



2025 Urban Water Management Plan

Public Viewing Draft



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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 309,927 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 DWR's methodology, this Plan estimates the District's full-time 2025 population at 11,650 persons and, based on CVWD's assessment, along with data produced by the Southern California Association of Governments (SCAG) for unincorporated San Bernardino County, 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 15 water storage tanks at 12 locations, with a total storage capacity of 8.677 million gallons (11,586 CCF). The distribution system has 12 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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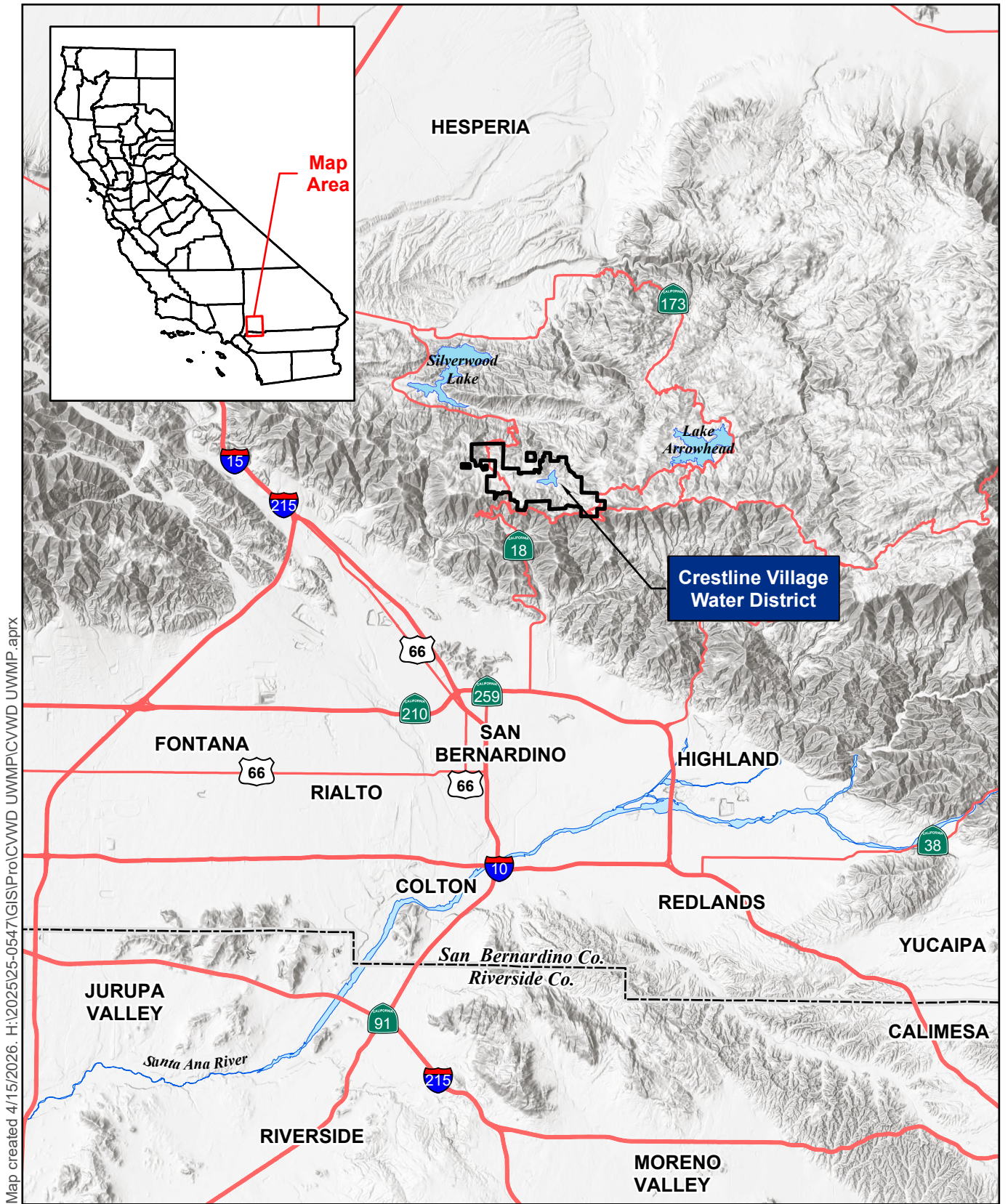
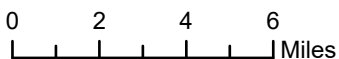


Figure 1-1 Regional Vicinity
 Crestline Village Water District Urban Water Management Plan 2025



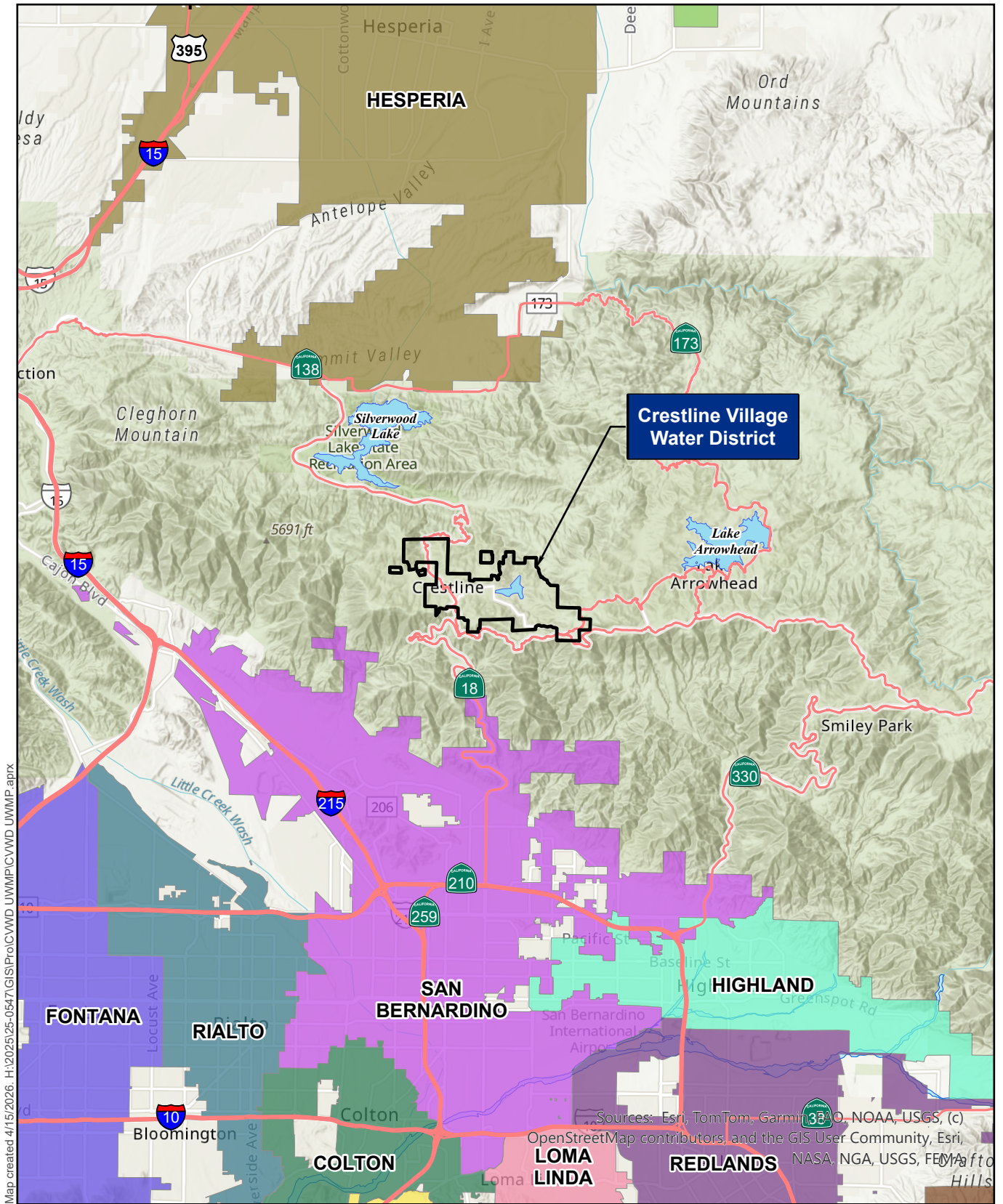


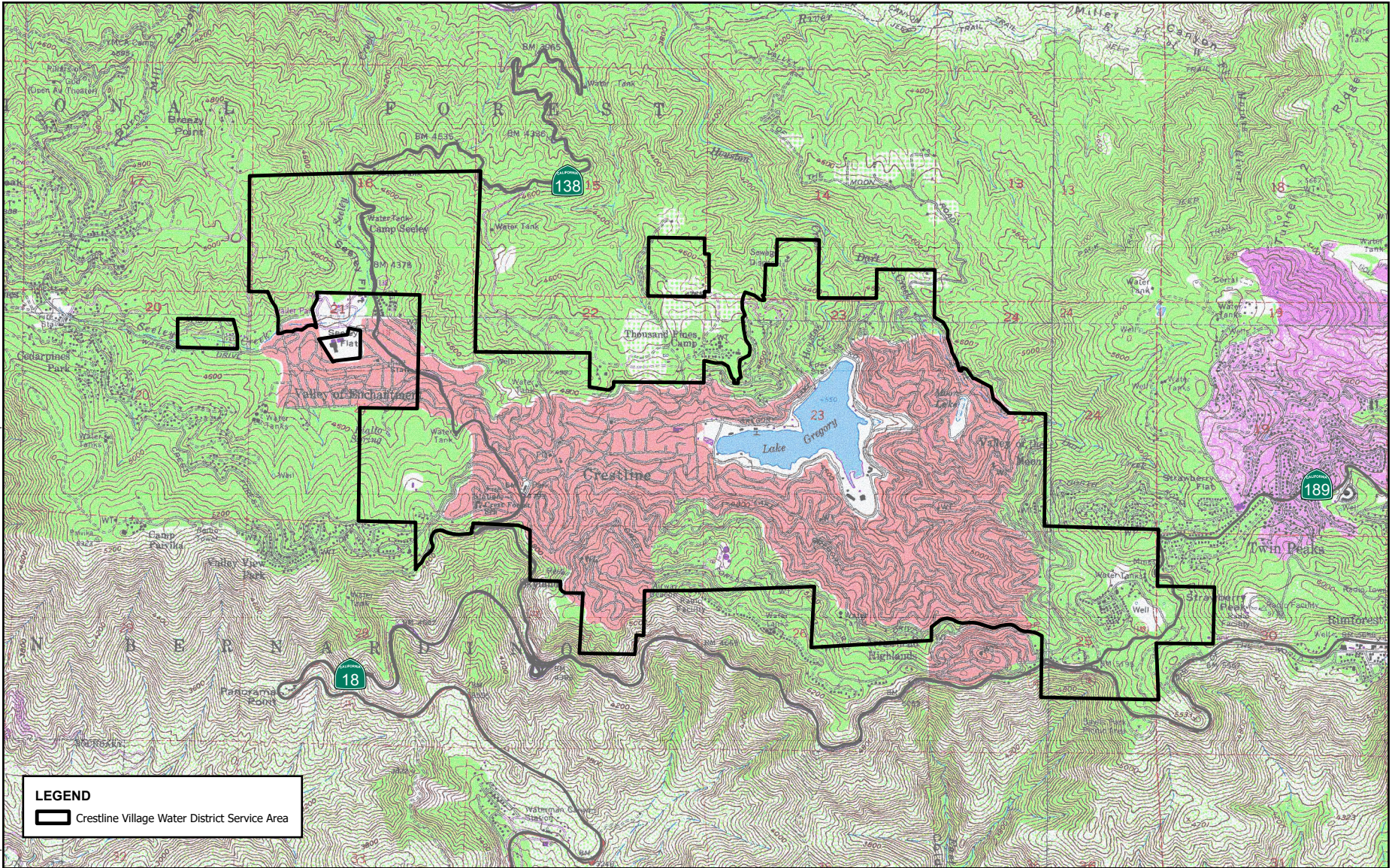
Figure 1-2 Neighboring Cities and Waterbodies
Crestline Village Water District Urban Water Management Plan 2025




0 2 4 Miles



Map created 4/15/2026. H:\2025\25-0547\GIS\ProC\WWD_UWMP\C\WWD_UWMP.aprx



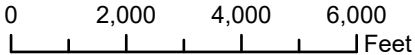
LEGEND

-  Crestline Village Water District Service Area

Sources: ESRI / USGS 7.5min Quad

Figure 1-3 Topographic Features

Crestline Village Water District Urban Water Management Plan 2025



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)
<input checked="" type="checkbox"/>	Individual UWMP	
	If Water Supplier is also a member of a SB X7-7 Regional Alliance, select name from the drop-down.	
<input type="checkbox"/>	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)	
<input type="checkbox"/>	Supplier is a wholesale supplier
<input checked="" type="checkbox"/>	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	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 in *The Alpine Mountaineer* and *The Mountain News* newspapers of the public hearing 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 12 locations, with a total storage capacity of 8.644 million gallons (11,555 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.

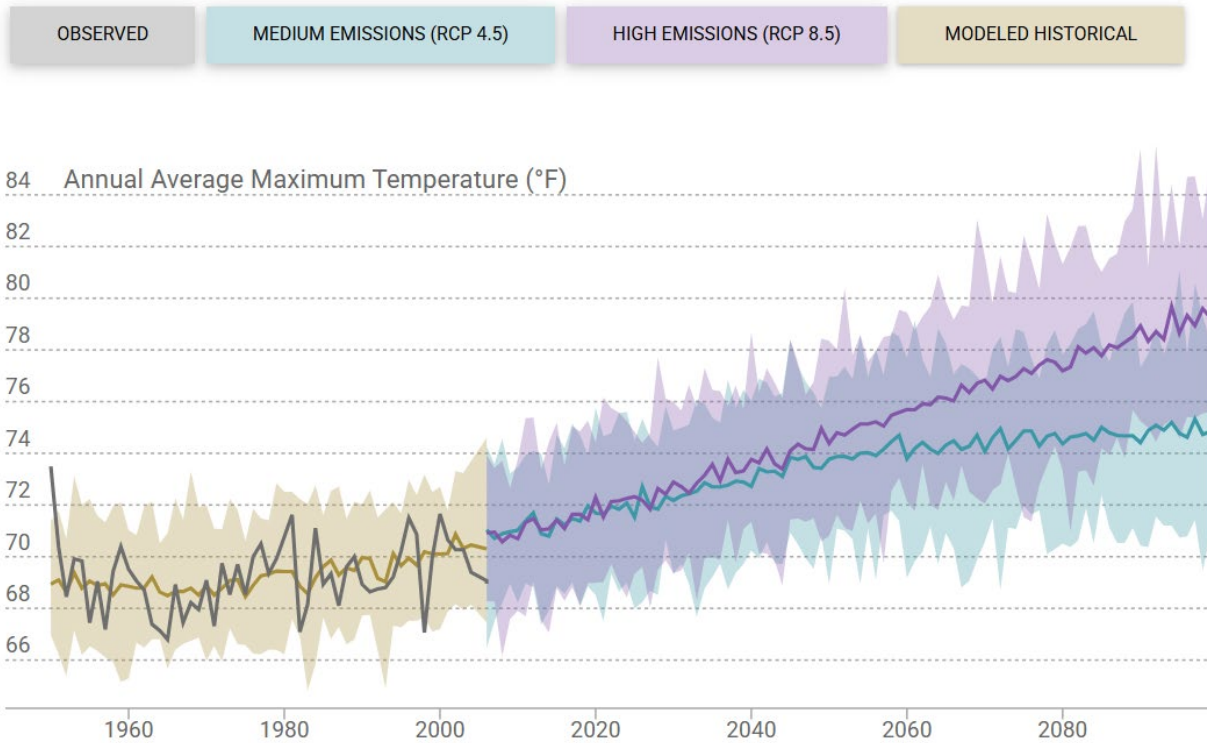
Pursuant to Water Code, the District's level of analysis of the potential effects of climate change on its supplies and demands has been done at a level commensurate with the size of the distribution system. Because of its size and analytical resources, CVWD looked to Western Municipal Water District (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 Chapter 4 and in Chapter 6 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)

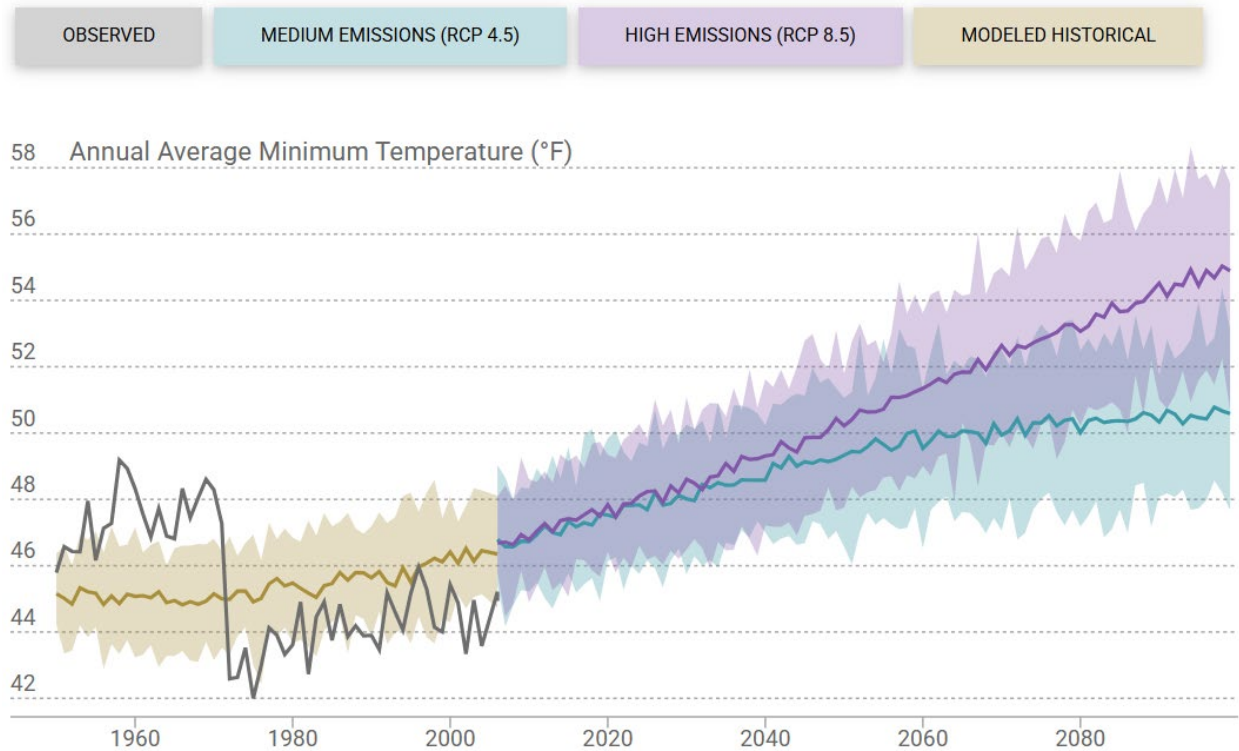


Table 3E below summarizes Cal-Adapt baseline (1961-1990) and mid-century projections (2035-2064) for Annual Average Minimum Temperature in the Crestline area.

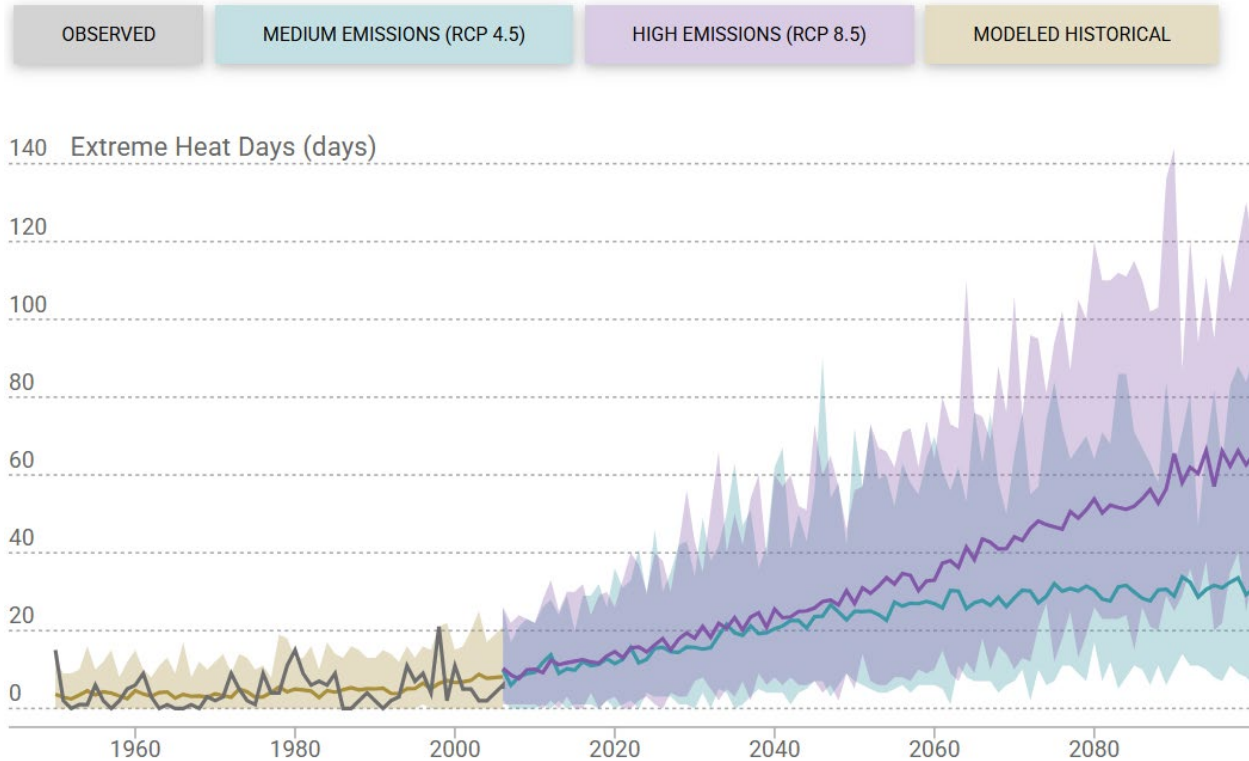
Table 3E: Annual Average Minimum Temperature (Cal-Adapt Projections)

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**.

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.

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.

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)*

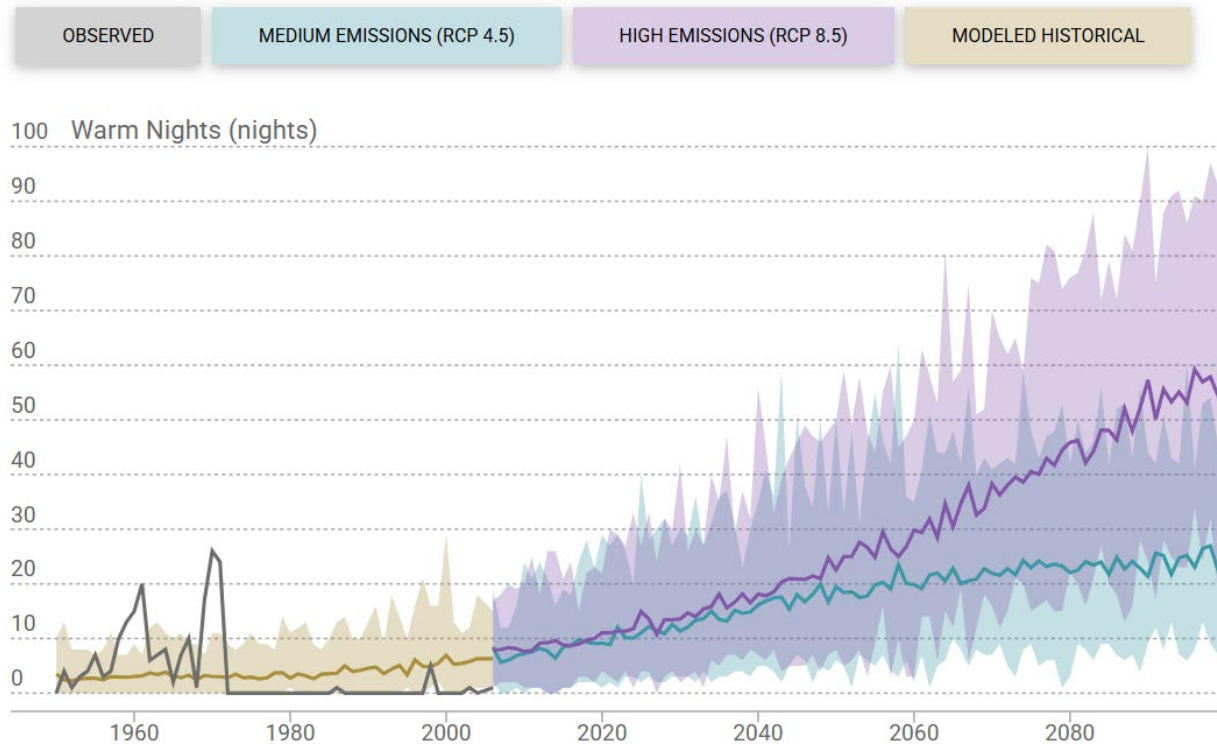


Table 3G below summarizes Cal-Adapt baseline and mid-century projections for Warm Nights, for baseline (1961-1990) and mid-century (2035-2064) time periods in the Crestline area.

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: 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)

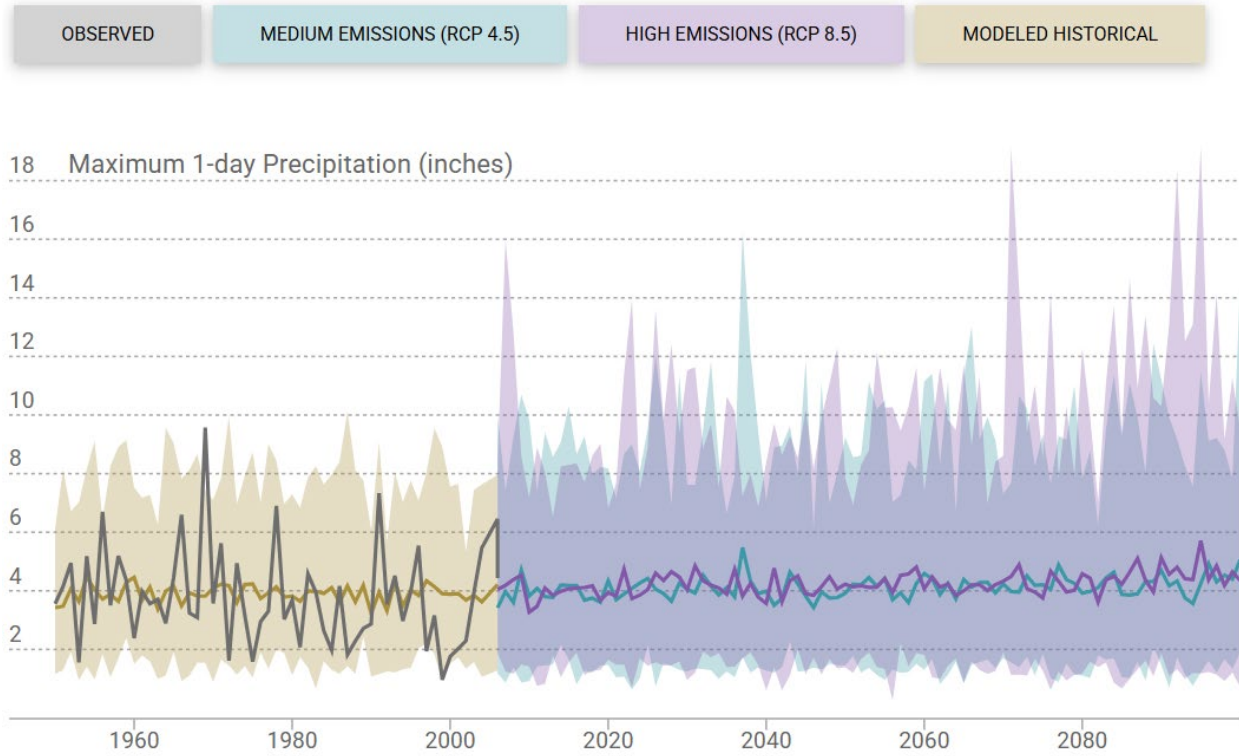


Table 3H below summarizes Cal-Adapt baseline and mid-century projections for Maximum 1-day Precipitation, which is the maximum daily amount of rain or snow over a 24-hour period.

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)

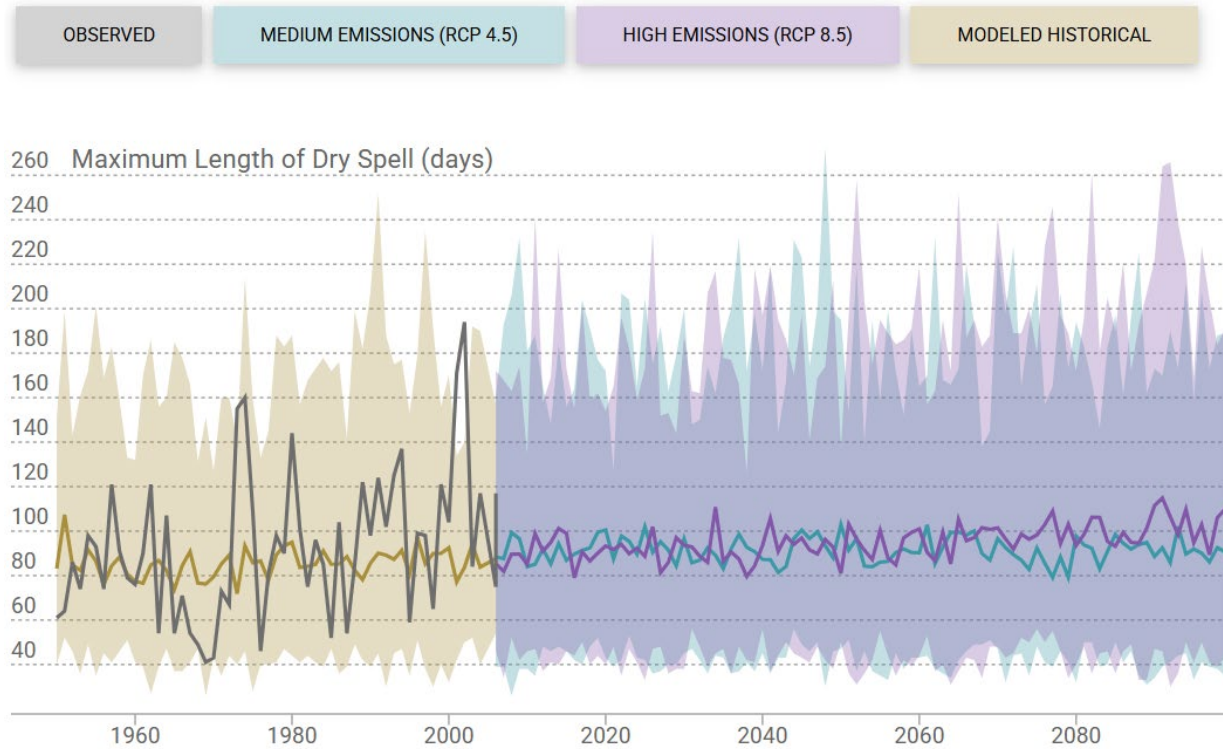


Table 3I below summarizes Cal-Adapt baseline and mid-century projections for Maximum Length of Dry Spell, which is maximum number of consecutive days with precipitation less than 1 millimeter for each year.

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)

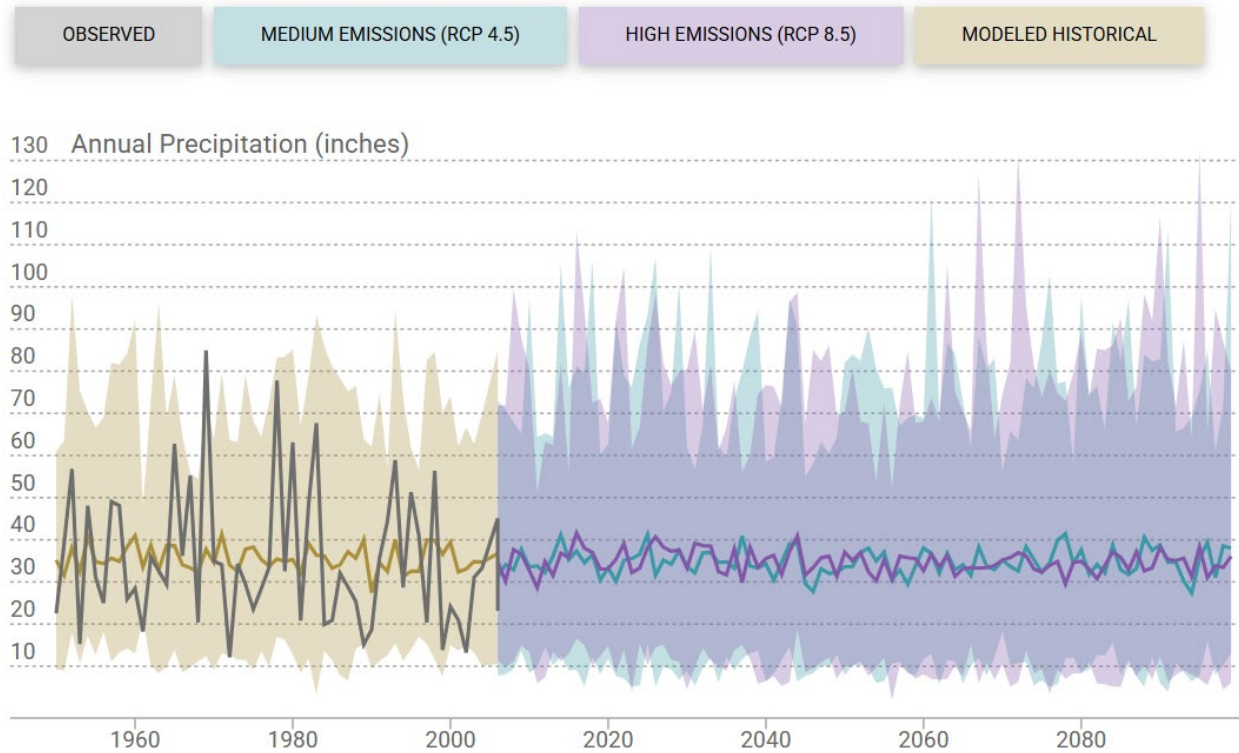


Table 3J below summarizes Cal-Adapt baseline and mid-century projections for Annual Precipitation in the Crestline area, which is the total precipitation in a year.

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)*

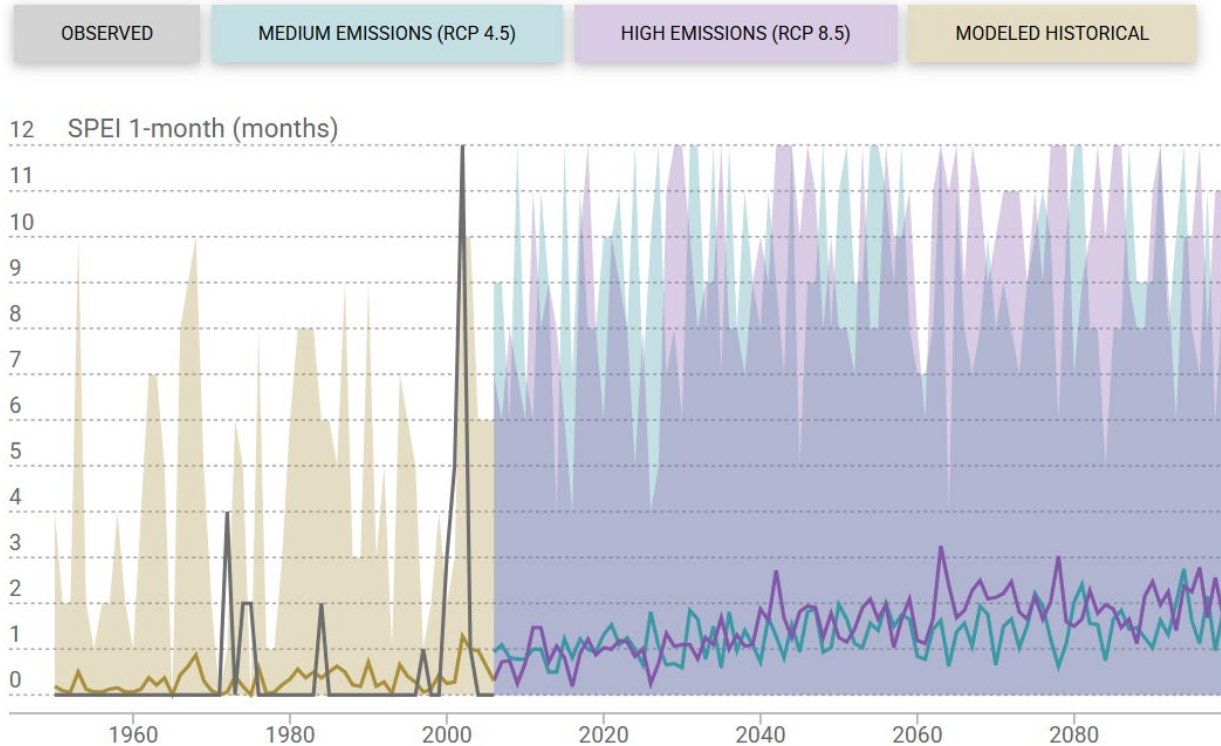


Table 3K below summarizes Cal-Adapt baseline and mid-century projections for SPEI 1-month in the Crestline area.

Table 3K: SPEI, 1-Month (Cal-Adapt Projections)

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 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 3K: 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 ^{l)}	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.

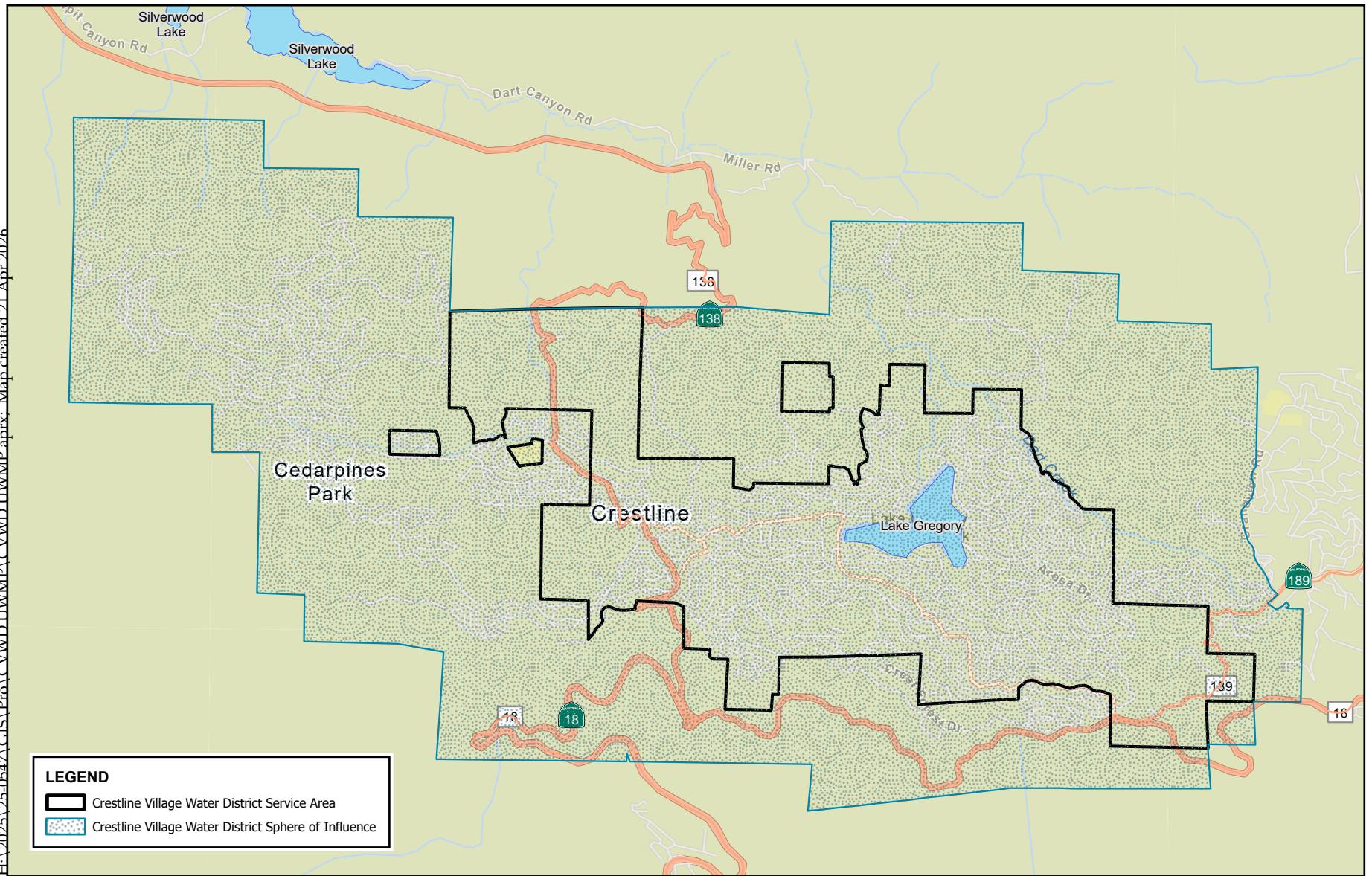
Table 3L: Summary of Maximum and Mid-Point Projected Buildouts Based on Land Use Districts per County Development Code

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.

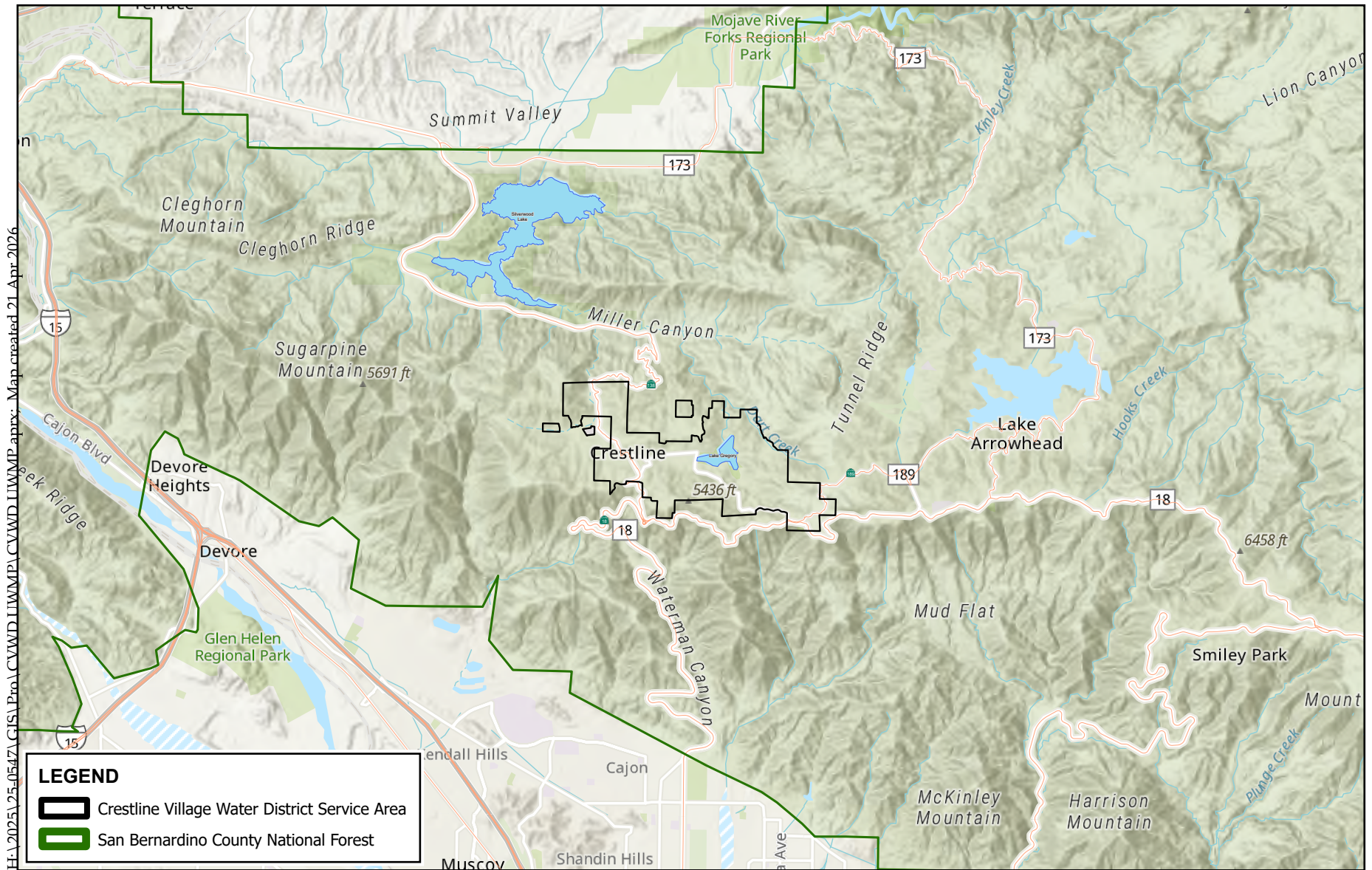
Figure 3-1 Sphere of Influence

Crestline Village Water District Urban Water Management Plan 2025



0 0.5 1 Miles



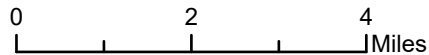


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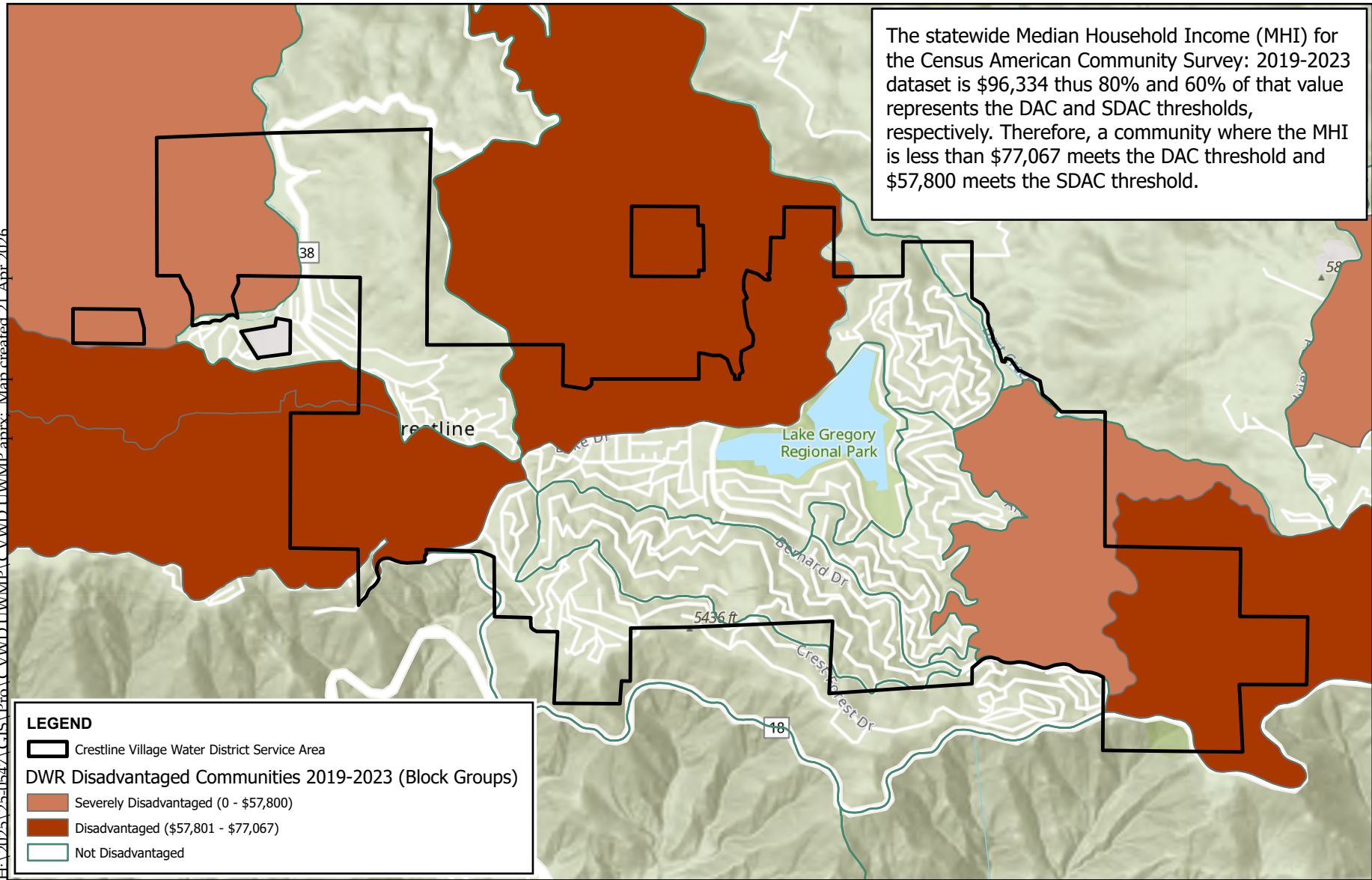
Sources: CVWD AGOL, 2016; USDA 2025.

Figure 3-2 National Forest Boundary

Crestline Village Water District Urban Water Management Plan 2025



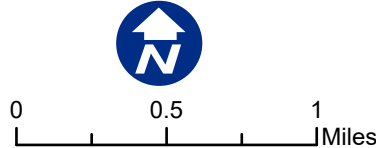
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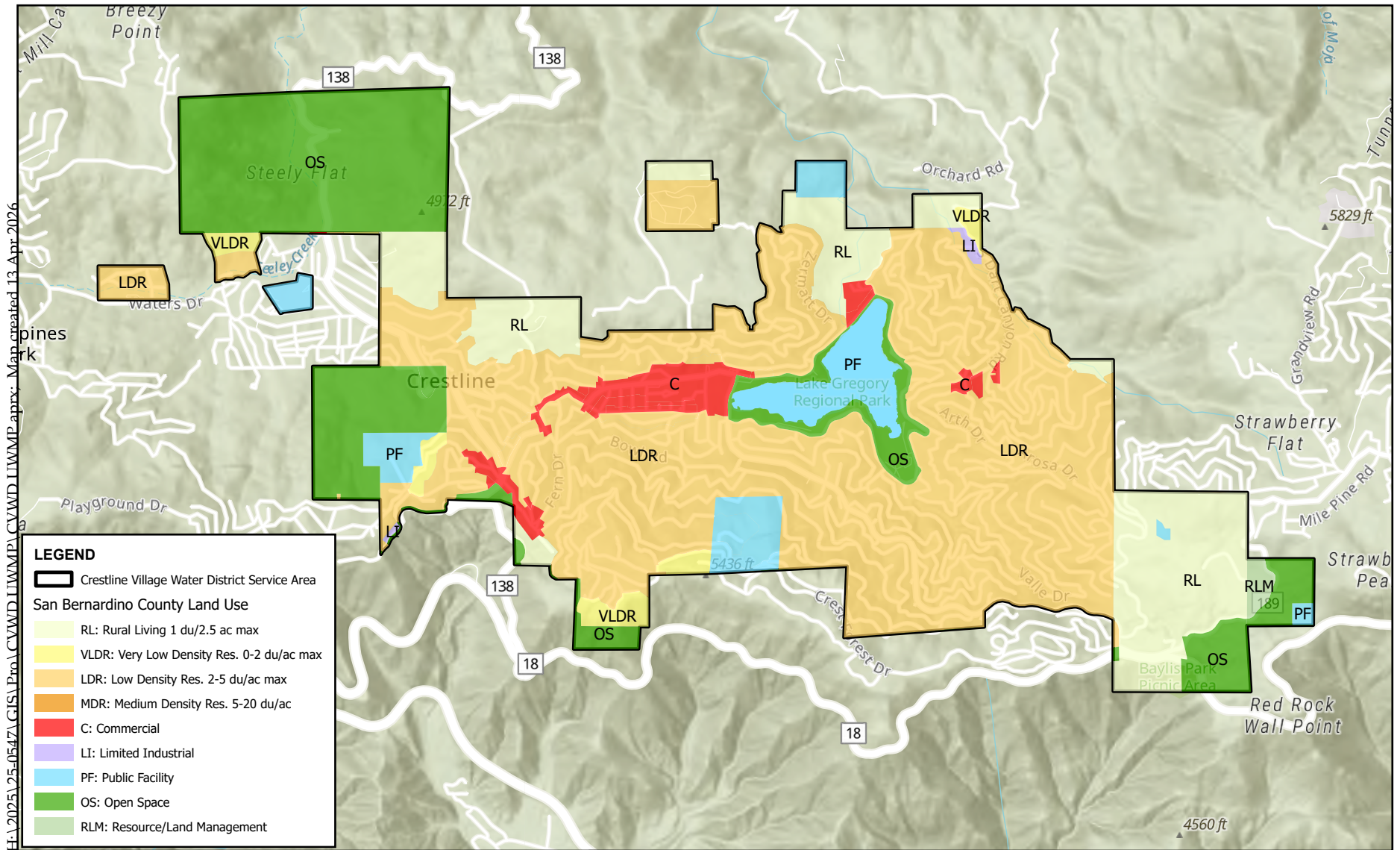


Sources: DWR DAC TOOL 2019-2023

Figure 3-3 Disadvantaged Community by Census Block Group

Crestline Village Water District Urban Water Management Plan 2025



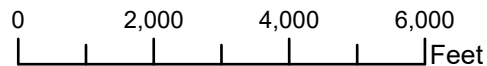


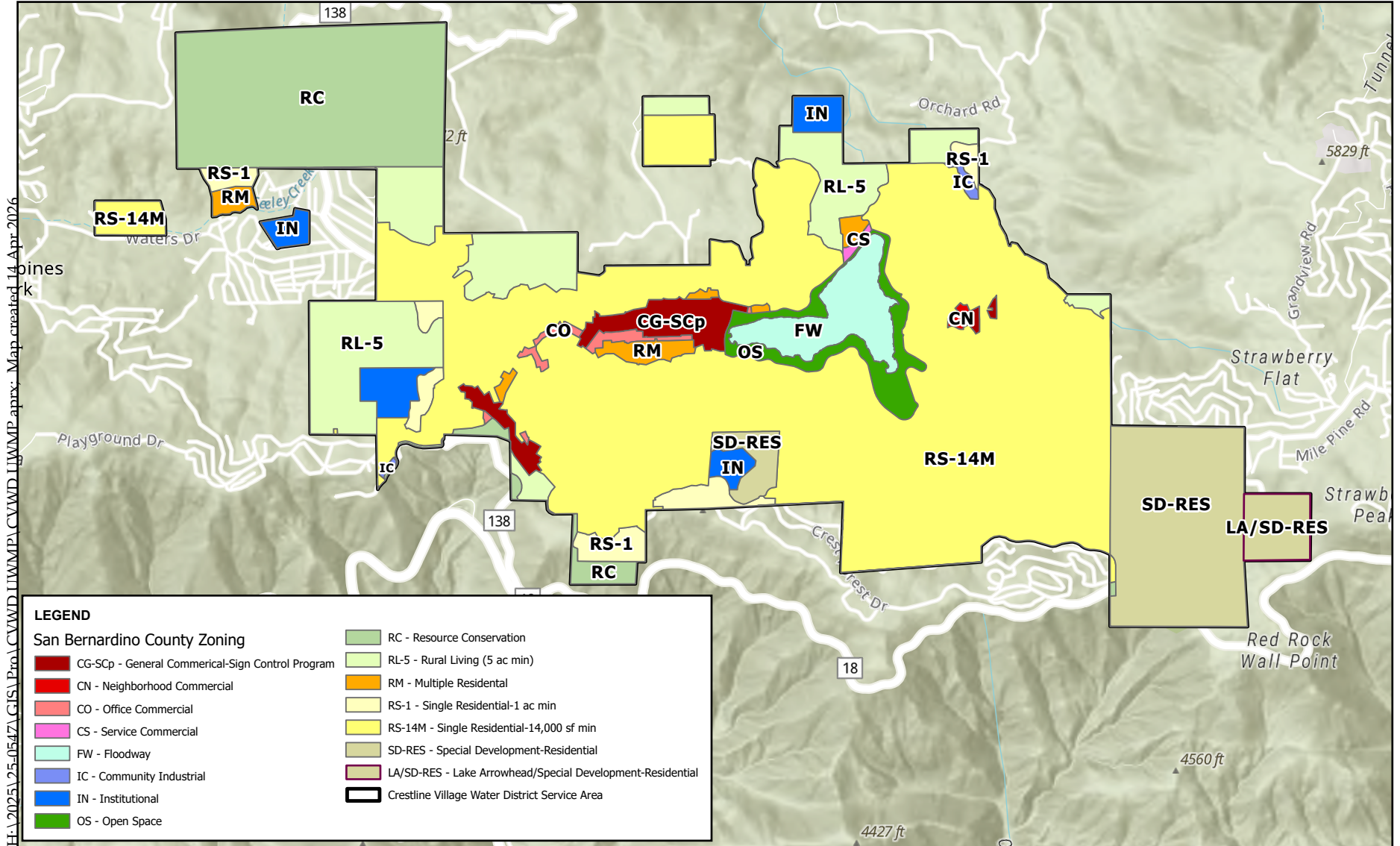
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Sources: San Bernardino Co. Land Use Services, 2025; ESRI.

Figure 3-4 San Bernardino County Land Use Designations

Crestline Village Water District Urban Water Management Plan 2025





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Sources: San Bernardino Co. Land Use Services, 2026; ESRI.

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	6535	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 Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
		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 4-5**. 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 4-6** 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 4-5: 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)	Apparent Water Loss Per Unit per Day			
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						
<input type="checkbox"/> 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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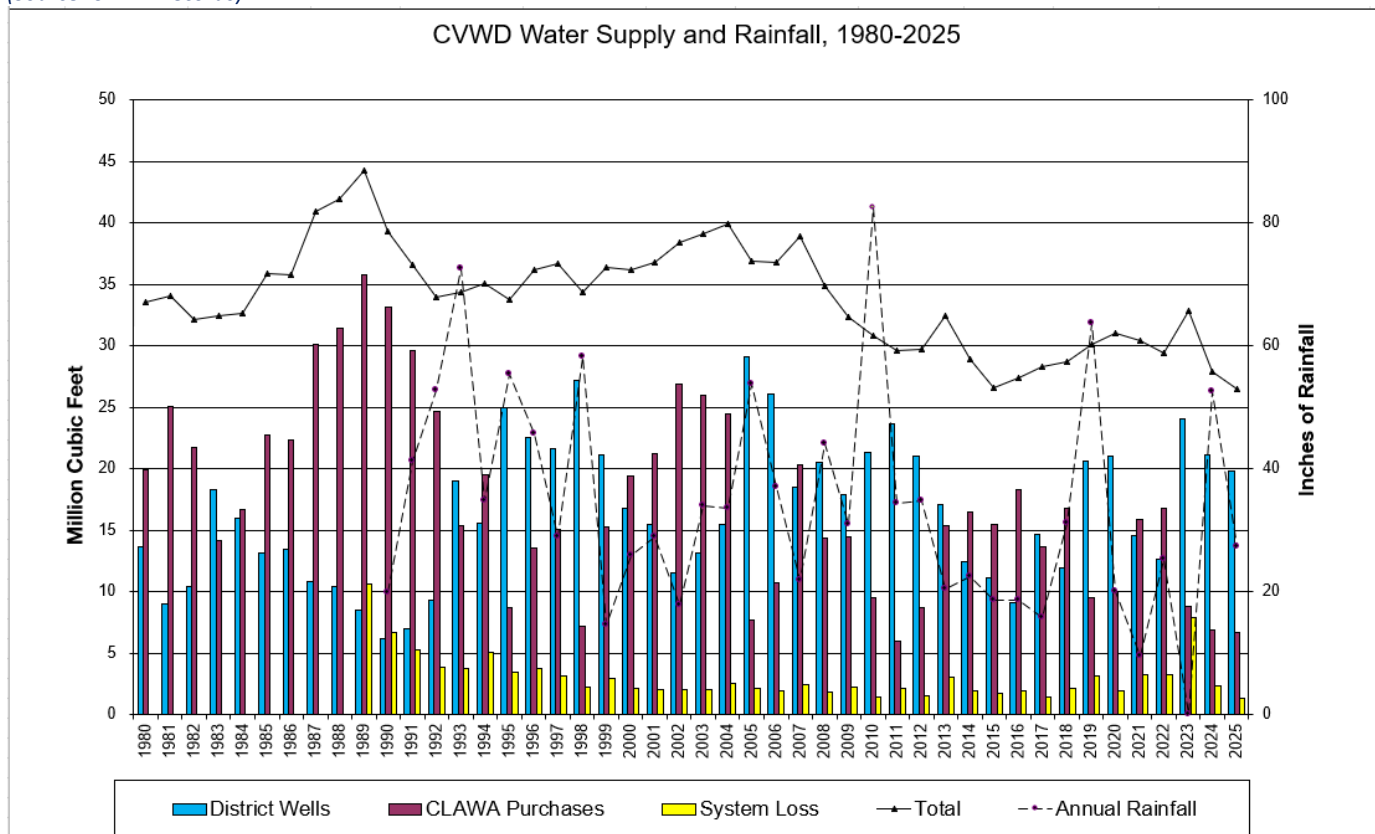
CHAPTER 6 NORMAL YEAR WATER SUPPLY CHARACTERIZATION

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.

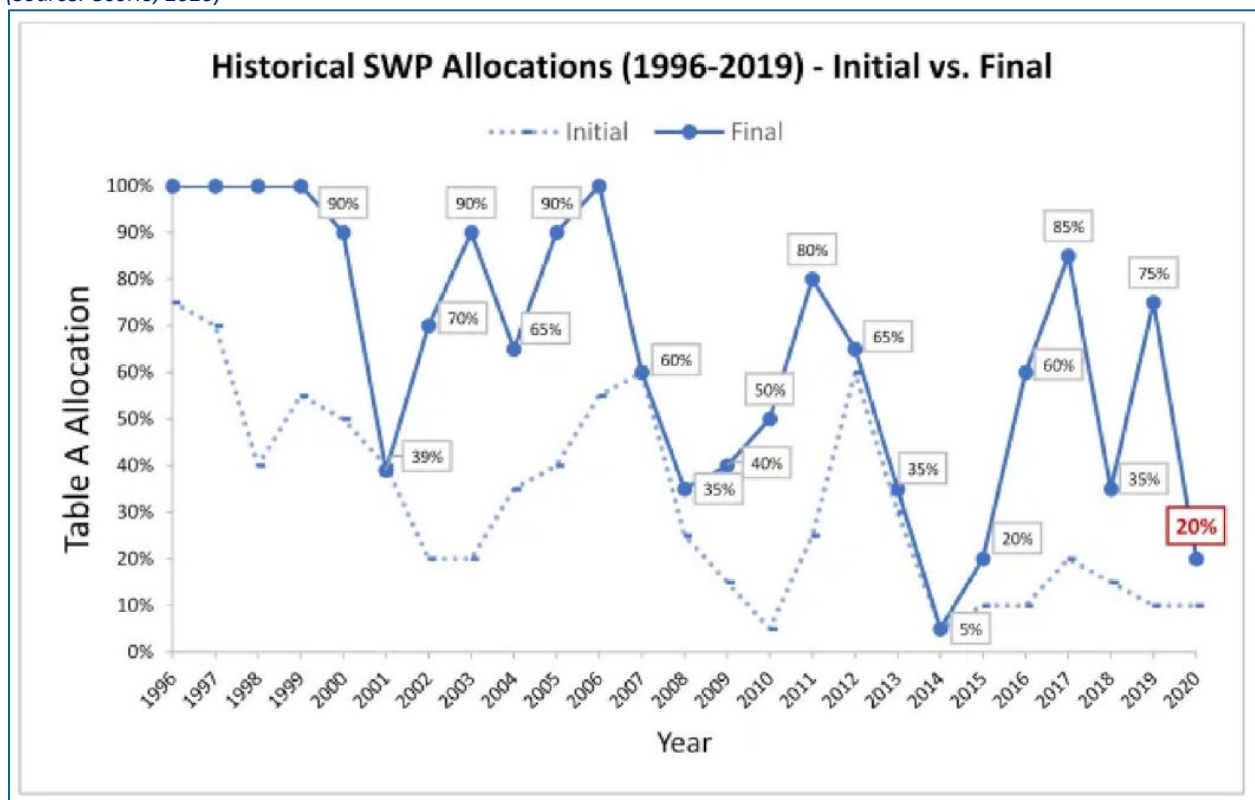
Chart 6-8 - CVWD Water Supply and Rainfall (1980-2025)
(Source: CVWD Records)



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 Gorgonio 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,

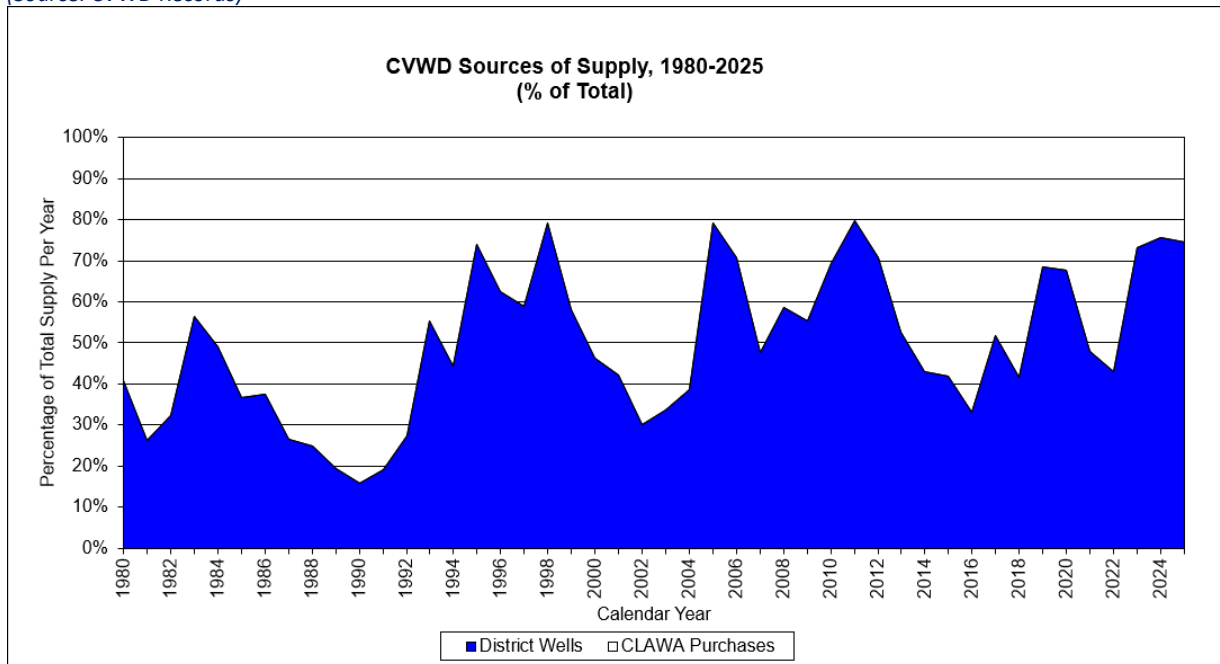
¹² Sometimes spelled "Houston."

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)							
<input type="checkbox"/>	Check the box if the Supplier does not pump groundwater. Proceed to the next table.						
<input type="checkbox"/>	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)				
<input type="checkbox"/>	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)													
<input type="checkbox"/> 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)	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)
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 Within Service Area

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area										
Water Code Section 10633 (c),(d),(e)										
<input checked="" type="checkbox"/>		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										
Other (Description Required)	Non-Potable									Narrative provided
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)		
<input checked="" type="checkbox"/>	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		
Other (Description Required)	0	0
Total	0	0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.		
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)			
<input checked="" type="checkbox"/>	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)							
<input type="checkbox"/>	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.						
<input checked="" type="checkbox"/>	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 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⁾	655,569	655,569	655,569	655,569	655,569
Supply from Groundwater (CCF) ⁽¹⁾	253,859	253,859	253,859	253,859	253,859
Water Supply Climate Change Factor (Groundwater) ⁽²⁾	99.2%	98.4%	98.0%	97.7%	97.3%
Groundwater Supply with Climate Change Factor (CCF)	251,828	249,797	248,782	248,020	247,005
Potential Change in Total Supply from Climate Change Effects (CCF)	-2,031	-4,062	-5,077	-5,839	-6,854
Total Supply with Climate Change Factor (CCF)	653,538	651,507	650,492	649,730	648,715

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.

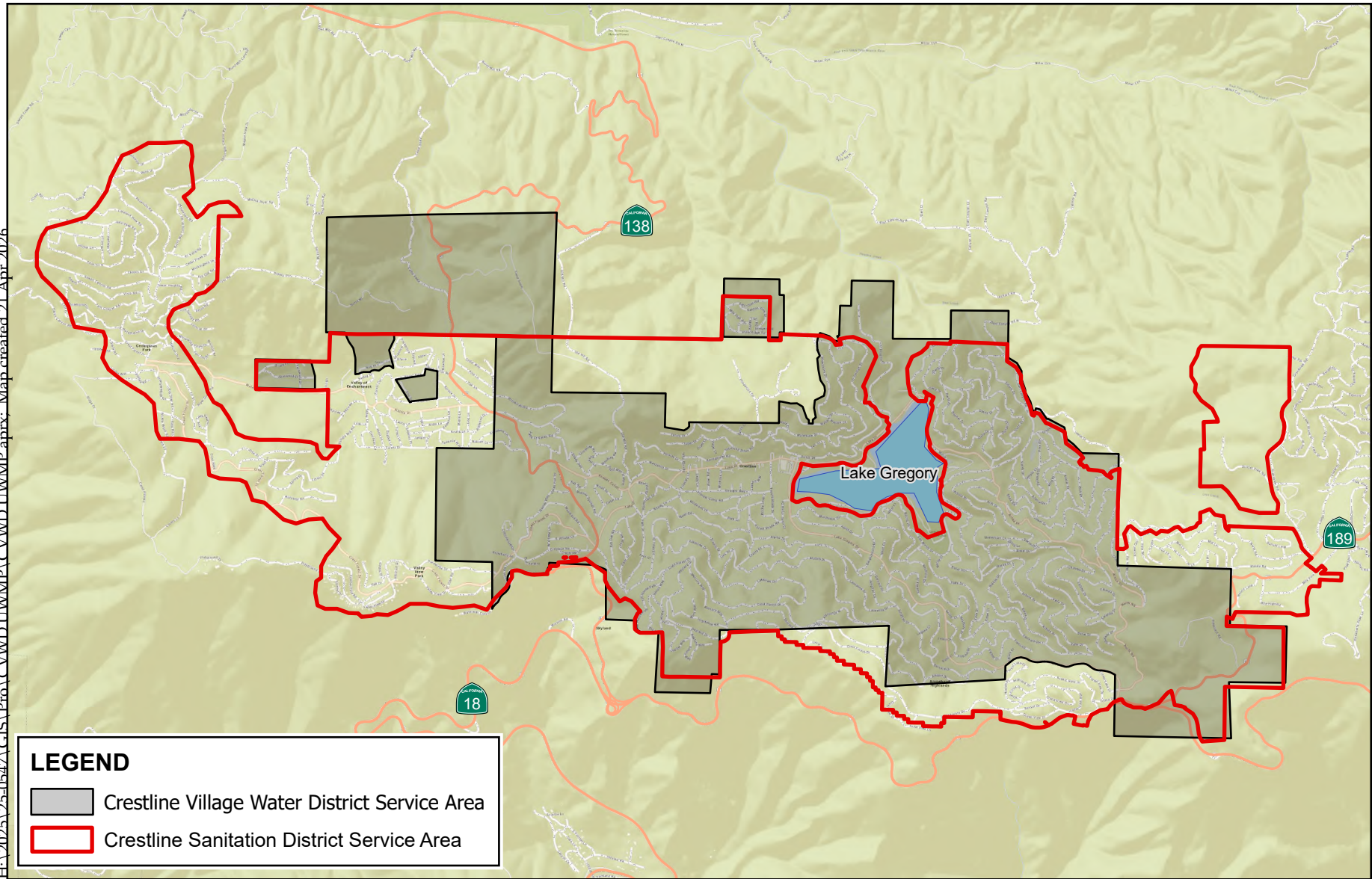
CVWD obtained electricity usage data from its electricity supplier, Southern California Edison for CY 2025 for each electrical meter located at each of the District's facilities. This includes CVWD water wells, booster stations, tanks, and pressure reducing stations. Total electricity used for the water 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-1C: 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		Hydropower	Net Utility
Is upstream embedded energy in the values reported?	No	Total Utility See DWR NOTES		
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:				
<p>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.</p>				
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:				

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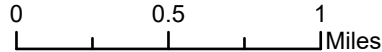
LEGEND

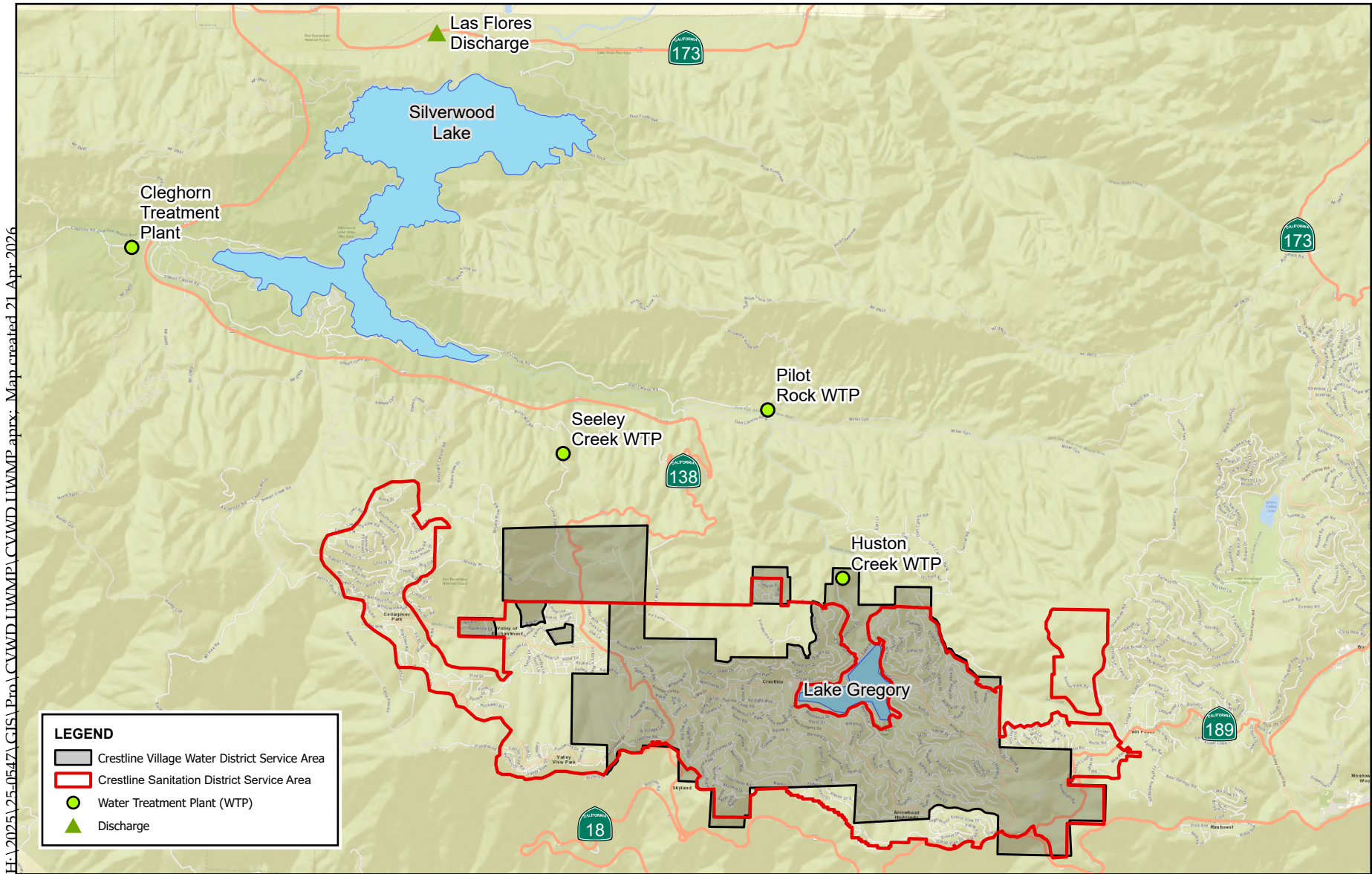
- Crestline Village Water District Service Area
- Crestline Sanitation District Service Area

Sources: San Bernardino Co. ISD, 2015

Figure 6-1 Crestline Sanitation District

Crestline Village Water District Urban Water Management Plan 2025





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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 2023 and 2025, District wells produced an average of 74.5% 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 47 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	
		<input type="checkbox"/>	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%
<p>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.</p> <p>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.</p> <p>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.</p>			

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	
		<input type="checkbox"/>	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%
<p>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.</p> <p>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.</p> <p>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.</p>			

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)	655,569	655,569	655,569	655,569	655,569
Use totals (autofill from Submittal Table 4-2 R)	270,603	276,471	282,467	288,592	294,850
Surplus/(shortfall)	384,966	379,098	373,102	366,977	360,719
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 7C**.

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 7C, 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 7C. 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 7C 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. XXX, 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)			
<input checked="" type="checkbox"/>	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%		
<p>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.</p>			

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

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).

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

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

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.

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: CF: cubic feet. CVWD Ord. No. 460, adopted June 16, 2020. Monthly minimum charge based on meter size is not shown.

(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.

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.

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 Future 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 Future 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)

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 Future 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 Future 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 Future 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.cvwater.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 newspapers (*The Alpine Mountaineer News* and *The Mountain News*) once a week for two successive weeks pursuant to Government Code 6066. The first notice appeared on June 2, 2026, and the second appeared on June 9, 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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REFERENCES

Chapter 1	
HMP	Crestline Village Water District. Hazard Mitigation Plan (HMP). 2018.
DWR UWMP Guidebook	California Department of Water Resources, <i>2025 Urban Water Management Plan Guidebook</i> , January 2026.
DWR, 2023	California Department of Water Resources. <i>The State Water Project Delivery Capability Report 2023</i> . July 2024.
Chapter 2	
DWR UWMP Guidebook	California Department of Water Resources, <i>2025 Urban Water Management Plan Guidebook</i> , January 2026.
Chapter 3	
CIMIS	California Irrigation Management System Information System, <i>CIMIS Station 192 Lake Arrowhead-San Bernardino 2005 – 2020 Records</i> . (Available at http://www.cimis.water.ca.gov/Default.aspx)
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