%	98.9%
Wet_5Yr	YR2035	101.1%	100.4%	95.8%	94.6%	95.1%	98.3%	99.3%	100.5%	104.5%	98.1%	97.4%	96.9%
Wet_5Yr	YR2040	101.5%	100.5%	94.8%	92.5%	93.6%	97.8%	99.2%	100.8%	106.6%	97.9%	96.6%	95.0%
Wet_5Yr	YR2045	102.0%	100.7%	93.7%	90.5%	92.1%	97.3%	99.0%	101.0%	108.8%	97.8%	95.9%	93.0%

Table A9: Projected Changes in Santa Margarita River Flow under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	100.3%	99.9%	99.6%	99.1%	98.8%	99.4%	99.6%	100.3%	100.3%	99.4%	98.9%	99.6%
Normal	YR2030	100.6%	99.7%	99.1%	98.2%	97.6%	98.9%	99.1%	100.6%	100.6%	98.9%	97.9%	99.1%
Normal	YR2035	103.5%	108.3%	110.5%	103.4%	99.4%	100.4%	100.0%	100.7%	122.4%	98.7%	97.0%	97.3%
Normal	YR2040	106.5%	116.8%	121.9%	108.7%	101.3%	101.9%	100.9%	100.8%	144.2%	98.6%	96.1%	95.5%
Normal	YR2045	109.4%	125.4%	133.2%	113.9%	103.1%	103.5%	101.8%	100.9%	166.0%	98.4%	95.1%	93.8%
Dry_1Yr	YR2025	100.7%	99.4%	100.1%	100.0%	99.6%	99.9%	100.0%	100.0%	100.0%	99.6%	99.9%	99.9%
Dry_1Yr	YR2030	101.4%	98.9%	100.3%	100.0%	99.1%	99.7%	100.0%	100.0%	100.0%	99.1%	99.7%	99.7%
Dry_1Yr	YR2035	103.2%	109.1%	105.9%	101.2%	99.9%	100.3%	100.2%	100.4%	121.2%	99.0%	99.8%	100.6%
Dry_1Yr	YR2040	105.0%	119.4%	111.5%	102.5%	100.7%	101.0%	100.5%	100.8%	142.5%	98.9%	100.0%	101.5%
Dry_1Yr	YR2045	106.8%	129.7%	117.0%	103.8%	101.4%	101.6%	100.8%	101.1%	163.8%	98.7%	100.1%	102.4%
Dry_5Yr	YR2025	100.0%	99.6%	99.1%	98.8%	98.9%	99.4%	99.7%	100.0%	99.9%	99.4%	98.9%	99.3%
Dry_5Yr	YR2030	100.0%	99.1%	98.2%	97.6%	97.9%	98.9%	99.4%	100.0%	99.7%	98.9%	97.9%	98.5%
Dry_5Yr	YR2035	101.8%	104.1%	106.2%	101.3%	99.3%	100.0%	100.2%	100.9%	108.7%	97.9%	96.8%	96.8%
Dry_5Yr	YR2040	103.5%	109.1%	114.1%	105.0%	100.8%	101.1%	100.9%	101.8%	117.6%	97.0%	95.8%	95.1%
Dry_5Yr	YR2045	105.2%	114.1%	122.1%	108.7%	102.2%	102.3%	101.7%	102.6%	126.5%	96.1%	94.7%	93.5%
Wet_1Yr	YR2025	99.9%	99.3%	96.3%	95.9%	92.8%	99.1%	99.4%	102.6%	100.3%	98.3%	97.0%	100.1%
Wet_1Yr	YR2030	99.7%	98.5%	92.5%	91.7%	85.6%	98.2%	98.9%	105.2%	100.6%	96.6%	94.1%	100.3%
Wet_1Yr	YR2035	104.4%	109.4%	114.0%	102.0%	87.7%	98.7%	99.2%	100.4%	116.0%	93.6%	91.8%	95.8%
Wet_1Yr	YR2040	109.0%	120.3%	135.6%	112.2%	89.7%	99.3%	99.6%	95.7%	131.4%	90.6%	89.5%	91.3%
Wet_1Yr	YR2045	113.7%	131.2%	157.1%	122.5%	91.7%	99.8%	100.0%	90.9%	146.8%	87.6%	87.2%	86.9%
Wet_5Yr	YR2025	100.3%	100.1%	98.5%	98.3%	98.3%	99.4%	99.7%	100.1%	101.2%	99.1%	99.1%	99.4%
Wet_5Yr	YR2030	100.6%	100.3%	96.9%	96.6%	96.6%	98.9%	99.4%	100.3%	102.4%	98.2%	98.2%	98.9%
Wet_5Yr	YR2035	104.8%	114.8%	126.4%	106.2%	100.7%	101.0%	101.2%	101.4%	157.6%	104.1%	99.1%	97.4%
Wet_5Yr	YR2040	108.9%	129.3%	155.9%	115.9%	104.7%	103.2%	103.0%	102.5%	212.8%	110.0%	100.0%	96.0%
Wet_5Yr	YR2045	113.1%	143.8%	185.4%	125.5%	108.8%	105.4%	104.7%	103.6%	268.0%	115.8%	101.0%	94.6%

Table A10: Projected Changes in Outdoor Demand under Drier with Extreme Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.1%	100.7%	100.4%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	102.2%	101.4%	100.9%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	103.9%	103.3%	102.3%	102.9%	103.7%	102.6%	101.2%	101.6%	101.6%	102.5%	104.2%	104.4%
Normal	YR2040	105.7%	105.2%	103.8%	104.8%	105.7%	104.0%	101.6%	102.1%	102.1%	103.6%	106.4%	106.7%
Normal	YR2045	107.5%	107.2%	105.2%	106.6%	107.8%	105.5%	101.9%	102.6%	102.6%	104.6%	108.7%	108.9%
Dry_1Yr	YR2025	100.8%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.7%	100.8%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.4%	101.6%	101.4%	101.6%
Dry_1Yr	YR2035	103.8%	103.7%	102.4%	102.2%	103.4%	102.1%	101.2%	101.8%	101.7%	103.0%	103.1%	102.6%
Dry_1Yr	YR2040	106.0%	106.2%	104.0%	103.5%	105.2%	103.1%	101.6%	102.6%	102.1%	104.3%	104.8%	103.6%
Dry_1Yr	YR2045	108.1%	108.8%	105.6%	104.9%	107.0%	104.0%	101.9%	103.3%	102.5%	105.6%	106.4%	104.5%
Dry_5Yr	YR2025	101.0%	100.7%	100.6%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.0%	101.1%
Dry_5Yr	YR2030	101.9%	101.4%	101.1%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.9%	102.2%
Dry_5Yr	YR2035	104.0%	103.4%	102.6%	103.1%	103.6%	102.3%	101.1%	101.6%	101.6%	102.5%	104.5%	104.5%
Dry_5Yr	YR2040	106.2%	105.5%	104.0%	105.0%	105.5%	103.5%	101.3%	102.1%	102.1%	103.6%	107.1%	106.9%
Dry_5Yr	YR2045	108.3%	107.5%	105.5%	106.9%	107.4%	104.8%	101.6%	102.6%	102.6%	104.6%	109.8%	109.3%
Wet_1Yr	YR2025	101.2%	100.6%	100.3%	100.6%	101.0%	100.7%	100.6%	100.6%	100.7%	101.2%	101.2%	101.1%
Wet_1Yr	YR2030	102.4%	101.1%	100.6%	101.1%	101.9%	101.4%	101.1%	101.1%	101.4%	102.4%	102.4%	102.2%
Wet_1Yr	YR2035	105.0%	103.5%	101.8%	103.3%	103.5%	103.3%	101.7%	101.5%	102.0%	103.2%	105.0%	105.1%
Wet_1Yr	YR2040	107.6%	106.0%	103.0%	105.5%	105.0%	105.2%	102.3%	101.8%	102.6%	104.1%	107.6%	108.1%
Wet_1Yr	YR2045	110.2%	108.4%	104.3%	107.7%	106.5%	107.2%	102.9%	102.2%	103.2%	104.9%	110.2%	111.0%
Wet_5Yr	YR2025	101.0%	100.6%	100.4%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	100.8%	101.0%
Wet_5Yr	YR2030	101.9%	101.1%	100.9%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.6%	101.9%
Wet_5Yr	YR2035	103.0%	103.1%	102.2%	102.9%	103.6%	102.7%	101.2%	101.6%	101.5%	102.2%	103.7%	103.3%
Wet_5Yr	YR2040	104.0%	105.0%	103.5%	104.8%	105.5%	104.3%	101.6%	102.1%	101.8%	103.1%	105.7%	104.8%
Wet_5Yr	YR2045	105.1%	106.9%	104.9%	106.6%	107.4%	105.9%	101.9%	102.6%	102.2%	103.9%	107.8%	106.2%

Table A11: Projected Changes in Outdoor Demand under Median Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.1%	100.7%	100.4%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	102.2%	101.4%	100.9%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	102.9%	102.1%	101.6%	101.8%	102.4%	101.7%	101.2%	101.5%	101.5%	102.0%	102.7%	103.2%
Normal	YR2040	103.6%	102.8%	102.3%	102.6%	103.1%	102.3%	101.6%	101.8%	101.8%	102.6%	103.6%	104.3%
Normal	YR2045	104.3%	103.6%	103.0%	103.3%	103.8%	102.9%	101.9%	102.2%	102.2%	103.2%	104.4%	105.4%
Dry_1Yr	YR2025	100.8%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.7%	100.8%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.4%	101.6%	101.4%	101.6%
Dry_1Yr	YR2035	102.6%	102.2%	101.6%	101.7%	102.2%	101.6%	101.2%	101.6%	101.7%	102.2%	102.2%	102.4%
Dry_1Yr	YR2040	103.6%	103.3%	102.3%	102.6%	102.8%	102.1%	101.6%	102.1%	102.1%	102.8%	103.1%	103.1%
Dry_1Yr	YR2045	104.5%	104.4%	103.0%	103.4%	103.4%	102.6%	101.9%	102.6%	102.5%	103.4%	103.9%	103.8%
Dry_5Yr	YR2025	101.0%	100.7%	100.6%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.0%	101.1%
Dry_5Yr	YR2030	101.9%	101.4%	101.1%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.9%	102.2%
Dry_5Yr	YR2035	102.7%	102.2%	101.8%	102.0%	102.4%	101.6%	101.2%	101.5%	101.6%	102.1%	102.7%	103.3%
Dry_5Yr	YR2040	103.6%	103.1%	102.6%	102.8%	103.1%	102.1%	101.6%	101.8%	102.1%	102.8%	103.6%	104.5%
Dry_5Yr	YR2045	104.4%	103.9%	103.3%	103.7%	103.8%	102.6%	101.9%	102.2%	102.6%	103.6%	104.4%	105.7%
Wet_1Yr	YR2025	101.2%	100.6%	100.3%	100.6%	101.0%	100.7%	100.6%	100.6%	100.7%	101.2%	101.2%	101.1%
Wet_1Yr	YR2030	102.4%	101.1%	100.6%	101.1%	101.9%	101.4%	101.1%	101.1%	101.4%	102.4%	102.4%	102.2%
Wet_1Yr	YR2035	103.2%	102.1%	101.3%	101.7%	102.4%	102.0%	101.6%	101.5%	101.7%	103.0%	103.1%	103.1%
Wet_1Yr	YR2040	104.1%	103.1%	102.0%	102.3%	102.9%	102.6%	102.1%	101.8%	102.1%	103.6%	103.8%	104.1%
Wet_1Yr	YR2045	104.9%	104.0%	102.8%	102.9%	103.3%	103.2%	102.6%	102.2%	102.5%	104.2%	104.5%	105.0%
Wet_5Yr	YR2025	101.0%	100.6%	100.4%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	100.8%	101.0%
Wet_5Yr	YR2030	101.9%	101.1%	100.9%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.6%	101.9%
Wet_5Yr	YR2035	102.7%	102.0%	101.6%	101.8%	102.2%	101.8%	101.2%	101.5%	101.5%	101.9%	102.6%	102.9%
Wet_5Yr	YR2040	103.6%	102.8%	102.3%	102.6%	102.8%	102.6%	101.6%	101.8%	101.8%	102.3%	103.6%	103.8%
Wet_5Yr	YR2045	104.4%	103.7%	103.0%	103.3%	103.4%	103.3%	101.9%	102.2%	102.2%	102.8%	104.5%	104.8%

Table A12: Projected Changes in Outdoor Demand under Wetter with Moderate Warming Scenario

YearType	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal	YR2025	101.1%	100.7%	100.4%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.0%	101.1%
Normal	YR2030	102.2%	101.4%	100.9%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.9%	102.2%
Normal	YR2035	103.1%	100.9%	100.5%	100.5%	101.3%	101.2%	101.0%	101.2%	101.1%	101.1%	101.8%	102.8%
Normal	YR2040	104.1%	100.4%	100.1%	99.9%	100.9%	101.4%	101.1%	101.4%	101.1%	100.9%	101.7%	103.3%
Normal	YR2045	105.0%	99.9%	99.7%	99.3%	100.6%	101.5%	101.2%	101.5%	101.1%	100.7%	101.5%	103.9%
Dry_1Yr	YR2025	100.8%	100.6%	100.4%	100.4%	100.8%	100.6%	100.4%	100.6%	100.7%	100.8%	100.7%	100.8%
Dry_1Yr	YR2030	101.6%	101.1%	100.9%	100.9%	101.6%	101.1%	100.9%	101.1%	101.4%	101.6%	101.4%	101.6%
Dry_1Yr	YR2035	102.2%	101.1%	100.2%	101.0%	100.8%	101.2%	101.0%	101.2%	101.0%	100.2%	99.7%	100.7%
Dry_1Yr	YR2040	102.8%	101.1%	99.6%	101.1%	100.0%	101.4%	101.1%	101.4%	100.7%	98.8%	98.0%	99.7%
Dry_1Yr	YR2045	103.4%	101.1%	99.0%	101.2%	99.1%	101.5%	101.2%	101.5%	100.3%	97.3%	96.3%	98.8%
Dry_5Yr	YR2025	101.0%	100.7%	100.6%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	101.0%	101.1%
Dry_5Yr	YR2030	101.9%	101.4%	101.1%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.9%	102.2%
Dry_5Yr	YR2035	103.1%	101.4%	100.9%	100.4%	101.4%	101.2%	101.0%	101.2%	101.2%	101.5%	101.8%	103.2%
Dry_5Yr	YR2040	104.3%	101.4%	100.6%	99.7%	101.2%	101.4%	101.1%	101.4%	101.4%	101.6%	101.7%	104.3%
Dry_5Yr	YR2045	105.5%	101.4%	100.4%	98.9%	100.9%	101.5%	101.2%	101.5%	101.5%	101.7%	101.5%	105.4%
Wet_1Yr	YR2025	101.2%	100.6%	100.3%	100.6%	101.0%	100.7%	100.6%	100.6%	100.7%	101.2%	101.2%	101.1%
Wet_1Yr	YR2030	102.4%	101.1%	100.6%	101.1%	101.9%	101.4%	101.1%	101.1%	101.4%	102.4%	102.4%	102.2%
Wet_1Yr	YR2035	104.3%	100.5%	100.8%	100.3%	101.5%	101.7%	101.5%	101.2%	101.6%	102.9%	102.3%	103.0%
Wet_1Yr	YR2040	106.2%	99.9%	101.1%	99.4%	101.2%	102.1%	101.8%	101.4%	101.9%	103.4%	102.2%	103.8%
Wet_1Yr	YR2045	108.1%	99.3%	101.3%	98.6%	100.8%	102.5%	102.2%	101.5%	102.1%	103.8%	102.1%	104.6%
Wet_5Yr	YR2025	101.0%	100.6%	100.4%	100.6%	100.8%	100.6%	100.4%	100.6%	100.6%	100.7%	100.8%	101.0%
Wet_5Yr	YR2030	101.9%	101.1%	100.9%	101.1%	101.6%	101.1%	100.9%	101.1%	101.1%	101.4%	101.6%	101.9%
Wet_5Yr	YR2035	103.2%	100.6%	100.6%	100.5%	101.3%	101.4%	101.0%	101.2%	100.9%	101.1%	102.2%	102.7%
Wet_5Yr	YR2040	104.5%	100.1%	100.3%	99.9%	100.9%	101.6%	101.1%	101.4%	100.6%	100.9%	102.8%	103.6%
Wet_5Yr	YR2045	105.8%	99.7%	100.1%	99.3%	100.6%	101.8%	101.2%	101.5%	100.4%	100.7%	103.4%	104.4%

APPENDIX F



AWWA Free Water Audit Software: Worksheet

FWAS v6.0
American Water Works Association.
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Water Audit Report for: **Crestline Village Water District**
Audit Year: **2020** Jan 01 2020 - Dec 31 2020 Calendar

Click 'n' to add notes
Click 'g' to determine data validity grade
All volumes to be entered as: ACRE-FEET PER YEAR

To edit water system info: [go to start page](#)

To access definitions, click the [input name](#)

Water Supplied Error Adjustments

choose entry option:

VOS
WI
WE

Volume from Own Sources: n g 3 480.780 Acre-ft/Yr
Water Imported: n g 1 235.870 Acre-ft/Yr
Water Exported: n g n/a 0.000 Acre-ft/Yr

n g 8 0.00% percent
 n g 3 0.00% percent

VOSEA
WIEA
WEEA

WATER SUPPLIED: 716.650 Acre-ft/Yr

AUTHORIZED CONSUMPTION

BMAC
BUAC
UMAC
UUC

Billed Metered: n g 8 667.952 Acre-ft/Yr
Billed Unmetered: n g n/a 0.000 Acre-ft/Yr
Unbilled Metered: n g 10 0.917 Acre-ft/Yr
Unbilled Unmetered: n g 3 1.670 Acre-ft/Yr

choose entry option:

0.25% default

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

AUTHORIZED CONSUMPTION: 670.539 Acre-ft/Yr

WATER LOSSES

46.111 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

SDHE
CMI
UC

Systematic Data Handling Errors: n g 3 1.670 Acre-ft/Yr
Customer Metering Inaccuracies: n g 3 6.756 Acre-ft/Yr
Unauthorized Consumption: n g 3 1.670 Acre-ft/Yr

choose entry option:

0.25% default
 1.00% percent
 0.25% default

[under-registration](#)

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 10.096 Acre-ft/Yr

Real Losses

Real Losses: 36.015 Acre-ft/Yr

WATER LOSSES: 46.111 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 48.698 Acre-ft/Yr

SYSTEM DATA

Lm
Nc

Length of mains: n g 6 73.3 miles (including fire hydrant lead lengths)
Number of service connections: n g 5 4,990 (active and inactive)
Service connection density: 68 conn./mile main

Are customer meters typically located at the curbstop/property line? Yes

Lp

n g 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP

Average Operating Pressure: n g 6 88.0 psi

COST DATA

CRUC
VPC

Customer Retail Unit Charge: n g 9 \$4.64 \$/100 cubic feet (ccf)
Variable Production Cost: n g 4 \$498.20 \$/acre-ft

Total Annual Operating Cost
 \$4,111,278 \$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

*** The Water Audit Data Validity Score is in Tier II (26-50). See Dashboard tab for additional outputs. ***

[go to dashboard](#)

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

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

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

1: Volume from Own Sources (VOS)
2: Water Imported (WI)
3: Customer Metering Inaccuracies (CMI)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses: gal/conn/day
Unit Apparent Losses: gal/conn/day
Unit Real Losses^A: gal/conn/day
Unit Real Losses^B: gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)



AWWA Free Water Audit Software: Worksheet

FWAS v6.0
American Water Works Association.
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Water Audit Report for: **Crestline Village Water District**
Audit Year: **2021** Jan 01 2021 - Dec 31 2021 **Calendar**

Click 'n' to add notes
Click 'g' to determine data validity grade
All volumes to be entered as: ACRE-FEET PER YEAR

To edit water system info: [go to start page](#)

To access definitions, click the [input name](#)

Water Supplied Error Adjustments

choose entry option:

VOS	Volume from Own Sources:	n g 3	334.800	Acre-ft/Yr	n g 8	1.00%	percent	under-registration	VOSEA
WI	Water Imported:	n g 1	364.150	Acre-ft/Yr	n g 3		percent		WIEA
WE	Water Exported:	n g n/a	0.000	Acre-ft/Yr					WEEA

WATER SUPPLIED: Acre-ft/Yr

AUTHORIZED CONSUMPTION

BMAC	Billed Metered:	n g 8	625.040	Acre-ft/Yr					
BUAC	Billed Unmetered:	n g n/a	0.000	Acre-ft/Yr					
UMAC	Unbilled Metered:	n g 10	0.407	Acre-ft/Yr					
UUAC	Unbilled Unmetered:	n g 3	1.563	Acre-ft/Yr					

choose entry option:

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

AUTHORIZED CONSUMPTION: Acre-ft/Yr

WATER LOSSES Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

SDHE	Systematic Data Handling Errors:	n g 3	1.563	Acre-ft/Yr					
CMI	Customer Metering Inaccuracies:	n g 3	6.318	Acre-ft/Yr					
UC	Unauthorized Consumption:	n g 3	1.563	Acre-ft/Yr					

choose entry option:

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: Acre-ft/Yr

Real Losses

Real Losses: Acre-ft/Yr

WATER LOSSES: Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: Acre-ft/Yr

SYSTEM DATA

Lm	Length of mains:	n g 6	73.3	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n g 5	5,012		(active and inactive)
	Service connection density:		68	conn./mile main	
Lp	Are customer meters typically located at the curbstop/property line?	n g 10	Yes		
AOP	Average length of customer service line has been set to zero and a data grading of 10 has been applied				
	Average Operating Pressure:	n g 6	88.0	psi	

COST DATA

CRUC	Customer Retail Unit Charge:	n g 9	\$5.67	\$/100 cubic feet (ccf)		Total Annual Operating Cost	
VPC	Variable Production Cost:	n g 4	\$786.37	\$/acre-ft		\$3,811,440	\$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

*** The Water Audit Data Validity Score is in Tier II (26-50). See Dashboard tab for additional outputs. ***

[go to dashboard](#)

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

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

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

1: Water Imported (WI)
2: Volume from Own Sources (VOS)
3: Customer Metering Inaccuracies (CMI)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses ^a :		gal/conn/day
Unit Real Losses ^b :		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)



AWWA Free Water Audit Software: Worksheet

FWAS v6.0
American Water Works Association.
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Water Audit Report for: **Crestline Village Water District**
Audit Year: **2022** **Jan 01 2022 - Dec 31 2022** **Calendar**

Click 'n' to add notes
Click 'g' to determine data validity grade
All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To edit water system info: [go to start page](#)

To access definitions, click the [input name](#)

Water Supplied Error Adjustments

choose entry option:

VOS	Volume from Own Sources:	n g 8	126.992	MG/Yr	n g 4	1.00%	percent	under-registration	VOSEA
WI	Water Imported:	n g 8	94.025	MG/Yr	n g 3	1.00%	percent	under-registration	WIEA
WE	Water Exported:	n g n/a	0.000	MG/Yr					WEEA

WATER SUPPLIED: MG/Yr

AUTHORIZED CONSUMPTION

BMAC	Billed Metered:	n g 8	198.510	MG/Yr					
BUAC	Billed Unmetered:	n g n/a	0.000	MG/Yr					
UMAC	Unbilled Metered:	n g 10	0.141	MG/Yr					
UUAC	Unbilled Unmetered:	n g 3	0.496	MG/Yr					

choose entry option:

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

AUTHORIZED CONSUMPTION: MG/Yr

WATER LOSSES: MG/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

SDHE	Systematic Data Handling Errors:	n g 3	0.496	MG/Yr					
CMI	Customer Metering Inaccuracies:	n g 9	2.007	MG/Yr					
UC	Unauthorized Consumption:	n g 3	0.496	MG/Yr					

choose entry option:

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: MG/Yr

Real Losses

Real Losses: MG/Yr

WATER LOSSES: MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: MG/Yr

SYSTEM DATA

Lm	Length of mains:	n g 10	72.8	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n g 8	4,973		(active and inactive)
	Service connection density:		68	conn./mile main	
Lp	Are customer meters typically located at the curbstop/property line?	n g 10	Yes		
AOP	Average length of customer service line has been set to zero and a data grading of 10 has been applied				
	Average Operating Pressure:	n g 6	85.0	psi	

COST DATA

CRUC	Customer Retail Unit Charge:	n g 5	\$5.10	\$/100 cubic feet (ccf)	Total Annual Operating Cost
VPC	Variable Production Cost:	n g 3	\$987.35	\$/Million gallons	\$3,686,817 \$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

*** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. ***

[go to dashboard](#)

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

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

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

1: Variable Production Cost (VPC)
2: Volume from Own Sources (VOS)
3: Billed Metered (BMAC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses ^a :		gal/conn/day
Unit Real Losses ^b :		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

APPENDIX G



2024 Consumer Confidence Report June 2025

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 to December 31, 2024, and may include earlier monitoring data.

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

Water Sources and Drinking Water Source Assessment information: Crestline Village Water District gets its water from two types of sources: **1) Local Ground Water:** A limited amount of ground water is obtained from 17 separate wells within the District. **2) Imported Surface Water:** Imported surface water is purchased from the Crestline-Lake Arrowhead Water Agency. Crestline-Lake Arrowhead Water Agency buys surface water at Silverwood Lake, treats it and then pumps it up the mountain for use by the District and other water users. Depending on the location of your property, you may receive a blend of local and imported water, or 100% local or imported water.

The District has prepared Drinking Water Source Assessments for all of its local ground water sources. The source assessments were completed in 2002 and are available for review at the District's office.

Board Meetings: The District is governed by a locally elected Board of Directors, which meets in a public meeting on the third Tuesday of each month at 3:00 pm at the District's office located at 777 Cottonwood Drive, Crestline, California.

For More Information, Contact: Mike Casas, mjcasas@cvwater.com, CVWD (909) 338-1727 Ext 229, www.cvwater.com

Importance of This Report Statement in Five Non-English Languages (Spanish, Mandarin, Tagalog, Vietnamese, and Hmong)

Language in Spanish: Este informe contiene información muy importante sobre su agua para beber. Favor de comunicarse Crestline Village Water District a 909-338-1727 para asistirlo en español.

Language in Mandarin: 这份报告含有关于您的饮用水的重要讯息。请用以下地址和电话联系 Crestline Village Water District 以获得中文的帮助: Po Box 3347 Crestline Ca. 92325, 909-338-1727.

Language in Tagalog: Ang pag-uulat na ito ay naglalaman ng mahalagang impormasyon tungkol sa inyong inuming tubig. Mangyaring makipag-ugnayan sa Crestline Village Water District, PO Box 3347 Crestline, Ca. 92325 o tumawag sa 909-338-1727 para matulungan sa wikang Tagalog.

Language in Vietnamese: Báo cáo này chứa thông tin quan trọng về nước uống của bạn. Xin vui lòng liên hệ Crestline Village Water District tại Po Box 3347 Crestline Ca. 92325 để được hỗ trợ giúp bằng tiếng Việt.

Language in Hmong: Tsab ntawv no muaj cov ntsiab lus tseem ceeb txog koj cov dej haus. Thov hu rau Crestline Village Water District ntawm 909-338-1727 rau kev pab hauv lus Askiv.

Terms Used in This Report

Term	Definition
Level 1 Assessment	A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
Level 2 Assessment	A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an <i>E. coli</i> MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.
Maximum Contaminant Level (MCL)	The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
Maximum Contaminant Level Goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (U.S. EPA).
Maximum Residual Disinfectant Level (MRDL)	The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG)	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Primary Drinking Water Standards (PDWS)	MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
Public Health Goal (PHG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
Regulatory Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
Secondary Drinking Water Standards (SDWS)	MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.
Treatment Technique (TT)	A required process intended to reduce the level of a contaminant in drinking water.
Variances and Exemptions	Permissions from the State Water Resources Control Board (State Board) to exceed an MCL or not comply with a treatment technique under certain conditions.

Term	Definition
ND	Not detectable at testing limit.
ppm	parts per million or milligrams per liter (mg/L)
ppb	parts per billion or micrograms per liter (µg/L)
ppt	parts per trillion or nanograms per liter (ng/L)
ppq	parts per quadrillion or picogram per liter (pg/L)
pCi/L	picocuries per liter (a measure of radiation)

Sources of Drinking Water and Contaminants that May Be Present in Source Water

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

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants, that can be naturally occurring or be the result of oil and gas production and mining activities.

Regulation of Drinking Water and Bottled Water Quality

In order to ensure that tap water is safe to drink, the U.S. EPA and the State Board prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health.

About Your Drinking Water Quality

Drinking Water Contaminants Detected

Tables 1, 2, 3, 4, 5, 6, and 8 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The State Board allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old. Any violation of an AL, MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.

Table 1. Sampling Results Showing the Detection of Coliform Bacteria

Complete if bacteria are detected.

Microbiological Contaminants	Highest No. of Detections	No. of Months in Violation	MCL	MCLG	Typical Source of Bacteria
<i>E. coli</i>	0	0	(a)	0	Human and animal fecal waste

(a) Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*.

Table 1.A. Compliance with Total Coliform MCL between January 1, 2024 and December 31, 2024 (inclusive)

Microbiological Contaminants	Highest No. of Detections	No. of Months in Violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria	0	0	More than 1 positive sample in a month with detection	0	Naturally present in the environment
Fecal Coliform and <i>E. coli</i>	0	0	0	None	Human and animal fecal waste

(a) For systems collecting fewer than 40 samples per month: two or more positively monthly samples is a violation of the total coliform MCL

Table 2. Sampling Results Showing the Detection of Lead and Copper

Lead and Copper	Sample Date	No. of Samples Collected	90th Percentile Level Detected	No. Sites Exceeding AL	AL	PHG	No. of Schools Requesting Lead Sampling	Typical Source of Contaminant
Lead (ppb)	9/20/23	20	.0039	0	15	0.2	1	Internal corrosion of household water plumbing systems; discharges from industrial manufactures; erosion of natural deposits.
Copper (ppm)	9/20/23	20	.47	0	1.3	0.3	1	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.

Table 3. Sampling Results for Sodium and Hardness

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	9/20/24	16.40	11-50	None	None	Salt present in the water and is generally naturally occurring.
Hardness (ppm)	9/20/24	93.80	58-160	None	None	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring.

Table 4. Detection of Contaminants with a Primary Drinking Water Standard

Chemical or Constituent (and reporting units)	Level Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Fluoride (ppm)	0.02	ND - .20	2	1	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories.
Lead (ppb)	See above	See above	15	0.2	
Nitrate as (N) (ppm)	1.49	.56 – 4.50	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits.
Gross Alpha (pCi/L)	N/D Reported levels are after blending and entering the distribution system.	37 – 93 Reported levels are before blending and entering the distribution system.	15	0	Erosion of natural deposits.
Uranium (pCi/L)	3.33	12 – 17	20	0.43	Erosion of natural deposits.
	Reported levels are after blending and entering the distribution system.	Reported levels are before blending and entering the distribution system.			

Table 5. Detection of Contaminants with a Secondary Drinking Water Standard

Chemical or Constituent (and reporting units)	Level Detected	Range of Detections	SMCL	PHG (MCLG)	Typical Source of Contaminant
Chloride (ppm)	12.41	5 – 30	500		Runoff/leaching from natural deposits; seawater influence.
Sulfate (ppm)	8.11	3.6 – 18	500		Runoff/leaching from natural deposits; industrial waste.
Specific Conductance (uS/cm)	250.67	180 – 350	1600		Substances that form ions when in water; seawater influence.
Total Dissolved Solids (ppm)	160	96 - 370	1000		Runoff/ leaching from natural deposits.
Foaming Agents (MBAS)	<.10	<.10	500		Municipal and industrial waste discharges.

Table 6. Detection of Unregulated Contaminants

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	Notification Level	Health Effects
Boron (ppb)	10-31-2024	N/D	N/D	1000 ppb	The babies of some pregnant women who drink water containing boron in excess of the notification level may have an increased risk of developmental effects, based on studies in laboratory animals.
Vanadium	11-30-2023	0.82	N/D-6.3	15 ppb	The babies of some pregnant women who drink water containing vanadium in excess of the notification level may have an increased risk of developmental effects, based on

					studies in laboratory animals.
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Table 7. Disinfection Byproducts, Disinfectant Residuals, and Disinfection Byproduct Precursors

Chemical or Constituent	Crestline Village Water District Ground Water		Crestline-Lake Arrowhead Water Agency Purchased Surface Water		MCL	PHG CLG	Typical Source of Contaminant	Health Effects Language
	Level Detected	Range of Detections	Level Detected	Range of Detections				
TTHM (Total Trihalomethanes) (ppb)	20.125	6.2-56.30	24.1	18.5-84.3	80	N/A	Byproduct of drinking water disinfection	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience liver, kidney or central nervous system problems and may have an increased risk of getting cancer.
Haloacetic Acids (ppb)	2.0125	N/D-5	2.6	2.0-7.4	60	N/A	Byproduct of drinking water disinfection	Some people who drink water containing trihalomethanes in excess of the MCL over many years

								may experience liver, kidney or central nervous system problems and may have an increased risk of getting cancer.
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Turbidity

Chemical or Constituent	Crestline Village Water District Ground Water		Crestline-Lake Arrowhead Water Agency Purchased Surface Water		MCL	PHG CLG	Typical Source of Contaminant	Health Effects Language
	Level Detected	Range of Detections	Level Detected	Range of Detections				
Turbidity (NTU)*	0.08	0.00-0.79	0.22	0.00-0.61	5	N/A	Soil runoff	Turbidity has no health effects. However, high levels of turbidity can interfere with disinfections and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses and parasites that can

								cause symptoms such as nausea, cramps diarrhea and associated headaches.
* Turbidity is the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye, similar to smoke in the air. The measurement of turbidity is part of a treatment process and is a key test of water quality. Turbidity Performance Standard: at least 95% of samples must be less than 0.3 Nephelometric Turbidity Units (NTU); Not exceed 1.0 NTU for more than eight consecutive hours; Not exceed 5.0 NTU at any time. Please refer to Crestline-Lake Arrowhead Water Agency Consumer Confidence Report for surface water treatment turbidity.								

Additional General Information on Drinking Water

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

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

Lead-Specific Language: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. **Crestline Village Water District** is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. [Optional: If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.] If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at <http://www.epa.gov/lead>.

State Revised Total Coliform Rule (RTCR):

This Consumer Confidence Report (CCR) reflects changes in drinking water regulatory requirements during 2016. All water systems are required to comply with the state Total Coliform Rule. Effective April 1, 2016, all water systems are also required to comply with the federal Revised Total Coliform Rule. The new federal rule maintains the purpose to protect public health by ensuring the integrity of the drinking water distribution system and monitoring for the presence of microbials (i.e., total coliform and E. coli bacteria). The U.S. EPA anticipates greater public health protection as the new rule requires water systems that are vulnerable to microbial contamination to identify and fix problems. Water systems that exceed a specified frequency of total coliform occurrences are required to conduct an assessment to determine if any sanitary defects exist. If found, these must be corrected by the water system.

Crestline-Lake Arrowhead Water Agency (CLAWA)
2025 Water Quality Report

We are pleased to present CLAWA's Annual Water Quality Report for 2025. This report is designed to inform you about the quality of water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to protect your water supply. We are committed to ensuring the quality of your water.

Last year, as in years past, your tap water met all USEPA and State Drinking Water health standards. CLAWA vigilantly safeguards its water supplies, and once again we are proud to report that our system did not violate any water quality standard. This brochure is a snapshot of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to State standards. We are committed to providing you with information because informed customers are our best allies.

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

Drinking Water Contaminants

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

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, that can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health.

CLAWA's Water Supply

CLAWA's sole water supply is surface water from Silverwood Lake, a reservoir of the State Water Project which is operated by the California Department of Water Resources. Silverwood Lake contains imported water which is diverted from the Sacramento-San Joaquin Delta and transported to Southern California in man-made aqueducts and canals; it is also fed by streams which carry runoff from the local mountains. Contamination of the imported water supply can occur at any point along its journey to Silverwood Lake, or from sources within the Silverwood Lake watershed itself. In 2021, DWR published an updated Sanitary Survey Report of all watersheds tributary to the State Water Project, including the Silverwood Lake watershed. Copies of that report can be obtained by contacting the State Water Contractors at (916) 447-7357.

CLAWA pumps surface water from Silverwood Lake, treats and disinfects the water at a "multi-barrier" treatment plant located near the south shore of the Lake, then pumps the treated water uphill to CLAWA's storage and pipeline distribution system, which extends from Job's Peak (near Cedarpines Park) eastward to Green Valley Lake.

Water Conservation

Water conservation remains a high priority throughout the State. Please continue to implement the following measures: (1) Protect against frozen pipes. Install and utilize shut-off valves on your side of the meter, and then drain your on-site water system as appropriate. Insulate water pipes outside the structure and in the crawl space beneath the structure. (2) Install low-flow showerheads and toilet tank displacement devices. (3) Repair leaky faucets and valves. A leaky faucet can waste 1,500 gallons per month. (4) Use buckets instead of running hoses to wash vehicles, equipment and structures. (5) Use brooms rather than hoses to clean sidewalks and driveways. (6) Minimize landscape irrigation, especially during hot summer days to reduce evaporation. Please visit www.clawa.org/drought for more information and conservation tips.

Additional Information

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

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice

about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are also available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from minerals and components associated with service lines and home plumbing. CLAWA is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standard Institute accredited certifier to reduce lead in drinking water. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at <http://www.epa.gov/safewater/lead>.

CLAWA does not add fluoride to the water it supplies. Additional information regarding fluoridation of water, oral health, and current issues is available from http://www.swrcb.ca.gov/drinking_water/certific/drinkingwater/Fluoridation.html.

Water Quality Definitions:

The water quality data table on the following page contains several terms and abbreviations which may be unfamiliar to you. To help you better understand these terms we have provided the following definitions:

- **MCL:** Maximum Contaminant Level – The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
- **MCLG:** Maximum Contaminant Level Goal – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.
- **PHG:** Public Health Goal – The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- **PDWS:** Primary Drinking Water Standard – MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
- **MRDL:** Maximum Residual Disinfectant Level – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **MRDLG:** Maximum Residual Disinfectant Level Goal – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Range:** Lowest to highest
- **mg/l:** Milligrams per liter (parts per million)
- **ug/l:** Micrograms per liter (parts per billion)
- **NTU:** Nephelometric Turbidity Units – a measure of the clarity of water. Turbidity is the measure of particles suspended in water. Higher quality water has low turbidity.
- **N/A:** Not Applicable
- **ND:** Non-Detected
- **TT:** Treatment Technique – A required process intended to reduce the level of a contaminant in drinking water
- **AL:** Regulatory Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **USEPA:** United States Environmental Protection Agency

Questions

If you have any questions regarding the information contained in this report, please contact Curtis Vanderwoude at (909) 338-1779. We want our customers to be informed about the water system that serves them. If you want to learn more, please attend any of our regularly scheduled Board meetings, which are held on the first Thursday of every month at 2:00 p.m.

Water Quality Data

CLAWA routinely monitors for contaminants in your drinking water according to State and Federal laws. Last year, CLAWA monitored the source and treated water continuously and had analyses performed by State certified laboratories for all regulated and many unregulated constituents. Of the many constituents that can be present in a water supply, CLAWA's test results reveal that only a few were detected in CLAWA's treated water. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk.

The tables on the next pages show the results of our monitoring for the period of January 1 to December 31, 2025.

*Total Trihalomethanes and Haloacetic Acids are reported as the Highest Locational Running Annual Average.

**Turbidity is monitored continuously because it is a good indicator of the effectiveness of our treatment system. Turbidity measures the cloudiness of water. The Agency uses a conventional treatment process to reduce turbidity.

***Unregulated contaminant monitoring helps USEPA and the State Water Resources Control Board to determine where certain contaminants occur and whether the contaminants need to be regulated.

Test Results							
Contaminant	Violation Y/N	Average Level Detected	Range of Levels Detected	Units	MCL	PHG (MCLG)	Major Sources in Drinking Water
Primary Standards							
Total Trihalomethanes*	N	46.8*	18.8 – 88.8	uG/l	80	N/A	By-product of drinking water disinfection
Haloacetic Acids*	N	3.5*	0.0 – 6.3	uG/l	60	N/A	By-product of drinking water disinfection
Inorganic Chemicals							
Fluoride (naturally occurring)	N	ND	0.0 - 0.0	mg/l	2	1	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (as N)	N	ND	0.0 - 0.0	mg/l	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Secondary Standards							
Chloride	N	60.81	51 - 98	mg/l	500	N/A	Runoff/leaching from natural deposits; seawater influence
Sulfate	N	36.13	27 - 42	mg/l	500	N/A	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS)	N	241.25	180 - 350	mg/l	1000	N/A	Runoff/leaching from natural deposits.
Turbidity**	N	0.20	0.11 - 0.35	NTU	5units	N/A	Soil Runoff
Other Constituents							
Sodium	N	51.94	47 - 69	mg/l	N/A	N/A	“Sodium” refers to the salt present in the water and is generally naturally occurring
Total Hardness	N	82.69	70 - 90	mg/l	N/A	N/A	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring.
Odor - Threshold	N	1	1-1	TON	3	N/A	Naturally occurring organic materials
Unregulated Contaminants***							
Boron	N	50	0 - 120	uG/l	1000	N/A	Erosion of natural deposits
Vanadium	N	6.03	0 – 7.9	uG/l	50	N/A	Erosion of natural deposits
pH	N	8.26	8.1 – 8.6	Unit	6.5-8.5	N/A	
Lead and Copper		Number of Samples Collected	90 th Percentile Level Detected	Number of Sites Exceeding AL	AL	PHG (MCLG)	
Lead (uG/l)	N	10	1.9 uG/L	0	15	.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits. Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
Copper (uG/l)	N	10	41 uG/L	0	1300	.3	
Samples collected through August and September of 2023							

SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES	
Treatment Technique ^(a) (Type of approved filtration technology used)	Conventional Treatment with multimedia pressure filters
Turbidity Performance Standards ^(b) (that must be met through the water treatment process)	Turbidity of the filtered water must: 1 – Be less than or equal to <u>0.3</u> NTU in 95% of measurements in a month. 2 – Not exceed <u>1.0</u> NTU for more than eight consecutive hours. 3 – Not exceed <u>5.0</u> NTU at any time.
Lowest monthly percentage of samples that met Turbidity Performance Standard No. 1.	100%
Highest single turbidity measurement during the year	0.35 NTU
Number of violations of any surface water treatment requirements	0

- (a) A required process intended to reduce the level of a contaminant in drinking water.
- (b) Turbidity (measured in NTU) is a measurement of the cloudiness of water and is a good indicator of water quality and filtration performance. Turbidity results which meet performance standards are considered to be in compliance with filtration requirements.

Hazard Assessments

In accordance with new state law, the Agency will be contacting you to schedule a hazard assessment to determine if there is a need for a backflow device to be installed at your property. While the Agency has always conducted assessments, new state law requires the Agency to visit every property to conduct an assessment. All backflow devices must be installed immediately adjacent to the meter; some backflow devices may need to be relocated. The purpose of this assessment is to be sure that the drinking water supply is protected from any potential cross connection which could result in contamination of the water system. We appreciate your help in protecting the drinking water supply for our mountain communities.

APPENDIX H

RESOLUTION NO. 421

RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESTLINE VILLAGE WATER DISTRICT
AMENDING THE DISTRICT'S WATER
CONSERVATION PROGRAM TO INCLUDE TEMPORARY
RESTRICTIONS ESTABLISHED BY THE STATE WATER
RESOURCES CONTROL BOARD

WHEREAS, the Board of Directors of Crestline Village Water District adopted Ordinance No. 29 on February 21, 1991, which Ordinance first established the District's Water Use Reduction Plan (this Program is more commonly referred to as the "District's Water Conservation Program" and also serves as the District's water shortage contingency plan); and

WHEREAS, the District Board of Directors adopted Ordinance No. 30 on August 27, 1992, which Ordinance modified the basic monthly allocations of water for the water conservation phases set forth in Ordinance No. 29; and

WHEREAS, the District Board of Directors adopted Ordinance No. 32 on November 17, 1998, which Ordinance established the Administrative Code of Crestline Village Water District and placed the Water Conservation Program in Section 3.3 of the Administrative Code; and

WHEREAS, the District Board of Directors adopted Ordinance No. 35 on August 19, 2014, which Ordinance amended Section 3.3 of the Administrative Code; and

WHEREAS, by Resolution No. 414 adopted August 19, 2014, the District Board of Directors ordered that Phase I.a of the District's Water Conservation Plan be implemented; and

WHEREAS, this Resolution supplements, but does not change, the action taken in Resolution No. 414; and

WHEREAS, Drought Emergency Water Conservation regulations adopted by the State Water Resources Control Board imposed temporary restrictions that became effective on March 27, 2015; and

WHEREAS, these temporary restrictions were not previously included in the District's Water Conservation Program; and

WHEREAS, the Board of Directors of Crestline Village Water District desires to conform to the provisions of the Drought Emergency Water Conservation regulations by amending the District's Water Conservation Program to include these temporary restrictions;

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

Section 1. The following temporary drought emergency restrictions are imposed throughout the District's service area. These restrictions will become effective May 10, 2015 and will expire on December 23, 2015.

(1) Lawn or garden watering, or any other outdoor irrigation is limited to no more than three (3) days per week;

(2) The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited;

(3) The serving of drinking water is prohibited, 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 or drink are served and/or purchased

(4) To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

Section 2. The enforcement provisions of Section 3.3.6.2 of the District's Administrative Code shall apply to any violations of these temporary restrictions.

Section 3. This Board finds and determines that the adoption of this Resolution and implementation of the measures set forth herein are exempt from requirements of the California Environmental Quality Act because of the necessity to mitigate an emergency.

ADOPTED, SIGNED and APPROVED this 21st day of April 2015.

President, Crestline Village Water District

ATTEST:

Secretary, Crestline Village Water District

ORDINANCE NO. 35

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE CRESTLINE VILLAGE WATER DISTRICT MODIFYING THE DISTRICT'S WATER CONSERVATION PROGRAM AND AMENDING SECTION 3.3 OF THE DISTRICT'S ADMINISTRATIVE CODE

WHEREAS, Crestline Village Water District receives more than 50% of its water supply from Crestline-Lake Arrowhead Water Agency (the "Agency") and depends on said water supply; and

WHEREAS, rainfall has been substantially below normal in the watershed supplying the Agency and there is a serious drought which is causing water shortages in many communities of the State; and

WHEREAS, the production of the wells and springs that supply the balance of the District's water supply have also decreased due to the extended drought conditions; and

WHEREAS, these shortages have and will cause this District, its residents, businesses and industries to suffer adversely, such that an active water conservation program is essential to protect against drought and help alleviate against Statewide shortages; and

WHEREAS, the District Board of Directors adopted Ordinance No. 29 on February 21, 1991, establishing a Water Conservation Program for the District in order to (1) protect the health, safety and welfare of the customers of the District, (2) assure the maximum beneficial use of the water supplies of the District, and (3) ensure that there will be sufficient water supplies to meet the basic needs of human consumption, sanitation and fire protection; and

WHEREAS, the District Board of Directors adopted Ordinance No. 30 on August 27, 1992, which ordinance modified the basic monthly allocations of water for the water conservation phases set forth in Ordinance No. 29; and

WHEREAS, the District Board of Directors adopted Ordinance No. 32 on November 17, 1998, which ordinance established the Administrative Code of Crestline Village Water District and placed the Water Conservation Program in Section 3.3 of the Administrative Code; and

WHEREAS, the State Water Resources Control Board adopted Resolution No. 2014-0038 adopting an Emergency Regulation for Statewide Urban Water Conservation; and

WHEREAS, based on information provided by the District staff regarding the water conservation efforts of the District customers generally, and in order to more efficiently implement the District's Water Conservation Program, the District Board of Directors desires to modify the District's Water Conservation Program; and

WHEREAS, this Ordinance is enacted in conformity with Section 350, et seq., and Section

31026 of the Water Code,

NOW, THEREFORE, BE IT ORDAINED by the Board of Directors of Crestline Village Water District as follows:

Section 1. Purpose and Findings:

Based upon information submitted and testimony received at the Public Hearing held on August 19, 2014, this Board of Directors finds that a drought emergency and water shortage exists which requires modification of the District's Water Conservation Program through the enactment of this Ordinance No. 35. The current drought conditions impose a threat to the public health, safety, and welfare of the District customers because of the potential of a reduced water supply for human consumption, sanitation and fire protection. In order to conserve the water supply for the greatest public benefit, it is necessary to modify the District's Water Conservation Program.

Section 2. Modification of the District's Water Conservation Program:

The District hereby adopts the modifications to the District's Water Conservation Program as shown in Exhibit "A" attached hereto and incorporated herein.

Section 3. No Other Change to District Rules and Regulations:

The provisions of this Ordinance No. 35 are in addition to all other District Rules and Regulations for Water Service, and in the event of a conflict between this Ordinance and other rules and regulations relating to the same subject matter, the conflict shall, insofar as practical, be resolved to implement the purpose of this Ordinance.

Section 4. Severability:

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional or invalid by a court of competent jurisdiction, such decision shall not affect the remaining portions of this ordinance and those shall remain in full force and effect.

Section 5. CEQA Exemption:

This Board finds and determines that the adoption of this Ordinance and implementation of the measures set forth herein are exempt from requirements of the California Environmental Quality Act because of the necessity to mitigate an emergency.

Section 6. Effective Date:

This Ordinance shall take effect as of September 1, 2014. Before the expiration of 10 days after its passage, this Ordinance shall be published and posted as required by law.

PASSED AND ADOPTED at a Regular Meeting of the Board of Directors of Crestline Village Water District held the 19th day of August, 2014.

By: _____
President

ATTEST: _____
Secretary

Ordinance 35 – Exhibit “A”

3.3 Water Conservation.

3.3.1 Water Waste Prohibited.

No customer shall knowingly permit leaks or waste of water. Where water is wastefully or negligently used on a customer's premises, and such waste seriously affects the general service, the District may discontinue the service if such conditions are not corrected within five (5) days after giving the customer written notice.

(Res. 200, March 11, 1982.)

3.3.2 Customer Responsibility to Prevent Water Loss.

Each customer of the District is required to install a shut-off valve on the customer's side of the meter, outside the meter box, to allow on-site plumbing to be drained as necessary to prevent loss of water from frozen or broken pipes. It shall be the customers' responsibility to maintain their on-site plumbing and operate these valves as necessary to prevent water loss, especially during periods of freezing conditions when the premises are unoccupied.

(Ord. 29, Section 2, February 21, 1991.)

3.3.3 Water Use Reduction Program.

No customer of the District shall make, cause, use or permit the use of water received from the District for any purpose in a manner contrary to any provision of this Section 3.3.3 or in an amount in excess of that use permitted by the conservation phase then in effect pursuant to this Section 3.3.3 or pursuant to action taken by the Board in accordance to the provisions herein.

(Ord. 29, Section 2, February 21, 1991.)

3.3.3.1 Phase I - General Water Use Reduction Program.

(1) Consumer Curtailment. The District has established a Surcharge for Excess Consumption which establishes 1,300 cubic feet per month as the basic allocation for each single family residential customer. The customer of record may request an increase in this basic allocation as provided in Section 3.3.4 below. Multi-Family, Commercial and Political Entity accounts may request an increase in this basic allocation based upon the number of units served and/or uses of water as provided in Section 3.3.4 below. Every consumer shall eliminate the waste of potable water from the District in an effort to conserve District water supplies.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be one and one half times the rate for the basic allocation.

Ordinance 35 – Exhibit “A”

(Ord. 29, Section 2, February 21, 1991; amended by Ord. 30, Section 1, August 27, 1992.)

3.3.3.2 Phase I.a – 5 Percent Water Use Reduction Program

(1) Consumer Curtailment. The basic allocation shall remain at 1,300 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a five percent reduction of the amount of water used by all consumers during the base calendar year as determined by the provisions of Section 3.3.5.

(2) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District for the following uses:

(a) The washing of sidewalks, walkways, driveways, parking lots and all other hard-surfaced areas by direct hosing, except as may be necessary to properly dispose of flammable or otherwise dangerous liquids or substances, or as otherwise necessary to prevent or eliminate materials dangerous to the public health and safety;

(b) The escape of water through breaks, leaks or dripping faucets within the consumer's plumbing or private distribution system for any substantial period of time within which such break or leak should reasonably have been discovered or corrected. It shall be presumed that a period of forty-eight hours after the consumer discovers such a leak or break, or receives notice from the District of such leak or break, whichever occurs first, is reasonable time within which to correct such leak or break;

(c) The use of running water during freezing weather to prevent the freezing of water lines. Water lines should be protected by other means.

(d) Using a hose to wash cars, trucks, boats, trailers or other vehicles unless it has a spring-release shut-off nozzle;

(e) Lawn or garden watering, or any other irrigation or other water use, in a manner which results in water runoff or over spray of the areas being watered. Every consumer is deemed to have under control at all times its water distribution lines and facilities, and to know the manner and extent of its water use and any runoff;

(f) Sprinkling for dust control;

Ordinance 35 – Exhibit “A”

(g) Any water use that results in the runoff of water in street, gutters, driveways, or other waterways;

(h) Lawn or garden watering, or any other irrigation, beyond what is needed to sustain plant life;

(i) In a fountain or other decorative water feature except where the water is part of a recirculating system.

(Ord. 35, Section 2, August 19, 2014)

3.3.3.3 Phase II - 10 Percent Water Use Reduction Program.

(1) Consumer Curtailment. The basic allocation is reduced to 1,200 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a ten percent reduction of the amount of water used by all consumers during the base calendar year as determined by the provisions of Section 3.3.5.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be two (2) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of Section 3.3.3.2 (2), or for the following uses:

(a) Any irrigation, of landscaping installed after the date upon which this subsection has been activated, is prohibited.

(Ord. 29, Section 2, February 21, 1991; amended by Ord. 30, Section 1, August 27, 1992; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.3.4 Phase III - 20 Percent Water Use Reduction Program.

(1) Consumer Curtailment. The basic allocation is reduced to 1,100 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a twenty percent reduction of the amount of water used by all consumers during the base calendar year as determined by the provisions of Section 3.3.5.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be two and one half (2 1/2) times the rate for the basic allowance.

Ordinance 35 – Exhibit “A”

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of Section 3.3.3.3 (3), or for the following uses:

(a) Using potable water for decorative fountains or the filling of pools, spas, decorative lakes or ponds.

(Ord. 29, Section 2, February 21, 1991; amended by Ord. 30, Section 1, August 27, 1992; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.3.5 Phase IV - 30 Percent Water Use Reduction Program.

(1) Consumer Curtailment. The basic allocation is reduced to 900 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a thirty percent reduction of the amount of water used by all consumers during the base calendar year as determined by the provisions of Section 3.3.5.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be three (3) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of Section 3.3.3.4 (3), or for the following uses:

(a) Sewer or storm system flushing for normal maintenance, and fire department training, except as approved in writing by the District;

(b) Use of potable water for construction;

(c) The washing of motor vehicles, trailers, boats or other vehicles by hosing, or by use of water directly from faucets or other outlets, except: it shall be lawful to wash such vehicles from water contained in a bucket or container not exceeding three (3) gallon capacity; and this prohibition shall not be applicable to the washing of such vehicles at commercial vehicle washing facilities operated at fixed locations which employ water recycling equipment.

(Ord. 29, Section 2, February 21, 1991; amended by Ord. 30, Section 1, August 27, 1992; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.3.6 Phase V - 40 Percent Water Use Reduction Program.

(1) Consumer Curtailment. The basic allocation is reduced to 800 cubic feet

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per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a forty percent reduction of the amount of water used by all consumers during the base calendar year as determined by the provisions of Section 3.3.5.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be three and one half (3 1/2) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of Section 3.3.5 (3), or for the following uses:

(a) The use of potable water for any non-essential outdoor use. Essential uses of potable water are uses necessary for the health, sanitation, fire protection or safety of the consumer or public.

(Ord. 29, Section 2, February 21, 1991; amended by Ord. 30, Section 1, August 27, 1992; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.3.7 Phase VI - 50 Percent Water Use Reduction Program

(1) Consumer Curtailment. The basic allocation is reduced to 700 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a fifty percent reduction of the amount of water used by all consumers during the base calendar year as determined by the provisions of Section 3.3.5.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be four (4) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of Section 3.3.6 (3), or for any non-essential use. Essential uses of potable water are uses necessary for the health, sanitation, fire protection or safety of the consumer or public.

(Ord. 29, Section 2, February 21, 1991; amended by Ord. 30, Section 1, August 27, 1992; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.4 Exceptions to Water Use Reduction Program

3.3.4.1 Exceptions to Basic Allocation

Exceptions to increase the amount of water which may be used without exceeding the basic allotment may be granted by the District Manager or his designee, upon written request for the following reasons:

Ordinance 35 – Exhibit “A”

- (1) Substantiated medical requirements.
- (2) Multiple family units served by a single meter.
- (3) A single family residential household exceeding six (6) residents.
- (4) Unnecessary and undue hardship to the consumer or the public, including but not limited to, adverse economic impacts.

(Ord. 29, Section 3, February 21, 1991.)

3.3.4.2 Exceptions to Prohibited Uses.

Exceptions to prohibited uses may be granted by the General Manager or his designee, upon written request if it is found and determined that failure to do so would cause an unnecessary and undue hardship to the consumer or the public, including, but not limited to, adverse economic impacts.

(Ord. 29, Section 3, February 21, 1991.)

3.3.4.3 Further Exceptions to Prohibited Uses.

Exceptions to prohibited uses shall be granted by the General Manager or his designee, upon written request if it is found and determined that failure to do so would cause an emergency condition affecting the health, sanitation, fire protection or safety of the consumer or the public.

(Ord. 29, Section 3, February 21, 1991.)

3.3.5 Water Use Reduction Program Phase Implementation.

The District shall monitor and evaluate the projected supply and demand for water by its customers, and shall recommend to the Board of Directors any change in customer curtailment as indicated in the respective phases of Section 3.3.3. The Board of Directors shall, by resolution, determine the base calendar year from which the amount of water reduction shall be calculated and order that the appropriate phase of water use reduction be implemented. The effective date of said phase change shall be published once in a local newspaper and a notice shall be mailed to all property owners and customers of record within 10 days after the adoption date of the resolution changing the phase of water use reduction. Said phase shall remain in effect until a different phase is initiated and made effective pursuant to the provisions of this section. The District can, by resolution, order a more stringent phase be implemented, and it need not order one phase at a time.

(Ord. 29, Section 4, February 21, 1991; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.6 Enforcement of Water Use Reduction Program.

Any consumer who violates the provisions of Section 3.3.3 herein may be cited by the District or its representative.

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(Ord. 29, Section 5, February 21, 1991.)

3.3.6.1 Excess Use.

When the requirements of Sections 3.3.3.2, 3.3.3.3, 3.3.3.4, 3.3.3.5, 3.3.3.6 or 3.3.3.7 are in effect, any customer using more than 125% of the basic allocation, for any billing period, may be warned that such use is considered waste of water, and that a reduction in use is required to avoid being subject to the enforcement provisions of Section 3.3.6.2.

(Ord. 29, Section 5, February 21, 1991; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.6.2 Enforcement Provisions.

(1) First Violation. Any consumer found by the District to be violating the regulations and restrictions on water use set forth in Section 3.3.3 shall receive a written warning, which describes the penalty for subsequent violations.

(2) Second Violation. In the event that a second violation is found by the District, the District may add a single \$50 charge to the next water bill of the premises for which or upon which the violation has occurred.

(3) Third Violation. In the event that a third violation is found by the District, the District may add a fine to the next water bill for up to \$500 for each day in which the violation occurs and may discontinue the water service pursuant to Section 3.1.8 and the appropriate reinstatement charge will apply. Installation of a flow restrictor may be required before service is reinstated. If the installation of a flow restrictor is required, the District may add a charge to the next water bill of the premises that covers the cost of said installation.

(Ord. 29, Section 5, February 21, 1991; amended by Ord. 35, Section 2, August 19, 2014.)

3.3.7 Property Owner Responsibility to Provide Notification of Water Use Reduction Program.

It is the responsibility of each property owner to notify any person or persons that use their premises, including, but not limited to weekend rentals, multi-unit apartments, motels and commercial buildings, of any water use restrictions currently in effect. The District will mail a notice to all property owners and customers of record within 10 days of the adoption date of a water use reduction phase change.

(Ord. 29, Section 7, February 21, 1991.)

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3.3.8 Use of Surcharge and Other Charges.

The revenues collected by the District as a result of consumer use of water in excess of the basic allocation set forth in Section 3.3.3 and the charges to be added to consumer bills set forth in Section 3.3.6.2 (2) shall be deposited into the operating fund as reimbursement for the District's costs and expenses of administration and enforcement of the Water Use Reduction Program, and to provide funding to promote, encourage and implement water conservation programs.

(Ord. 29, Section 9, February 21, 1991.)

3.3.9 Restrictions on New Connections.

The Board, by resolution, may from time-to-time restrict new service commitments and connections based on current and future water availability projections.

(Ord. 29, Section 6, February 21, 1991; amended by Ord. 35, Section 2, August 19, 2014.)

ORDINANCE NO. 59

AN ORDINANCE OF THE BOARD OF DIRECTORS OF CRESTLINE-LAKE ARROWHEAD WATER AGENCY DECLARING A WATER SHORTAGE EMERGENCY AND ADOPTING RULES, REGULATIONS AND RESTRICTIONS ON THE USE OF AGENCY WATER

WHEREAS, Crestline-Lake Arrowhead Water Agency (hereinafter "Agency"), a public agency created by legislation codified as Act 9099a of Deering's Water Code - Uncodified Acts (hereinafter the "Crestline-Lake Arrowhead Water Agency Law"), provides water service on a retail basis directly to certain customers within its boundaries, and also provides supplemental water on a wholesale basis to other water purveyors, also located within the Agency's boundaries, for retail delivery to their own customers; and

WHEREAS, the Agency is one of twenty-nine State Water Contractors in the State of California which obtain water from the State Water Project, and all of the water which the Agency delivers comes from Silverwood Lake, a facility of the State Water Project; and

WHEREAS, due to extraordinarily low precipitation state-wide, the Governor of the State of California has declared a state-wide water shortage emergency; and

WHEREAS, the Agency has been advised by the California Department of Water Resources ("DWR"), which operates the State Water Project, that due to water shortage conditions, the Agency's allocation of water from the State Water Project for calendar year 2014 will be 0%, leaving the Agency to rely on its own stored water supplies within the State Water Project, and DWR cannot confirm that it will even be able to deliver the Agency's stored water to the Agency in 2014; and

WHEREAS, even if DWR is able to deliver enough stored water to the Agency in 2014 to satisfy the needs of the Agency's customers in 2014, continued dry conditions must be anticipated at this time, such that the ordinary demands and requirements of the Agency's customers cannot continue to be satisfied without depleting the Agency's water supply to the extent that a number of the Agency's customers would have insufficient water for human consumption, sanitation, and fire protection; and

WHEREAS, the Agency is authorized by Section 11, subsections (13) and (14), of the Crestline-Lake Arrowhead Water Agency Law to restrict the use of Agency water during a threatened or existing water shortage, and to prohibit the waste or the use of Agency water during such periods for any purpose other than domestic uses or such other uses as may be determined by the Agency to be necessary; and

WHEREAS, the Agency is further authorized by Water Code Sections 350, et seq., to declare a water shortage emergency and to impose such rules, regulations and restrictions on the use of Agency water as may be appropriate or necessary; and

WHEREAS, this Board of Directors determines that the adoption of rules, regulations and restrictions on the use of Agency water is necessary in order to (1) protect the health, safety, and welfare of the inhabitants and customers of the Agency, (2) assure the maximum beneficial use of the water supplies of the Agency, and (3) ensure that there will be sufficient water supplies to meet the basic needs of human consumption, sanitation and fire protection; and

WHEREAS, the Board of Directors further determines that the specific rules, regulations and restrictions established herein are necessary as emergency measures to cope with an existing water supply shortage which could become even worse in the future;

NOW, THEREFORE, BE IT ORDAINED by the Board of Directors of Crestline-Lake Arrowhead Water Agency as follows:

Section 1. Findings.

This Board of Directors finds that a water shortage emergency exists which requires the adoption and enforcement of this Ordinance. The Agency has received notice from DWR that its allocation of water from the State Water Project during calendar year 2014 will be 0%, and that DWR may not even be able to deliver carryover water not used by the Agency in previous years, that normally would be available for use by the Agency during a period of shortage. This unavailability of water will directly impact the wholesale and retail customers of the Agency, many of whom rely exclusively upon the Agency for their water supply. If such dry conditions continue, the ordinary demands and requirements of the Agency's customers cannot be satisfied without depleting the Agency's water supply to the extent that a number of the Agency's customers would have insufficient water for human consumption, sanitation, and fire protection. Therefore, the Agency must impose rules, regulations and restrictions on the use of Agency water designed to reduce consumption within the Agency's service area in order to preserve a supply of water necessary to protect the health, safety and welfare of the customers within the Agency's service area. The Agency's first priority in the implementation of these regulations and restrictions will be preservation of sufficient water to satisfy minimum domestic consumptive needs, ensure adequate fire protection, and preserve the health and safety of the inhabitants and customers of the Agency.

Section 2. Definitions.

- | | |
|----------------------|--|
| "Agency" -- | Crestline-Lake Arrowhead Water Agency. |
| "Board" -- | Board of Directors of the Agency. |
| "Retail customer" -- | A customer receiving water service directly from the Agency, through a service connection, for his own use and not for resale or delivery to others. |
| "Waste" -- | Any unreasonable or non-beneficial use of water or any unreasonable method of use of water, including, but not limited to, the specific uses prohibited and restricted by this Ordinance as hereinafter set forth. |

“Water users” -- Any person, firm, partnership, association, corporation or entity using water obtained from the water system of Crestline-Lake Arrowhead Water Agency.

“Wholesale customer” -- A customer having a connection to the Agency’s water system which purchases water from the Agency for resale or delivery to its own users, customers, or shareholders through its own water system; the term “wholesale customer” shall include camps.

Section 3. Water Supply Allocation Plan – Wholesale Customers.

During the pendency of the existing water shortage emergency, the Board will monitor the quantity of water available to the Agency from storage arrangements, exchange arrangements or other sources, and in its discretion may limit water deliveries to its customers in stages as hereafter set forth. Using 2013 as a base year, the Agency will determine the quantity of water which the Agency delivered to each wholesale customer during each month of 2013. Each such customer shall then be allowed to receive from the Agency, each month, at the Agency’s standard rate for wholesale water then in effect, no more than the following percentage of the quantity of water which the Agency delivered to that wholesale customer during the corresponding month of the base year, subject to such further limitations as may apply to any specific customer. The percentage shall depend upon the stage of allocation declared by the Board, as follows:

STAGE OF ALLOCATION DECLARED BY BOARD	PERCENTAGE OF WATER DELIVERED DURING CORRESPONDING MONTH OF BASE YEAR
STAGE 1 ALLOCATION	95%
STAGE 2 ALLOCATION	90%
STAGE 3 ALLOCATION	80%
STAGE 4 ALLOCATION	70%
STAGE 5 ALLOCATION	60%

During a Stage 1 Allocation, water taken for any month in excess of the applicable percentage shall be charged at twice the Agency’s standard rate for wholesale water in effect at the time of delivery. For Stage 2 through Stage 5 Allocations, water taken for any month in excess of the applicable percentage shall be subject to such surcharges as the Board may establish by resolution, at the time each such stage of allocation is declared by the Board.

Section 4. Water Supply Allocation Plan -- Retail Customers.

A. Allowable Consumption. Using 2013 as a base year, the Agency will determine the quantity of water that the Agency delivered to each retail customer during each month of 2013. When a stage of allocation is declared by the Board as set forth in Section

3 above, each such customer shall then be allowed to receive from the Agency, each month, a percentage of the quantity of water which the Agency delivered to that retail customer during the corresponding month of the base year, provided that a retail customer using water for residential purposes shall not be restricted to less than a quantity equal to 55 gallons per person per day to satisfy minimum health and safety needs. The percentage shall equal the same percentage set forth in Section 3 above, for each such stage of allocation declared by the Board. Whenever a stage of allocation is declared by the Board, the Agency shall inform each retail customer in writing of the percentage of base year consumption that each customer is allowed to use each month in order to comply with this restriction.

B. Prohibited Uses. This Board finds the following uses constitute waste, and therefore retail customers are urged to avoid the following practices at all times, and such practices shall be prohibited for the Agency's retail customers during all phases of allocation declared by this Board:

- (i) Running water into streets or gutters.
- (ii) Washing automobiles or equipment with running water (as opposed to use of a bucket, other container or a commercial wash establishment using recycled or reclaimed water).
- (iii) Washing down buildings (except windows), walks, driveways or streets.
- (iv) Sprinkling for dust control.
- (v) Water displays or ornamental water use (fountains, etc.) except when the display uses reclaimed or recycled water.
- (vi) Dripping faucets, or other leaks, or unattended or excessively running hoses.
- (vii) Watering lawns, parks, playgrounds or ball fields more than twice per week, which watering must occur after 9:00 p.m. and before 3:00 a.m.; provided there shall be no prohibition against watering with reclaimed water.

C. Installation and Use of Shut-off Valves. Each retail customer of the Agency is hereby required to install a shut-off valve on the customer's side of the meter, outside of the meter box, to allow on-site plumbing to be drained as necessary to prevent loss of water from frozen or broken pipes. It shall be the customer's responsibility to turn off the shut-off valve upon leaving the premises, and to insulate exposed pipes and valves to protect the pipes and valves against breaks when freezing conditions occur.

D. Construction Water Use. Whenever the Board declares a stage of allocation pursuant to this ordinance, the Board shall also establish the rates and charges to be imposed for the use of water at construction sites or in aid of construction. The rates and charges

shall be established in amounts designed to discourage the use of water for construction purposes, as determined by the Board to be appropriate under the circumstances.

Section 5. Adjustment of Base Quantities.

The base quantities established for wholesale and retail customers pursuant to Section 3 and Section 4 of this ordinance may be adjusted by the Board, as the Board in its discretion deems necessary, in order to equitably apply the provisions of this Ordinance and to achieve the purposes and objectives set forth herein. Customers seeking an adjustment must apply to the Board in writing and provide documentation to demonstrate that the adjustment is necessary in order to avoid inequitable application of this Ordinance. Upon granting or denying a requested adjustment, the decision of the Board shall be final.

Section 6. Use of Surcharge Revenues.

The surcharge revenues collected by the Agency as a result of customer consumption in excess of the base quantities set forth in Section 3 of this ordinance shall be used by the Agency to assist in defraying the cost of measures employed by the Agency to cope with the water shortage emergency which necessitates the adoption of this Ordinance.

Section 7. Moratorium on Service Commitments and Connections.

Until the Board determines that a water shortage emergency no longer exists, the Agency shall not make any oral or written commitments to provide any new retail service and shall not approve the installation of a new or additional turnout to a wholesale customer. Any such commitment shall be without authority from this Board and, therefore, shall be void and unenforceable.

Section 8. Use of Water Saving Kits.

The Agency shall provide a water saving kit, free of charge, to each retail customer of the Agency who needs and requests one, so long as the Agency has a stockpile of kits. Retail customers are urged to use such kits. Furthermore, the Agency's wholesale customers are urged to assist their own retail customers in obtaining and installing water saving devices to minimize water consumption within their service areas.

Section 9. Lawns, Parks, Playgrounds and Ballfields.

Retail customers, schools and camps which receive water directly from the Agency are urged at all times to refrain from, and during any stage of allocation shall be prohibited from, watering lawns, parks, playgrounds or ballfields more than twice per week, with such watering to occur after 9:00 p.m. and before 3:00 a.m. There shall be no prohibition against watering with reclaimed water.

Section 10. Compliance.

Failure to comply with the provisions of this Ordinance shall constitute a misdemeanor punishable under Section 13 of the Crestline-Lake Arrowhead Water Agency Law. Upon conviction of such a misdemeanor, that person shall be punished by imprisonment in the county jail for not more than thirty (30) days or by a fine of not more than Three Hundred Dollars (\$300), or by both fine and imprisonment. The Agency reserves the right to take such civil enforcement action or other action as may be available or appropriate to compel compliance with the provisions of this Ordinance, including the right to discontinue service to customers who violate the provisions of this Ordinance.

Section 11. Rules and Regulations.

This Ordinance shall augment, and not supersede, the provisions set forth in the Agency's Rules and Regulations. Customers are urged to pay particular attention to Section 3.13(d) of the Agency's Rules and Regulations, which specifically prohibits the waste of water by causing or permitting the overflow of water storage reservoirs.

Section 12. Severability.

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional or invalid by a court of competent jurisdiction, such decision shall not affect the remaining portions of this Ordinance and those shall remain in full force and effect.

Section 13. Supersession..

This Ordinance shall supersede Ordinance No. 44, adopted by the Board in 1991.

Section 14. CEQA Exemption.

This Board finds and determines that the adoption of this Ordinance and implementation of the measures set forth herein are exempt from environmental assessment pursuant to Section 15269(c) of Title 14 of the California Code of Regulations, which sets forth the State Guidelines for Implementing the California Environmental Quality Act, and directs the Agency's General Manager to file a Notice of Exemption with the County Clerk for the County of San Bernardino.

Section 15. Publication and Notice.

A copy of this Ordinance shall be published one time in a newspaper of general circulation within the Agency within ten (10) days after the adoption hereof pursuant to Government Code Section 6061. In addition, copies shall be mailed to each wholesale customer of the Agency.

ADOPTED this 3rd day of April, 2014.



President of the Board of Directors
CRESTLINE-LAKE ARROWHEAD WATER AGENCY

ATTEST:



Secretary of the Board of Directors
CRESTLINE-LAKE ARROWHEAD WATER AGENCY

CERTIFICATION

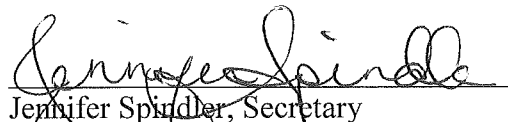
I, Jennifer Spindler, Secretary of the Board of Directors of the Crestline-Lake Arrowhead Water Agency, hereby certify that the foregoing is a full, true and correct copy of the Ordinance adopted by the Board of Directors of said Agency at the regular meeting of said Board held on the 3rd day of April, 2014, by the following vote:

AYES: Directors Pleasant, Risher, Sutton, Eaton & Wood

NOES:

ABSENT:

ABSTAIN:



Jennifer Spindler, Secretary

RESOLUTION NO. 414

RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESTLINE VILLAGE WATER DISTRICT
CHANGING THE EXISTING PHASE OF WATER
CONSERVATION UNDER THE DISTRICT'S
WATER CONSERVATION PROGRAM

WHEREAS, the Board of Directors of Crestline Village Water District adopted Ordinance No. 29 on February 21, 1991, which Ordinance established the District's Water Conservation Program; and

WHEREAS, the District Board of Directors adopted Ordinance No. 30 on August 27, 1992, which ordinance modified the basic monthly allocations of water for the water conservation phases set forth in Ordinance No. 29; and

WHEREAS, the District Board of Directors adopted Ordinance No. 32 on November 17, 1998, which ordinance established the Administrative Code of Crestline Village Water District and placed the Water Conservation Program in Section 3.3 of the Administrative Code; and

WHEREAS, the District Board of Directors adopted Ordinance No. 35 on August 19, 2014, which ordinance modified Section 3.3 of the Administrative Code; and

WHEREAS, pursuant to Section 3.3.5 of the Administrative Code, the District Board of Directors may, by resolution, establish the base calendar year from which the amount of water use reduction is calculated and order that the appropriate phase of water use reduction be implemented; and

WHEREAS, the District is presently operating under Phase I, a General Water Use Reduction Program; and

WHEREAS, based on the recommendation and report of District Staff, the projected supply and demand for water throughout the District is such that Phase I.a provides for more appropriate conservation of water within the District;

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

Section 1. Based on the report and recommendation of the District Staff, the projected water supply and demand for water in the District is such that water conservation efforts as provided in Phase I.a of the District's Water Conservation Program, implemented pursuant to Section 3.3.5 of the Administrative Code is necessary to encourage the conservation of water within the District's service area.

Section 2. Effective with the September 2014 billing period for the District's service areas, the conservation phase of the District's Water Conservation Program shall be changed from Phase I to Phase I.a.

Section 3. Effective with the September 2014 billing period for the District's service areas, the base calendar year from which the amount of water use reduction is calculated is determined to be calendar year 2013.

Section 4. This Board finds and determines that the change to Phase I.a is exempt from the requirements of the California Environmental Quality Act because it can be seen with certainty that there is no possibility that this activity may have a significant effect on the environment and the decision relates only to ongoing operation of District facilities.

Section 5. In accordance with Section 3.3.5 of the Administrative Code, within 10 days after the adoption date of this Resolution, the Secretary of the District shall publish the effective date of this phase change once in a local newspaper and shall mail notice of the phase change to all property owners and customers of record.

ADOPTED, SIGNED and APPROVED this 19th day of August 2014.

President, Crestline Village Water District

ATTEST:

Secretary, Crestline Village Water District

PUBLIC NOTICE

NOTICE OF CHANGE IN THE EXISTING STAGE OF
WATER CONSERVATION UNDER THE
CRESTLINE VILLAGE WATER DISTRICT'S
WATER CONSERVATION PROGRAM

Effective as of the September 2014 billing period, the Board of Directors of Crestline Village Water District adopted Resolution No. 414 and, thereby, changed the existing phase of water conservation under the District's Water Conservation Program. The District was operating under Phase I, a General Water Use Reduction Program. Pursuant to Resolution No. 414, the District will be operating under Phase I.a requiring a 5% reduction in water use.

August 19, 2014

Karl B. Drew
Secretary, Board of Directors
CRESTLINE VILLAGE WATER DISTRICT

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, KARL B. DREW, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 19th day of August, 2014, and that it was adopted by the following roll call vote:

AYES: Directors Davis, Stone, Farrell, Clanin and Bracher
NOES: None
ABSENT: None
ABSTAINED: None

Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, _____, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 414 of said Board, and that the same has not been amended or repealed.

DATED: _____

Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

RESOLUTION NO. 490

RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESTLINE VILLAGE WATER DISTRICT
CHANGING THE EXISTING PHASE OF WATER
CONSERVATION UNDER THE DISTRICT'S
WATER CONSERVATION PROGRAM

WHEREAS, the Board of Directors of Crestline Village Water District adopted Ordinance No. 29 on February 21, 1991, which Ordinance established the District's Water Conservation Program; and

WHEREAS, the District Board of Directors adopted Ordinance No. 30 on August 27, 1992, which ordinance modified the basic monthly allocations of water for the water conservation phases set forth in Ordinance No. 29; and

WHEREAS, the District Board of Directors adopted Ordinance No. 32 on November 17, 1998, which ordinance established the Administrative Code of Crestline Village Water District and placed the Water Conservation Program in Section 3.3 of the Administrative Code; and

WHEREAS, the District Board of Directors adopted Ordinance No. 35 on August 19, 2014, which ordinance modified Section 3.3 of the Administrative Code; and

WHEREAS, pursuant to Section 3.3.5 of the Administrative Code, the District Board of Directors may, by resolution, establish the base calendar year from which the amount of water use reduction is calculated and order that the appropriate phase of water use reduction be implemented; and

WHEREAS, the District is presently operating under Phase 1, a General Water Use Reduction Program; and

WHEREAS, based on the recommendation and report of District Staff, the projected supply and demand for water throughout the District is such that Phase 1a provides for more appropriate conservation of water within the District;

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

Section 1. Based on the report and recommendation of the District Staff, the projected water supply and demand for water in the District is such that water conservation efforts as provided in Phase 1a of the District's Water Conservation Program, implemented pursuant to Section 3.3.5 of the Administrative Code is necessary to encourage the conservation of water within the District's service area.

Section 2. Effective with the _____, 2022 billing period for the District's service areas, the conservation phase of the District's Water Conservation Program shall be changed from Phase 1 to Phase 1a.

Section 3. Effective with the _____, 2022 billing period for the District's service areas, the base calendar year from which the amount of water use reduction is calculated is determined to be calendar year 2013.

Section 4. This Board finds and determines that the change to Phase 1a is exempt from the requirements of the California Environmental Quality Act because it can be seen with certainty that there is no possibility that this activity may have a significant effect on the environment and the decision relates only to ongoing operation of District facilities.

Section 5. In accordance with Section 3.3.5 of the Administrative Code, within 10 days after the adoption date of this Resolution, the Secretary of the District shall publish the effective date of this phase change once in a local newspaper and shall mail notice of the phase change to all property owners and customers of record.

ADOPTED, SIGNED and APPROVED this 17th day of May, 2022.

President, Crestline Village Water District

ATTEST:

Secretary, Crestline Village Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, Jeanene Weiss, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 17th day of May, 2022, and that it was adopted by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAINED:

Secretary of the Board of Directors of
Crestline Village Water District

(SEAL)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, _____, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 490 of said Board, and that the same has not been amended or repealed.

DATED: _____

Secretary of the Board of Directors of

Crestline Village Water District (SEAL)

RESOLUTION NO. 460

RESOLUTION OF THE BOARD OF DIRECTORS OF CRESTLINE VILLAGE WATER DISTRICT ADOPTING NEW WATER RATE SCHEDULE

WHEREAS, Crestline Village Water District is duly organized and exists under and pursuant to the provisions of the County Water District Law, and serves the community of Crestline in the County of San Bernardino, State of California; and

WHEREAS, the Board of Directors of Crestline Village Water District set the existing water rate schedule over three (3) years ago, at their meeting on December 20, 2016; and

WHEREAS, in the three (3) years since the existing water rate schedules were last increased, the District has incurred significant increased operational costs including, without limitation, increases in cost of living adjustments and salary increases to District employees and increases in insurance costs, all without increasing water rates for its customers; and

WHEREAS, it has been, and continues to be, the policy of the Board of Directors of Crestline Village Water District to impose on their customers only such rates and charges as are necessary and proper; and

WHEREAS, based on the reports and studies of the Crestline Village Water District staff, including without limitation the financial forecast and water rate study presented to this Board of Directors on March 17, 2020, budget information for the current and future fiscal years, and the studies and actions taken by the Rate Study Committee, all of which have been made available to this Board of Directors and to the public, and all of which have been reviewed and considered by this Board of Directors, it appears that an increase in the Monthly Minimum Charge as shown in the new water rate schedule imposed by this Resolution are necessary and proper; and

WHEREAS, the increase to the Monthly Minimum Charge and Basic Allocation in the District's water rate will help ensure the health and safety of the community, while protecting the District's financial health; and

WHEREAS, the procedures required by Proposition 218, Article XIII D, Section 6 of the California Constitution and Sections 53750 - 53758 of the Government Code, have been followed, including without limitation the provision of proper notice and the holding of a public hearing; and

WHEREAS, the Board of Directors of Crestline Village Water District has the legal authority to impose the rates and charges set forth in this Resolution and, pursuant to Water Code section 31007, has the legal obligation to fix a rate or rates for water that will result in revenue which, together with other revenues, will pay the operating expenses of the District, provide for repairs and depreciation of works owned or operated by the District, pay the interest on any

bonded debt and, so far as possible, provide a fund for the payment of the principal of the bonded debt as it becomes due;

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

Section 1. The following water rate schedule is hereby set for the Crestline Village Water District:

The District hereby adopts an annual increase over a five-year period of \$5.00 per month for all meter sizes to the Monthly Minimum Charge in the District's water rate beginning July 01, 2020. An increase of \$1.00 per month for all meter sizes to the Monthly Minimum Charge in the District's water rate beginning May 01, 2021. An increase of \$1.00 per month for all meter sizes to the Monthly Minimum Charge in the District's water rate beginning May 01, 2022. An increase of \$1.00 per month for all meter sizes to the Monthly Minimum Charge in the District's water rate beginning May 01, 2023. An increase of \$2.00 per month for all meter sizes to the Monthly Minimum Charge in the District's water rate beginning May 01, 2024. The Basic Allocation Rate is to be increased to \$5.10 per one hundred cubic foot (CCF) of water for the 0-1300 CF consumption range July 01, 2020. Consequently, the Excess Consumption Rate becomes \$7.65 per 100 CF for 1301 CF or greater as recommended by the Study.

Water Rate Schedule – July 01, 2020

Water Conservation Program - Phase I general conservation measures in effect

Monthly Minimum Charge:

5/8 X 3/4	inch meter	\$30.50*
3/4	inch meter	31.50
1	inch meter	32.50
1	inch meter (Residential fire service)	34.75
1-1/2	inch meter	36.50
2	inch meter	41.50
3	inch meter	47.50
4	inch meter	70.50

* 5/8 X 3/4 inch meter is standard for most residential accounts.

Quantity Rates:

Basic Allocation - 0 to 1300 cubic feet	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule - Commercial Fire Services: Commercial Fire Services have detector check meters to detect any water that passes through the fire service water line. The detector check meter is a 5/8 X 3/4 inch meter.

Monthly Minimum Charge:

5/8 X 3/4 inch meter	\$34.00
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Quantity Rates:

Basic Allocation	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule – May 01, 2021

Water Conservation Program - Phase I general conservation measures in effect

Monthly Minimum Charge:

5/8 X 3/4	inch meter	\$31.50*
3/4	inch meter	32.50
1	inch meter	33.50
1	inch meter (Residential fire service)	35.75
1-1/2	inch meter	37.50
2	inch meter	42.50
3	inch meter	48.50
4	inch meter	71.50

* 5/8 X 3/4 inch meter is standard for most residential accounts.

Quantity Rates:

Basic Allocation - 0 to 1300 cubic feet	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule - Commercial Fire Services: Commercial Fire Services have detector check meters to detect any water that passes through the fire service water line. The detector check meter is a 5/8 X 3/4 inch meter.

Monthly Minimum Charge:

5/8 X 3/4 inch meter	\$35.00
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Quantity Rates:

Basic Allocation	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule – May 01, 2022

Water Conservation Program - Phase I general conservation measures in effect

Monthly Minimum Charge:

5/8 X 3/4	inch meter	\$32.50*
3/4	inch meter	33.50
1	inch meter	34.50
1	inch meter (Residential fire service)	36.75
1-1/2	inch meter	38.50
2	inch meter	43.50
3	inch meter	49.50
4	inch meter	72.50

* 5/8 X 3/4 inch meter is standard for most residential accounts.

Quantity Rates:

Basic Allocation - 0 to 1300 cubic feet	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule - Commercial Fire Services: Commercial Fire Services have detector check meters to detect any water that passes through the fire service water line. The detector check meter is a 5/8 X 3/4 inch meter.

Monthly Minimum Charge:

5/8 X 3/4 inch meter	\$36.00
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Quantity Rates:

Basic Allocation	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule – May 01, 2023

Water Conservation Program - Phase I general conservation measures in effect

Monthly Minimum Charge:

5/8 X 3/4 inch meter	\$33.50*
3/4 inch meter	34.50
1 inch meter	35.50
1 inch meter (Residential fire service)	37.75
1-1/2 inch meter	39.50
2 inch meter	44.50
3 inch meter	50.50
4 inch meter	73.50

* 5/8 X 3/4 inch meter is standard for most residential accounts.

Quantity Rates:

Basic Allocation - 0 to 1300 cubic feet	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule - Commercial Fire Services: Commercial Fire Services have detector check meters to detect any water that passes through the fire service water line. The detector check meter is a 5/8 X 3/4 inch meter.

Monthly Minimum Charge:

5/8 X 3/4 inch meter	\$37.00
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Quantity Rates:

Basic Allocation	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule – May 01, 2024

Water Conservation Program - Phase I general conservation measures in effect

Monthly Minimum Charge:

5/8 X 3/4	inch meter	\$35.50*
3/4	inch meter	36.50
1	inch meter	37.50
1	inch meter (Residential fire service)	39.75
1-1/2	inch meter	41.50
2	inch meter	46.50
3	inch meter	52.50
4	inch meter	75.50

* 5/8 X 3/4 inch meter is standard for most residential accounts.

Quantity Rates:

Basic Allocation - 0 to 1300 cubic feet	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Water Rate Schedule - Commercial Fire Services: Commercial Fire Services have detector check meters to detect any water that passes through the fire service water line. The detector check meter is a 5/8 X 3/4 inch meter.

Monthly Minimum Charge:

5/8 X 3/4 inch meter	\$39.00
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Quantity Rates:

Basic Allocation	\$5.10 per 100 cubic ft
Quantity in excess of 1300 cubic feet	\$7.65 per 100 cubic ft

Section 2. Exemption from the California Environmental Quality Act. The Board of Directors finds that the imposition of rates and charges pursuant to this Resolution No. 460 is exempt from the provisions of the California Environmental Quality Act (CEQA) since the rates and other charges have been imposed for the purposes of meeting operating expenses, purchasing or leasing supplies, equipment or materials, meeting financial reserve needs and requirements, and obtaining funds for capital projects necessary to maintain service within existing service areas, and, additionally, since the imposition of these rates and charges constitutes the creation of government funding mechanisms which do not involve commitment to any specific project which may result in a potentially significant physical impact on the environment or which will be used to fund projects which have CEQA documentation or will have CEQA documentation in place prior to construction of any facility or facilities.

Section 3. Repeal of Prior Water Rate Schedule. The water rate schedule for Crestline Village Water District as set by Board action on December 20, 2016, and any other motions or resolutions of Crestline Village Water District inconsistent with the new water rate schedules established in Section 1 of this Resolution No. 460, are hereby repealed effective as of the effective date specified in Section 4 below.

Section 4. Effective Date. This Resolution and the water rate schedule imposed pursuant hereto shall become effective for all billing periods that begin in July 2020.

Dated: June 16, 2020

CRESTLINE VILLAGE WATER DISTRICT

By: _____
President

ATTEST:

Secretary

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, ALAN E. CLANIN, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 16th day of June 2020, and that it was adopted by the following roll call vote:

AYES: Directors
NOES: None
ABSENT: None
ABSTAINED: None

Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, _____, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 460 of said Board, and that the same has not been amended or repealed.

DATED: _____

Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

APPENDIX I

Autumn DeWoody

From: DO-NOT-REPLY <donotreply@ecointeractive.com>
Sent: Tuesday, June 30, 2026 1:57 PM
To: Autumn DeWoody
Subject: WUEdata - UWMP Submittal Confirmation

This serves as confirmation that the following UWMP was electronically submitted to DWR:

Water Supplier Name: Crestline Village Water District
Submitted by: Autumn DeWoody
Email Address: autumn.dewoody@webbassociates.com
Submitted Date: 6/30/2026 1:57:24 PM
Confirmation Number: 7047764420

Click the link below to view the submitted plan on WUEdata:

[View Submitted UWMP on WUEdata](#)

DWR staff reviews plans in the order they are received. Upon the completion of the review, DWR will send a status letter to the people you listed on the contact sheet. This will contain the results of the review. The DWR reviewer may contact you if they have questions.

If you have any questions or would like to discuss the Urban Water Management Plan's review, please contact us at (UWMPHelp@water.ca.gov).
Send a request to UWMPHelp@water.ca.gov if you require an expedited review.

Email auto-generated by WUEdata on 6/30/2026

ALBERT A. WEBB ASSOCIATES

3788 McCRAY STREET, RIVERSIDE, CALIFORNIA 92506
TELEPHONE (951) 686-1070 FAX
www.webbassociates.com

TO: California State Library Government Publications Section
900 N Street
Sacramento, CA 95814

LETTER OF TRANSMITTAL

DATE: W.O. NO. :
July 1, 2026 FILE NO. :

ATTENTION : Coordinator, Urban Water Management Plans

RE: **Submittal of Compact Disk: 2025 UWMP**

TRANSMITTED: VIA: FedEx

One (1) Compact Disk with Crestline Village Water District adopted 2025 UWMP and adopted WSCP
One (1) Compact Disk with East Valley Water District adopted 2025 UWMP and adopted WSCP
One (1) Compact Disk with Running Springs Water District adopted 2025 UWMP and adopted WSCP

THESE ARE TRANSMITTED AS CHECKED BELOW

FOR APPROVAL

FOR YOUR USE X

AS REQUESTED

FOR REVIEW AND COMMENT

OTHER:

NOTES / COMMENTS:

Hello Coordinator of UWMP, Please find the documents, listed above, for formal submittal. Please let me know if you have any questions. I can be reached over the phone at (951)320-6047 or via email at noemi.avila@webbassociates.com. Thank you!
Noemi Avila

Noemi Avila

IF ENCLOSURES ARE NOT AS NOTED, KINDLY NOTIFY US AT ONCE.

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From address

Noemi Avila co WEBB ASSOCIATES

Webb Associates

3788 McCray Street

92506 CA Riverside

US

Phone: 9513206047

To address

Coordinator, UWMP

CA State Library Govt. Publication

900 N Street Sacramento

95814 CA SACRAMENTO

US

Phone: 9163239845

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Autumn DeWoody

From: Autumn DeWoody
Sent: Monday, July 20, 2026 2:10 PM
To: 'Figueroa, Miguel'; Lee Reeder; noel.castillo
Cc: Julia Archibeque; Josselyn Quine; Espino, Alcelma
Subject: RE: Information Request for Crestline Village Water District Urban Water Management Plan (2025)

Hi Miguel,

Crestline Village Water District approved their UWMP on June 16, 2026, which can be accessed on their website at <https://www.crestlinevillagewaterca.gov/> / Documents / Urban Water Management Plans or directly at the link below:

https://www.crestlinevillagewaterca.gov/files/882670d0c/2026.06.16_Adopted_CVWD_UWMP.pdf

Thank you for the County's participation in this process!



Autumn DeWoody
Senior Environmental Analyst- Water Resources Planning

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From: Figueroa, Miguel <Miguel.Figueroa@lus.sbcounty.gov>
Sent: Tuesday, April 28, 2026 12:01 PM
To: Lee Reeder <Lee.Reeder@webbassociates.com>; noel.castillo <noel.castillo@dpw.sbcounty.gov>
Cc: Autumn DeWoody <autumn.dewoody@webbassociates.com>; Julia Archibeque <julia.archibeque@webbassociates.com>; Josselyn Quine <jmquine@cvwater.com>; Espino, Alcelma <Alcelma.Espino@lus.sbcounty.gov>
Subject: RE: Information Request for Crestline Village Water District Urban Water Management Plan (2025)

Hello Lee, per your request.

- Large-scale projects within District: 0
- Recently approved (past six months) and in process ADUs in water district: 6
- No additional information to provide regarding projects/initiatives that may affect the district's projections for future water use in the next 20-25 years.

[District Website](#)[\(https://www.crestlinevillagewaterca.gov/\)](https://www.crestlinevillagewaterca.gov/)[Contact Us \(/contact-us\)](/contact-us)**DOCUMENTS (/UPDATES)**[NOTICES \(/NOTICES\)](#)[WATER RATE DOCUMENTS \(/YOUR-WATER\)](#)[MEETING AGENDAS \(/BOARD-MEETINGS\)](#)[URBAN WATER MANAGEMENT PLAN \(/URBAN-WATER-MANAGEMENT-PLANS\)](#)[EXTERNAL LINKS \(/EXTERNAL-LINKS\)](#)

Urban Water management Plans

[📄 CVWD UWMP Final 2025 \(/files/882670doc/2026.06.16_Adopted_CVWD_UWMP.pdf\)](/files/882670doc/2026.06.16_Adopted_CVWD_UWMP.pdf)[📄 CVWD UWMP Final 2020 \(/files/a20b11cc1/CVWD+UWMP+Final+2020.pdf\)](/files/a20b11cc1/CVWD+UWMP+Final+2020.pdf)[📄 CVWD UWMP Final 2015 \(/files/c5bdcea17/CVWD+UWMP+Final+2015.pdf\)](/files/c5bdcea17/CVWD+UWMP+Final+2015.pdf)[📄 CVWD UWMP Final 2010 \(/files/44e2e9e2b/CVWD+UWMP+Final+2010.pdf\)](/files/44e2e9e2b/CVWD+UWMP+Final+2010.pdf)

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