

Crestline Village Water District



2010

Urban Water Management Plan

January 2013

Crestline Village Water District
Urban Water Management Plan

For Adoption By: Crestline Village Water District (CVWD)
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Conversion Table:

Acre-Foot	Cubic Feet	Gallons	Million Gallons
1	43,560	325,851	0.3258

Crestline Village Water District
2005 Urban Water Management Plan
Contact Sheet

Date plan submitted to the Department of Water Resources: January 23, 2013

Name of person preparing this plan: **James Baker and Wally Franz, Albert A. Webb Associates**

Phone: **(951) 686-1070**

Fax: **(951) 788-1256**

E-mail address: **Wally.Franz@webbassociates.com**

The Water supplier is a: **Public Agency**

The Water supplier is a: **Retail water purveyor**

Utility services provided by the water supplier include: **Domestic Water**

Is This Agency a Bureau of Reclamation Contractor? **No**

Is This Agency a State Water Project Contractor? **No**

Section 1: Plan Preparation

Plan Coordination

This Urban Water Management Plan (UWMP) for Crestline Village Water District (CVWD) is intended to help the District assure reliable water supplies, strengthen water conservation, handle water shortages, and analyze the potential use of recycled water in the District's service area. Based upon this plan, the District may choose to modify some of its policies and requirements in order to promote these goals. This plan was developed with interagency consultation and public review.

Crestline Village Water District prepared this Urban Water Management Plan during late 2011 and 2012. CVWD staff, CVWD's District Engineer (Albert A. Webb Associates), and District counsel Ron Van Blarcom collaborated in the development of the plan.

The format and content of this plan comply with recent amendments to the California Water Code, which was adopted as SB 553. SB 553 took effect on September 28, 2000. The next required plan update will be due on December 31, 2015. The District will compile data over the next three years in order to aid in the preparation of the next plan.

INTERAGENCY COORDINATION

Table I-2 UWMP Checklist No. 4

UWMP Requirement: Coordinate the preparation of its plan with other agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

Calif. Water Code Ref. 10620(d)(2)

For preparation of the 2010 UWMP CVWD contacted a number of public agencies to obtain information and input. **Table 1** (DWR Table 1) Coordination with Appropriate Agencies, lists contact information and the nature of the contact for each public agency. The 2010 UWMP complies with the latest reporting requirements of SBX7-7, and the California Department of Water Resources UWMP guidelines for 2010.

Crestline Village Water District customers have been encouraged to participate in the urban water management planning process. Water in all its aspects - quality, sources, availability, pricing, conservation, and reuse - is a topic of high public interest in the Crestline and Lake Gregory areas. The population served by CVWD has done an excellent job of conserving water, both historically and recently. Many of the conservation measures discussed 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.

**Table 1 (DWR Table 1)
Coordination With Appropriate Agencies**

Coordinating Agencies ^{1,2}	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved / No information
Other Water Suppliers						Roxanne Holmes Crestline-Lake Arrowhead Water Agency P. O. Box 3880 Crestline, CA 92325-3880	
						Cedarpines Park Mutual Water Company P. O. Box 9259 Cedarpines Park, CA	
						Valley of Enchantment Mutual Water Company P. O. Box 6510 Crestline, CA 92325-6510	
						Larry Lambert Strawberry Lodge Mutual Water Company P. O. Box 7 Twin Peaks, CA 92391-	
						Valley View Mutual Water District P. O. Box 301 Crestline, CA 92325-0301	
Water Management Agencies				CA Regional Water Quality Control Board			
				County of San Bernardino Dept. of Environmental			
				Lahontan River Water Quality Control Board, 14440			
				Santa Ana River Water Quality Control Board, 3737			
				Sean McCarthy, California Department of Public Health, Drinking Water			
Relevant Public Agencies				U.S. Dept. of Agriculture			
				County of San Bernardino			
				San Bernardino County Planning			
				United States Forest Service 602 South Tippecanoe			
				Kathy Whalen Crestline Sanitation District			
				Chief Michael Sherman, Crest Forest Fire Protection			
General public					CVWD will notify the public of the availability of this plan in draft form through newspaper advertisements, CVWD meeting announcements, and the CVWD website as a pdf.		
Other							

¹ Indicate the specific name of the agency with which coordination or outreach occurred.
² Check at least one box in each row.

CVWD has notified the public of the availability of this plan, in draft form, through newspaper advertisements and announcements at CVWD meetings. The plan has been made available for public inspection and comment, including a PDF copy on the District's Website.

Plan Adoption, Submittal and Implementation

This document is an Urban Water Management Plan for the Crestline Village Water District (CVWD or the District). The purpose of this plan is to address the District's long-term needs and policies concerning water supply, water demand, water conservation, and water reclamation and reuse. The intended benefits of this plan are:

- to help assure reliable water supplies;
- to promote the wise and efficient use of water;
- to plan ahead for periods of water shortage; and
- to analyze the potential use of recycled water in the District's service area.

WHY THIS PLAN HAS BEEN PREPARED

This Urban Water Management Plan has been prepared to meet the requirements of the Urban Water Management Planning Act (California Water Code Division 6, Part 2.6). The Urban Water Management Planning Act requires water suppliers who directly or indirectly provide water for municipal purposes to more than 3,000 customers, or supply more than 3,000 acre-feet of water annually, to develop and implement an Urban Water Management Plan.

HOW THIS PLAN WILL AFFECT CVWD AND ITS CUSTOMERS

This plan, when adopted by the Board of Directors of CVWD, will guide the District's water supply and conservation efforts over the next three years. Based upon this plan, the District may:

- require new conservation measures;
- enforce new development conditions;
- seek new sources of supply, including the use of recycled water;
- modify rate structures; and
- implement programs providing information, assistance, and enforcement.

PLAN ADOPTION

Before plan adoption, a duly noticed public hearing will be held to receive public comment and discuss questions and issues. The CVWD Board of Directors plans to adopt this Urban Water Management Plan on January 15, 2013. After approval, the final document will be submitted to the California Department of Water Resources within 30 days. A copy of the resolution for adoption of the plan is provided in **APPENDIX A**.

Section 2: System Description

Table I-2 UWMP Checklist No. 8

UWMP Requirement: Describe the water supplier service area.

Calif. Water Code Ref. 10631(a)

Service Area Physical Description

Crestline Village Water District is a public agency, which provides domestic water service in the Crestline and Lake Gregory areas of San Bernardino County, California. Crestline is located about ten miles north of the City of San Bernardino in the San Bernardino Mountains, as shown in **Figure 1**, REGIONAL LOCATION. As indicated in **FIGURE 1**, most land in the San Bernardino Mountains is included within the San Bernardino National Forest. Crestline and nearby mountain communities occupy islands of private land surrounded by National Forest territory.

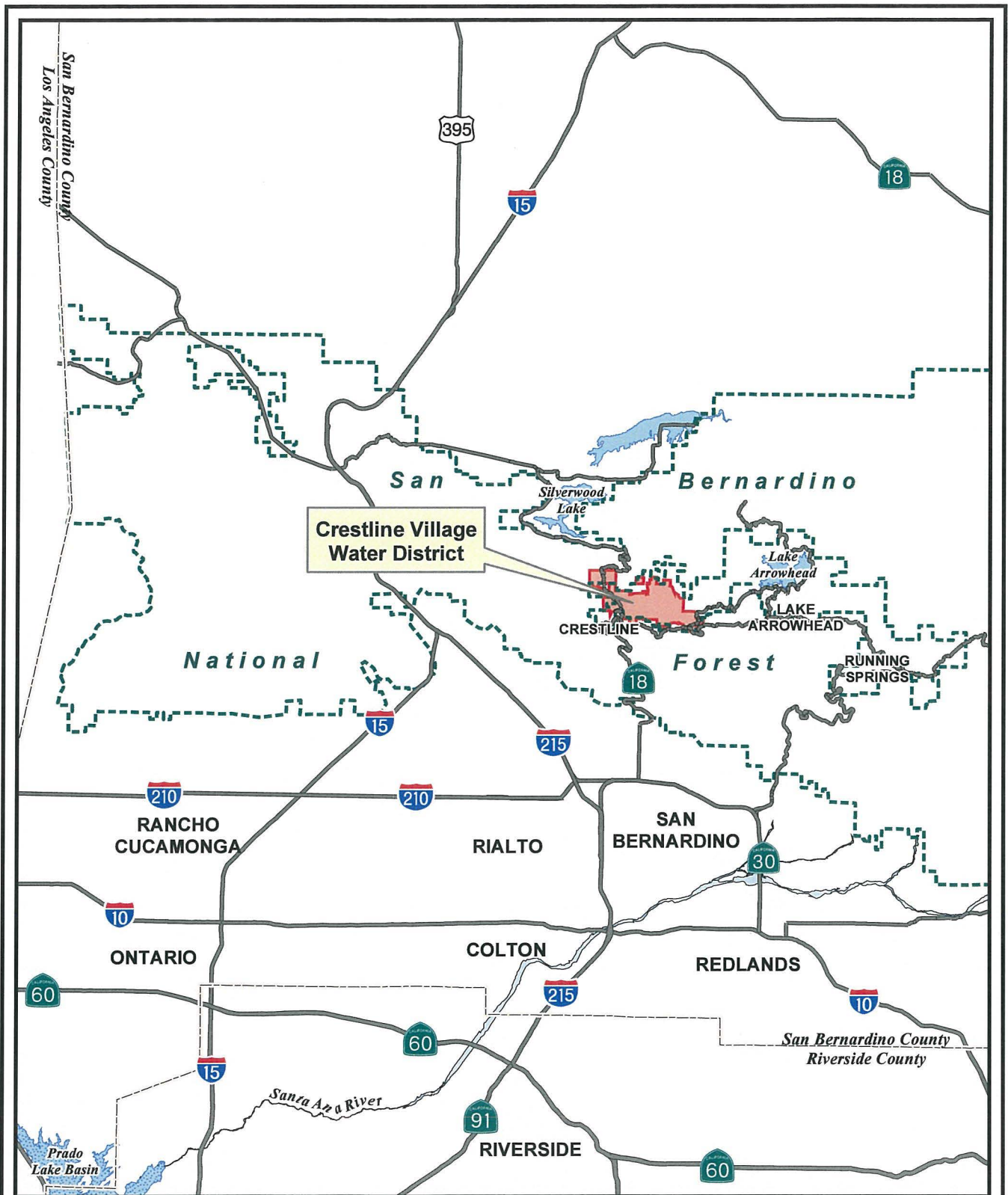
Figure 2, VICINITY MAP, shows the major travel routes and communities in the area and also shows CVWD's boundary. CVWD's service area lies predominantly on the north side of State Highway 18 (Rim of the World Drive) and is served by State Highways 138 and 18.

The CVWD service area is located along the crest of the San Bernardino Mountains and in adjacent valleys high on the mountains' north slopes. The terrain 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 is 4,550 feet (USGS datum). Unlike Southern California's valleys, this area experiences a four-season climate.

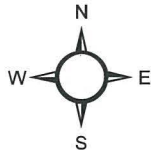
Crestline Village Water District was organized on January 19, 1954 by the citizens of Crestline, under the authority of the County Water District Law (California Water Code sections 31000 *et seq.*). CVWD was originally known as the Crestline Village County Water District and served only the immediate Crestline area, with approximately 1,600 service connections. 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 relied on both local and imported water supplies.

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 and accepted responsibility for providing retail water service in the area around Lake Gregory. By purchasing the Water Company, CVWD almost doubled in size.

CVWD's existing boundary encompasses approximately five square miles, as shown in **Figure 3** CRESTLINE VILLAGE WATER DISTRICT SERVICE AREA. The existing service area includes portions of Sections 14 through 16 and Sections 20 through 28, Township 2 North, Range 4 West, and Section 30, Township 2 North, Range 3 West, San Bernardino Base and Meridian. The communities currently served by CVWD include Crestline and Lake Gregory.



0 2 4 6 Miles



ALBERT A.
WEBB
ASSOCIATES

Figure 1

Regional Location

Crestline Village Water District
Urban Water Management Plan

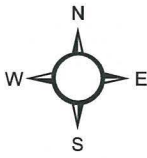
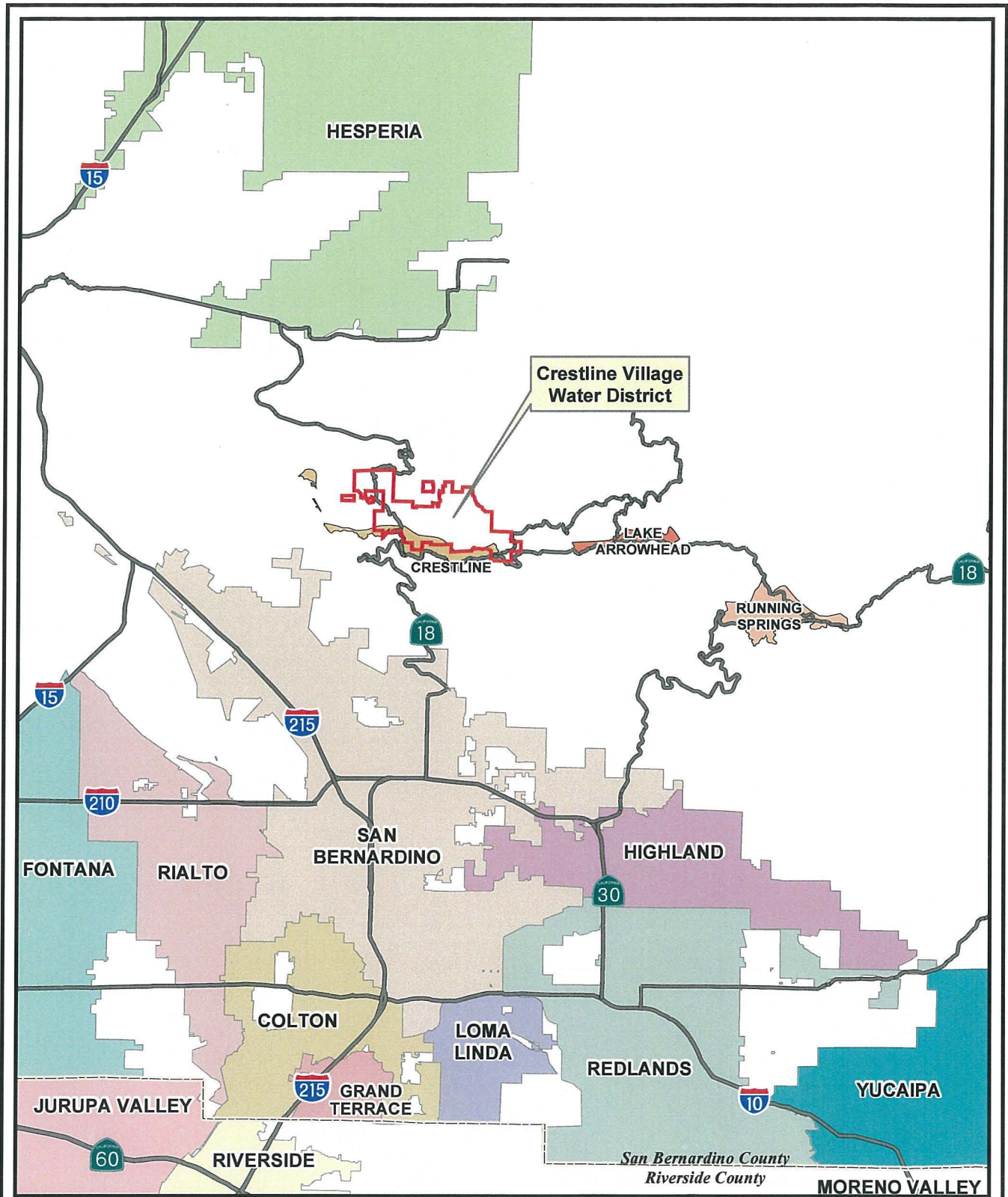


Figure 2

Vicinity Map

Crestline Village Water District
Urban Water Management Plan

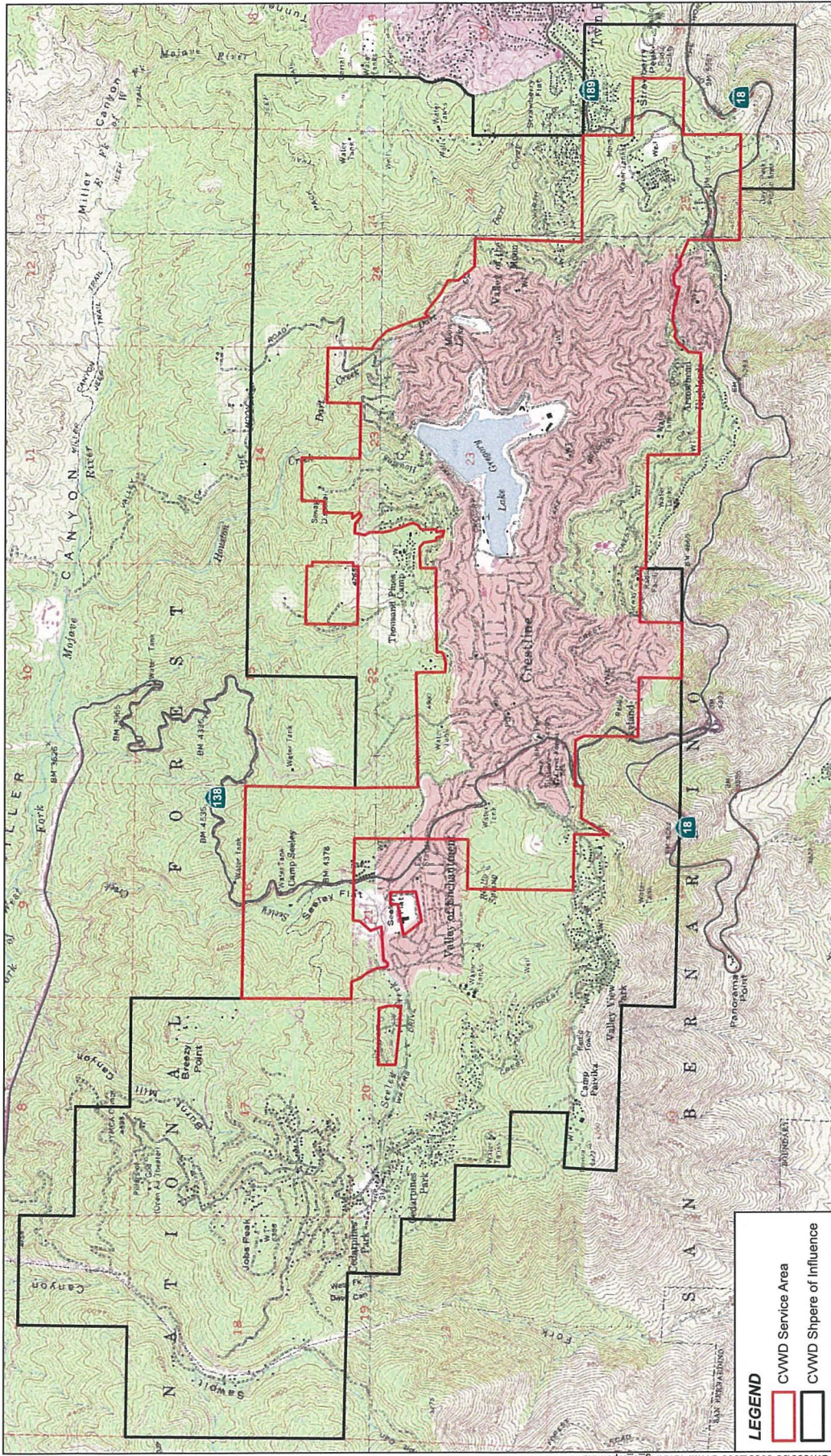


Figure 3. Crestline Village Water District Service Area
2010 Urban Water Management Plan

LEGEND

- CVWD Service Area
- CVWD Sphere of Influence

Sources: County of San Bernardino, 2010;
USGS 7.5min DRG



WATER SYSTEM DESCRIPTION

Crestline Village Water District produces water locally from 52 approved groundwater sources located on 22 individual sites. In addition, CVWD obtains supplemental water supply from the Crestline-Lake Arrowhead Water Agency (CLAWA). CLAWA is the State Water Project contractor, which acts as a water wholesaler to the San Bernardino Mountains area. CVWD has six connections to the CLAWA water system. See **Appendix C** for a list of CVWD's sources of supply.

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. Thus, the District operates no centralized, complete water treatment facilities of its own. CVWD chlorinates water from its Pioneer, Horst, and Wilson wells and monitors water quality at those sources.

The District has 12 water storage tanks at 11 locations, with a total storage capacity of approximately 8.843 million gallons. Pumping and pressure reducing facilities are used where needed. A schematic plan of CVWD's water system is provided in **Appendix D**. The system contains many miles of pipelines, of varying ages, types, and conditions.

The original portion of the District, formed to serve the Crestline area in 1954, is referred to as Division 10 of the CVWD system. The Lake Gregory area, which was added to the District in 1979, is referred to as Division 20. While the two systems were operated under separate Domestic Water Supply Permits from the California Department of Health Services (DHS) in the past, in 1995 the entire CVWD system was consolidated under a single DHS permit.

WASTEWATER TREATMENT

The Crestline Sanitation District provides wastewater collection and treatment services in CVWD's service area. Information on its wastewater treatment systems is included in Section 4: System Supplies, Recycled Water Opportunities of this plan.

Service Area Climate and Demographics

Table I-2 UWMP Checklist No. 9

UWMP Requirement: Describe the climate and other demographic factors of the service area of the supplier.

Calif. Water Code Ref. 10631(a)

Table 2, Climate Data for CVWD, shows data from the nearest weather station, 4 miles from the CVWD service area, monitored by the Western Regional Climate Center.

Table 2

Climate Data for CVWD

LAKE ARROWHEAD, CALIFORNIA (044671)

PERIOD OF RECORD MONTHLY CLIMATE SUMMARY

Period of Record: 8/1/1941 to 5/31/2009

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	45.7	48.8	53.1	60.1	67.3	75.9	81.9	81.2	76.8	65.8	53.8	46.7	63.1
Average Min. Temperature (F)	28.9	29.8	31.4	35.3	41.3	48.4	56.5	56.0	50.8	42.1	34.3	29.7	40.4
Average Total Precipitation (in)	8.58	7.96	6.45	2.93	1.14	0.16	0.14	0.35	0.76	1.64	4.24	5.71	40.04
Average Total Snow Fall (in)	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
Average Snow Depth (in)	3	2	3	1	0	0	0	0	0	0	0	1	1

Percent of possible observations for period of record. Max Temp.: 97.7%; Precipitation 97.8%; Snowfall: 94.7%; Snow Depth: 89.8%. Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness

Western Regional Climate Center, wrc@dr.edu Development in the San Bernardino Mountains is naturally constrained by rugged terrain, limited access to public services, and lack of support infrastructure, as well as by planning and environmental policies. Such policies place much of the area off limits to significant development. Additionally, most of the mountain area, including portions of CVWD’s service area, is within the San Bernardino National Forest. These forestlands are devoted primarily to resource protection and recreational use.

The unincorporated community of 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. The seasonal population is not reflected in available demographic statistics which 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 of other water purveyors, which reflect monthly changes in water use for landscape irrigation, swimming pools, car washing, space cooling, etc. By contrast, Crestline and other nearby 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.

The CVWD service area includes residential, commercial, and institutional customers. The existing commercial customers are oriented to tourists, seasonal residents, and permanent residents. The development pattern in the CVWD service area is primarily detached single-family residential use. This pattern is expected to continue for the duration of the planning period. According to CVWD data, there were approximately 4,957 active service connections in the CVWD service area as of December 31, 2010. Of this total, the 4,772 connections (96 percent of total) were classified as residential. Of the remaining services, there were 159

commercial connections (3 percent of total), and 26 institutional connections (1 percent of total). CVWD also had 112 inactive connections, which may include lapse payments or maintenance/repair services.

Service Area Current Population

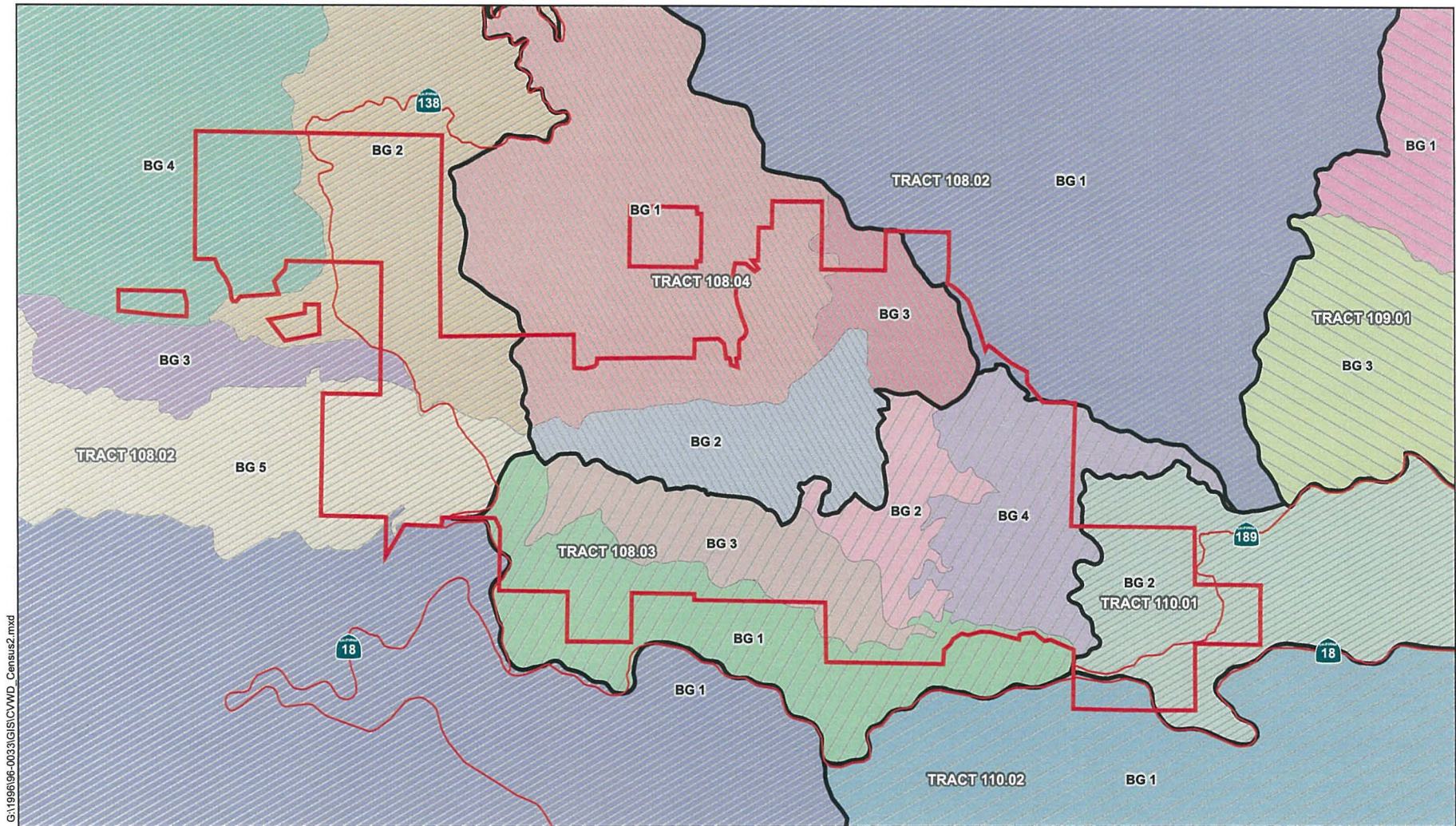
Table I-2 UWMP Checklist No. 10

UWMP Requirement: Indicate the current population of the service area.

Calif. Water Code Ref. 10631(a)

CVWD service area had a permanent population of 7,542 persons in 2010, and a seasonal peak population of approximately 13,500 persons.

Figure 4, Census Tracts and Block Groups, shows the census tracts and block groups within the Crestline area, as defined by the United States Census Bureau in the 2010 Census, within the CVWD service area boundary.



G:\1996\96-003\GIS\CIVWD_Census2.mxd

Source: County of San Bernardino, 2010;
US Census Bureau

Figure 4. Census Tracts and Block Groups
2010 Urban Water Management Plan

0 1,000 2,000 3,000
Feet



As shown, the CVWD service area includes portions of the following census tract numbers: 108.02, 108.03, 108.04, 110.01, and 110.02. With the exception of census tract 108.03, the CVWD service area boundary covers only a minor portion of the overall census tract areas. **Table 3**, Housing Characteristics for Census Tracts in CVWD Service Area, shows the pertinent and available population and housing characteristic data for each of these census tracts.¹ To provide a general context of the census tract data in the CVWD service area with the nearest metropolitan area, 2010 Census data for the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (RSO MSA) is also reflected on the following table.²

Table 3

Housing Characteristics for Census Tracts in CVWD Service Area

Characteristics	Census Tracts in CVWD Service Area						For Comparison		
	108.02	108.03	108.04	110.01	110.02	Total	Percent	RSO MSA	Percent
Total population	5,338	3,375	2,947	2,390	1,673	15,723	100.0	4,224,851	100.0
Total housing units	3,156	2,527	1,928	2,555	1,272	11,438	100.0	1,500,344	100.0
Vacant housing units	1,063	1,156	740	1,667	634	5,260	46.0	202,466	13.5
Occupied housing units	2,093	1,371	1,188	888	638	6,178	54.0	1,297,878	86.5

Note: Census tract information on this table reflects the full census tract, including the areas beyond the CVWD service area.

Source: U.S. Census Bureau, 2010 Census

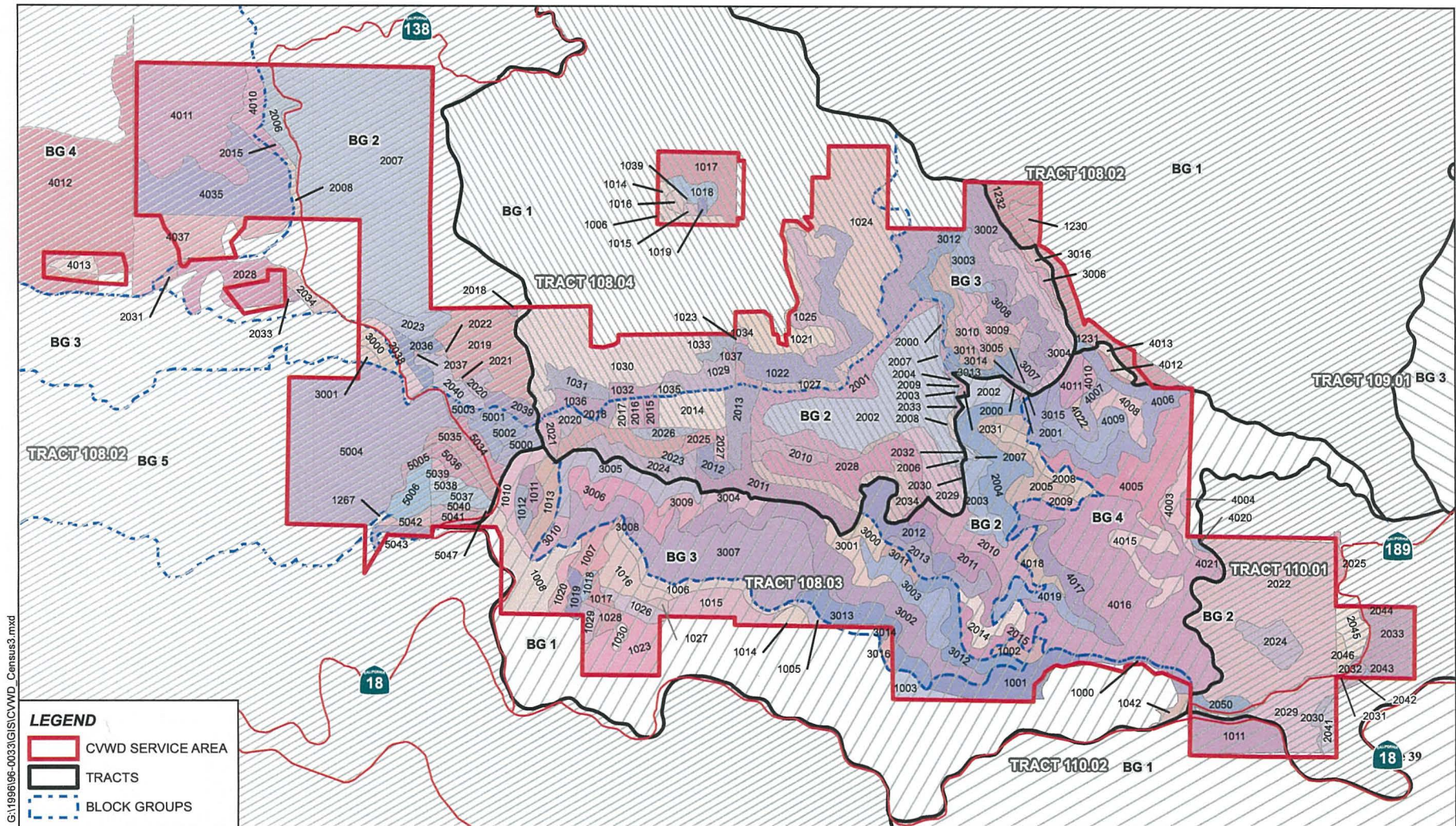
Table 3 indicates that the census tracts in the CVWD service area differ substantially from the surrounding metropolitan area in an important respect. At the time of the 2010 Census, 46 percent of the total housing units were vacant as compared to 13.5 percent in RSO MSA. As discussed, the majority of development in the Crestline area is detached single-family residential, and because of its location in the San Bernardino Mountains, a considerable amount of these residences are utilized for seasonal, recreational, and occasional use. The United State Census Bureau defines such homes as “vacant units used or intended for use only in certain seasons or for weekend or other occasional use throughout the year.” An official count of residences that fall within the seasonal, recreational, or occasional use category by the 2010 Census is not yet

¹ To date, only limited information from the 2010 Census is available. While the United States Census Bureau is actively releasing data in batches throughout the year, completion of the data dissemination, including related reports, is estimated to be in summer 2013.

² The United State Census Bureau defines MSAs as geographic entities established by the United States Office of Management and Budget for use by federal statistical agencies in collecting, tabulating, and publishing federal statistics.

available; however, according to the 2000 Census, that number was approximately 40 percent of the total housing units.

Figure 4 shows that the census tracts in the CVWD service area generally extend well beyond the CVWD service area. For census tracts 108.02, 110.01 and 110.02, the CVWD service area encompasses a small portion of the tract. The CVWD service area includes the majority of census tract 108.03, and approximately one-third of census tract 108.04. Thus, in order to determine a more accurate population and housing unit count for the CVWD service area, available census block data were utilized. For highly precise data extrapolation, census tracts are divided into block groups, and block groups are further divided into census blocks. Census blocks are the most refined of geographic areas defined by the United States Census Bureau. Census block groups represent clusters of census blocks. **Table 4.** Census Tracts, Block Group and Blocks with Characteristics in CVWD Service Area, shows the census tracts, block groups, and blocks in the CVWD service area. **Figure 5,** Census Blocks, shows these same census tracts, groups, and blocks in the CVWD service area. It should be noted that if any portion of the census block is in the CVWD service area, the entire block boundary is shown.



C:\1996196-0033\GIS\C\WWD_Census3.mxd

LEGEND

- CVWD SERVICE AREA
- TRACTS
- BLOCK GROUPS

Sources: County of San Bernardino, 2010;
US Census Bureau

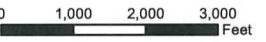


Figure 5. Census Tracts, Block Groups, and Blocks, 2010 Urban Water Management Plan

Table 4

Census Tracts, Block Groups, and Blocks with Characteristics in CVWD Service Area

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
108.02	1	1230	38	34	19	15
		1231	8	7	4	3
		1232	0	0	0	0
		1267	2	2	1	1
	2	2006	0	0	0	0
		2007	46	16	13	3
		2008	0	0	0	0
		2015	0	0	0	0
		2018	0	0	0	0
		2019	86	63	39	24
		2020	32	15	12	3
		2021	0	0	0	0
		2022	0	0	0	0
		2023	58	24	19	5
		2028	103	56	38	18
		2031	17	8	7	1
		2033	22	11	9	2
		2034	46	27	18	9
		2036	41	30	14	16
		2037	0	0	0	0
		2038	23	11	8	3
		2039	26	29	13	16

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		2040	80	56	30	26
	3	3000	40	21	15	6
		3001	22	19	10	9
		4010	0	0	0	0
	4	4011	0	0	0	0
		4012	164	119	69	50
		4013	32	14	13	1
		4035	0	0	0	0
		4037	51	25	21	4
		5000	50	33	25	8
		5001	102	62	42	20
	5	5002	13	17	10	7
		5003	47	29	17	12
		5004	56	45	22	23
		5005	8	2	2	0
		5006	21	17	9	8
		5034	65	34	22	12
		5035	87	62	40	22
		5036	62	45	29	16
		5037	45	26	18	8
		5038	44	27	21	6
		5039	14	10	7	3
		5040	14	10	4	6
		5041	36	16	13	3
		5042	11	6	4	2

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		5043	2	1	1	0
		5047	0	0	0	0
TOTAL FOR 108.02			1,614	1029	658	371
108.03	1	1000	2	4	1	3
		1001	25	13	10	3
		1002	8	11	5	6
		1003	4	6	3	3
		1005	1	1	1	0
		1006	51	36	19	17
		1007	16	11	5	6
		1008	28	19	12	7
		1010	100	62	40	22
		1011	28	24	12	12
		1012	30	24	17	7
		1013	79	53	31	22
		1014	0	0	0	0
		1015	2	3	1	2
		1016	46	50	21	29
		1017	3	5	2	3
		1018	12	5	1	4
		1019	12	11	6	5
		1020	22	21	7	14
		1023	28	26	14	12
1026	25	23	12	11		
1027	3	3	2	1		

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		1028	17	14	6	8
		1029	9	10	5	5
		1030	4	3	1	2
		1042	3	1	1	0
		2000	0	0	0	0
	2001	0	0	0	0	
	2002	0	0	0	0	
	2003	85	55	38	17	
	2004	134	84	50	34	
	2005	126	70	45	25	
	2007	0	0	0	0	
	2008	69	50	29	21	
	2009	13	5	3	2	
	2010	56	62	26	36	
	2011	89	53	35	18	
	2012	55	51	25	26	
	2013	43	29	18	11	
	2014	67	36	27	9	
	2015	51	31	21	10	
	3000	15	15	6	9	
	3001	56	32	19	13	
	3002	162	132	63	69	
	3003	134	71	49	22	
	3004	33	24	12	12	
	3005	141	123	57	66	

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		3006	111	74	41	33
		3007	123	116	58	58
		3008	0	0	0	0
		3009	33	22	13	9
		3010	64	37	24	13
		3011	7	8	3	5
		3012	108	49	37	12
		3013	65	29	21	8
		3014	6	3	2	1
		3016	12	8	5	3
	4	4003	13	9	6	3
		4004	2	6	2	4
		4005	56	47	27	20
		4006	88	81	37	44
		4007	55	42	23	19
		4008	39	20	14	6
		4009	24	18	11	7
		4010	17	11	7	4
		4011	4	6	3	3
		4012	14	12	6	6
		4013	8	11	3	8
		4015	34	24	14	10
		4016	220	192	91	101
		4017	99	73	38	35
		4018	18	17	7	10

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		4019	43	38	15	23
		4020	0	1	0	1
		4021	0	0	0	0
		4022	7	11	6	5
TOTAL FOR 108.03			3,157	2,327	1,272	1,055
108.04	1	1021	103	80	45	35
		1006	0	0	0	0
		1014	28	13	10	3
		1016	16	6	4	2
		1015	11	8	5	3
		1019	37	16	11	5
		1039	24	13	7	6
		1017	6	3	2	1
		1018	0	0	0	0
		1022	181	130	77	53
		1023	2	3	1	2
		1024	89	66	42	24
		1025	105	66	42	24
		1027	24	18	11	7
		1029	58	35	23	12
		1030	342	197	138	59
		1031	49	42	21	21
1032	19	16	10	6		
1033	12	11	6	5		
1034	0	2	0	2		

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		1035	4	1	1	0
		1036	39	25	15	10
		1037	5	3	3	0
	2	2000	0	0	0	0
		2001	0	0	0	0
		2002	0	0	0	0
		2003	0	0	0	0
		2004	0	0	0	0
		2006	0	0	0	0
		2007	0	0	0	0
		2008	0	0	0	0
		2009	0	0	0	0
		2010	42	27	19	8
		2011	93	60	34	26
		2012	43	18	15	3
		2013	48	26	16	10
		2014	168	99	78	21
		2015	12	16	7	9
		2016	16	17	8	9
		2017	36	21	14	7
		2018	27	19	16	3
		2020	36	25	17	8
		2021	39	23	16	7
		2023	10	11	4	7
		2024	87	75	36	39

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group ^a	Census Block ^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
		2025	39	31	16	15
		2026	85	46	32	14
		2027	30	20	13	7
		2028	83	96	38	58
		2029	1	1	1	0
		2030	0	0	0	0
		2031	0	0	0	0
		2032	0	0	0	0
		2033	0	0	0	0
		2034	111	67	40	27
		3	3002	54	33	23
	3003		46	27	19	8
	3004		95	52	37	15
	3005		0	0	0	0
	3006		10	7	4	3
	3007		50	32	20	12
	3008		69	36	23	13
	3009		55	32	22	10
	3010		29	22	12	10
	3011		81	67	36	31
	3012		98	62	36	26
	3013		0	0	0	0
	3014		7	4	3	1
	3015		0	0	0	0
	3016		3	9	2	7

CVWD 2010 URBAN WATER MANAGEMENT PLAN

Characteristics at the Census Block Level						
Census Tract	Census Block Group^a	Census Block^b	Total Population	Total Housing Units	Occupied Housing Units	Vacant Housing Units
TOTAL FOR 108.04			2,757	1,835	1,131	704
110.01	2	2022	4	4	2	2
		2024	5	3	3	0
		2025	0	0	0	0
		2029	5	1	1	0
		2030	0	0	0	0
		2031	0	0	0	0
		2032	0	0	0	0
		2033	0	0	0	0
		2041	0	0	0	0
		2042	0	0	0	0
		2043	0	0	0	0
		2044	0	0	0	0
		2045	0	0	0	0
		2046	0	0	0	0
		2050	0	0	0	0
TOTAL FOR 110.01			14	8	6	2
110.02	1	1011	0	0	0	0
TOTAL FOR 110.02			0	0	0	0
GRAND TOTAL IN CVWD SERVICE AREA			7,542	5,199	3,067	2,132

Note: If any portion of the block lies within the CVWD service area, the entire data for the block are shown on this table.

^a Only block groups in the CVWD service area are shown. Refer to FIGURE 5

^b Only blocks in the CVWD service area are shown. Refer to FIGURE 5.

Source: U.S. Census Bureau, 2010 Census

According to the 2010 Census data at the block level, there are 7,542 persons residing in the CVWD service area and 5,199 total housing units. Of the total housing units, 3,067 are occupied and 2,132 are vacant. Vacant housing units represent 41 percent of the total housing units, which is approximately the vacancy rate at the 2000 Census of 40 percent. The CVWD service area has an average of 2.46 persons per housing unit, whereas RSO MSA has an average of 3.26 persons per housing unit which highlights the differences in density between the two areas.

The United States Census Bureau establishes what are called census designated places (CDPs) for compiling statistical data in unincorporated areas that have a notable population density and are identifiable by name. CDPs are delineated for each census as the statistical counterparts of incorporated places. The CVWD service area is within the Crestline CDP. However, the boundary of the Crestline CDP extends beyond the CVWD service area. The CVWD service area provides water services to approximately two-thirds of the Crestline CDP (approximately 70 percent of the population, approximately 71 percent of the total housing units). **Table 5**, Crestline CDP and CVWD Service Area, shows the 2010 Census data of the Crestline CDP, and the CVWD service area has been added for comparison.

Table 5

Crestline CDP and CVWD Service Area

Characteristic	Crestline CDP	CVWD Service Area
Total Population	10,770	7,542
Total Housing Units	7,333	5,199
Occupied Housing Units	4,360 (59.5%)	3,067 (59.0%)
Vacant Housing Units	2,973 (40.5%)	2,132 (41.0%)
Average Household Size	2.47 persons	2.46 persons

Source: U.S. Census Bureau, 2010 Census

As of the 2010 Census, the Crestline CDP has a total population of 10,770 persons and 7,333 total housing units. Of the total housing units, 4,360 are occupied (59.5 percent) and 2,973 are vacant (40.5 percent). While the total population and housing units are greater than those in the CVWD service area, the density and housing characteristics are consistent. The seasonal fluctuation of the Crestline area's population is not reflected in the available census data for the Crestline CDP, nor is it for the CVWD service area., CVWD estimates its year-round permanent population is approximately 7,700 persons, and the seasonal peak population is approximately 13,500 persons.

Service Area Population Projections for 2015, 2020, 2025, 2030

Table I-2 UWMP Checklist No. 11

UWMP Requirement: Provide population projections for 2015, 2020, 2025, and 2030 based upon data from State, regional, or local service area population projections.

Calif. Water Code Ref. 10631(a)

Table 6 (DWR Table 2) Population Current and Projected, shows the current and projected population for the CVWD service area.

The Southern California Association of Governments (SCAG) is the metropolitan planning organization responsible for growth forecasting and regional transportation planning in Southern California, with the exception of San Diego County. As part of the population forecasting, SCAG has adopted growth forecasts for sub-regions within its jurisdiction. SCAG's growth forecast is a projection of what is expected to occur and a policy statement based upon decisions as to where growth should be encouraged or discouraged. CVWD is within SCAG's San Bernardino sub-region, which consists of all of the County of San Bernardino (County). Forecast data are broken into incorporated cities and unincorporated areas within the County. These data are the official regional growth forecast applicable to the CVWD service area. It should be noted that SCAG's 2008 Regional Transportation Plan (RTP) was used for the forecast data as it is the current, adopted plan. The 2008 RTP uses 2000 Census data as its baseline. RTPs are updated by SCAG every four years. Thus, the 2010 numbers in the SCAG data may not match 2010 Census data. The SCAG forecast data, however, is still useful for its calculated growth rate. For this 2010 UWMP, the calculated growth rate from SCAG's 2008 RTP is used to forecast the CVWD service area's population, housing units, and employment opportunities over the next 25 years. **Table 7**, SCAG Growth Forecast for San Bernardino Sub-Region, shows SCAG's growth forecast for the San Bernardino sub-region from 2010 to 2035.

**Table 6 (DWR Table 2)
Population — Current and Projected**

	2010	2015	2020	2025	2030	2035 - optional	Data source²
Service area population¹	7,542	7,725	7,847	7,999	8,168	8,345	2010 Census

¹ Service area population is defined as the population served by the distribution system. See Technical Methodology 2: Service Area Population (2010 UWMP Guidebook, Section M).

² Provide the source of the population data provided.

Table 7

SCAG Growth Forecast for San Bernardino Sub-Region

Element	SCAG Growth Forecast ^a						25-Year Growth Period		
	2010 ^b	2015	2020	2025	2030	2035	Unit Change	Percent Change	Annual Average
Population	2,182,049	2,385,748	2,582,765	2,773,945	2,957,753	3,133,801	+951,752	43.6	1.7
Households	637,250	718,602	787,142	852,986	914,577	972,561	+335,311	52.6	2.1
Employment	810,233	897,489	965,778	1,045,480	1,134,960	1,254,749	+444,516	54.9	2.2

^a Based on Adopted 2008 Regional Transportation Plan's (RTP) Growth Forecasts (the most recent available).

^b Numbers may not match 2010 Census data. Numbers used are from SCAG's current, adopted 2008 RTP.

Percentages rounded to the nearest one-tenth of a percent

Source: SCAG; Albert A. Webb Associates (growth calculations)

As shown, the San Bernardino sub-region is forecasted to grow by 951,752 persons (+43.6 percent), 335,311 households (+52.6 percent), and 444,516 employment opportunities (+54.9 percent) over the 25-year growth period. The annual average growth rate over the 25-year period is forecasted to be 1.7 percent in population, 2.1 percent in households, and 2.2 percent in employment opportunities. Additionally, SCAG applies different growth rates for each five-year projection. **Table 8**, SCAG Growth Forecast for San Bernardino Sub-Region by Projection Period, shows the specific growth rate by each five-year period for the San Bernardino sub-region.

Table 8
SCAG Growth Forecast for San Bernardino Sub-Region by Projection Period

Element	Population		Households		Employment	
	Percent Change	Annual Average	Percent Change	Annual Average	Percent Change	Annual Average
2010 to 2015	9.3	1.9	12.8	2.6	10.8	2.2
2015 to 2020	8.3	1.7	9.5	1.9	7.6	1.5
2020 to 2025	7.4	1.5	8.4	1.7	8.3	1.7
2025 to 2030	6.6	1.3	7.2	1.4	8.6	1.7
2030 to 2035	6.0	1.2	6.3	1.3	10.6	2.1

Note: Percent change and annual averages calculated from numbers shown in TABLE 8 and are rounded to the nearest tenth.

Source: Albert A. Webb Associates

The most detailed data available from SCAG is provided at the census tract level. However, the census tract projection data do not constitute the official growth forecast, which applies only at the sub-regional level. SCAG forecast data is not available for smaller demographic areas within the San Bernardino Mountains. While the CVWD service area is only a portion of these census tracts (See **Figure 4**), the statistics are useful for comparison between census data and SCAG projections. It should be noted that the census tract and block group numbering from the 2000 Census to 2010 Census has changed in the CVWD service area, while the general boundaries have not. That is to say, previous census tracts, and some block groups, have been split into two new tracts out of necessity in the current census. Specifically, what was census tract 10801 in the 2000 Census has now been split into census tracts 108.03 and 108.04 in the 2010 Census. Additionally, what was census tract 11000 in the 2000 Census is now census tracts 110.01 and 110.02 in the 2010 Census. Census tract 10802 in the 2000 Census has retained its boundary in the CVWD service area, but is numbered 108.02 in the 2010 Census. Because these new census tracts encompass the same area as their previous tract, SCAG projected growth rates using 2000 Census tract numbering remain unaffected. Because the CVWD service area and surrounding

environs are unincorporated land, only census tract forecasts for the unincorporated portion of each census tract is utilized for this 2010 UWMP. **Table 9**, SCAG Growth Forecast for CVWD Service Area Census Tracts, shows the census tract projections by SCAG for the CVWD service area. The 2010 Census tract titles are shown on the table.

Table 9
SCAG Growth Forecast for CVWD Service Area Census Tracts

Element	SCAG Growth Forecast ^a						25-Year Growth Period		
	2010 ^b	2015	2020	2025	2030	2035	Unit Change	Percent Change	Annual Average
Census Tracts 108.03 & 108.04 ^c									
Population	5,416	5,144	4,879	4,670	4,502	4,364	-1,052	-19.4	-0.8
Households	2,145	2,039	1,970	1,918	1,879	1,849	-296	-13.8	-0.6
Employment	745	713	694	675	657	631	-114	-15.3	-0.6
Census Tracts 110.01 & 110.02 ^d									
Population	3,894	4,155	4,364	4,573	4,781	4,982	+1,088	27.9	1.1
Households	1,447	1,602	1,731	1,858	1,976	2,090	+643	44.4	1.8
Employment	2,764	2,817	2,863	2,925	3,001	3,082	+318	11.5	0.5
Census Tract 108.02 ^e									
Population	5,158	5,519	5,811	6,101	6,387	6,663	+1,505	29.2	1.2
Households	1,980	2,192	2,368	2,539	2,702	2,855	+875	44.2	1.8
Employment	705	763	808	860	918	986	+281	39.9	1.6
CENSUS TRACTS TOTAL									
Population	14,468	14,818	15,054	15,344	15,670	16,009	+1,541	10.7	0.4
Households	5,572	5,833	6,069	6,315	6,557	6,794	+1,222	21.9	0.9
Employment	4,214	4,293	4,365	4,460	4,576	4,699	+485	11.5	0.5

^a Based on 2008 RTP Growth Forecasts (the most recent available).

^b Numbers may not match 2010 Census data. Numbers used are from SCAG's current, adopted 2008 RTP.

^c Forecast data for these census tracts based on SCAG's projection for census tract 10801 from 2000 Census.

^d Forecast data for these census tracts based on SCAG's projection for census tract 11000 from 2000 Census.

^e Forecast data for this census tract based on SCAG's projection for census tract 10802 from 2000 Census.

Source: SCAG; Albert A. Webb Associates (growth calculations)

As **Table 9** indicates, the census tracts in the CVWD service area are collectively forecasted to grow by 1,541 persons (+10.7 percent), 1,222 households (+21.9 percent), and 485 employment opportunities (+11.5 percent) over the 25-year growth period. The annual average growth rate over the 25-year period is forecasted to be 0.4 percent in population, 0.9 percent in households, and 0.5 percent in employment opportunities. As with the San Bernardino sub-region projections, SCAG applies different growth rates for each five-year projection. **Table 10**, SCAG Growth Forecast for CVWD Service Area Census Tract in 5-Year Increments, shows the specific growth rate by each five-year period for the CVWD service area census tracts.

Table 10

SCAG Growth Forecast for CVWD Service Area Census Tracts in 5-Year Increments

Element	Population		Households		Employment	
	Percent Change	Annual Average	Percent Change	Annual Average	Percent Change	Annual Average
2010 to 2015	2.4	0.5	4.7	0.9	1.9	0.3
2015 to 2020	1.6	0.3	4.0	0.8	1.7	0.3
2020 to 2025	1.9	0.4	4.1	0.8	2.2	0.4
2025 to 2030	2.1	0.4	3.8	0.8	2.6	0.5
2030 to 2035	2.2	0.4	3.6	0.7	2.7	0.5

Note: Percent change and annual averages calculated from numbers shown on **TABLE 10** and are rounded to the nearest tenth.

Source: Albert A. Webb Associates

As **Table 10** shows, the forecasted growth in population, households, and employment opportunities is at a slower rate in the CVWD service area than in the San Bernardino sub-region. The growth forecasts at the sub-regional level are official, however in order to ascertain accurate projections, forecast data in this 2010 UWMP for the CVWD service area is based on SCAG’s growth rate at the census tract level which is then applied to the 2010 Census data at the block level. **Table 11**, CVWD Service Area Growth Forecast, shows the CVWD service area population, housing units, and employment opportunity projections using the 2010 Census data at the block level as the baseline and applying the extrapolated growth rate shown on **Table 10**. The 2010 Census data do not include employment counts, therefore the complete SCAG forecast from 2010 to 2035 is used. The growth projections for population, total housing units, and employment opportunities are illustrated in graphical format along with linear forecast trend lines in **Figures 6, 7, and 8**.

Table 11

CVWD Service Area Growth Forecast

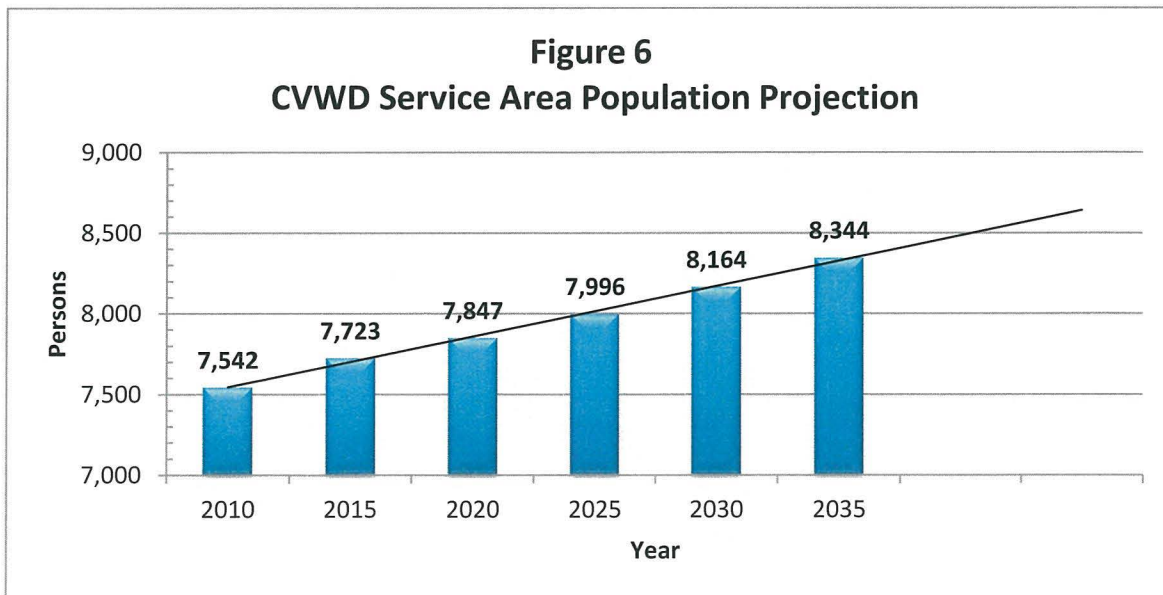
	2010 ^a	Multiplier ^b	2015	Multiplier	2020	Multiplier	2025	Multiplier	2030	Multiplier	2035
Population	7,542	2.4%	7,723	1.6%	7,847	1.9%	7,996	2.1%	8,164	2.2%	8,344
Housing Units	5,199	4.7%	5,443	4.0%	5,660	4.1%	5,892	3.8%	6,116	3.6%	6,336
Employment	4,214	1.9%	4,293	1.7%	4,365	2.2%	4,460	2.6%	4,576	2.7%	4,699

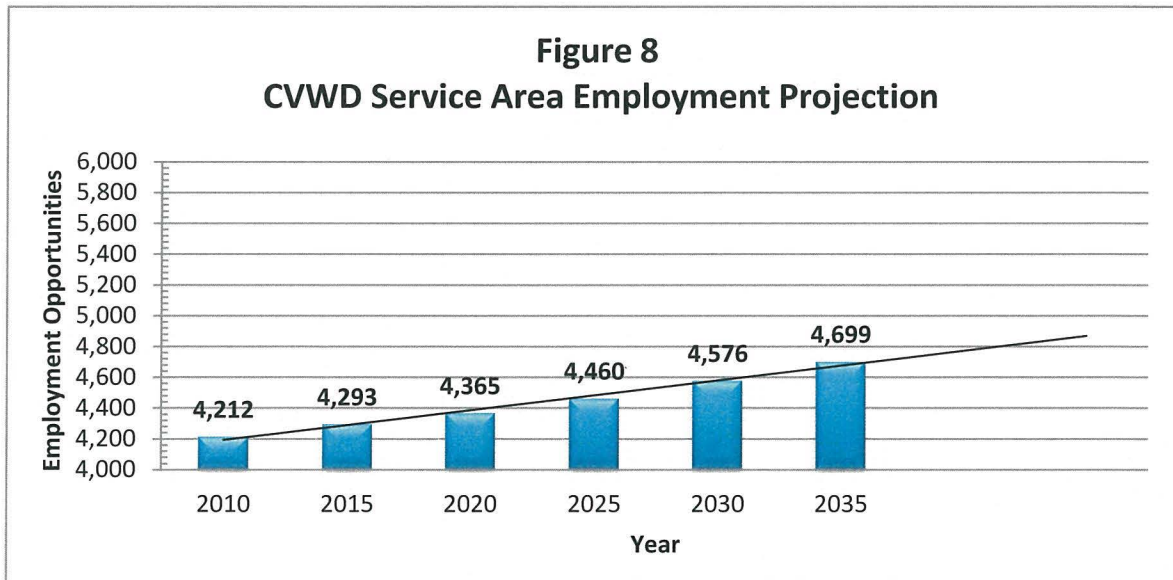
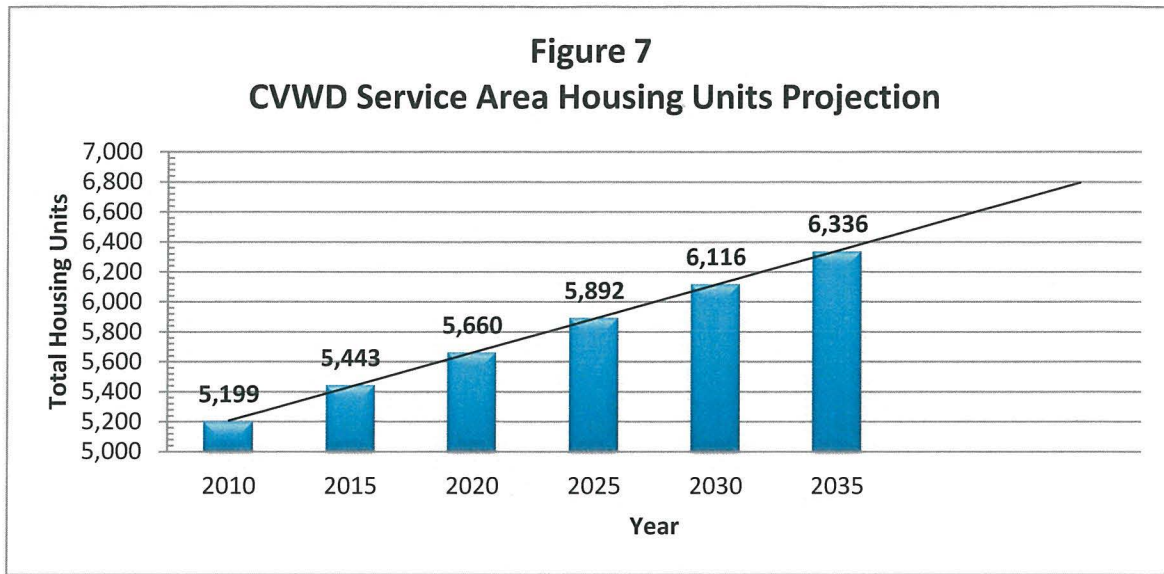
^a Population and Housing Units baseline based on TABLE 5. Employment baseline based on TABLE 9.

^b All multipliers based on percent change on TABLE 9.

Source: Albert A. Webb Associates

Figures 6 through 8 show that from 2010 to 2035 the population in the CVWD service area is estimated to grow from 7,542 persons to 8,344 persons; an increase of 802 persons. This represents a +10.7 percent overall growth rate and 0.4 percent annual average increase. Total housing units will expand from 5,199 housing units to 6,336 housing units, an increase of 1,137 housing units representing a +21.9 percent overall growth rate and 0.9 percent annual average increase. Employment opportunities will expand from 4,212 opportunities to 4,699 opportunities, an increase of 487 opportunities representing a +11.5 percent overall growth rate and 0.5 percent annual average increase.





Based on water usage data, CVWD staff estimates its seasonal peak population is approximately double the size of the permanent one. Based upon this assumption, the projected population growth and seasonal peak population will increase proportionately. Using the percentage of CVWD’s seasonal peak population estimate for 2010 as the baseline, it is assumed the season peak population will be 179 percent of the projected permanent population. **Table 12**, CVWD Service Area Seasonal Peak Population Projection, shows the projected seasonal peak population in the CVWD service area. These projections are shown in **Figure 9**, CVWD Service Area Seasonal Peak Population Projection.

Table 12

CVWD Service Area Seasonal Peak Population Projection

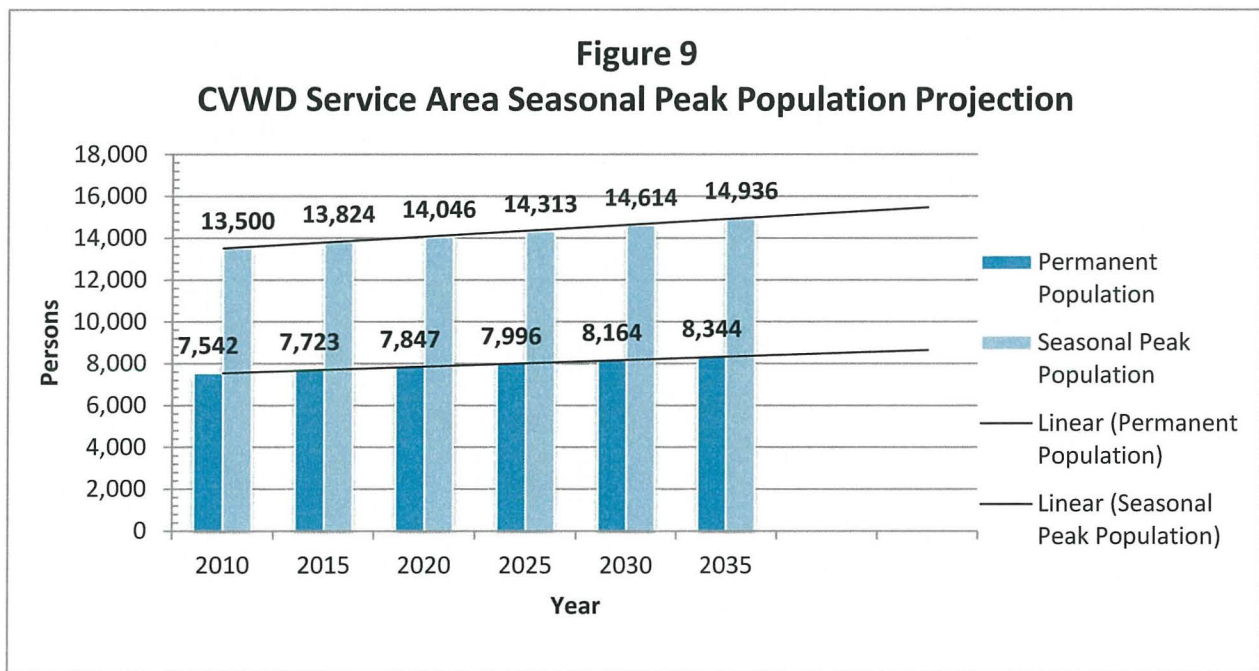
	2010	2015	2020	2025	2030	2035
Permanent Population ^a	7,542	7,723	7,847	7,996	8,164	8,344
Seasonal Peak Population ^b	13,339	13,824	14,046	14,313	14,614	14,936
Change ^c	5,887	6,101	6,199	6,317	6,450	6,592

^a Based on **Table 11** and **Figure 6**.

^b Assumed at 179 percent of projected permanent population.

^c Change = (Seasonal Peak Population) – (Permanent Population).

Source: Albert A. Webb Associates



As shown, the seasonal peak population could potentially reach to 14,936 persons in 2035 with a projected permanent population of 8,344 persons. As shown on **Table 11** and **Figure 7**, construction of 1,137 total housing units is projected for the CVWD service area. An adequate amount of housing units are projected to exist in the 25-year growth period to accommodate the seasonal peak population.

Additional Demographic Factors Affecting CVWD's Water Management Planning

Table I-2 UWMP Checklist No. 12

UWMP Requirement: Describe other demographic factors affecting the water supplier's management planning.

Calif. Water Code Ref. 10631(a)

CVWD SPHERE OF INFLUENCE

Pursuant to California Government Code section 56425, the Local Agency Formation Commission of San Bernardino County (LAFCO) is required to develop and determine a "sphere of influence" for every local governmental agency in the County, which includes the CVWD. A sphere of influence is defined by Government Code Section 56076 as "a plan for the probable physical boundaries and service area of a local agency, as determined by the commission."

The sphere of influence for CVWD was established by LAFCO in 1974 (LAFCO No. 1347). CVWD's sphere of influence covers an area of approximately twelve square miles (see Figure 3). The sphere of influence is located almost entirely within Township 2 North, Range 4 West (in Sections 7 and 13 through 29); the eastern end of the sphere extends into Township 2 North, Range 3 West (in Sections 18, 19, and 30). CVWD's sphere includes the communities of Valley View Park, Cedarpines Park, Valley of Enchantment, and a portion of Dart Canyon, along with areas that are not identified as named communities. These areas that are not identified are either presently undeveloped or are receiving water service from private water companies in the area. Sources of supply for these areas include local sources and supplemental water obtained from Crestline-Lake Arrowhead Water Agency (CLAWA).

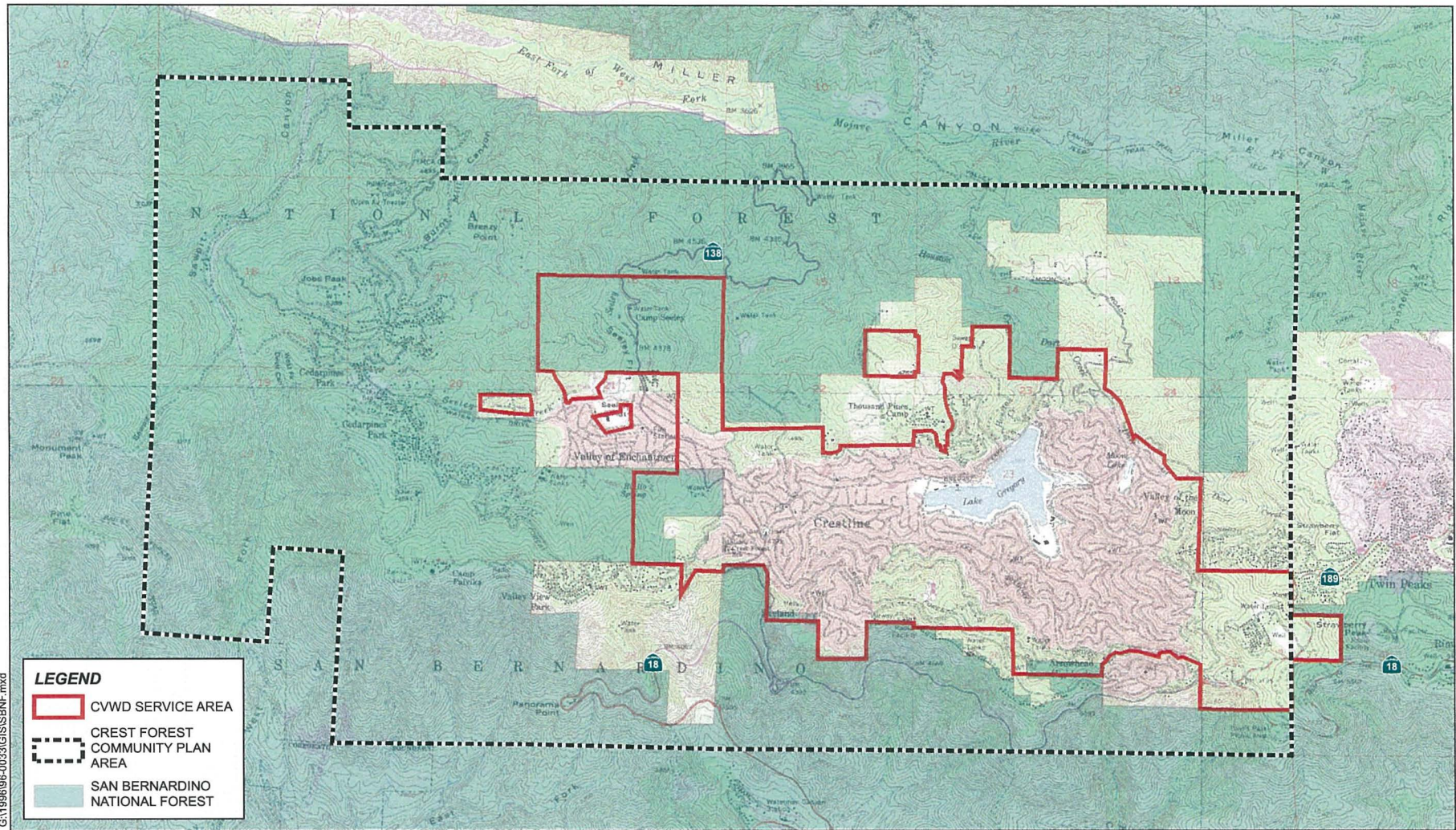
Designation of a sphere of influence is a legal requirement for public agency water purveyors, but it does not affect pre-existing service arrangements by others within the sphere. For example, the Cedarpines Park area is within CVWD's sphere of influence, but is served by the Cedarpines Park Mutual Water Company. Also, inclusion in the sphere of influence does not mean that land will eventually be annexed to CVWD. CVWD will annex property in its sphere only if requested to do so by the property owner, and CVWD has no authority over any land in its sphere until an annexation occurs.

Local Land Use Planning

The CVWD service area encompasses unincorporated land in the San Bernardino Mountains, and is, therefore, under the planning direction of the County of San Bernardino General Plan (General Plan). Specifically, the County has jurisdiction over land use planning and development in the CVWD service area and region. One exception is the land within the San Bernardino National Forest, discussed later. Under the General Plan are various community plans. Community plans focus on a particular community within the overall area covered by the General Plan. According to the General Plan, the CVWD service area is primarily located within the Crest Forest Community Plan (Community Plan) area. The primary purpose of the Community Plan is to guide

the future use and development of land within its specified area in a manner that preserves the character and independent identity of the community. Additionally, the Community Plan has set goals and policies for the Crest Forest community that are distinct from those applied countywide. The Community Plan outlines how the County will manage and address growth while retaining the attributes that make Crest Forest unique. The community of Crest Forest includes approximately 18 square miles of unincorporated area located west of Lake Arrowhead and south of Lake Silverwood. The Community Plan area is entirely within the San Bernardino Mountains and includes the communities of Crestline, Cedar Pines Park, Valley of Enchantment, and the Lake Gregory Village area. **Figure 11**, Crest Forest Community Plan Area, shows the boundary relationship between the CVWD service area and the Community Plan area.

Land use planning data are available from the County for the Community Plan area. **Table 14**, County Land Use Designations in the Community Plan Area, shows the County land use designations within the Community Plan area, and the spatial distribution in acres.



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Sources: County of San Bernardino, 2010

Figure 11. Crest Forest Community Plan Area
2010 Urban Water Management Plan

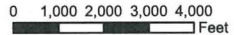


Table 14
County Land Use Designations in the Community Plan Area

Land Use Designation	Code	Area (Acres)	Percentage of Plan Area
Resource Conservation	RC	5,798	51
Rural Living (min. lot size of 5 acres)	RL-5	1,933	17
Rural Living	RL	94	1
Single Residential (min. lot size of 1 acre)	RS-1	427	4
Single Residential (min. lot size of 14,000 sf)	RS-14M	2,374	21
Open Space	OS	58	1
Multiple Residential	RM	62	1
Special Development Residential	SD-RES	325	3
Office Commercial	CO	15	<1
Neighborhood Commercial	CN	6	<1
General Commercial	CG	74	1
Service Commercial	CS	17	<1
Community Industrial	IC	5	<1
Institutional	IN	62	1
Floodway	FW	80	1
Total Land Area within Community Plan area		11,330	100

Note: min. = minimum; sf = square feet
 Source: Crest Forest Community Plan, February 2007

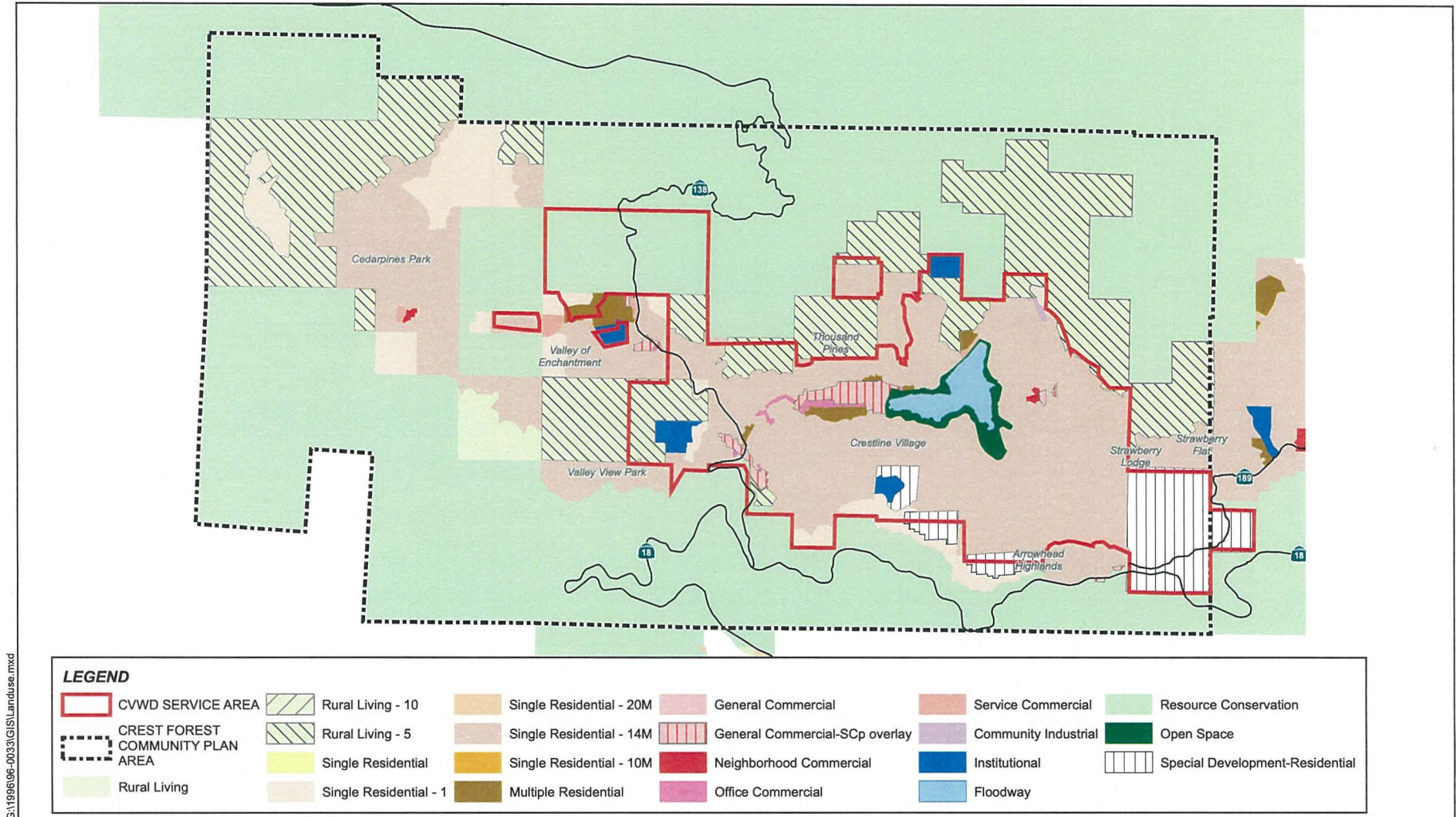
As **Table 14** indicates the largest land use designations within the Community Plan area are single-family residential with a minimum lot size of 14,000 square feet (RS-14M) and rural-living residential with a minimum lot size of 5 acres (RL-5). Together, these two land use designations encompass approximately 367 acres, or 38.5% of the Community Plan area.

Portions of the Community Plan area, as well as the CVWD service area, are within the San Bernardino National Forest. The National Forest comprises 5,798 acres, or 51.2%, of the total land within the Community Plan area. The San Bernardino National Forest is not under the jurisdiction of the County. Instead, the United States Department of Agriculture’s Forest Service

controls land use in this area. The San Bernardino National Forest is divided into three areas known as Ranger Districts. The Community Plan area and CVWD service area are located in the Mountaintop Ranger District.

The Forest Service prepares the Land and Resource Management Plan, which establishes management emphasis areas to guide the management of the National Forest. **Figure 11** shows the area designated as San Bernardino National Forest, in a darker shade of green, in the vicinity of the Community Plan and CVWD service areas. The primary purpose of the management emphasis areas within the National Forest land is the protection of natural resources of the forest. Hence, little or no development is permitted under forest management policies. Land exchanges, however, are possible by which National Forest lands could be made available for development. National Forest lands are included within the overall acreage for the Community Plan area.

Figure 11 shows that the Community Plan area is larger than the CVWD service area. In order to better understand the characteristics of the designated land uses of the Community Plan area within the CVWD service area, the quantity of designated land use specifically within the CVWD service area has been extrapolated. **Figure 12**, Community Plan Land Use Designations, shows the CVWD service area boundary within the Community Plan area's land use designations. **Table 15**, Community Plan Area Land Use Designations in CVWD Service Area shows the area of the Community Plan's land use designations specifically within the CVWD service area.



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Sources: County of San Bernardino, 2010

Figure 12. Community Plan Land Use Designations
2010 Urban Water Management Plan



Table 15

Community Plan Area Land Use Designations in CVWD Service Area

Land Use Designation	Code	Area (Acres)	Percentage of CVWD Service Area
Resource Conservation	RC	333	11.9
Rural Living (min. lot size of 5 acres)	RL-5	291	10.4
Rural Living	RL	0	0
Single Residential (min. lot size of 1 acre)	RS-1	70	2.5
Single Residential (min. lot size of 14,000 sf)	RS-14M	1,472	52.5
Single Residential	RS	0	0
Multiple Residential	RM	39	1.4
Special Development Residential	SD-RES	316	11.3
Office Commercial	CO	14	0.5
Neighborhood Commercial	CN	3	0.1
General Commercial	CG	63	2.2
Service Commercial	CS	3	0.1
Community Industrial	IC	4	0.1
Institutional	IN	59	2.1
Floodway	FW	80	2.9
Open Space	OS	58	2
Total Land Area within Community Plan area		2,806	100

Note: min. = minimum; sf = square feet

Source: Albert A. Webb Associates

The largest land use designation of the Community Plan area within the CVWD service area is single-family residential with a minimum lot size of 14,000 square feet (RS-14M) which encompasses 1,472 acres or 52.5 percent of the 2,806 acre area total. The total residential land use designations consist of 2,188 acres, or 78.1 percent of the CVWD service area. Resource conservation (RC) encompasses 333 acres, or 11.9 percent of the CVWD service, and commercial uses (CO, CN, CG, CS) encompass 83 acres, or 2.9 percent of the CVWD service area. The residual 201 acres, or 7.1 percent of land use designations include community industrial (IC), institutional (IN), floodway (FW), and open space (OS).

The Community Plan provides a maximum permissible development density for each land use designation. Most land in the CVWD service area, however, carries a minimum lot size designation. This results in densities lower than the maximum.

- The rural living land use designation in the CVWD service area, RL-5, has a 5-acre minimum lot size.
- The single residential land use designations in the CVWD service area, RS-14M and RS-1, have a minimum lot size of 14,000 square feet and one acre, respectively. and
- Only the multiple residential land use designation, RM, allows the full lot density to occur.

The resource conservation (RC) land use designation allows some residential use, but this designation in CVWD’s service area is within the San Bernardino National Forest, therefore, significant development is essentially prohibited.

Table 16, Community Plan Area Population, Household, and Employment Projections, shows the Community Plan’s population, household, and employment opportunity projections from 2000 to 2030. The projected growth is compared to the maximum permissible development density, and General Plan projections. The maximum permissible development density is a capacity analysis with no specific build-out timeframe based on the County’s land use and density policies. The General Plan projection provides estimates of population, households, and employment opportunities based on an analysis of historic and expected growth trends.

Table 16

Community Plan Area Population, Household, and Employment Projections

	2000	2030	Average Annual Growth Rate 2000-2030	Maximum Policy Build-out	Ratio of 2030 Projections to Land Use Policy Plan Build-out
Population	10,606	15,592	1.3	25,257	0.62
Households	4,156	6,406	1.5	9,866	0.65
Employment ^a	925	1,378	1.4	4,680	0.29

^a Based on 2002 data from California Employment Development Department.

Source: Crest Forest Community Plan, February 2007 (abridged version of table shown here)

Table 16 shows projections that the Community Plan area could contain 6,406 housing units in 2030 and 9,866 housing units at maximum build-out, which has no specific timeframe.

Section 3: System Demands

Baseline Per Capita Water Use, Urban Water Use Target and Bases for determining Estimates

Table I-2 UWMP Checklist No. 1

UWMP Requirement: Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

Calif. Water Code Ref. 10608.20(e)

Tables 17 through **19** (DWR Tables 13 through 15) establish the base period for water use, the 10-yr water use and 5-yr water use, respectively for CVWD. Based upon U.S. Census data and meter data from CVWD, the 10-yr average water usage rate is 86 gallons per capita per day (gpcd) as shown in **Table 18**. The 5-yr average usage rate is 86 gpcd as shown in **Table 19**. The input data used to develop **Tables 17** through **19** can be found in **Appendix C**.

**Table 17 (DWR Table 13)
Base Period Ranges**

Base	Parameter	Value	Units
10- to 15-Year Base Period	2008 Total Water Deliveries (See Appendix B)	754	<i>see below</i>
	2008 Total Volume of Delivered Recycled Water	0	<i>see below</i>
	2008 Recycled Water as a Percent of Total Deliveries	0	percent
	Number of Years in Base Period ¹	10	years
	Year Beginning Base Period Range	2001	
	Year Ending Base Period Range ²	2010	
5-Year Base Period	Number of Years in Base Period	5	years
	Year Beginning Base Period Range	2006	
	Year Ending Base Period Range ³	2010	

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

¹ If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

² The ending year must be between December 31, 2004 and December 31, 2010.

³ The ending year must be between December 31, 2007 and December 31, 2010.

**Table 18 (DWR Table 14)
Base Daily Per Capita Water Use — 10- to 15-Year Range**

Base period year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	2001	8,936	0.706	79.0
Year 2	2002	8,781	0.742	84.5
Year 3	2003	8,597	0.753	87.6
Year 4	2004	8,457	0.763	90.3
Year 5	2005	8,304	0.732	88.2
Year 6	2006	8,176	0.713	87.2
Year 7	2007	8,031	0.759	94.5
Year 8	2008	7,873	0.673	85.5
Year 9	2009	7,713	0.645	83.6
Year 10	2010	7,542	0.597	79.1
Year 11				
Year 12				
Year 13				
Year 14				
Year 15				
Base Daily Per Capita Water Use¹				86.0

¹ Add the values in the column and divide by the number of rows (See Appendicies B and C).

**Table 19 (DWR Table 15)
Base Daily Per Capita Water Use — 5-Year Range**

Base period year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (mgd)
Sequence Year	Calendar Year			
Year 1	2006	8,176	0.713	87.2
Year 2	2007	8,031	0.759	94.5
Year 3	2008	7,873	0.673	85.5
Year 4	2009	7,713	0.645	83.6
Year 5	2010	7,542	0.597	79.1
Base Daily Per Capita Water Use¹				86.0

¹ Add the values in the column and divide by the number of rows (See Appendices B and C).

Urban Water Use Targets

Table I-2 UWMP Checklist No. 3

UWMP Requirement: Report progress in meeting urban water use targets using the standardized form.

Calif. Water Code Ref. 10608.40

CVWD's service area lies within the South Lahontan hydrologic region. This region has a Department of Water Resources usage target of 162 gpcd by 2020 in order to satisfy the requirements of SBX7-7. CVWD's Base Daily per Capita Water Use for both the 5 and 10-yr base periods is approximately 86 gpcd as discussed in the preceding section. According to Figure D-2, Water Conservation Baseline and Targets Development Process (see **Appendix D**), no adjustment to the Urban Water Use Target is required obviating the need for CVWD to report progress in meeting urban water use targets.

Past, Current and Projected Water Use

Table I-2 UWMP Checklist No. 25

UWMP Requirement: Quantify past, current, and projected water use, identifying the uses among water use sectors for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.

Calif. Water Code Ref. 10631 (e)(1)

Tables 20 through **26** (DWR Tables 3 through 7, 10 and 11), show the past, present and projected water use for the categories for which CVWD has data: single-family residential (A), commercial (C) and institutional/governmental (E). Multi-family (B) water use quantities are included in the single-family residential data because there are very few multi-family units in the CVWD service area. Landscape water use (F) is not separately measured by CVWD. Additional historical data for these categories covering the period from 1980 to 2010 can be found in **Appendix B**. Use projections for commercial and institutional accounts are based upon the assumption that the commercial and institutional growth rates are in direct proportion to the number of single-family residential accounts added within CVWD existing service area. See **Appendix E** for CVWD staff estimates. As of 2010, CVWD does not supply water or wastewater services to any industrial (D) or agricultural (I) end users. CVWD does not sell water to other agencies (G). No saline water intrusion barriers or ground water recharge wells exist within the CVWD service area and conjunctive use is currently not practiced (H).

**Table 20 (DWR Table 3)
Water Deliveries – Actual, 2005**

Water use sectors	2005				
	Metered		Not metered		Total
	# of accounts ⁽²⁾	Volume ⁽²⁾	# of accounts	Volume	Volume
Single family	4,694	702			702
Multi-family					0
Commercial ⁽¹⁾	157	75			75
Industrial					0
Institutional/Governmental	21	43			43
Landscape					0
Agriculture					0
Other					0
Total	4,872	820	0	0	820

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

Notes:

(1) Assumes balance of water deliveries are to commercial accounts.

(2) See Appendix B for raw data.

**Table 21 (DWR Table 4)
Water Deliveries — Actual, 2010**

Water use sectors	2010				
	Metered		Not Metered		Total
	# of accounts	Volume	# of accounts	Volume	Volume
Single family	4,772	643			643
Multi-family					0
Commercial ⁽¹⁾	159	21			21
Industrial					0
Institutional/Governmental ⁽¹⁾	26	4			4
Landscape					0
Agriculture					0
Other					0
Total	4,957	668	0	0	668

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

Notes:

(1) Data from CVWD staff.

(2) See Appendix B for raw data.

**Table 22 (DWR Table 5)
Water Deliveries — Projected, 2015**

Water use sectors	2015				
	Metered		Not Metered		Total
	# of Accounts	Volume	# of Accounts	Volume	Volume
Single family	4,969	645			645
Multi-family					0
Commercial	166	22			22
Industrial					0
Institutional/Governmental	27	4			4
Landscape					0
Agriculture					0
Other					0
Total	5,162	670	0	0	670

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

**Table 23 (DWR Table 6)
Water Deliveries — Projected, 2020**

Water use sectors	2020				
	Metered		Not Metered		Total
	# of accounts	Volume	# of accounts	Volume	Volume
Single family	4,992	650			650
Multi-family					0
Commercial	166	22			22
Industrial					0
Institutional/Governmental	27	4			4
Landscape					0
Agriculture					0
Other					0
Total	5,186	675	0	0	675

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

**Table 24 (DWR Table 7)
Water Deliveries — Projected 2025, 2030, and 2035**

	2025		2030		2035 - optional	
	Metered		Metered		Metered	
Water use sectors	# of Accounts	Volume	# of Accounts	Volume	# of Accounts	Volume
Single family	5,027	654	5,072	659		
Multi-family						
Commercial	167	22	169	22		
Industrial						
Institutional/Governmental	27	4	28	4		
Landscape						
Agriculture						
Other						
Total	5,222	680	5,269	684	0	0

Units (circle one): *acre-feet per year* million gallons per year cubic feet per year

Note: Commercial and Institutional number of accounts assumed to increase in same proportion as single family from 2020 to 2025, 2030 and 2035.

**Table 25 (DWR Table 10)
Additional Water Uses and Losses**

Water use ¹	2005	2010	2015 ⁽²⁾	2020 ⁽²⁾	2025 ⁽²⁾	2030 ⁽²⁾	2035 -opt
Saline Barriers	0	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0	0
Recycled Water	0	0	0	0	0	0	0
System Losses	49	37	38	38	39	39	39
Other (define)							
Total	49	37	38	38	39	39	0

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

¹ Any water accounted for in Tables 3 through 7 are not included in this table.

Notes:

(2) Loss estimate based upon average system loss from 2000 to 2010, i.e. 5.70%. See Appendix F for raw loss data.

Table 26 (DWR Table 11)

Total Water Use

Water Use	2005	2010	2015	2020	2025	2030	2035 - opt
Total Water Deliveries (from Tables 3 to 7)	820	668	670	675	680	684	
Sales to Other Water Agencies (from Table 9)	0	0	0	0	0	0	
Additional Water Uses and Losses (from Table 10)	49	37	38	38	39	39	
Total	869	705	709	713	718	723	0

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

Supporting Documentation CVWD Provided Water Use Projections to CLAWA

Table I-2 UWMP Checklist No. 33

UWMP Requirement: Provide as an Appendix, documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP is a retail agency, or if a wholesale agency, it provided its urban retail customers with future planned and existing water sources available to it from the wholesale agency during the required water-year types.

Calif. Water Code Ref. 10631 (k)

Copies of CVWD's previous UWMP's have been provided to CLAWA, who is the District's wholesale supplier. CLAWA has also been notified regarding the preparation of CVWD's current UMWP. **Table 27** (DWR Table 12), Retail Agency Demand Projections Provided to Wholesale Suppliers has been provided to CLAWA in connection with the preparation of this current UWMP by CVWD.

Projected Water Use for Lower-Income Households

UWMP Checklist No. 34

UWMP Requirement: Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county or city and county in the service area of the supplier.

Calif. Water Code Ref. 10631.1 (a)

CVWD does not currently track lower-income house water use, therefore, no data is available for future projections. **DWR Table 8**, therefore, is not used for this report.

**Table 27 (DWR Table 12)
Retail Agency Demand Projections Provided to Wholesale Suppliers**

Wholesaler	Contracted Volume	2010 ⁽¹⁾	2015	2020	2025	2030	2035 -opt
Crestline-Lake Arrowhead Water Agency	Yes	217.21	217.13	219.81	224.35	230.84	

Note: (1) See Appendix E.

Section 4: System Supplies

Existing and Planned Sources of Water 2015, 2020, 2025, 2030

Table I-2 UWMP Checklist No. 13

UWMP Requirement: Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030.

Calif. Water Code Ref. 10631 (b)

Tables 28 through **30** (DWR Tables 16 through 18) identify and quantify the existing and planned sources of water for CVWD up to the year 2030. Year 2010 purchased water and groundwater production is based on actual water production records. Future years are based on the average groundwater well production for the past seven years plus the addition of new wells every 5 years producing approximately 34.44 acre feet annually. Local groundwater wells draw water from fractured rock aquifers as discussed in the following sections which are highly influenced by local weather conditions. Year 2010 had above average local precipitation which caused above average groundwater production. Additional wells can be developed and constructed to increase supply within the CVWD service area as population increases. However, while the capacity is currently unknown, the opportunities to develop additional well supply is limited.

Groundwater as a Planned Source for CVWD

Table I-2 UWMP Checklist No. 14

UWMP Requirement: Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP checklist. If no, then indicate, “not applicable”, in lines 15 through 21 under the UWMP location column.

Calif. Water Code Ref. 10631 (b)

As **Table 30** (DWR Table 18) Groundwater Volume Pumped indicates, CVWD has historically used local wells to pump groundwater from fractured rock aquifers in the Crestline-Lake Gregory pumping area. groundwater from local wells is an existing and a planned source of water available to CVWD.

Groundwater Management Plan

Table I-2 UWMP Checklist No. 15

UWMP Requirement: Indicate whether groundwater management plan has been adopted by the water supplier or if there is any specific authorization for groundwater management. Include a copy of the plan or authorization.

Calif. Water Code Ref. 10631 (b)(1)

CVWD has no groundwater management plan. CVWD obtains its groundwater from a fractured rock aquifer and not a groundwater basin. No specific authorization exists for groundwater management by CVWD.

**Table 28 (DWR Table 16)
Water Supplies — Current and Projected**

Water Supply Sources		2010 ⁽³⁾	2015 ⁽³⁾	2020 ⁽³⁾	2025 ⁽³⁾	2030 ⁽³⁾	2035 - opt
Water Purchased From ¹ :	Wholesaler Supplied Volume (yes/no)						
Crestline-Lake Arrowhead Water Agency	no	217.21	217.13	219.81	224.35	230.84	
Wholesaler 2 (enter agency name)							
Wholesaler 3 (enter agency name)							
Supplier-Produced Groundwater ²		489.79	525.22	559.65	594.09	628.52	
Supplier-Produced Surface Water		0	0	0	0	0	
Transfers In		0	0	0	0	0	
Exchanges In		0	0	0	0	0	
Recycled Water		0	0	0	0	0	
Desalinated Water		0	0	0	0	0	
Other		0	0	0	0	0	
Other		0	0	0	0	0	
Total		707.00	742.35	779.46	818.44	859.36	0

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

¹ Volumes shown here should be what was purchased in 2010 and what is anticipated to be purchased in the future. If these numbers differ from what is contracted, show the contracted quantities in Table 17.

² Volumes shown here should be consistent with Tables 17 and 18.

³ See Appendix E.

Table 29 (DWR Table 17)

Wholesale Supplies — Existing and Planned Sources of Water

Wholesale sources ^{1,2}	Contracted	2015	2020	2025	2030	2035 - opt
Crestline-Lake Arrowhead Water Agency	yes	217.13	219.81	224.35	230.84	
(source 2)						
(source 3)						

Units (circle one): **acre-feet per year** million gallons per year cubic feet per year

¹ Water volumes presented here should be accounted for in Table 16.

² If the water supplier is a wholesaler, indicate all

³ Indicate the full amount of water

**Table 30 (DWR Table 18)
Groundwater — Volume Pumped**

Basin name(s)	Metered or Unmetered ¹	2006	2007	2008	2009	2010
CVWD Well Sites in Fractured Mountain Rock	Metered	598	425	488	410	490
Total Groundwater Pumped						
Groundwater as a Percent of Total Water Supply						

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

¹ Indicate whether volume is based on volumetric meter data or another method

Notes:

(2) See Appendix F for volume of fractured rock groundwater pumped. See Appendix G for a list of CVWD well sites.

Groundwater Basin Assumed Characteristics

Table I-2 UWMP Checklist No. 16

UWMP Requirement: Describe the groundwater basin.

Calif. Water Code Ref. 10631 (b)(2)

CVWD's service area lies within the Lahontan Hydrologic Region. According to DWR , *California's Ground Water, Bulletin 118 - Update 2001*, this area is not within a region or basin that has been previously identified as over drafting its groundwater supply. A copy of the chapter from Bulletin that discusses the Lahontan region is given in **Appendix H**.

All of the CVWD wells produce water pumped from fractured-rock aquifer in the Crestline-Lake Gregory area. Krautkramer and Robison (2004) provide the following description of fractured rock water aquifers . The primary permeability of this environment is extremely low as almost no water at all can pass through the rock itself. Water can be transmitted only primarily through cracks and fractures from the folding and faulting of the rock over time. These fractures create what is typically called "secondary" permeability. Aquifers that rely on secondary permeability generally have much lower ability to transmit water. This lower capacity results from both a smaller amount of open space (the size of the fracture) and a smaller lateral extent of the aquifer (fracture zones are not consistent throughout the rock). As a consequence, compared to the primary permeability found in sediments, many rock wells are limited in the amount of water that they can produce in long term.

Fractured-rock settings usually have difficulty collecting and storing water to transmit. An appreciably lower percentage of the precipitation over the area ends up getting into the groundwater system. This means that a smaller volume of water is available annually throughout the region served by an aquifer.

Adjudication of Groundwater Basin

Table I-2 UWMP Checklist No. 17

UWMP Requirement: Indicate whether the groundwater basin is adjudicated. Include a copy of the court order or decree.

Calif. Water Code Ref. 10631 (b)(2)

CVWD's service area is not in an adjudicated basin.

Table I-2 UWMP Checklist No. 18

UWMP Requirement: Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.

Calif. Water Code Ref. 10631 (b)(2)

Not Applicable.

DWR Identification of Basin Overdraft

Table I-2 UWMP Checklist No. 19

UWMP Requirement: For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.

Calif. Water Code Ref. 10631 (b)(2)

CVWD’s service area lies within the Lahontan Hydrologic Region. According to DWR , *California’s Ground Water, Bulletin 118 - Update 2001*, this area is not within a region or basin that has been previously identified as overdrafting its groundwater supply. A copy of the chapter from Bulletin that discusses the Lahontan region is given in **Appendix H**.

Groundwater Pumping 2006 to 2010

Table I-2 UWMP Checklist No. 20

UWMP Requirement: Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years.

Calif. Water Code Ref. 10631 (b)(3)

Table 30 (DWR Table 18) shows the amount of ground water pumped by CVWD for the five years inclusive from 2006 to 2010. The CVWD wells that supplied this water are listed in **Appendix G** under District Divisions 10 and 20.

Groundwater Pumping Analysis and Projections 2015, 2020, 2025, 2030

Table I-2 UWMP Checklist No. 21

UWMP Requirement: Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.

Calif. Water Code Ref. 10631 (b)(4)

Table 31 (DWR Table 19) Groundwater Volume Projected to be Pumped, shows the amount of ground water projected to be pumped by CVWD through 2030 assuming new wells are built every five years within the CVWD existing service area. The existing CVWD wells that supplied this water are listed in **Appendix G** under District Divisions 10 and 20.

Table I-2 UWMP Checklist No. 24

UWMP Requirement: Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Calif. Water Code Ref. 10631 (d)

Not applicable. At this time, CVWD does not transfer or exchange water with other agencies and is not planning to do so in the future. **DWR Tables 9** and **20** are, therefore, not used for this report.

Table I-2 UWMP Checklist No. 30

UWMP Requirement: Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability on average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.

Calif. Water Code Ref. 10631 (h)

Water supply projects are in progress at CVWD. Future supply projects are planned at this time. **Table 30A** (DWR 26) provides information concerning these projects.

**Table 30A (DWR Table 26)
Future Water Supply Projects**

Project name ¹	Projected start date	Projected completion date	Potential Project Constraints ²	Normal-Year Supply ³	Single-Dry Year Supply ³	Multiple-Dry Year First Year Supply ³	Multiple-Dry Year Second Year Supply ³	Multiple-Dry Year Third Year Supply ³
Vertical Wells Development	2013	2015	Yes	35.34				
Vertical Wells Development	2018	2020	Yes	34.43				
Vertical Wells Development	2023	2025	Yes	34.44				
Vertical Wells Development	2028	2030	Yes	34.43				
Total				138.64	26.34	25.92	36.18	56.66

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

¹ Water volumes presented here should be accounted for in Table 16.

² Indicate whether project is likely to happen and what constraints, if any, exist for project implementation. The District has been very successful in developing local well supply over the last seven years. However local groundwater wells draw water from fractured rock aquifers which are highly influenced by local weather conditions. Therefore implementation of the future water supply projects shown hereon are somewhat speculate with regards to the water supply quantities estimated.

³ Provide estimated supply benefits, if available.

Table 31 (DWR Table 19)					
Groundwater — Volume Projected to be Pumped					
Basin name(s)	2015	2020	2025	2030	2035 - opt
CVWD Well Sites in Fractured Mountain Rock	525.22	559.65	594.09	628.52	
Total Groundwater Pumped	525.22	559.65	594.09	628.52	
Percent of Total Water Supply					

Units (circle one): **acre-feet per year** million gallons per year cubic feet per year
 Include future planned expansion

Notes:
 (2) See Appendix E for CVWD staff projections. See Appendix G for a list of CVWD well sites.

Table I-2 UWMP Checklist No. 31

UWMP Requirement: Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.

Calif. Water Code Ref. 10631 (i)

Not applicable. CVWD does not have access to desalinated water now nor will they in the future.

Potential Recycled Water Use

Table I-2 UWMP Checklist No. 44

UWMP Requirement: Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

Calif. Water Code Ref. 10633

The potential applications of recycled water within CVWD are limited as a result of natural conditions and development patterns. The terrain in CVWD's service area is steep and irregular, winters are severe, and maintenance of natural forest conditions is preferred. As a result, most lots have little landscaped area that requires irrigation. There are no industrial uses at all in the CVWD service area, hence there are no potential markets for industrial use of reclaimed water. Most commercial uses are also fairly small. There are virtually no agricultural/irrigation uses. The dearth of potential major users of recycled water makes the economic feasibility of constructing dual water systems questionable. Thus, although various uses of recycled water (*EPA 1992*) are possible in the abstract, most have low potential in the CVWD service area.

There is a potential to use recycled water for wildlife habitat and wetland enhancement within the National Forest. The Forest Service is interested in exploring opportunities for water reuse. However, regulatory constraints would have to be overcome to make this possible.

The California Regional Water Quality Control Board, Lahontan Region, prohibits any discharge of waste in the Silverwood Lake watershed or above 3,200 feet elevation in the Deep Creek and Grass Valley Creek watersheds. Also prohibited is any discharge of waste to surface water above 3,200 feet in areas tributary to the West Fork Mojave River or Deep Creek (*RWQCB 1994*). The Water Quality Control Plan for the Lahontan Region allows the Regional Board to grant an exemption to the latter prohibition if it is shown that there will be no adverse effect on water quality or beneficial uses. The plan makes no explicit provision for exemptions to the first prohibition.

The area served by Crestline Village Water District and Crestline Sanitation District is subject to both of these discharge prohibitions. In addition, large areas served by the districts are tributary to lakes, which are sources of public drinking water supply. It is not known whether the Regional Board would grant any exemption for discharge of reclaimed wastewater under these circumstances. In the absence of an exemption, no reuse of recycled water is possible.

In consultations related to this plan, the Crestline Sanitation District has indicated that it intends to use the reclaimed water from its system in locations outside of CVWD's service area. If CSD's effluent is not used at the Las Flores Ranch, the district intends to market its reclaimed water elsewhere. Therefore, CVWD assumes that no supply of recycled water will be available from Crestline Sanitation District.

There are no other potential sources of reclaimed water in the District's service area. Lake Arrowhead Community Services District adjoins CVWD to the east, and produces tertiary-treated wastewater effluent. Lake Arrowhead Community Services District has found that reuse of tertiary effluent for landscape irrigation purposes at schools and a golf course in the immediate Lake Arrowhead area is not economically feasible, due to the high cost of necessary reclaimed water lines and pump stations (*LACSD 1995*). Conveyance of flows from the treatment facility to CVWD's service area would probably require extensive pumping and very lengthy pipelines, along with regulatory approvals. Therefore, for purposes of this plan, it has been assumed that no substantial reclaimed water supply will be available for use within CVWD. **DWR Tables 22 through 25**, therefore, are not used for this report.

Wastewater Collection and Treatment in CVWD Service Area

Table I-2 UWMP Checklist No. 45

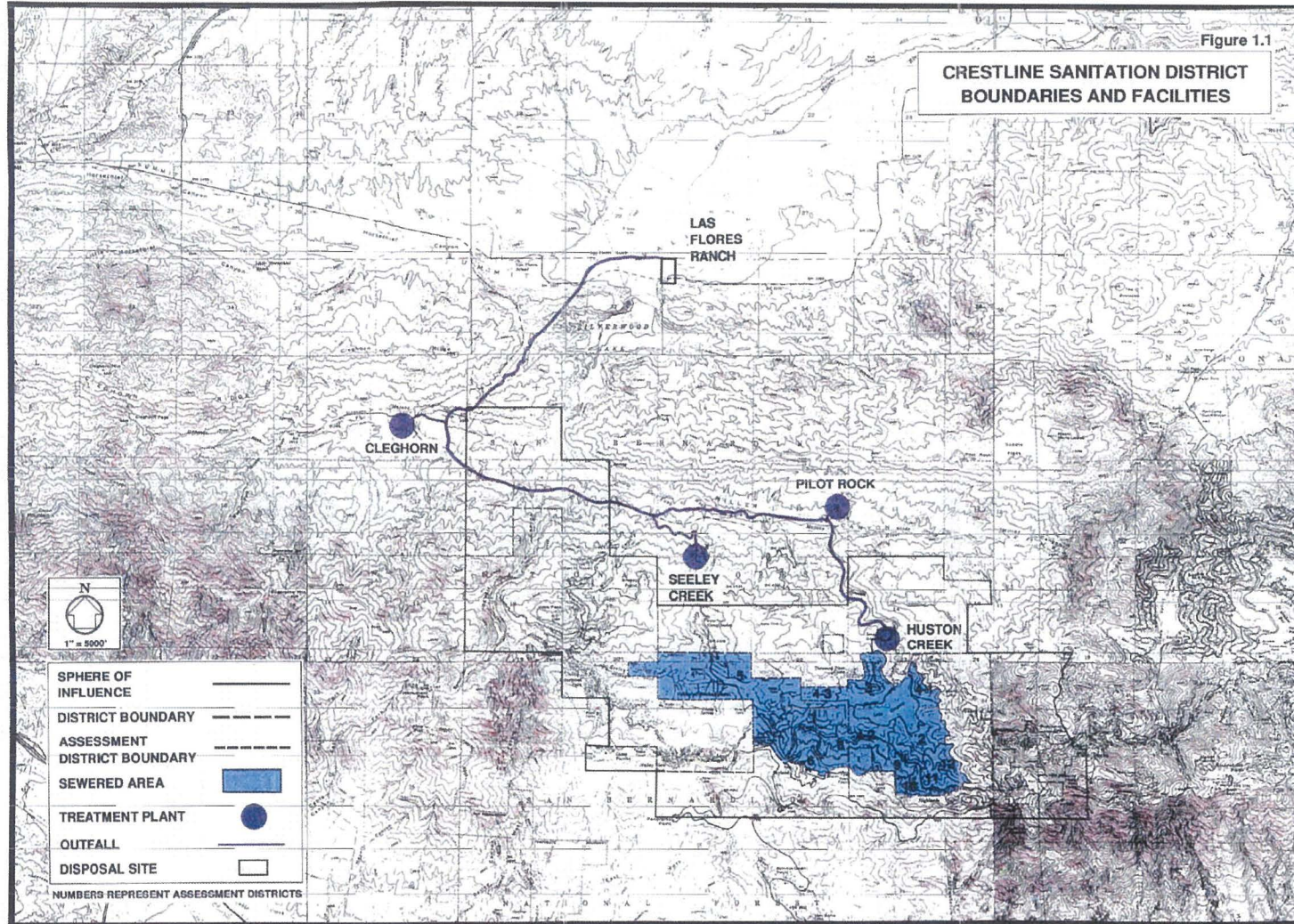
UWMP Requirement: Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

Calif. Water Code Ref. 10633(a)

The Crestline Sanitation District (CSD), is the only wastewater collection and treatment agency in CVWD's service area or sphere of influence. The service area of CSD, shown in **Figure 13**, CRESTLINE SANITATION DISTRICT (*CSan 2000*), is roughly equivalent to CVWD's sphere of influence.

Crestline Sanitation District operates three small wastewater treatment plants, with a combined treatment capacity of 1.4 mgd, in the San Bernardino National Forest. The Huston Creek wastewater treatment plant, located north of Lake Gregory, has a treatment capacity of 0.7 mgd. The Seeley Creek treatment plant, located north of Valley of Enchantment, has 0.5 mgd capacity, and the Cleghorn facility, southwest of Silverwood Lake, has capacity of 0.2 mgd. CSD also disposes of effluent from the Pilot Rock Treatment Plant, located in Miller Canyon north of Crestline, which is owned by the California Department of Forestry and has a treatment capacity of 0.01 mgd.

Figure 13 Crestline Sanitation District



Average daily flows to CSD's treatment plants as of 2000 are 0.44 mgd at Huston Creek, 0.178 mgd at Seeley Creek, and between 0.01 and 0.10 mgd, at Cleghorn, depending on the season. The largest flows are in late winter (usually February, March, or April). The peak wet day flow is about two times the average wet day flow, and is influenced by snowmelt and runoff. Another smaller peak period usually occurs in July, August, or September. This summer peak is related to the full summer use of camps and the presence of many part-time residents and tourists. Average daily flows in recent years have been approximately 50-60 gallons per capita on dry days and 110 gallons per capita on wet days. CSD has based its long-term planning on an average dry weather flow of 75 gallons per capita per day.

Crestline Sanitation District's wastewater collection system comprises approximately 475,201 linear feet of sewer lines. As of 2000, CSD served approximately 5,208 residential and commercial connections. The area currently served by CSD sewers, as shown in **Figure 13**, corresponds to the developed core of CVWD's service area. The Huston Creek plant treats the wastewater from approximately 65 percent of the sewered area, the Seeley Creek facility serves the remaining 35 percent. The Cleghorn and Pilot Rock treatment plants provide treatment service areas whose collection systems are owned and maintained by the California Department of Forestry and the California Department of Parks and Recreation. Three pump stations are included in CSD's collection system.

All treated effluent from the four treatment plants is conveyed through a single 14-mile outfall line, 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, and used for flood-irrigation of a nearby pasture area.

The Huston Creek and Seeley Creek plants provide primary treatment, fixed-film (i.e., trickling filter) secondary treatment, and chlorine disinfection. The Cleghorn plant provides primary treatment, activated sludge secondary treatment using an extended aeration process (i.e., oxidation ditch), and chlorine disinfection. Sludge thickening and dewatering of solids from all three plants is performed at the Huston Creek facility. Huston Creek 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 California Regional Water Quality Control Board, Lahontan Region.

Crestline Sanitation District currently has no plans to upgrade its facilities to provide tertiary treatment. The Las Flores Ranch, CSD's effluent disposal site, is proposed for development within the City of Hesperia. The development proposal for the treatment of Crestline Sanitation District's flows, as well as generalized flows from the Las Flores Ranch development. The developers of Las Flores Ranch are negotiating to obtain approval for reuse of tertiary treated effluent. The Las Flores Ranch development, at the magnitude proposed, is dependent upon the use of effluent flows from CSD. CSD is also interested in capturing economic value for its effluent through negotiated sales. Therefore, Crestline Sanitation District 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 ordinance issued by the Lahontan Water

Quality Control Board prohibiting the use of reclaimed water above 3,200 feet, wastewater must be used elsewhere.

Table I-2 UWMP Checklist No. 46

UWMP Requirement: Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Calif. Water Code Ref. 10633(b)

Not applicable. CVWD has no water available for this end use.

Table I-2 UWMP Checklist No. 47

UWMP Requirement: Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place and quantity of use.

Calif. Water Code Ref. 10633(c)

CVWD is not currently using any recycled water within its service area and has no plans to do so in the future at this time.

Table I-2 UWMP Checklist No. 48

UWMP Requirement: Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

Calif. Water Code Ref. 10633(d)

The potential applications of recycled water within CVWD are limited as a result of natural conditions and development patterns. The terrain in CVWD's service area is steep and irregular, winters are severe, and maintenance of natural forest conditions is preferred. As a result, most lots have little landscaped area that requires irrigation. There are no industrial uses at all in the CVWD service area, hence there are no potential markets for industrial use of reclaimed water. Most commercial uses are also fairly small. There are virtually no agricultural/irrigation uses. The dearth of potential major users of recycled water makes the economic feasibility of constructing dual water systems questionable. Thus, although various uses of recycled water (*EPA 1992*) are possible in the abstract, most have low potential in the CVWD service area.

There is a potential to use recycled water for wildlife habitat and wetland enhancement within the National Forest. The Forest Service is interested in exploring opportunities for water reuse. However, regulatory constraints would have to be overcome to make this possible.

The California Regional Water Quality Control Board, Lahontan Region, prohibits any discharge of waste in the Silverwood Lake watershed or above 3,200 feet elevation in the Deep Creek and Grass Valley Creek watersheds. Also prohibited is any discharge of waste to surface water above 3,200 feet in areas tributary to the West Fork Mojave River or Deep Creek (*RWQCB 1994*). The Water Quality Control Plan for the Lahontan Region allows the Regional Board to grant an exemption to the latter prohibition if it is shown that there will be no adverse effect on water quality or beneficial uses. The plan makes no explicit provision for exemptions to the first prohibition.

The area served by Crestline Village Water District and Crestline Sanitation District is subject to both of these discharge prohibitions. In addition, large areas served by the districts are tributary to lakes, which are sources of public drinking water supply. It is not known whether the Regional Board would grant any exemption for discharge of reclaimed wastewater under these circumstances. In the absence of an exemption, no reuse of recycled water is possible.

In consultations related to this plan, the Crestline Sanitation District has indicated that it intends to use the reclaimed water from its system in locations outside of CVWD's service area. If CSD's effluent is not used at the Las Flores Ranch, the district intends to market its reclaimed water elsewhere. Therefore, CVWD assumes that no supply of recycled water will be available from Crestline Sanitation District.

There are no other potential sources of reclaimed water in the District's service area. Lake Arrowhead Community Services District adjoins CVWD to the east, and produces tertiary-treated wastewater effluent. Lake Arrowhead Community Services District has found that reuse of tertiary effluent for landscape irrigation purposes at schools and a golf course in the immediate Lake Arrowhead area is not economically feasible, due to the high cost of necessary reclaimed water lines and pump stations (*LACSD 1995*). Conveyance of flows from the treatment facility to CVWD's service area would probably require extensive pumping and very lengthy pipelines, along with regulatory approvals. Therefore, for purposes of this plan, it has been assumed that no substantial reclaimed water supply will be available for use within CVWD.

Table I-2 UWMP Checklist No. 49

UWMP Requirement: The projected use of recycled water within the supplier's service area at the end of 5, 10 15 and 20 years, and a description of the actual use of the recycled water in comparison to uses previously projected.

Calif. Water Code Ref. 10633(e)

Not applicable. CVWD is not planning to use recycled water in the future at this time.

Table I-2 UWMP Checklist No. 50

UWMP Requirement: Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

Calif. Water Code Ref. 10633(f)

Not applicable. CVWD does not currently use recycled water within its service area and does not have plans to do so in the future at this time.

Table I-2 UWMP Checklist No. 51

UWMP Requirement: Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Calif. Water Code Ref. 10633(g)

Not applicable. CVWD does not currently use recycled water within its service area and does not have plans to do so in the future at this time.

Section 5: Water Supply Reliability and Water Shortage Contingency Planning

Water Management Tools to Minimize Water Importation

Table I-2 UWMP Checklist No. 5

UWMP Requirement: Describe the water management tools and options to maximize resources and minimize the need to import water from other regions.

Calif. Water Code Ref. 10620(f)

CVWD only has two sources of water: imports from CLAWA whose primary source of water is the State Water Project (SWP) and wells within the CVWD service area. The amount of well water that can be pumped is of course limited by the well capacity, the amount of precipitation that has infiltrated into the fractured rock zone, and the amount of water stored within the fracture rock aquifer which is likely limited. Hence, CVWD's options for minimizing and the importation of water from other regions are limited to the development of additional wells and implementation of Demand Management Measures (DMM). CVWD does not have sufficient storage to supply end user needs during an extended drought period nor does it have direct access to a reservoir. Further discussion of penalties for excessive use of water and DMM's during shortage or drought conditions is discussed in the following sections. Even though the amount of water available from the infiltration of precipitation into the fractured rock aquifer during local drought conditions would be reduced, development of additional well sites would be a management tool to minimize the importation of water from other regions. By drilling additional vertical wells from 1994 through 2004, CVWD has increased the amount of it's total water sources provided from wells from 35% to 56%; a 23% increase. By developing additional wells, more water would be supplied from local sources.

Water Supply Reliability – Average, Single-Dry, Multiple-Dry Water Years

Table I-2 UWMP Checklist No. 22

UWMP Requirement: Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single-dry water year, and (C) multiple-dry water years.

Calif. Water Code Ref. 10631(c)(1)

Tables 32 and 33 (DWR Tables 27 [A and B]), and **Table 34** (DWR Table 28) shows the water years used to determine the time periods for calculating the average, single-dry, and multiple-dry water years.

Table 32 (DWR Table 27 [A]) Basis of water year data for CLAWA	
Water Year Type	Base Year(s)
Average Water Year	1922-2029 ¹
Single-Dry Water Year	1977
Multiple-Dry Water Years	1988-1991
¹ SWP delivery modeled conditions.	

Table 33 (DWR Table 27 [B]) Basis of water year data for CVWD	
Water Year Type	Base Year(s)
Average Water Year	1984-2010
Single-Dry Water Year	1990
Multiple-Dry Water Years	1988-1991

**Table 34 (DWR Table 28)
Supply reliability — historic conditions**

Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
Crestline-Lake Arrowhead Water Agency (CLAWA)	CLAWA	CLAWA	CLAWA	CLAWA	CLAWA
Percent of Average/Normal Year:	13.9%	36.1%	55.6%	77.8%	44.4%
Crestline Village Water District (CVWD)	CVWD	CVWD	CVWD	CVWD	CVWD
Percent of Average/Normal Year:	60.3%	74.0%	64.6%	60.3%	60.5%

As discussed, CVWD obtains its water from two sources, CLAWA and local wells within the CVWD service area. CVWD generally pumps its local wells at maximum capacity and then, if the demand is still not met, purchases additional water from CLAWA. CLAWA is a State Water Project (SWP) contractor. CLAWA's Table A allocation is 5,800 acre-feet per year for cost apportioning and determination of yearly allocation from the SWP (*Crestline-Lake Arrowhead, ContractorDDR spreadsheet for 2009, DWR*). In the period from 1980 to 2010, water purchased from CLAWA accounted for an average of 55% of the water used by CVWD customers (see **Appendix F**), with the balance coming from CVWD's wells. However, in the period from 2000 to 2010, water purchased from CLAWA only accounted for an average of 49% of the water used by CVWD customers (see Appendix F). Even though CVWD has been developing additional local well sites to reduce its dependence on imported CLAWA water, an analysis of CVWD's water supply reliability necessarily includes an examination of the SWP source from CLAWA in addition to CVWD's local well field production.

Figure 14 plots the amount of water supplied to CVWD customers from its local wells and the amount from CLAWA's imported supply over the 30-yr period from 1980 to 2010. In response to addressing the requirements of California Water Code Section 10631(c)(1), two different sets of data were analyzed to calculate an average water year, single-dry water year, and multiple dry water years. First, following DWR methodology described in, *ContractorDRR_2009_rev080510.xls*, from the DWR website, an analysis was performed to estimate the SWP deliveries to CLAWA for the three periods of interest using CLAWA's Table A delivery maximum of 5,800 acre-feet per year. The results of this analysis are shown in **Appendix I**. Next, the CVWD well production data in the 30-yr period from 1980 to 2010 was analyzed as a separated source from CLAWA's SWP supply. The results of this analysis are shown in **Tables 36 and 37**.

Figure 14
Water Supplied to CVWD Customers from CVWD Wells and CLAWA Purchases

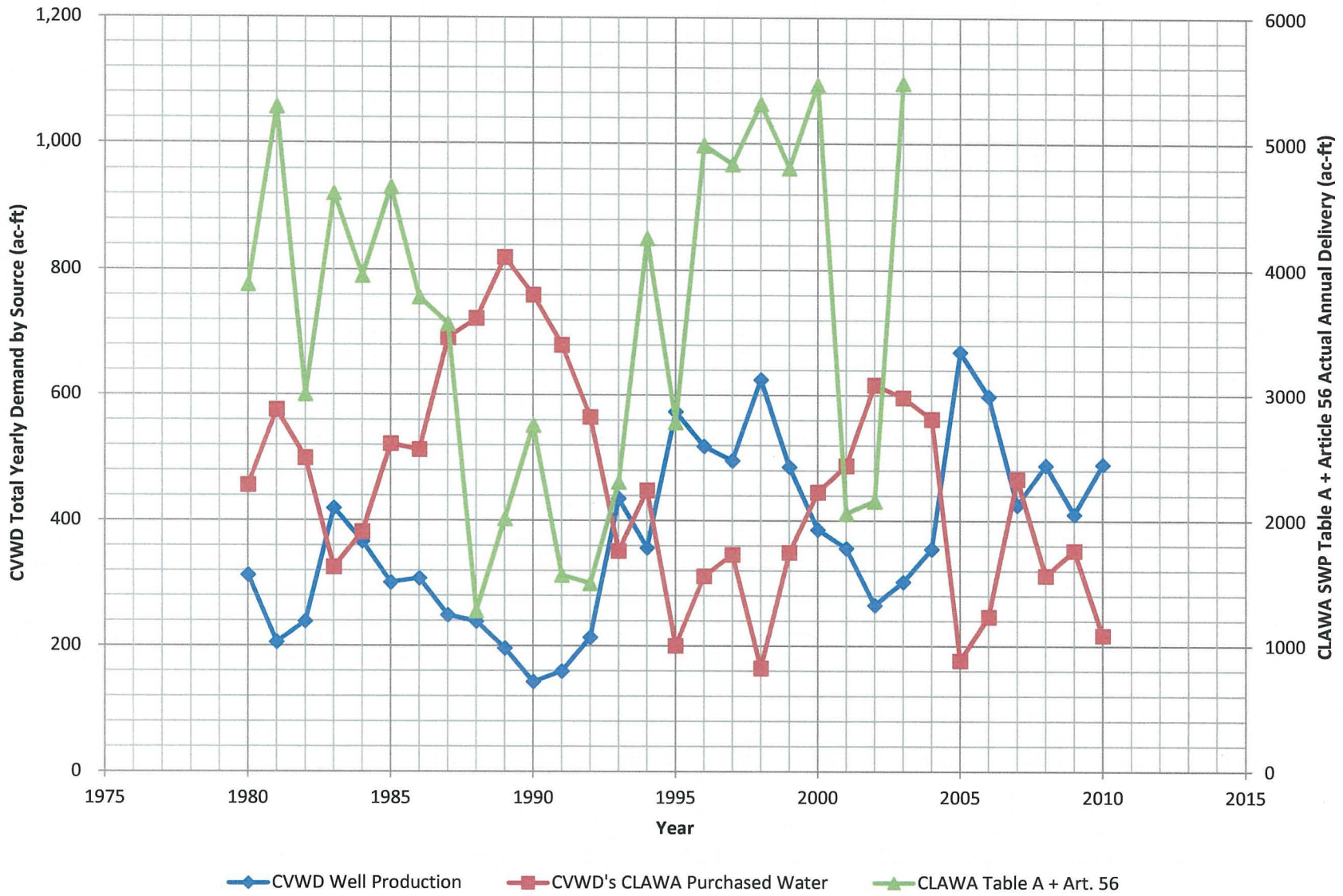


Table 36 (DWR Table 33) Supply and Demand Comparison — Single Dry Year					
	2015	2020	2025	2030	2035 - opt
Supply Totals ^{1,2}	756	782	808	806	-
Demand Totals ^{2,3,4}	820	820	820	820	-
Difference	(64)	(38)	(12)	(14)	-
Difference as % of Supply	-8.5%	-4.9%	-1.5%	-1.8%	-
Difference as % of Demand	-7.8%	-4.7%	-1.5%	-1.7%	-

Units are in acre-feet per year.

¹ Consider the same sources as in Table 16. If

² Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

³ Consider the same demands as in Table 3. If

⁴ The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Note: See Appendix I for supply totals for CVWD and CLAWA.

Table 37 (DWR Table 34) Supply and Demand Comparison — Multiple Dry-Year Events						
		2015	2020	2025	2030	2035 - opt
Multiple-Dry Year First Year Supply	Supply Totals ^{1,2}	2,222	2,243	2,269	2,185	-
	Demand Totals ^{2,3,4}	820	820	820	820	-
	Difference	1,401	1,423	1,449	1,365	-
	Difference as % of Supply	63.1%	63.4%	63.8%	62.5%	-
	Difference as % of Demand	170.8%	173.4%	176.6%	166.4%	-
Multiple-Dry Year Second Year Supply	Supply Totals ^{1,2}	2,227	2,252	2,269	2,185	-
	Demand Totals ^{2,3,4}	820	820	820	820	-
	Difference	1,407	1,432	1,449	1,365	-
	Difference as % of Supply	63.2%	63.6%	63.8%	62.5%	-
	Difference as % of Demand	171.5%	174.5%	176.6%	166.4%	-
Multiple-Dry Year Third Year Supply	Supply Totals ^{1,2}	2,231	2,261	2,268	2,185	-
	Demand Totals ^{2,3,4}	820	820	820	820	-
	Difference	1,410	1,441	1,448	1,365	-
	Difference as % of Supply	63.2%	63.7%	63.8%	62.5%	-
	Difference as % of Demand	171.9%	175.6%	176.5%	166.4%	-

Units are in acre-feet per year.

¹ Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.

² Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

³ Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

⁴ The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

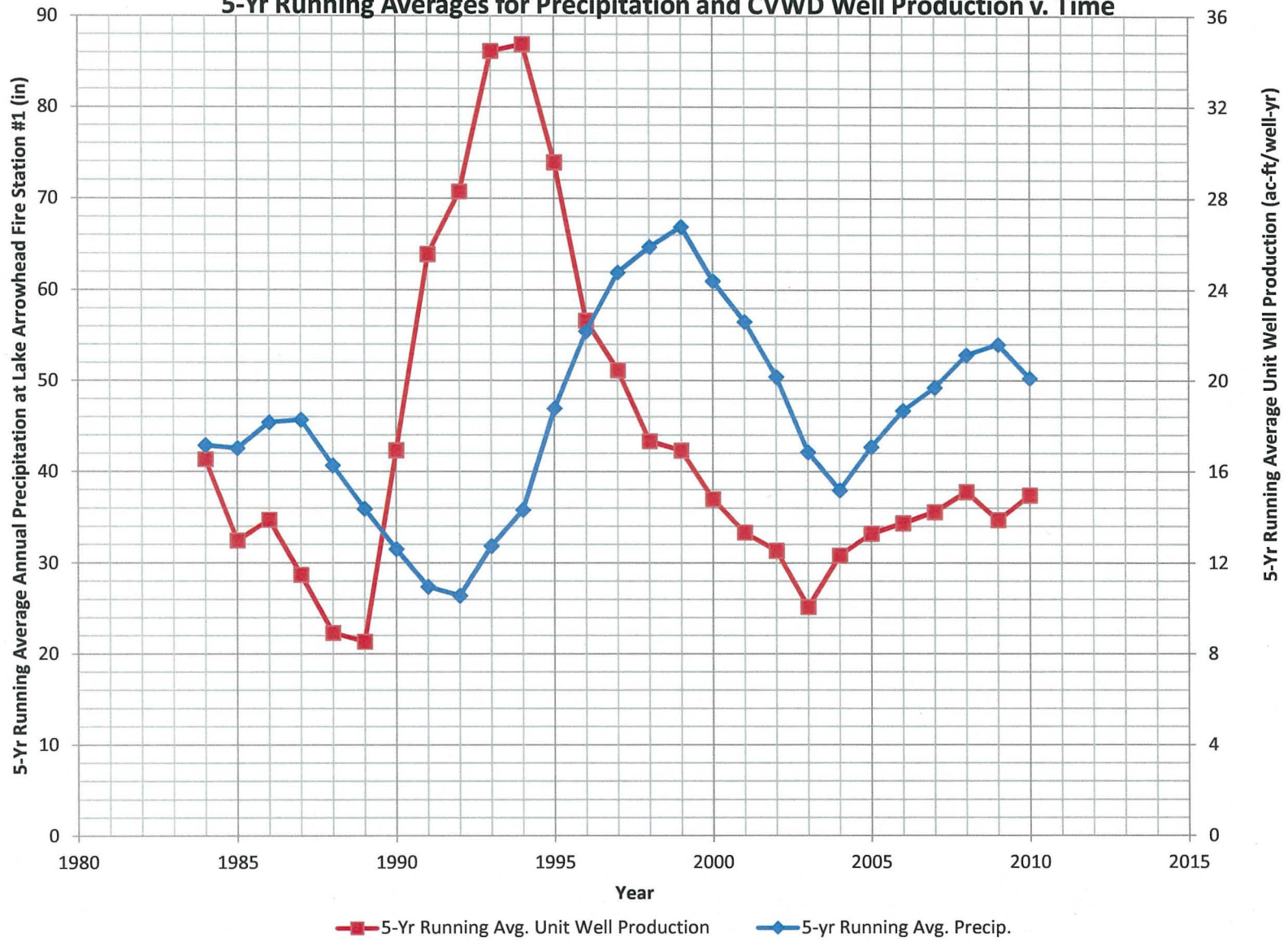
Note: See Appendix I for raw data used to populate this table.

The data for CVWD well production spans a 30 year history from 1980-2010. The CVWD local wells draw water from fractured rock aquifers as described above. These fractured rock aquifers typically receive the bulk of their water from precipitation. It follows that the amount of water available for pumping by the CVWD wells will generally be a function of the porosity of each of these fractured rock aquifers (cracks and pores that can store water) as well as the permeability of each aquifer (connections between the cracks and pores that allow for the movement of water to the well bore). Porosity and permeability also affect the infiltration rate of water into the fractured rock aquifer during a precipitation event. No comprehensive hydrogeologic study has been performed of these fractured rock aquifers throughout the Crestline-Lake Gregory area, therefore, establishing an exact correlation between rainfall and CVWD well production is not possible. In addition, rainfall across the Crestline-Lake Gregory area, and in the greater area around Lake Arrowhead, can be highly variable within a single precipitation event and after longer storms precipitation measurements can differ significantly among measuring stations that are relatively close in location.

Consequently, in order to estimate the single-dry, multiple-dry and average year water supply for the CVWD wells a 5-year running average of precipitation and unit well production was created for the period from 1980 to 2010 as shown in **Figure 15**. Note that the first data point is 5 years into the time interval since it is an average of the first 5 years of the data set. A running average has the effect of smoothing out year-over-year sharp variations in production rate and precipitation that do not elucidate overall trends. Well unit production is simply the overall production for a given year divided by the number of wells in service for that year.

Figure 15

5-Yr Running Averages for Precipitation and CVWD Well Production v. Time



Comment:

The purpose of preparing the DWR standard tables using different data sets (estimating State wide drought conditions instead of local drought conditions) is to account for differences between the availability of SWP supply and a state contractor's ability to deliver water to a local agency. Drought conditions in the area supplying the SWP will not always exist at the same time, and/or at the same level of severity in the Crestline-Lake Gregory area.

Source Replacement With Alternatives

Table I-2 UWMP Checklist No. 23

UWMP Requirement: For any water source that may not be available at a consistent level of use – given specific legal, environmental, water quality, or climatic factors – describe plans to supplement or replace that source with alternative sources or water demand management measures to the extent practicable.

Calif. Water Code Ref. 10631(c)(2)

As shown in **Figure 14**, water produced from CVWD's local wells is available but the amount of production varies dependent upon local precipitation. The difference between water supplied from CVWD wells and CVWD customer demand has been made up by increased deliveries of imported water from CLAWA over the 30-yr period from 1980 to 2010. Additional demand management measures are discussed below.

Urban Water Contingency Analysis – 50% Reduction

Table I-2 UWMP Checklist No. 35

UWMP Requirement: Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage.

Calif. Water Code Ref. 10632(a)

Crestline Village Water District has developed a water conservation plan designed for supply reductions of up to 50 percent. The District enacted Ordinance No. 29 in 1991, establishing a water conservation program. It was amended by Ordinance No. 30 in 1992, and further implemented by Resolution No. 279 in 1993. These ordinances and resolution will implement the District's water shortage contingency plan. Copies are provided in **Appendix J**.

In accordance with the requirements of the California Water Code, Ordinance No. 29 provides the District with specific stages of action to be undertaken in response to a water supply shortage. The ordinance also describes the mandatory provisions, which prohibit wasteful practices, consumption limits, and penalties for excessive use. The plan provides for reductions in water supply up to 50 percent, and outlines specific water supply conditions, which are applicable to each stage. Ordinance No. 29 can be found in **Appendix J**.

Estimate of Minimum Water Supply Available for Next Three Years Based Upon Historic Data

Table I-2 UWMP Checklist No. 36

UWMP Requirement: Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

Calif. Water Code Ref. 10632(b)

Table 35 (DWR Table 31) shows estimates of the minimum water supply.

Plan for Catastrophic Interruption of Water Supply

Table I-2 UWMP Checklist No. 37

UWMP Requirement: Identify actions to be taken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake or other disaster.

Calif. Water Code Ref. 10632(c)

The most likely events which could cause CVWD to sustain a catastrophic interruption in water supply are wild land fires, earthquakes, and widespread system failure. CVWD has recently prepared a system wide vulnerability assessment, emergency response plans and a participated in the preparation of a regional hazard mitigation plan. Each of these plans attempts to mitigate the effects of these catastrophic interruptions in water supply.

The primary effect of fires and earthquakes on water supply is the interruption of power throughout the San Bernardino Mountains and potential damage to CVWD's storage and distribution facilities. In order to minimize system damage during an earthquake, CVWD's facilities have been designed in accordance with the most current building and safety requirements and have generally been constructed with multiple units to minimize the system disruption if a single unit is damaged. In addition, all of the District's above ground storage tanks have undergone a seismic and structural evaluation based upon current building codes. Each tank has now been upgraded to current building codes to provide maximum safety and system reliability.

**Table 35 (DWR Table 31)
Supply Reliability — Current Water Sources**

Water supply sources ¹	Average / Normal Water Year Supply ²	Multiple Dry Water Year Supply ^{2,3}			Year 4
		Year 1	Year 2	Year 3	
Crestline-Lake Arrowhead Water Agency (Table A + Art. 56)	3,600	1,276	2,030	2,784	1,566
Crestline Village Water District (24 wells estimated production)	443	328	286	267	268
Percent of Normal Year:	100.0%	39.7%	57.3%	75.5%	45.4%

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

¹ From Table 16.

² See Table 27 for basis of water type years.

Notes:

(3) See Appendix F for average water year supply and Appendix I for average water year percentage determination.

Interruption of the SWP deliveries to CLAWA due to levee failure or drought for extended periods is possible according to the “State Water Project Delivery Reliability Report 2009” (August 2010). Assuming a +/- 50% reduction in supply to CVWD if CLAWA deliveries are halted, demand management measures are in place to contend with this scenario. See **Appendix J**. Additional wells can also be developed and drilled within the CVWD service area.

Mandatory Prohibitions on Water Use During Shortage Periods

Table I-2 UWMP Checklist No. 38

UWMP Requirement: Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

Calif. Water Code Ref. 10632(d)

Ordinance No. 29 contains mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning. Please see **Appendix J**.

Consumption Reduction Methods

Table I-2 UWMP Checklist No. 39

UWMP Requirement: Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50-percent reduction in water supply.

Calif. Water Code Ref. 10632(e)

Consumption reduction methods under a 50-percent reduction in water supply are detail in Ordinance No. 29, **Appendix J**, and include consumer curtailment, surcharges for excess consumption and prohibited uses.

Penalties or Charges for Excess Water Use During Shortages

Table I-2 UWMP Checklist No. 40

UWMP Requirement: Indicate penalties or charges for excessive use, where applicable.

Calif. Water Code Ref. 10632(f)

Ordinance No. 29, **Appendix J**, details customer charges for excessive use as a multiplicative factor of their base allocation rate for each stage 10, 20, 30, 40 and 50-percent of CVWD's Water Conservation Program.

Estimated Impact on CVWD Gross Revenue of Water Shortages

Table I-2 UWMP Checklist No. 41

UWMP Requirement: Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

Calif. Water Code Ref. 10632(g)

This section provides an analysis of the effect of the urban water management plan on the revenues and expenditures of the Crestline Village Water District and identifies measures, which are in place to offset potential revenue shortfalls in periods reflecting water use reductions ranging from 10-percent to 50-percent. A general analysis of effects on revenues and expenditures is provided in **Table 38**.

The District's revenues and expenditures for Fiscal Year 2009-10, and the projected revenues and expenditures for each phase of implementation of the water plan are depicted in **Table 38**. In the event of a worsening drought, increasingly stringent water rationing phases would be implemented. Operating expenses would tend to decrease mainly as a result of the reduced amount of supplemental water available for purchase. Operating expenses relating to local well production would also be subject to change depending upon the origin of the water shortage. However, transmission and distribution costs would remain the same inasmuch as the water distribution network would remain unchanged. Customer accounts, salaries, and administration would increase as a result of an increase in activities related to monitoring of the plan and administrative duties. Overall, the District's operating expenses tend to decrease as a result of a water shortage of supplemental water and implementation of the plan.

As income from operations changes, the District may be forced to find a way to increase its operating revenues in order to avoid a revenue shortfall. The District's revenues are derived from a combination of standby charges, water rates and surcharges for usage exceeding allocations. The District's operating procedures involve an ongoing monitoring of the revenue/expenditure balance during the fiscal year. If it becomes apparent that a positive balance may not be met, the General Manager notifies the Board of Directors so that corrective action can be taken.

Normally, a water rate increase would be proposed. The figures in **Table 38** would need to be adjusted to reflect rate increases necessary to maintain a positive revenue/expenditure balance.

Inasmuch as future surcharge revenue resulting from implementation of each phase is unpredictable at this time, given the uncertainty of customer reaction to increasing surcharges, the exact customer rate increase that will be necessary cannot be precisely estimated but will be determined at the time of its establishment.

Table 38
Fiscal Effects of Implementation of Water Shortage Contingency Plan

OPERATING REVENUES AND EXPENSES	ACTUAL FY 2009-10	PHASE II -10%	PHASE III -20%	PHASE IV -30%	PHASE V -40%	PHASE VI -50%
OPERATING REVENUES						
Residential	\$2,308,940	\$2,254,564	\$2,156,493	\$2,044,041	\$1,910,589	\$1,819,136
Business and Other	\$267,228	300,337	267,617	239,981	191,345	184,709
Total Water Sales	\$2,576,168	2,554,901	2,424,110	2,284,022	2,101,934	2,003,845
Service Charges	\$93,304	102,634	112,897	124,187	136,606	150,267
TOTAL REVENUE	\$2,669,472	\$2,657,535	\$2,537,007	\$2,408,209	\$2,238,540	\$2,154,112
OPERATING EXPENSES						
Purchased & Local Water Cost	\$463,423	\$381,968	\$300,513	\$219,058	\$137,603	\$71,124
Pumping	74,496	74,496	74,496	74,496	74,496	74,496
Water Treatment	20,465	20,465	20,465	20,465	20,465	20,465
Transmission and Distribution	181,502	181,502	181,502	181,502	181,502	181,502
Customer Accounts	61,563	64,641	67,873	71,267	74,830	78,572
Salaries	336,068	336,068	336,068	336,068	336,068	336,068
Administration and General	1,210,520	1,210,520	1,210,520	1,210,520	1,210,520	1,210,520
Depreciation and Other	562,884	562,884	562,884	562,884	562,884	562,884
TOTAL EXPENSES	2,910,921	2,832,544	2,754,321	2,676,260	2,598,368	2,535,631
SURPLUS (OR DEFICIT)	(241,449)	(175,009)	(217,314)	(268,051)	(359,828)	(381,519)

Water Shortage Contingency Resolution

Table I-2 UWMP Checklist No. 42

UWMP Requirement: Provide a draft water shortage contingency resolution or ordinance.

Calif. Water Code Ref. 10632(h)

Please see **Appendix J** for a copy of CVWD's, Ordinance No. 29, Water Conservation Management Program adopted by CVWD's Board on 14 February 1991. It was amended by Ordinance No. 30 in 1992, and further implemented by Resolution No. 279 in 1993 copies of which can be found in **Appendix J**.

Mechanism for Determining Reductions in Water Use

Table I-2 UWMP Checklist No. 43

UWMP Requirement: Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Calif. Water Code Ref. 10632(i)

CVWD's local well production would likely be reduced during critically dry years. The occurrence of a critically dry year both locally and on the State Water Project (SWP) would be rare but can happen as experienced in 1991 when local production was 6.9 MCF and the SWP supply was cut to 30%. It is estimated that if these conditions occurred again only 34.2 MCF would be available to CVWD. Due to the fact that all other local water purveyors would be in a similar situation and the lack of water storage in the mountains, the District cannot rely on neighboring retail purveyors as a means to mitigate a shortfall in supply. The mitigation measures currently available to CVWD to reduce and replace the shortfall are as follows.

- Implement mandatory conservation effort as described in the District's conservation plan to reduce the actual demand. As previously discussed, it is anticipated that a reduction of up to 50 percent can be achieved through conservation.
- If conservation efforts are not able to reduce the demand sufficiently, CVWD will rely upon CLAWA to provide enough water to mitigate the shortage. The options available to CLAWA as the local SWP Contractor and wholesale provider in the San Bernardino Mountains are discussed in detail in CLAWA's Urban Water Management Plan. They generally include 1) Utilizing the water available through the SBVMWD and LACSD transfer agreement, 2) Purchasing additional drought relief water from DWR (drought relief water is typically available at a higher cost during critically dry periods), and 3) Long-term storage currently being pursued by CLAWA.

Water Quality

Table I-2 UWMP Checklist No. 52

UWMP Requirement: Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments (2010, 2015, 2020, 2025, 2030), and the manner in which water quality affects water management strategies and supply reliability.

Calif. Water Code Ref. 10634

The quality of the District's potable water supply has been historically very good. The District is currently satisfying every standard established by the State Department of Health Services and the Environmental Protection Agency for water produced at its well sites.

The fact that CVWD is dependent on CLAWA to treat State Water Project water and deliver it into the District's potable water system creates interdependence between CVWD and CLAWA with respect to water quality. The District does not anticipate any local supply reductions in the future due to water quality problems and CLAWA has been diligent in ensuring that the supplemental water delivered to CVWD meets all established guidelines set by the State and Federal Governments. For more information on water quality impacts relating to supplemental water see CLAWA's Urban Water Management Plan (CLAWA 2010).

Water Supply Reliability Projections – Average, Single-Dry, and Multiple-Dry Water Years 2015, 2020, 2025, 2030

Table I-2 UWMP Checklist No. 53

UWMP Requirement: Assess the water supply reliability during normal, dry and multiple-dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, and single-dry water year, and multiple-dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional or local agency population projections within the service area of the urban water supplier.

Calif. Water Code Ref. 10635(a)

Please see **Table 39** (DWR Table 29) for factors resulting in inconsistency of the water supply. Please see **Tables 35** through **37** and **Table 40** for water year projections. CVWD currently has no water quality issues, nor are any anticipated, therefore, DWR Table 30 is not used in this report.

**Table 39 (DWR Table 29)
Factors Resulting in Inconsistency of Supply**

Water supply sources ¹	Specific source name, if any	Limitation quantification	Legal	Environmental	Water quality	Climatic	Additional information
Crestline-Lake Arrowhead Water Agency		SWP Allocation Limi		SWP Environmental Restrictions	N/A	Drought	
Crestline Village Water District Wells			N/A	N/A	N/A	Drought	

Units (circle one): acre-feet per year million gallons per year cubic feet per year

¹ From Table 16.

**Table 40 (DWR Table 32)
Supply and Demand Comparison — Normal Year**

	2015	2020	2025	2030	2035 - opt
Supply Totals (from Table 16)	742	779	818	859	-
Demand Totals (From Table 11)	670	675	680	684	-
Difference	72	104	138	175	-
Difference as % of Supply	9.7%	13.4%	16.9%	20.4%	-
Difference as % of Demand	10.7%	15.4%	20.4%	25.6%	-

Units are in acre-feet per year.

Section 6: Demand Management Measures

6.1 Background

Crestline Village Water District became a member of the California Urban Water Conservation Council in March of 1996, by executing the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) (*CUWCC 1994 as amended*). The Council is a voluntary organization whose members agree to implement reasonable water conservation measures. The Memorandum of Understanding identifies specific Best Management Practices (BMPs) for water conservation. All signatory agencies have agreed to make a good faith effort to implement these BMPs.

CVWD has committed itself to make a good faith effort to implement the Best Management Practices that lie within its authority, are technically and economically reasonable, and are environmentally and socially acceptable.

Since the last UWMP in 2005, CVWD has focused its conservation methods on such fundamental activities such as replacement of water meters to accurately measure water use and assist in the detection of on-site water leakage and/or waste.

CVWD's customers already use their water in an extremely efficient way compared to other areas of Southern California. The average annual water consumption for CVWD is approximately 86 gpcd which is much less than the South Latontan Hydrologic Region's DWR usage target of 162 gpcd by 2020 in order to satisfy the requirements of SBX 7-7. In other areas of California, water agencies are attempting to reduce their water consumption *down* from much higher use rates.

Because water conservation is already strongly practiced within the District's service area, specific water conservation measures may yield less benefit in the CVWD service area than they would in other areas of the State which would use more water on a per capita basis. For this reason, the reasonableness and effectiveness of each proposed conservation measure needs to be carefully analyzed in light of the conditions unique to the San Bernardino Mountains area.

The following sections identify each BMP as defined in the MOU, and discuss CVWD's activities related to it. Signatories of the MOU are not required to provide detailed discussion and analysis of each BMP in their Urban Water Management Plans. The following discussion covers some of CVWD's existing practices and highlights some issues which will be evaluated in more detail by CVWD in the future.

6.2 Implementation Levels of DMMS/BMPS

The revised MOU and BMP's now contain a category of "Foundation BMP's" which include utility operations (metering, water loss control, pricing, conservation coordinator, etc...) and public education.

The following sections describe District activities related to the BMP's.

6.3 Foundational BMP's

6.3.1 – Utility Operations

6.3.1.1 – Conservation Coordinator

The District has appointed Mr. Karl B. Drew to serve as it's Conservation Coordinator since December 15, 1997. Mr. Drew dedicates five percent of his time performing the duties of Conservation Coordinator.

6.3.1.2 – Water Waste Prevention

Ordinance No. 29 prohibits water waste during times of water shortage. These prohibitions include gutter flooding, non-recirculating systems in all new conveyor or car wash systems, non-recirculating systems in all new decorative fountains, customer plumbing leaks, and hosing of hard surfaces, as well as other restrictions. The District reserves the rights to implement more stringent standards and/or ban on-site regeneration of water softeners if it is demonstrated that there is an adverse effect on reclaimed water or groundwater supply.

6.3.1.3 – Water Loss Control

The District has significantly reduced water loss from previous years (20%) to the present by conducting annual pipeline replacement projects. As a result, production losses are currently estimated to be in the range of 5-6% which is low for the industry. Further, it should be noted that the District is implementing a water meter replacement program that will significantly enhance it's abilities to quickly identify customers that may have leaks or other irregular water use situations.

6.3.1.4 – Metering and Commodity Rates for All New Connections and Retrofit of Existing Connections

CVWD meters all connections and bills customers based upon their water usage. The District maintains three CII mixed-use accounts, all of which are on mixed-use meters. As previously mentioned, the District is implementing a replacement program for all of it's meters. This program will ensure the accurate recording of water quantity delivered.

6.3.1.5 – Retail Conservation Pricing

CVWD implements conservation pricing in its rate schedule. Ordinance No. 29 requires higher water rates after a basic amount of water is used, and increases the rate and reduces the basic allowance as the water supply becomes more restricted. The basic water allocation is currently approximately 1300 cubic feet per month for single family residential uses. The ordinance does provide some adjustments to the basic allocation for high volume users such as homes with more than six full-time residents, attached dwellings, and for medical or handicapped necessity and consideration. However, once the basic allocation is established, water use above the basic allocation pays a surcharge of approximately 50 percent.

6.3.2 – Education

6.3.2.1 – Public Information Programs

The District provides public education in the form of bill inserts and messages, and by showing previous water use on customer's water bills.

6.3.2.2 – School Education Programs

CVWD does not currently offer a formal school education program, although the District has provided speakers to various classes upon request.

6.4 Programmatic BMP's

The District has calculated an avoided cost of water to be \$1,150/AF based upon the cost of imported CLAWA water.

6.4.1 – Cost Effectiveness Analysis

The Cost Effectiveness Analysis measures a conservation activity effectiveness in terms of cost versus benefit. The CUWCC has provided guidance on these costs in their "BMP Costs and Savings Study": A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices Program. The circumstances in the District's service area are unique to mountain communities and as such the Cost Effectiveness Analysis may have limited applicability in some BMP

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question. The MOU does provide the exemptions from particular BMP's under certain conditions. Further analysis will be undertaken concerning this issue.

6.4.2.3 – Water Sense Specification (WSS) Toilets

CVWD does not currently have an WSS toilet replacement or rebate program. This BMP requires detailed analysis to assess its feasibility in the District's case. The MOU contains additional technical materials spelling out analytical approaches and assumptions, which can be used to evaluate the feasibility of this specific measure. The circumstances in CVWD's service area are such that the advisability of implementing ultra-low-flush toilet replacement is in question. The MOU does provide for exemptions from particular BMP's under certain conditions. Further analysis will be undertaken concerning this issue.

6.4.2.4 – Water Sense Specification for New Residential Development

The District provides water conservation information to new customers by direct handouts when accounts are established, inserts with billings, and their website. The requirements of this BMP include cost incentives, recognition programs, or ordinances requiring residential construction meeting water sense specifications (WSS) for single and multi-family housing until building agency regulation is established.

These WSS requirements are provided in the 2010 California Green Building Standards Code (Cal Green Code). The Cal Green Code includes goals such as a 20% reduction in indoor water use and regulations addressing landscape irrigation and design. These regulations are enforced by local building departments.

6.4.2.5 – Commercial, Industrial, and Institutional (CII) BMP's

The District has identified its large water users and is currently implementing water use surveys and incentive programs for its CII customers. Surveys will involve site visits, evaluation of all water-using apparatus and processes, and a customer report identifying recommended efficiency measures, paybacks, and agency incentives. Estimated annual savings from site-verified actions taken by the District since 1991 equal 0.5 AF/Year.

6.4.2.6 – Landscape

Based upon the characteristics of the mountain community of Crestline, landscape water use is not typically a large component of the District's water demand. However, the District will continue to work with customers and identify efficiency opportunities for conservation.

APPENDIX A

RESOLUTION FOR ADOPTION OF THE PLAN

RESOLUTION NO. 324

RESOLUTION OF THE BOARD OF
DIRECTORS OF CRESTLINE VILLAGE
WATER DISTRICT ADOPTING AN URBAN
WATER MANAGEMENT PLAN

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

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

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

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

Section 1. The District’s Urban Water Management Plan dated December, 2012 and attached hereto as Exhibit “A”, is hereby adopted. The District’s Urban Water Management Plan, dated July, 2006 and any and all previously adopted Urban Water Management Plans or portions thereof are hereby repealed and replaced by the Plan dated December, 2012.

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

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

Section 4. In accordance with Water Code Section 10652, the District finds that adoption and implementation of the Urban Water Management Plan is statutorily exempt

RESOLUTION NO. 399

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

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

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

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

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

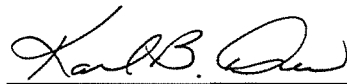
Section 1. The District's Urban Water Management Plan dated January 2013 and attached hereto as Exhibit "A", is hereby adopted. The District's Urban Water Management Plan, dated July 2006 and any and all previously adopted Urban Water Management Plans or portions thereof are hereby repealed and replaced by the Plan dated January 2013.

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

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

I, KARL B. DREW, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 15th day of January, 2013, and that it was adopted by the following roll call vote:

AYES: Directors Stone, Davis and Clanin
NOES: Director Farrell
ABSENT: Director Huckell
ABSTAINED: None



Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

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

I, Karl B. Drew, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 399 of said Board, and that the same has not been amended or repealed.

DATED: _____

Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

APPENDIX B

CVWD HISTORICAL WATER DEMAND AND SERVICE CONNECTIONS

Historical Water Demand and Service Connections

	Metered Water Deliveries (Cubic Feet)							Active Service Connections				Water Use Per Connection (Acre-Feet)					
	Residential Water Use	Commercial Water Use †	Institutional Water Use †	Total Water Use	Rate of Increase	Percent Residential	Percent Commercial	Percent Institutional	Residential	Commercial	Institutional	Total	Residential	Commercial	Institutional	Total Use	Rate of Increase
▶ 1980	23,879,535	2,951,403		26,830,938		89.0%	11.0%					3,781				0.163	
▶ * 1981	24,052,313	2,972,758		27,025,071	0.007	89.0%	11.0%					3,868				0.160	(0.015)
▶ ① 1982	24,225,092	2,994,112		27,219,204	0.007	89.0%	11.0%					3,929				0.159	(0.008)
▶ ① 1983	24,397,870	3,015,467		27,413,337	0.007	89.0%	11.0%					4,021				0.157	(0.016)
▶ ① 1984	24,570,649	3,036,822		27,607,471	0.007	89.0%	11.0%					4,139				0.153	(0.022)
▶ 1985	24,856,684	2,944,920		27,801,604	0.007	89.4%	10.6%					4,207				0.152	(0.009)
▶ 1986	24,366,310	4,827,540		29,193,850	0.050	83.5%	16.5%					4,339				0.154	0.018
▶ ① 1987	25,681,731	5,260,114		30,941,845	0.060	83.0%	17.0%					4,407				0.161	0.044
▶ 1988	27,132,566	5,557,273		32,689,839	0.056	83.0%	17.0%					4,471				0.168	0.041
▶ 1989	28,200,534	5,637,701		33,838,235	0.035	83.3%	16.7%					4,549				0.171	0.017
▶ 1990	26,901,330	5,441,538		32,342,868	(0.044)	83.2%	16.8%					4,615				0.161	(0.059)
▶ 1991	24,359,625	5,389,037		29,748,662	(0.080)	81.9%	18.1%		4,496	198		4,694	0.124	0.625		0.145	(0.096)
▶ 1992	24,312,834	5,169,786		29,482,620	(0.009)	82.5%	17.5%		4,568	184		4,752	0.122	0.645		0.142	(0.021)
▶ 1993	24,725,936	5,089,572		29,815,508	0.011	82.9%	17.1%		4,595	185		4,780	0.124	0.632		0.143	0.005
▶ 1994	25,015,602	5,252,058		30,267,660	0.015	82.6%	17.4%		4,595	185		4,780	0.125	0.652		0.145	0.015
▶ 1995	24,886,446	5,015,676		29,902,122	(0.012)	83.2%	16.8%		4,595	182		4,777	0.124	0.633		0.144	(0.011)
▶ 1996	26,225,100	5,828,976		32,054,076	0.072	81.8%	18.2%		4,604	183		4,787	0.131	0.731		0.154	0.070
▶ 1997	26,790,942	6,369,270		33,160,212	0.035	80.8%	19.2%		4,609	183		4,792	0.133	0.799		0.159	0.033
▶ 1998	26,858,004	5,390,466		32,248,470	(0.027)	83.3%	16.7%		4,621	182		4,803	0.133	0.680		0.154	(0.030)
▶ 1999	27,772,998	5,407,572		33,180,570	0.029	83.7%	16.3%		4,632	179		4,811	0.138	0.694		0.158	0.027
▶ 2000	28,694,418	5,378,538		34,072,956	0.027	84.2%	15.8%		4,640	179		4,819	0.142	0.690		0.162	0.025
▶ 2001	29,015,184	5,428,560		34,443,744	0.011	84.2%	15.8%		4,649	179		4,649	0.143	0.696		0.170	0.048
▶ 2002	30,790,176	3,536,044	1,857,914	36,184,134	0.051	85.1%	9.8%	5.1%	4,661	156	23	4,840	0.152	0.520	1.854	0.172	0.009
▶ 2003	31,792,704	3,464,160	1,496,520	36,753,384	0.016	86.5%	9.4%	4.1%	4,657	156	23	4,836	0.157	0.510	1.494	0.174	0.017
▶ 2004	32,065,674	3,124,878	2,062,410	37,252,962	0.014	86.1%	8.4%	5.5%	4,678	157	22	4,857	0.157	0.457	2.152	0.176	0.009
▶ 2005	30,584,971	3,272,846	1,873,474	35,731,291	(0.041)	85.6%	9.2%	5.2%	4,694	157	21	4,872	0.150	0.479	2.048	0.168	(0.044)
▶ 2006	30,016,735	3,009,612	1,777,460	34,803,807	(0.026)	86.2%	8.6%	5.1%	4,721	158	21	4,900	0.146	0.437	1.943	0.163	(0.032)
▶ 2007	32,278,498	2,951,717	1,817,370	37,047,585	0.064	87.1%	8.0%	4.9%	4,746	156	21	4,923	0.156	0.434	1.987	0.173	0.059
▶ 2008	28,515,561	2,709,383	1,635,110	32,860,054	(0.113)	86.8%	8.2%	5.0%	4,756	159	22	4,937	0.138	0.391	1.706	0.153	(0.116)
▶ 2009	27,314,902	2,491,026	1,642,350	31,448,278	(0.043)	86.9%	7.9%	5.2%	4,766	159	25	4,950	0.132	0.360	1.508	0.146	(0.045)
▶ 2010	25,194,971	2,409,878	1,510,300	29,115,149	(0.074)	86.5%	8.3%	5.2%	4,772	159	26	4,957	0.121	0.348	1.334	0.135	(0.075)

▶ - No residential/commercial breakdown available. Values estimated using 11% commercial prior to 1985 and 17% commercial thereafter.

① - No data available; values interpolated arithmetically.

† - Prior to 2002, Institutional Water Use is included in Commercial.

APPENDIX C

CVWD STAFF BASE HISTORIC WATER USE USING APPENDIX B DATA

Crestline Village Water District
 Calculations for Base Daily Per Capita Water Use

			YEARS															
	1990	1995	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
			1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Gross Water Use																		
Cubic Feet	32,342,868	29,902,122	32,054,076	33,160,212	32,248,470	33,180,570	34,072,956	34,443,744	36,184,134	36,753,384	37,252,962	35,731,291	34,803,807	37,047,585	32,860,054	31,448,278	29,115,149	
Service Area Population																		
Per Census Data	6,800						9,096											7,542
Calculated (See Below)	-	8,028	8,243	8,450	8,668	8,882	-	8,936	8,781	8,597	8,457	8,304	8,173	8,031	7,873	7,713		-
Service Area Population	6,800	8,028	8,243	8,450	8,668	8,882	9,096	8,936	8,781	8,597	8,457	8,304	8,173	8,031	7,873	7,713		7,542
Number of Active Water Services																		
	4,615	4,777	4,787	4,792	4,803	4,811	4,819	4,828	4,840	4,836	4,857	4,872	4,900	4,923	4,937	4,950		4,957
Population Calculation																		
Calculated Persons Per Water Service Based on Census Years 1990, 2000 & 2010 *	1.47						1.89											1.52
Calculated Persons Per Water Service all Other Years **		1.68	1.72	1.76	1.80	1.85		1.85	1.81	1.78	1.74	1.70	1.67	1.63	1.59	1.56		
Calculated Population ***		8,028	8,243	8,450	8,668	8,882		8,936	8,781	8,597	8,457	8,304	8,173	8,031	7,873	7,713		
Increase in Persons Per Water Service From Census Data	0.41407						(0.36604)											
Annual Increase ****	0.04141	0.20704	0.04141	0.04141	0.04141	0.04141	(0.03660)	(0.03660)	(0.03660)	(0.03660)	(0.03660)	(0.03660)	(0.03660)	(0.03660)	(0.03660)	(0.03660)		
Notes for Population Calculation	* Census Population / Water Services ** Prior year plus Annual Increase *** Water Services x Persons Per Water Service **** 1995 = Annual Increase x 5																	
Base Daily Per Service Water Use																		
Cubic Feet	19.20	17.15	18.30	18.96	18.40	18.90	19.32	19.55	20.48	20.82	20.96	20.09	19.46	20.62	18.19	17.41		16.09
Gallons	143.62	128.28	136.85	141.81	137.60	141.34	144.50	146.20	153.21	155.75	156.75	150.30	145.56	154.22	136.03	130.20		120.37
Annual Per Capita Water Use																		
Cubic Feet	4,756.30	3,724.73	3,888.64	3,924.29	3,720.40	3,735.71	3,745.93	3,854.49	4,120.73	4,275.14	4,404.99	4,302.90	4,258.39	4,613.07	4,173.77	4,077.31		3,860.40
Gallons	35,577.15	27,860.97	29,087.04	29,353.66	27,828.63	27,943.11	28,019.54	28,831.60	30,823.06	31,978.05	32,949.29	32,185.70	31,852.74	34,505.78	31,219.76	30,498.27		28,875.80
Daily Per Capita Water Use																		
Cubic Feet	13.03	10.20	10.62	10.75	10.19	10.23	10.23	10.56	11.29	11.71	12.04	11.79	11.67	12.64	11.40	11.17		10.58
Gallons (GPCD)	97.47	76.33	79.47	80.42	76.24	76.56	76.56	78.99	84.45	87.61	90.03	88.18	87.27	94.54	85.30	83.56		79.11
10 Year Base Period																		
Daily Per Capita Water Use																		
Cubic Feet								10.56	11.29	11.71	12.04	11.79	11.67	12.64	11.40	11.17		10.58
Gallons (GPCD)								78.99	84.45	87.61	90.03	88.18	87.27	94.54	85.30	83.56		79.11
5 Year Base Period																		
Daily Per Capita Water Use																		
Cubic Feet													11.67	12.64	11.40	11.17		10.58
Gallons (GPCD)													87.27	94.54	85.30	83.56		79.11

APPENDIX D

DWR FIGURE D-2, WATER CONSERVATION BASELINE AND TARGETS DEVELOPMENT PROCESS

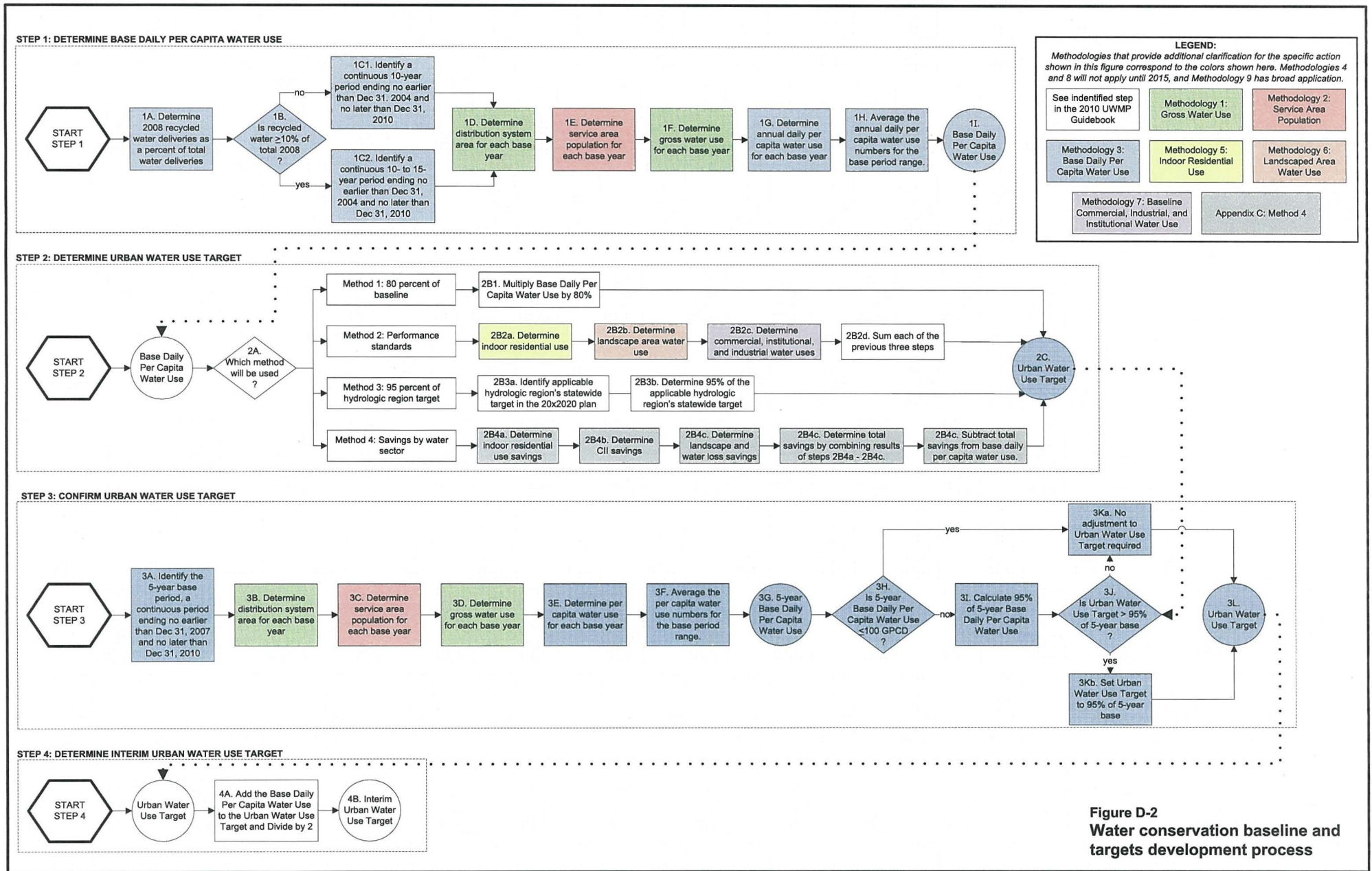


Figure D-2
Water conservation baseline and targets development process

APPENDIX E

CVWD STAFF PROJECT WATER SUPPLY

APPENDIX E

PROJECTED WATER SUPPLY (ACRE FEET (AF))

YEAR	TOTAL ACTIVE SERVICE CONNECTIONS	ESTIMATED POPULATION ⁽¹⁾	TOTAL WATER USE (AF) ⁽²⁾	TOTAL WATER SOURCES PROJECTED ³ (AF)	WELLS (AF) ⁴	PURCHASED (AF) ⁵
2010	4,957	7,542	705	707.00	489.79	217.21
2015	4,969	7,725	709	742.35	525.22	217.13
2020	4,992	7,847	713	779.47	559.65	219.81
2025	5,027	7,999	718	818.44	594.09	224.35
2030	5,072	8,168	723	859.36	628.52	230.84

¹ Table 6

² Table 26

³ Uses a conservative assumption of an approximate 1% per year increase in supply due to increase in demand (District's staff estimate)

⁴ Future years use based upon last 7 years of average vertical well production plus the addition of one or more new wells every 5 years producing approximately 34.44 AF/YR (District's staff estimate).

⁵ Table 27

APPENDIX F
CVWD SYSTEM LOSSES

Crestline Village Water District
Annual Sources of Supply/System Loss/Rainfall

Year	District Wells		CLAWA Purchases		Total Sources	System Loss		Annual Rainfall (Calendar Year)
	Cubic Feet	% of Total	Cubic Feet	% of Total		Cubic Feet	% of Total	
1980	13,642,246	40.68%	19,896,427	59.32%	33,538,673			
1981	8,977,386	26.35%	25,096,551	73.65%	34,073,937			
1982	10,409,809	32.35%	21,772,131	67.65%	32,181,940			
1983	18,293,983	56.30%	14,197,706	43.70%	32,491,689			
1984	15,985,190	48.99%	16,644,431	51.01%	32,629,621			
1985	13,121,796	36.57%	22,755,534	63.43%	35,877,330			
1986	13,411,753	37.50%	22,348,217	62.50%	35,759,970			
1987	10,850,634	26.48%	30,121,885	73.52%	40,972,519			
1988	10,418,220	24.87%	31,474,248	75.13%	41,892,468			
1989	8,547,043	19.30%	35,742,248	80.70%	44,289,291	10,577,208	23.88%	
1990	6,222,175	15.82%	33,117,784	84.18%	39,339,959	6,655,426	16.92%	19.89
1991	6,954,813	19.01%	29,637,089	80.99%	36,591,902	5,266,612	14.39%	41.28
1992	9,301,608	27.42%	24,616,766	72.58%	33,918,374	3,817,605	11.26%	52.74
1993	18,966,342	55.28%	15,344,969	44.72%	34,311,311	3,758,094	10.95%	72.57
1994	15,535,737	44.28%	19,550,913	55.72%	35,086,650	5,054,849	14.41%	34.82
1995	24,979,110	74.09%	8,737,593	25.91%	33,716,703	3,459,478	10.26%	55.38
1996	22,586,525	62.44%	13,585,633	37.56%	36,172,158	3,738,576	10.34%	45.64
1997	21,602,218	58.89%	15,080,107	41.11%	36,682,325	3,094,122	8.43%	28.94
1998	27,213,134	79.10%	7,190,864	20.90%	34,403,998	2,234,155	6.49%	58.27
1999	21,163,765	58.15%	15,234,263	41.85%	36,398,028	2,966,894	8.15%	14.50
2000	16,808,289	46.40%	19,419,055	53.60%	36,227,344	2,152,007	5.94%	25.95
2001	15,515,154	42.19%	21,258,156	57.81%	36,773,310	2,071,042	5.63%	28.83
2002	11,550,321	30.07%	26,861,873	69.93%	38,412,194	2,041,378	5.31%	17.73
2003	13,168,805	33.64%	25,978,785	66.36%	39,147,590	2,025,581	5.17%	33.90
2004	15,462,866	38.70%	24,488,914	61.30%	39,951,780	2,530,489	6.33%	33.64
2005	29,148,277	79.09%	7,705,536	20.91%	36,853,813	2,134,682	5.79%	53.73
2006	26,045,639	70.78%	10,750,289	29.22%	36,795,928	1,891,799	5.14%	36.90
2007	18,516,278	47.65%	20,341,575	52.35%	38,857,853	2,399,925	6.18%	21.84
2008	21,269,697	60.96%	13,622,339	39.04%	34,892,036	1,864,313	5.34%	44.04
2009	17,871,544	53.77%	15,367,661	46.23%	33,239,205	2,187,225	6.58%	30.96
2010	21,335,334	69.28%	9,461,554	30.72%	30,796,888	1,594,099	5.18%	82.45
Total	504,875,691		617,401,096		1,122,276,787	73,515,559		834.00
Ave.	16,286,313	44.99%	19,916,164	55.01%	36,202,477	3,341,616	9.23%	39.71

Note: Data does not reconcile exactly with that provided in Appendix B of this document. Sources of error could be rounding, meter calibration, accounting method, but are unknown at this time.

APPENDIX G

CVWD WELL GROUP LISTING

Crestline Village Water District
Source of Supply Production Report
Cubic Feet
Last 13 Months

1/17/2012

<u>Source Name</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>Last 12 Months</u>	<u>13 Months</u>
Division 10															
Altdorf	79,912	72,708	71,135	125,491	102,928	69,903	61,107	67,134	93,432	109,441	139,345	133,394	117,087	1,163,105	1,243,017
Pioneer #2	54,363	48,800	45,386	72,620	55,994	52,237	60,612	69,287	85,065	88,628	103,069	107,273	107,302	896,273	950,636
Pioneer #1	64,725	62,707	53,118	93,085	87,218	58,671	70,358	78,764	91,129	111,087	97,083	79,678	95,550	978,448	1,043,173
Old Mill Springs	72,000	58,340	46,830	30	-	-	-	58,640	99,230	95,740	105,870	78,710	81,110	624,500	696,500
Maple springs	81,933	74,860	60,150	130,153	111,839	58,765	71,164	74,735	162,501	171,951	188,101	166,855	161,077	1,432,151	1,514,084
Willow Springs	42,660	62,990	41,040	20	-	10	-	-	-	-	-	-	-	104,060	146,720
Brookside Springs	45,610	39,920	31,630	65,920	80,680	16,670	-	-	0	-	-	-	-	234,820	280,430
Hillside Springs	26,590	22,670	17,750	56,670	50,250	59,820	75,420	81,420	68,590	65,270	53,090	47,720	44,110	642,780	669,370
Pinecrest	99,340	82,320	77,380	77,170	88,910	91,290	134,420	178,960	155,800	148,480	131,120	93,330	92,010	1,351,190	1,450,530
Pinecrest Vertical	225,020	165,110	190,020	242,200	211,240	222,290	207,110	240,630	226,010	226,160	217,250	187,560	172,160	2,507,740	2,732,760
Cypress Vertical	127,940	78,750	33,100	70,950	38,720	580	124,870	154,910	132,750	15,090	-	-	104,370	754,090	882,030
Anderson Vertical	117,000	103,500	62,100	27,800	6,900	118,400	117,400	135,500	126,700	133,800	120,300	81,600	131,700	1,165,700	1,282,700
Division 10 Totals	1,037,093	872,675	729,639	962,109	834,679	748,636	922,461	1,139,980	1,241,207	1,165,647	1,155,228	976,120	1,106,476	11,854,857	12,891,950
Division 20															
Wilson Springs #1 & 2	200,300	174,100	201,500	283,200	263,900	290,200	295,400	275,600	239,500	286,900	268,900	254,300	252,100	3,085,600	3,285,900
Wilson Vertical	41,900	100,400	86,400	202,900	159,200	182,500	18,500	196,100	166,600	23,500	-	100	192,000	1,328,200	1,370,100
Felsen Vertical	43,860	104,980	108,220	-	1,180	53,980	151,190	186,630	168,720	185,650	228,470	192,800	225,080	1,606,900	1,650,760
Horst	137,900	118,200	120,200	183,000	191,000	159,800	148,300	177,300	185,500	209,000	86,700	199,000	207,200	1,985,200	2,123,100
Jewell No 64	84,097	75,087	78,834	104,115	86,320	104,197	104,643	113,335	105,639	111,046	99,271	96,362	96,786	1,175,635	1,259,732
Cathcart	30,800	27,300	31,000	39,100	32,500	36,200	36,700	38,000	34,500	35,800	20,800	25,500	26,100	383,500	414,300
Bergschrund	34,545	29,820	41,577	62,235	48,743	64,958	72,106	71,501	62,995	63,757	28,325	56,770	54,002	656,789	691,334
Chamois	12,000	6,200	5,900	-	4,700	6,800	6,000	6,400	6,000	6,300	5,700	5,600	5,700	65,300	77,300
Chamois Vertical	72,300	54,100	68,860	72,320	61,070	64,410	60,640	63,920	59,330	62,320	56,780	55,960	57,310	737,020	809,320
Valle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chillon 64 (stand-by)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Government	40,712	36,815	26,955	1	-	-	-	-	-	-	-	-	-	63,771	104,483
Lewter	5,300	4,600	4,100	500	108	100	45,256	16,200	14,100	13,284	12,136	8,587	9,881	128,852	134,152
Division 20 Totals	703,714	731,602	773,546	947,371	848,721	963,145	938,735	1,144,986	1,042,884	997,557	807,082	894,979	1,126,159	11,216,767	11,920,481
Total District Sources	1,740,807	1,604,277	1,503,185	1,909,480	1,683,400	1,711,781	1,861,196	2,284,966	2,284,091	2,163,204	1,962,310	1,871,099	2,232,635	23,071,624	24,812,431
C.L.A.W.A.															
Crest Forest 6"	384,893	304,011	297,861	146,791	-	42,914	-	-	38,770	80,882	-	160,027	-	1,071,256	1,456,149
Mile High Park 2"	132,861	159,586	47,687	-	-	-	-	-	-	195,976	217,995	246,056	72,660	939,960	1,072,821
Mile High Park 4"	113,369	-	-	-	-	-	-	-	-	-	-	-	-	-	113,369
Pinecrest 2"	90,976	132,112	207,714	104,211	148,222	206,524	167,928	150,267	137,848	1,257	-	-	81,217	1,337,300	1,428,276
Pinecrest 4"	163,904	-	-	217,112	-	-	-	-	-	683,690	806,016	631,417	147,727	2,485,962	2,649,866
Lake Drive 2"	-	-	-	-	-	-	-	-	59,479	38,449	120,147	-	-	218,075	218,075
Lake Drive 4"	-	-	-	-	-	-	-	-	63,770	51,738	-	26,471	-	141,979	141,979
Camp Seely	37,433	49,599	29,679	33,824	20,455	55,080	-	27,674	63,102	106,952	87,567	64,572	31,150	569,654	607,087
C.L.A.W.A. Totals	923,436	645,308	582,941	501,938	168,677	304,518	167,928	177,941	362,969	1,158,944	1,231,725	1,128,543	332,754	6,764,186	7,687,622
Grand Totals	2,664,243	2,249,585	2,086,126	2,411,418	1,852,077	2,016,299	2,029,124	2,462,907	2,647,060	3,322,148	3,194,035	2,999,642	2,565,389	29,835,810	32,500,053

APPENDIX H

SOUTH LAHONTAN HYDROLOGIC
REGION BULLETIN 118

South Lahontan Hydrologic Region

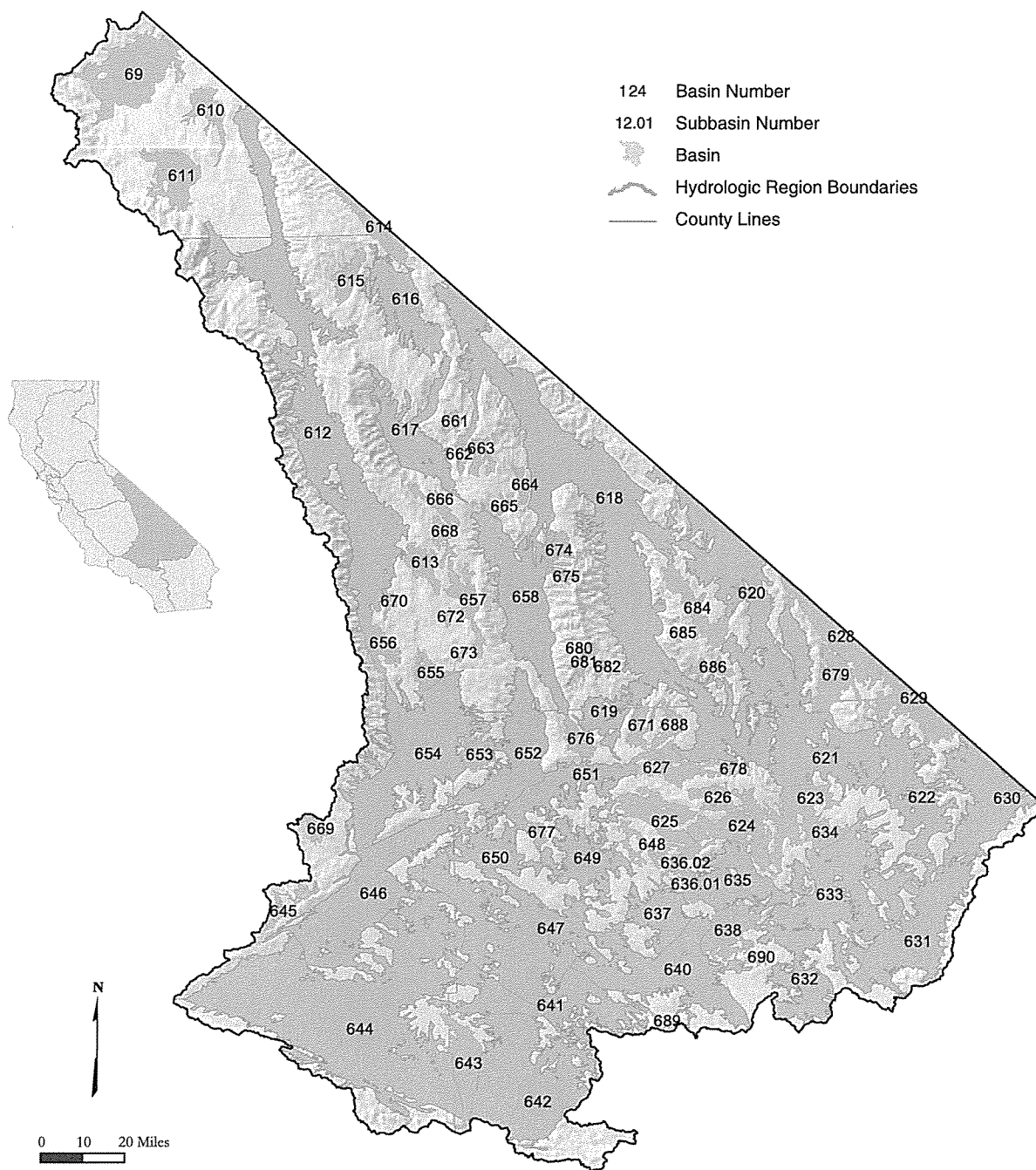


Figure 41 South Lahontan Hydrologic Region

Basins and Subbasins of the South Lahontan Hydrologic Region

Basin/subbasin	Basin name	Basin/subbasin	Basin name
6-9	Mono Valley	6-51	Pilot Knob Valley
6-10	Adobe Lake Valley	6-52	Searles Valley
6-11	Long Valley	6-53	Salt Wells Valley
6-12	Owens Valley	6-54	Indian Wells Valley
6-13	Black Springs Valley	6-55	Coso Valley
6-14	Fish Lake Valley	6-56	Rose Valley
6-15	Deep Springs Valley	6-57	Darwin Valley
6-16	Eureka Valley	6-58	Panamint Valley
6-17	Saline Valley	6-61	Cameo Area
6-18	Death Valley	6-62	Race Track Valley
6-19	Wingate Valley	6-63	Hidden Valley
6-20	Middle Amargosa Valley	6-64	Marble Canyon Area
6-21	Lower Kingston Valley	6-65	Cottonwood Spring Area
6-22	Upper Kingston Valley	6-66	Lee Flat
6-23	Riggs Valley	6-68	Santa Rosa Flat
6-24	Red Pass Valley	6-69	Kelso Lander Valley
6-25	Bicycle Valley	6-70	Cactus Flat
6-26	Avawatz Valley	6-71	Lost Lake Valley
6-27	Leach Valley	6-72	Coles Flat
6-28	Pahrump Valley	6-73	Wild Horse Mesa Area
6-29	Mesquite Valley	6-74	Harrisburg Flats
6-30	Ivanpah Valley	6-75	Wildrose Canyon
6-31	Kelso Valley	6-76	Brown Mountain Valley
6-32	Broadwell Valley	6-77	Grass Valley
6-33	Soda Lake Valley	6-78	Denning Spring Valley
6-34	Silver Lake Valley	6-79	California Valley
6-35	Cronise Valley	6-80	Middle Park Canyon
6-36	Langford Valley	6-81	Butte Valley
6-36.01	Langford Well Lake	6-82	Spring Canyon Valley
6-36.02	Irwin	6-84	Greenwater Valley
6-37	Coyote Lake Valley	6-85	Gold Valley
6-38	Caves Canyon Valley	6-86	Rhodes Hill Area
6-40	Lower Mojave River Valley	6-88	Owl Lake Valley
6-41	Middle Mojave River Valley	6-89	Kane Wash Area
6-42	Upper Mojave River Valley	6-90	Cady Fault Area
6-43	El Mirage Valley		
6-44	Antelope Valley		
6-45	Tehachapi Valley East		
6-46	Fremont Valley		
6-47	Harper Valley		
6-48	Goldstone Valley		
6-49	Superior Valley		
6-50	Cuddeback Valley		

Description of the Region

The South Lahontan HR covers approximately 21.2 million acres (33,100 square miles) in eastern California. This region includes about 21 percent of the surface area of California and both the highest (Mount Whitney) and lowest (Death Valley) surface elevations of the contiguous United States. The HR is bounded on the west by the crest of the Sierra Nevada and on the north by the watershed divide between Mono Lake and East Walker River drainages; on the east by Nevada and the south by the crest of the San Gabriel and San Bernardino mountains and the divide between watersheds draining south toward the Colorado River and those draining northward. This HR includes the Owens, Mojave, and Amargosa River systems, the Mono Lake drainage system, and many other internally drained basins. Average annual precipitation is about 7.9 inches, and runoff is about 1.3 maf per year (DWR 1994).

The South Lahontan HR includes Inyo County, much of Mono and San Bernardino counties, and parts of Kern and Los Angeles counties (Figure 41). National forests, national and state parks, military bases and other public lands comprise most of the land in this region. The Los Angeles Department of Water and Power is also a major landowner in the northern part of the HR and controls rights to much of the water draining the eastern Sierra Nevada.

According to 2000 census data, the South Lahontan HR is home to about 530,000 people, or 1.6 percent of the state's population. The major population centers are in the southern part of the HR and include Palmdale, Lancaster, Victorville, Apple Valley, and Hesperia.

Groundwater Development

In this report, 76 groundwater basins are delineated in the South Lahontan HR, and the Langford Valley Groundwater Basin (6-36) is divided into two subbasins. The groundwater basins underlie about 11.60 million acres (18,100 square miles) or about 55 percent of the HR.

Most of the groundwater production is concentrated, along with the population, in basins in the southern part of this region. Groundwater provides 41 percent of water supply for agriculture and urban uses (DWR 1998). Much of this HR is public land with very low population density, within these areas there has been little groundwater development and little is known about the basins.

In most smaller basins, groundwater is found in unconfined alluvial aquifers; however, in some of the larger basins, or near dry lakes, aquifers may be separated by aquitards that cause confined groundwater conditions. Depths of the basins range from tens or hundreds of feet in smaller basins to thousands of feet in larger basins. The thickness of aquifers varies from tens to hundreds of feet. Well yields vary in this region depending on aquifer characteristics and well location, size, and use.

Conjunctive use of surface water and groundwater is practiced in the more heavily pumped basins. Some water used in the southern part of the HR is imported from Northern California by the State Water Project. Some of this imported water is used to recharge groundwater in the Mojave River Valley basins (6-40, 6-41, and 6-42). Surface water and groundwater are exported from the South Lahontan HR to the South Coast HR by the Los Angeles Department of Water and Power.

Groundwater Quality

The chemical character of the groundwater varies throughout the region, but most often is calcium or sodium bicarbonate. Near and beneath dry lakes, sodium chloride and sodium sulfate-chloride water is common. In general, groundwater near the edges of valleys contains lower TDS content than water beneath the central part of the valleys or near dry lakes.

Drinking water standards are most often exceeded for TDS, fluoride, and boron content. The EPA lists 13 sites of contamination in this HR. Of these, three military installations in the Antelope Valley and Mojave River Valley groundwater basins are federal Superfund sites because of VOCs and other hazardous contaminants.

Water Quality in Public Supply Wells

From 1994 through 2000, 605 public supply water wells were sampled in 19 of the 77 basins and subbasins in the South Lahontan HR. Analyzed samples indicate that 506 wells, or 84 percent, met the state primary MCLs for drinking water. Ninety-nine wells, or 16 percent, have constituents that exceed one or more MCL. Figure 42 shows the percentages of each contaminant group that exceeded MCLs in the 99 wells.

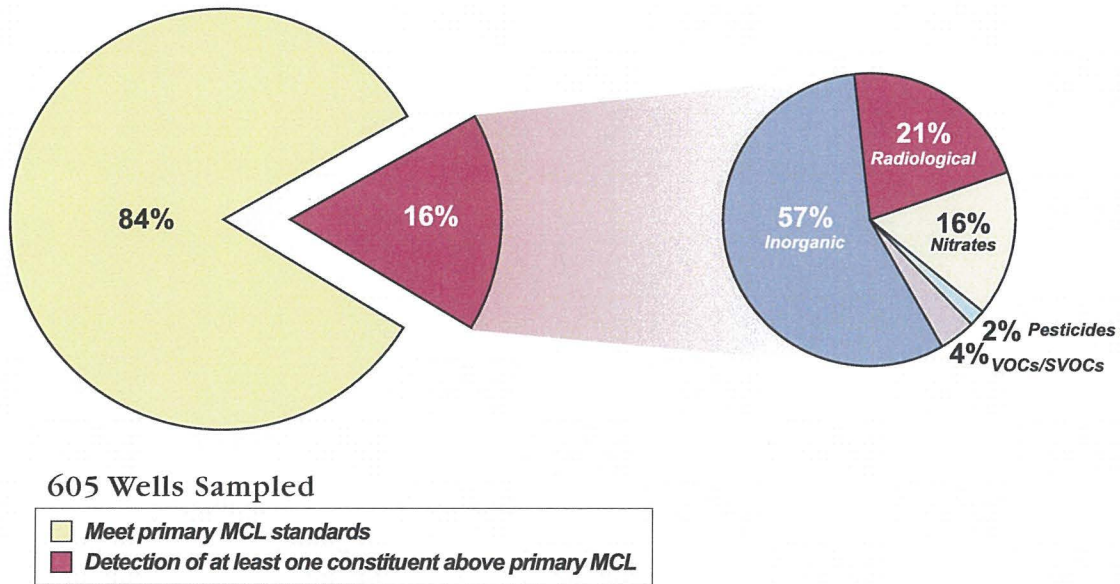


Figure 42 MCL exceedances in public supply wells in the South Lahontan Hydrologic Region

Table 36 lists the three most frequently occurring contaminants in each of the six contaminant groups and shows the number of wells in the HR that exceeded the MCL for those contaminants.

Table 36 Most frequently occurring contaminants by contaminant group in the South Lahontan Hydrologic Region

Contaminant group	Contaminant - # of wells	Contaminant - # of wells	Contaminant - # of wells
Inorganics – Primary	Fluoride – 30	Arsenic – 19	Antimony – 5
Inorganics – Secondary	Iron – 82	Manganese – 36	Specific Conductance – 5 TDS – 5
Radiological	Gross Alpha – 18	Uranium – 7	Radium 228 – 2
Dissolved Nitrogen	Nitrate (as NO ₃) – 12	Nitrate + Nitrite – 6	Nitrite (as N) – 4
Pesticides	Di(2-Ethylhexyl)phthalate) – 2		
VOCs/SVOCs	MTBE – 2	TCE – 2	Carbon Tetrachloride – 2

TCE = Trichloroethylene
 MTBE = Methyltertiarybutylether
 VOC = Volatile Organic Compound
 SVOC = Semivolatile Organic Compound

Changes from Bulletin 118-80

Several modifications from the groundwater basins presented in Bulletin 118-80 are incorporated in this report (Table 37). Langford Valley Groundwater Basin (6-36) has been divided into two subbasins. Granite Mountain Area (6-59) and Fish Slough Valley (6-60) groundwater basins have been deleted because no information was found concerning wells or groundwater in these basins or because well completion reports indicate that groundwater production is derived from fractured rocks beneath the basin. Furnace Creek Area Groundwater Basin (6-83) has been incorporated into Death Valley Groundwater Basin (6-18), and Butterbread Canyon Valley Groundwater Basin (6-87) has been incorporated into Lost Lake Valley Groundwater Basin (6-71).

Table 37 Modifications since Bulletin 118-80 of groundwater basins and subbasins in South Lahontan Hydrologic Region

Basin/subbasin name	New number	Old number
Langford Well Lake	6-36.01	6-36
Irwin	6-36.02	6-36
Troy Valley	Incorporated into 6-40 and 7-14.	6-39
Granite Mountain Area	Deleted	6-59
Fish Slough Valley	Deleted	6-60
Furnace Creek Area	Deleted – incorporated into 6-18	6-83
Butterbread Canyon Valley	Deleted – incorporated into 6-71	6-87

Troy Valley Groundwater Basin (6-39) has been split at the Pisgah fault, which is a groundwater barrier, and has been incorporated into Lower Mojave River Valley (6-40) and Lavié Valley (7-14) groundwater basins. This change incorporates part of the South Lahontan HR into a basin in the Colorado River HR¹. The Middle Mojave River Valley Groundwater Basin (6-41) has changed boundaries along the north (Harper Valley; 6-47) and east sides (Lower Mojave River Valley; 6-40). The new boundaries are along the Camp Rock-Harper Lake fault zone, Waterman fault, and Helendale fault. Groundwater level elevations indicate that these faults are likely strong barriers to groundwater movement.

The boundary between the Upper Mojave River Valley Groundwater Basin (6-42) and the Lucerne Valley Groundwater Basin (7-19) was changed from the regional surface divide to the southern part of the Helendale fault, which is a groundwater barrier. This change incorporates part of the Colorado Desert HR into a basin in the South Lahontan HR².

¹ The boundaries of the hydrologic regions are defined by surface drainage patterns. In this case, faults impede groundwater flow causing it to flow beneath the surface drainage divide into the adjacent hydrologic region.

² See previous note.

Table 38 South Lahontan Hydrologic Region groundwater data

Basin/Subbasin	Basin Name	Area (acres)	Groundwater Budget Type	Well Yields (gpm)		Types of Monitoring			TDS (mg/L)	
				Maximum	Average	Levels	Quality	Title 22	Average	Range
6-09	MONO VALLEY	173,000	A	800	480	-	-	-	-	2060
6-10	ADOBE LAKE VALLEY	39,800	C	-	-	-	-	-	-	-
6-11	LONG VALLEY	71,800	A	250	90	20	-	5	-	-
6-12	OWENS VALLEY	661,000	A	8,100	1,870	700	7	89	-	300-450,000
6-13	BLACK SPRINGS VALLEY	30,800	C	-	-	-	-	-	-	-
6-14	FISH LAKE VALLEY	48,100	C	-	-	-	-	-	-	-
6-15	DEEP SPRINGS VALLEY	29,900	C	700	390	-	-	-	-	-
6-16	EUREKA VALLEY	129,000	C	-	-	-	-	1	-	-
6-17	SALINE VALLEY	146,000	C	-	-	-	-	-	-	-
6-18	DEATH VALLEY	921,000	C	-	-	28	-	6	-	-
6-19	WINGATE VALLEY	71,400	C	-	-	-	-	-	-	-
6-20	MIDDLE AMARGOSA VALLEY	390,000	C	3,000	2,500	2	-	4	-	-
6-21	LOWER KINGSTON VALLEY	240,000	C	-	-	-	-	-	-	-
6-22	UPPER KINGSTON VALLEY	177,000	C	24	-	-	-	5	-	-
6-23	RIGGS VALLEY	87,700	C	-	-	-	-	-	-	-
6-24	RED PASS VALLEY	96,500	C	-	-	-	-	-	-	-
6-25	BICYCLE VALLEY	89,600	C	710	-	-	12	6	618	508-810
6-26	AVAWATZ VALLEY	27,700	C	-	-	-	-	-	-	-
6-27	LEACH VALLEY	61,300	C	-	-	-	-	-	-	-
6-28	PAHRUMP VALLEY	93,100	C	300	150	-	-	-	-	-
6-29	MESQUITE VALLEY	88,400	C	1,500	1,020	-	-	-	-	-
6-30	IVANPAH VALLEY	199,000	C	600	400	-	-	9	-	-
6-31	KELSO VALLEY	255,000	C	370	290	-	-	-	-	-
6-32	BROADWELL VALLEY	92,100	C	-	-	-	-	1	-	-
6-33	SODA LAKE VALLEY	381,000	C	2,100	1,100	-	-	3	-	-
6-34	SILVER LAKE VALLEY	35,300	C	-	-	-	-	-	-	-
6-35	CRONISE VALLEY	127,000	C	600	340	-	-	-	-	-
6-36	LANGFORD VALLEY									
6-36.01	LANGFORD WELL LAKE	19,300	C	1,700	410	11	7	3	498	440-568
6-36.02	IRWIN	10,500	C	550	-	40	-	3	528	496-598
6-37	COYOTE LAKE VALLEY	88,200	A	1,740	660	5	-	-	-	300-1000
6-38	CAVES CANYON VALLEY	73,100	A	300	-	4	1	4	-	300-1000
6-40	LOWER MOJAVE RIVER VALLEY	286,000	A	2,700	770	70	21	52	300	-
6-41	MIDDLE MOJAVE RIVER VALLEY	211,000	A	4,000	1,000	74	3	14	500	-
6-42	UPPER MOJAVE RIVER VALLEY	413,000	A	5,500	1,030	120	22	153	500	1105
6-43	EL MIRAGE VALLEY	75,900	A	1,000	230	50	3	21	-	-
6-44	ANTELOPE VALLEY	1,110,000	A	7,500	286	262	10	248	300	200-800
6-45	TEHACHAPI VALLEY EAST	24,000	C	150	31	31	-	9	361	298-405
6-46	FREMONT VALLEY	2,370,000	C	4,000	500	23	-	13	596	350-100,000
6-47	HARPER VALLEY	410,000	A	3,000	725	11	3	19	-	179-2391
6-48	GOLDSTONE VALLEY	28,100	C	-	-	-	-	-	-	-
6-49	SUPERIOR VALLEY	120,000	C	450	100	-	-	-	-	-

Table 38 South Lahontan Hydrologic Region groundwater data (continued)

Basin/Subbasin	Basin Name	Area (acres)	Groundwater Budget Type	Well Yields (gpm)		Types of Monitoring			TDS (mg/L)	
				Maximum	Average	Levels	Quality	Title 22	Average	Range
6-50	CUDDEBACK VALLEY	94,900	C	500	300	-	-	-	-	-
6-51	PILOT KNOB VALLEY	139,000	C	-	-	-	-	1	-	-
6-52	SEARLES VALLEY	197,000	C	1,000	300	-	-	-	-	-
6-53	SALT WELLS VALLEY	29,500	C	-	-	-	-	-	-	-
6-54	INDIAN WELLS VALLEY	382,000	A	3,800	815	116	20	63	312	110-1620
6-55	COSO VALLEY	25,600	C	-	-	-	-	-	-	-
6-56	ROSE VALLEY	42,500	C	-	-	-	-	1	-	-
6-57	DARWIN VALLEY	44,200	C	130	43	-	-	-	-	-
6-58	PANAMINT VALLEY	259,000	C	35	30	-	-	-	-	-
6-61	CAMEO AREA	9,310	C	-	-	-	-	-	-	-
6-62	RACE TRACK VALLEY	14,100	C	-	-	-	-	-	-	-
6-63	HIDDEN VALLEY	18,000	C	-	-	-	-	-	-	-
6-64	MARBLE CANYON AREA	10,400	C	-	-	-	-	-	-	-
6-65	COTTONWOOD SPRING AREA	3,900	C	-	-	-	-	-	-	-
6-66	LEE FLAT	20,300	C	-	-	-	-	-	-	-
6-68	SANTA ROSA FLAT	312	C	-	-	-	-	-	-	-
6-69	KELSO LANDER VALLEY	11,200	C	-	-	-	-	-	-	-
6-70	CACTUS FLAT	7,030	C	-	-	-	-	-	-	-
6-71	LOST LAKE VALLEY	23,300	C	-	-	-	-	-	-	-
6-72	COLES FLAT	2,950	C	-	-	-	-	-	-	-
6-73	WILD HORSE MESA AREA	3,320	C	-	-	-	-	-	-	-
6-74	HARRISBURG FLATS	24,900	C	-	-	-	-	1	-	-
6-75	WILDROSE CANYON	5,160	C	-	-	-	-	-	-	-
6-76	BROWN MOUNTAIN VALLEY	21,700	C	-	-	-	-	-	-	-
6-77	GRASS VALLEY	9,980	C	-	-	-	-	-	-	-
6-78	DENNING SPRING VALLEY	7,240	C	-	-	-	-	-	-	-
6-79	CALIFORNIA VALLEY	58,300	C	-	-	-	-	-	-	-
6-80	MIDDLE PARK CANYON	1,740	C	-	-	-	-	-	-	-
6-81	BUTTE VALLEY	8,810	C	-	-	-	-	-	-	-
6-82	ANVIL SPRING CANYON VALLEY	4,810	C	-	-	-	-	-	-	-
6-84	GREENWATER VALLEY	59,900	C	-	-	-	-	-	-	-
6-85	GOLD VALLEY	3,220	C	-	-	-	-	-	-	-
6-86	RHODES HILL AREA	15,600	C	-	-	-	-	-	-	-
6-88	OWL LAKE VALLEY	22,300	C	-	-	-	-	-	-	-
6-89	KANE WASH AREA	5,960	C	60	-	-	-	-	-	-
6-90	CADY FAULT AREA	7,960	C	-	-	-	-	-	-	-

gpm - gallons per minute
 mg/L - milligram per liter
 TDS -total dissolved solids

APPENDIX I

SINGLE-DRY, MULTIPLE-DRY AND AVERAGE WATER YEAR DATA TABLES AND ANALYSIS FOR CLAWA AND CVWD WELLS

5-yr Running Average CVWD Well Production (in percent maximum of highest production year = 819 ac-ft in year 1986)					
Year	Single-Dry Year 1990	2-Year Drought 1990-1991	4-Year Drought 1989-1992	6-Yr Drought 1987-1992	Median ⁽²⁾
2010	19%	22%	27%	33%	57%
2015	18.5%	21.5%	26.5%	32.5%	54%
2020	18.0%	21.0%	26.0%	32.0%	55%
2025	17.5%	20.5%	25.5%	31.5%	56%
2030	17%	20%	25%	31%	47%

Notes:

(1) Assumes 2% reduction in well production between 2010 and 2030.

(2) Assumes projected well supply of 16.6 million cubic feet in 2030.

Single-dry year (1990 conditions) 5-yr Running Average CVWD Well Production					
Water Supply Source	2010	2015	2020	2025	2030
CVWD Well Production (af)	153	151	147	143	139

Multiple-dry year (1988 to 1991 conditions) 5-yr Running Average CVWD Well Production					
Water Supply Source	2010	2015	2020	2025	2030
CVWD Well Production (af)	225	217	213	258	205

Average year 5-year Running Average CVWD Well Production					
Water Supply Source	2010	2015	2020	2025	2030
CVWD Well Production (af)	463	442	450	459	381

SWP Table A Delivery from The Delta (in percent maximum Table A)					
Year	Single-Dry Year 1977	2-Year Drought 1977- 1978	4-Year Drought 1988- 1991	6-Yr Drought 1988-1993	Average
2010	8%	26%	33%	33%	85%
2015	8.5%	30.5%	33.3%	35.0%	61.75%
2020	9.0%	35.0%	33.5%	36.0%	61.50%
2025	9.5%	39.5%	33.8%	37.0%	61.25%
2030	10%	44%	34%	38%	61%

Single-dry year SWP delivery (1977 Conditions) assuming a maximum Table A amount of 5,800 acre-feet (ac-ft)					
Water Supply Source	2010	2015	2020	2025	2030
State Water Project (Table A) (ac-ft/yr)	463	493	522	551	553

Multiple-dry year SWP delivery (1988-1991 Conditions) assuming a maximum Table A amount of 5,800 acre-feet (ac-ft)					
Water Supply Source	2010	2015	2020	2025	2030
State Water Project (Table A) (ac-ft/yr)	1905	1929	1943	1958	1980

Average year SWP delivery (1922-2029 Modeled Conditions) assuming a maximum Table A amount of 5,800 acre-feet (ac-ft)					
Water Supply Source	2010	2015	2020	2025	2030
State Water Project (Table A) (ac-ft/yr)	4919	3582	3567	3553	3514

APPENDIX J
CVWD ORDINANCES AND RESOLUTIONS

ORDINANCE NO. 29

AN ORDINANCE OF THE BOARD OF THE CRESTLINE
VILLAGE COUNTY WATER DISTRICT ESTABLISHING A
WATER CONSERVATION PROGRAM.

WHEREAS, severe drought conditions exist within the State of California, created by five consecutive years of below average rainfall; and

WHEREAS, the Crestline Village County Water District (hereinafter "District") receives more than 80% of its water supply from Crestline-Lake Arrowhead Water Agency (hereinafter "Agency") and depends on said water supply; and

WHEREAS, on February 14, 1991, the Board of Directors of the Crestline-Lake Arrowhead Water Agency adopted a water conservation program, effective March 1, 1991, designed to restrict the amount of water available to the District; and

WHEREAS, the production of the wells and springs that supply the balance of the District's water supply has decreased by more than 20% during the calendar year 1990 due to the extended drought conditions; and

WHEREAS, action must be taken by this Board of Directors in order to (1) protect the health, safety, and welfare of the customers

of the District, (2) assure the maximum beneficial use of the water supplies of the District, and (3) ensure that there will be sufficient water supplies to meet the basic needs of human consumption, sanitation and fire protection; and

WHEREAS, this ordinance is enacted in conformity with Section 350, et seq., and Section 31026 of the Water Code,

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

Section 1, Purpose and Findings

Based upon information submitted and testimony received at the Public Hearing held on February 21, 1991, this Board of Directors finds that a drought emergency and water shortage exists which requires the enactment of this Ordinance. The District has received notice from the Agency that the amount of water delivered to the District during calender year 1991 will be 5% less than the amount delivered in 1990, and that more severe reductions will likely be imposed if drought conditions continue during the first few months of 1991. These conditions impose a threat to the public health, safety, and welfare because of a reduced water supply for human consumption, sanitation and fire protection. In order to conserve the water supply for the greatest public benefit, it is necessary to enact and impose rules and regulations governing various water uses.

Section 2, Water Use Reduction Program

No customer of the District shall make, cause, use or permit the use of water received from the District for any purpose in a manner contrary to any provision of this ordinance or in an amount in excess of that use permitted by the conservation phase then in effect pursuant to this ordinance or pursuant to action taken by the Board in accordance to the provisions herein.

Each customer of the District is required to install a shut-off valve on the customer's side of the meter, outside the meter box, to allow on-site plumbing to be drained as necessary to prevent loss of water from frozen or broken pipes. It shall be the customers' responsibility to maintain their on-site plumbing and operate these valves as necessary to prevent water loss, especially during periods of freezing conditions when the premises are unoccupied.

A. Phase I - General Water Use Reduction Program

- (1) Consumer Curtailment. The District has established a Surcharge for Excess Consumption which establishes 1,250 cubic feet per month as the basic allocation for each single family residential customer. The customer of record may request an increase in this basic

allocation as provided in Section 3 below. Multi-Family, Commercial and Political Entity accounts may request an increase in this basic allocation based upon the number of units served and/or uses of water as provided in Section 3 below. Every consumer shall eliminate the waste of potable water from the District in an effort to conserve District water supplies.

- (2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be one and one half times the rate for the basic allocation.

B. Phase II - 10 Percent Water Use Reduction Program

- (1) Consumer Curtailment. The basic allocation is reduced to 1,125 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a ten percent reduction of the amount of water used by all consumers during calendar year 1990.
- (2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be two (2) times the rate for the basic allowance.
- (3) Prohibited Uses. It shall be unlawful for any consumer

to use potable water from the District for the following uses:

(a) The washing of sidewalks, walkways, driveways, parking lots and all other hard-surfaced areas by direct hosing, except as may be necessary to properly dispose of flammable or otherwise dangerous liquids or substances, or as otherwise necessary to prevent or eliminate materials dangerous to the public health and safety;

(b) The escape of water through breaks, leaks or dripping faucets within the consumer's plumbing or private distribution system for any substantial period of time within which such break or leak should be reasonably have been discovered or corrected. It shall be presumed that a period of forty-eight hours after the consumer discovers such a leak or break, or receives notice from the District of such leak or break, whichever occurs first, is reasonable time within which to correct such leak or break;

(c) The use of running water during freezing weather to prevent the freezing of water lines. Water lines should be protected by other means.

(d) Using a hose to wash cars, trucks, boats, trailers or other vehicles unless it has a spring-release shut-off nozzle;

(e) Lawn or garden watering, or any other irrigation or other water use, in a manner which results in water runoff or over spray of the areas being watered. Every consumer is deemed to have under control at all times its water distribution lines and facilities, and to know the manner and extent of its water use and any runoff. Any irrigation, of landscaping installed after the date upon which this subsection has been activated, is prohibited;

(f) Sprinkling for dust control;

(g) Any water use that results in the runoff of water in street, gutters, driveways, or other waterways.

C. Phase III - 20 Percent Water Use Reduction Program

- (1) Consumer Curtailment. The basic allocation is reduced to 1,000 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a twenty percent reduction of the amount of water used by all consumers during calendar

year 1990.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be two and one half (2 1/2) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of subsection B (3), or for the following uses:

(a) The draining and refilling of a pool or spa unless necessary for significant health or safety reasons:

(b) Using water for decorative fountains or the filling of decorative lakes or ponds, except when reclaimed or recycled water is used;

D. Phase IV - 30 Percent Water Use Reduction Program

(1) Consumer Curtailment. The basic allocation is reduced to 875 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a thirty percent reduction of the

amount of water used by all consumers during calendar year 1990.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be three (3) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of subsection C (3), or for the following uses:

(a) The filling of new pools or spas;

(b) Sewer or storm system flushing for normal maintenance, and fire department training, except as approved in writing by the District;

(c) Use of potable water for construction;

(d) The washing of motor vehicles, trailers, boats or other vehicles by hosing, or by use of water directly from faucets or other outlets, except:

It shall be lawful to wash such vehicles from water contained in a bucket or container not

exceeding three (3) gallon capacity; and

This prohibition shall not be applicable to the washing of such vehicles at commercial vehicle washing facilities operated at fixed locations which employ water recycling equipment.

(e) Lawn or garden watering, or any other irrigation, beyond what is needed to sustain plant life.

E. Phase V - 40 Percent Water Use Reduction Program

- (1) Consumer Curtailment. The basic allocation is reduced to 750 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a forty percent reduction of the amount of water used by all consumers during calendar year 1990.
- (2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be three and one half (3 1/2) times the rate for the basic allowance.
- (3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the

provisions of subsection D (3), or for the following uses:

(a) The use of potable water for any non-essential outdoor use. Essential uses of potable water are uses necessary for the health, sanitation, fire protection or safety of the consumer or public.

F. Phase VI - 50 Percent Water Use Reduction Program

(1) Consumer Curtailment. The basic allocation is reduced to 625 cubic feet per month. Every consumer shall eliminate the waste and non-essential use of potable water from the District in an effort to aid the District in achieving a fifty percent reduction of the amount of water used by all consumers during calendar year 1990.

(2) Surcharge for Excess Consumption. The rate for water used in excess of the basic allocation shall be four (4) times the rate for the basic allowance.

(3) Prohibited Uses. It shall be unlawful for any consumer to use potable water from the District contrary to the provisions of subsection E (3), or for any non-essential use. Essential uses of potable water are

uses necessary for the health, sanitation, fire protection or safety of the consumer or public.

Section 3 - Exceptions

A. Exceptions to Basic Allocation. Exceptions to increase the amount of water which may be used without exceeding the basic allotment may be granted by the District Manager or his designee, upon written request for the following reasons:

- (1) Substantiated medical requirements.
- (2) Multiple family units served by a single meter.
- (3) A single family residential household exceeding six (6) residents.
- (4) Unnecessary and undue hardship to the consumer or the public, including but not limited to, adverse economic impacts.

B. Exceptions to Prohibited Uses. Exceptions to prohibited uses may be granted by the General Manager or his designee, upon written request if it is found and determined that failure to do so would cause an unnecessary and undue hardship to the consumer or the public, including, but not limited to, adverse economic impacts.

C. Further Exceptions to Prohibited Uses. Exceptions to

prohibited uses shall be granted by the General Manager or his designee, upon written request if it is found and determined that failure to do so would cause an emergency condition affecting the health, sanitation, fire protection or safety of the consumer or the public.

Section 4 - Water Use Reduction Phase Implementation

- A. Initial Implementation. Phase II shall be effective upon the effective date of this ordinance, and the provisions of Phase II as set forth in Section 2 hereof shall apply to all water consumption on and after said date.
- B. Phase Change Initiation. 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 this ordinance. The Board of Directors shall, by resolution, 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.

Section 5 - Enforcement

Any consumer who violates the provisions of Section 2 herein may be cited by the District or its representative.

- A. Excess Use. When the requirements of Sections 2B, 2C, 2D, 2E or 2F are in effect, any customer using more than 125% of the basic allocation, for any billing period, will be warned that such use is considered waste of water, and that a reduction in use is required to avoid being subject to the enforcement provisions of subsection B.
- B. (1) First Violation. Any consumer found by the District to be violating the regulations and restrictions on water use set forth in this ordinance shall receive a written warning, which describes the penalty for subsequent violations.
- (2) Second Violation. In the event that a second violation is found by the District, the District may add a single \$50 charge to the next water bill of the premises for which or upon which the violation has occurred.

- (3) Third Violation. In the event that a third violation is found by the District, the District will discontinue the water service pursuant to the District's Rules and Regulations and the appropriate reinstatement charge will apply. Installation of flow restrictor may be required before service is reinstated. If the installation of a flow restrictor is required, the District may add a charge to the next water bill of the premises, that covers the cost of said installation.

Section 6 - Restrictions on New Connections

A new service connection shall only be granted upon the following conditions being met:

- A. Equipped with ultralow-flush toilets and low-flow showers, faucets and appliances.
- B. Equipped with an approved hot water circulation system.
- C. Use of drought tolerant or native plants for exterior landscaping.

Information regarding required devices and landscaping may be obtained at the District's office.

Section 7 - Notification

It is the responsibility of each property owner to notify any person or persons that use their premises, including, but not limited to weekend rentals, multi-unit apartments, motels and commercial buildings, of any water use restrictions currently in effect. The District will mail a notice to all property owners and customers of record within 10 days of the adoption date of a water use reduction phase change.

Section 8 - Tampering, Damage and Unauthorized Use of District Property

It is unlawful for any person to operate, damage or tamper with District valves, meters and appurtenances. Such unlawful use is governed by Section XIII of Resolution No. 200, as amended by Resolution No. 252 of this Board.

Section 9 - Use of Surcharge and Other Charges

The revenues collected by the District as a result of consumer use of water in excess of the basic allocation set forth in Section 2 and the charges to be added to consumer bills set forth in Section 5 shall be deposited into the operating fund as reimbursement for the District's costs and expenses of administration and enforcement of this ordinance, and to provide funding to promote, encourage and implement water conservation programs.

Section 10 - Rules and Regulations for Water Service

The provisions of this ordinance are in addition to all other District Rules and Regulations for Water Service , and in the event of a conflict between this ordinance and other rules and regulations relating to the same subject matter, the conflict shall, insofar as practical, be resolved to implement the purpose of this ordinance.

Sections 11 - Severability

If any section, subsection, sentence, clause or phrase of this ordinance is for any reason held to be unconstitutional or invalid by a court of competent jurisdiction, such decision shall not affect the remaining portions of this ordinance and those shall remain in full force and effect.

Sections 12 - CEQA Exemption

This Board finds and determines that the adoption of this ordinance and implementation of the measures set forth herein are exempt from requirements of the California Environmental Quality Act because of the necessity to mitigate an emergency.

Section 13 - Effective Date

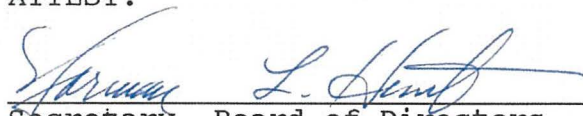
This ordinance shall take effect on March 1, 1991.

ADOPTED this 21st day of February, 1991.



President, Board of Directors
Crestline Village County Water District

ATTEST:



Secretary, Board of Directors
Crestline Village County Water District

CERTIFICATION

I hereby certify that the foregoing ordinance was duly and regularly adopted and passed by the Board of Directors of Crestline Village County Water District at a regular meeting thereof held on the 21st day of February, 1991 at Crestline, California, by the following vote of the members thereof:

AYES: Directors Olson, Anderson, Dorton, Wright, Huckell

NOES: None

ABSENT: None

ABSTAIN: None

Secretary - Board of Directors
Crestline Village County Water District

ORDINANCE NO. 30

AN ORDINANCE OF THE BOARD OF DIRECTORS OF
CRESTLINE VILLAGE WATER DISTRICT MODIFYING THE
BASIC MONTHLY WATER ALLOCATIONS SET FORTH IN THE
DISTRICT'S WATER CONSERVATION PROGRAM AND
AMENDING ORDINANCE NO. 29

WHEREAS, Crestline Village Water District receives more than 80% of its water supply from Crestline-Lake Arrowhead Water Agency (the "Agency") and depends on said water supply; and

WHEREAS, rainfall in the last five years and in this current water year has been substantially below normal in the watershed supplying the Agency and there is a serious drought which is causing water shortages in many communities of the State; and

WHEREAS, the production of the wells and springs that supply the balance of the District's water supply have also decreased due to the extended drought conditions; and

WHEREAS, these shortages have and will cause this District, its residents, businesses and industries to suffer adversely, such that an active water conservation program is essential to protect against drought and help alleviate against Statewide shortages; and

WHEREAS, the District, on February 21, 1991 adopted Ordinance No. 29 establishing a Water Conservation Program for the District in order to (1) protect the health, safety and welfare of the customers of the District, (2) assure the maximum beneficial use of the water supplies of the District, and (3) ensure that there will be sufficient water supplies to meet the basic needs of human consumption, sanitation and fire protection; and

WHEREAS, based on information provided by the District staff regarding the water conservation efforts of the District customers generally, and in order to more efficiently implement the District's Water Conservation Program, the District Board of Directors desires to modify the basic monthly water allocations for the six water conservation phases set forth in Ordinance No. 29; and

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

1. That the basic monthly water allocations set forth in Section 2 - Water Use Reduction Program, of Ordinance No. 29, be amended as follows:

PHASE I - 1,300 cubic feet per month.

PHASE II - 1,200 cubic feet per month.

PHASE III - 1,100 cubic feet per month.

PHASE IV - 900 cubic feet per month.

PHASE V - 800 cubic feet per month.

PHASE VI - 700 cubic feet per month.

2. The Secretary of the Board shall certify to the adoption of this Ordinance and shall cause the same to be posted within the District, and published as required by law.

3. Except as specifically modified by this Ordinance No. 30, Ordinance No. 29 remains in full force and effect.

4. The increase in basic monthly water allocations set forth in this Ordinance shall take effect at the earliest billing period feasible for the District customers.

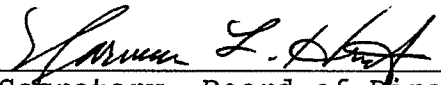
ADOPTED this 27th day of August, 1992.

CRESTLINE VILLAGE WATER DISTRICT

By: 

President

ATTEST:



Secretary, Board of Directors
Crestline Village Water District

CERTIFICATION

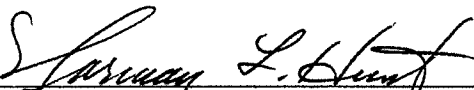
I hereby certify that the foregoing Ordinance was duly and regularly adopted and passed by the Board of Directors of Crestline Village Water District at a regular meeting thereof held on the 27th day of August, 1992 at Crestline, California, by the following vote of the members thereof;

AYES: Olson, Anderson, Huckell, Wright, Vukovich

NOES:

ABSENT:

ABSTAIN:



Secretary, Board of Directors
Crestline Village Water District

RESOLUTION NO. 279

RESOLUTION OF THE BOARD OF DIRECTORS OF
CRESTLINE VILLAGE WATER DISTRICT
CHANGING THE EXISTING PHASE OF WATER
CONSERVATION UNDER THE DISTRICT'S
WATER CONSERVATION PROGRAM

WHEREAS, the Board of Directors of Crestline Village Water District adopted Ordinance No. 29 on February 21, 1991, which Ordinance established the District's Water Conservation Program; and

WHEREAS, the District Board of Directors adopted Ordinance No. 30 on August 27, 1992, which ordinance modified the basic monthly allocations of water for the water conservation phases set forth in Ordinance No. 29; and

WHEREAS, pursuant to Section 4 of Ordinance No. 29, the District Board of Directors may, by resolution, order a change in the existing phase of water conservation; and

WHEREAS, the District is presently operating under Phase II, requiring a 10% reduction in water use within the District and establishing a basic allocation of 1200 cubic feet of water per month; and

WHEREAS, based on the recommendation and report of District Staff, the projected supply and demand for water throughout the District is such that Phase I provides for more appropriate conservation of water within the District;

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

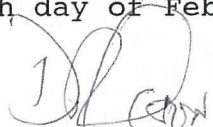
Section 1. Based on the report and recommendation of the District Staff, the projected water supply and demand for water in the District is such that water conservation efforts as provided in Phase I of the District's Water Conservation Program, implemented pursuant to Ordinance No. 29, as modified by Ordinance No. 30, are sufficient to encourage the conservation of water within the District's service area.

Section 2. Effective with the March 1993 billing period for the District's service areas, the conservation phase of the District's Water Conservation Program shall be changed from Phase II to Phase I.

Section 3. This Board finds and determines that reduction to Phase I is exempt from the requirements of the California Environmental Quality Act because it can be seen with certainty that there is no possibility that this activity may have a significant effect on the environment and the decision relates only to ongoing operation of District facilities.


Section 4. In accordance with Section 4 of Ordinance No. 29, within 10 days after the adoption date of this Resolution, the Secretary of the District shall publish the effective date of this phase change once in a local newspaper and shall mail notice of the phase change to all property owners and customers of record.

ADOPTED, SIGNED and APPROVED this 18th day of February, 1993.



President, Crestline
Village Water District

ATTEST:



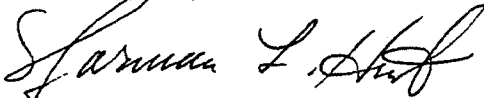
Secretary, Crestline
Village Water District

PUBLIC NOTICE

NOTICE OF CHANGE IN THE EXISTING STAGE OF
WATER CONSERVATION UNDER THE
CRESTLINE VILLAGE WATER DISTRICT'S
WATER CONSERVATION PROGRAM

Effective as of the March 1993 billing period, the Board of Directors of Crestline Village Water District adopted Resolution No. 279 and, thereby, changed the existing phase of water conservation under the District's Water Conservation Program. The District was operating under Phase II requiring a 10% reduction in water use and establishing a basic allocation of 1200 cubic feet of water per month. Pursuant to Resolution No. 279, the District will be operating under Phase I with a basic allocation of 1300 cubic feet of water per month.

February 22, 1993

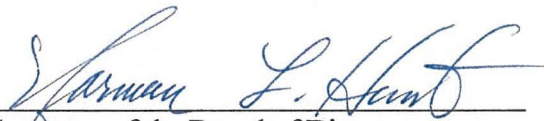


Norman L. Hunt
Secretary, Board of Directors
CRESTLINE VILLAGE WATER DISTRICT

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

I, NORMAN L. HUNT, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 18th day of February, 1993, and that it was adopted by the following roll call vote:

AYES: Olson, Anderson and Huckell
NOES:
ABSENT: Vukovich
ABSTAINED:


Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)

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

I, NORMAN L. HUNT, Secretary of the Board of Directors of the Crestline Village Water District, do hereby certify that the above and foregoing is a full, true and correct copy of Resolution No. 279 of said Board, and that the same has not been amended or repealed.

DATED: _____

Secretary of the Board of Directors
of Crestline Village Water District

(SEAL)