SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

UNITED STATES OF AMERICA
V.
FALLBROOK PUBLIC UTILITY DISTRICT, ET AL.

CIVIL NO. 51-CV-1247-GPC-RBB

MICHAEL J. PRESZLER, P.E.
WATERMASTER
169 PARKSHORE DRIVE, SUITE 110
FOLSOM, CA 95630
(916) 542-7895

November 2020

Table of Contents

Page No.

LIST OF TABLES

LIST OF FIGURES

APPENDICES

Appendix A-Production and Use Water year 2018-19

Appendix B-Production and Use Water Years 1965-66 through 2018-19

Appendix C-Substantial Users 2018-19

Appendix D-Water Quality Data

Map

List of abbreviations, acronyms, and initialisms contained in this document

AF – Acre Feet
BIA – Bureau of Indian Affairs
Camp Pendleton, or **CPEN** – Marine Corps Base Camp Pendleton
CASGEM – California Statewide Groundwater Elevation Monitoring
CDFW – California Department of Fish and Wildlife
cfs – Cubic feet per second
Court, or **District Court** - United States District Court for the Southern District of California
CUP – Santa Margarita River Conjunctive Use Project
CWRMA – Cooperative Water Resource Management Agreement
DWR – California Department of Water Resources
EMWD – Eastern Municipal Water District
EVMWD – Elsinore Valley Municipal Water District
FPUD – Fallbrook Public Utility District
GAMA – Groundwater Ambient Monitoring and Assessment
GW - Groundwater
IRWM – Integrated Regional Water Management
LSMRWM Program – Lower Santa Margarita River Watershed Monitoring Program
MCL – Maximum Contaminant Level
MGD – Million gallons per day
MOU – Memorandum of Understanding
MWD – Metropolitan Water District of Southern California
NWS – Naval Weapons Station Seal Beach, Detachment Fallbrook
Pechanga – Pechanga Band of Luiseño Mission Indians
RCWD – Rancho California Water District
Regional Board – Regional Water Quality Control Board, San Diego Region
RMWD – Rainbow Municipal Water District
SBM – San Bernardino Meridian
SGMA – Sustainable Groundwater Management Act
SMR – Santa Margarita River
SMRW, or **Watershed** – Santa Margarita River Watershed
SWP – State Water Project
SWRCB, or **Board** –State Water Resource Control Board
TDS – Total Dissolved Solids
TMDL – Total Maximum Daily Load
TVRWRF – Temecula Valley Regional Water Reclamation Facility
USGS – United States Geological Survey
VDC – Valle De los Caballos Recharge Area
WMWD – Western Municipal Water District
WY – Water Year

SECTION 1 – SUMMARY

Section 1 - A summary of the Santa Margarita River Watershed (SMRW or Watershed) Annual Watermaster Report for the 2018-19 Water Year (WY).

Section 2 - This Annual Watermaster Report is prepared pursuant to the U. S. District Court Order dated March 13, 1989. The Court retains jurisdiction over all surface flows of the SMRW and all underground waters determined by the Court to be subsurface flow of streams or creeks or which are determined by the Court to add to, support, or contribute to the Santa Margarita River (SMR) stream system. The SMRW is adjudicated, as to all underground waters, basins, surface flow, streams and subsurface flows that add to, support, or contribute to the SMR stream system. Local vagrant groundwaters that do not support the SMR stream system are outside Court jurisdiction.

Section 3 - Surface water flows varied in 2018-19. Flows for long-term stations on Murrieta Creek at Temecula, SMR near Temecula, and SMR at Ysidora were 164.0%, 160.5%, and 172.2% of their long-term averages, respectively. Flows at Temecula Creek near Aguanga were 111.6% of the long-term average. Private pumpers' direct surface diversions to use totaled 604 acre feet (AF), which reflects an increase of 5 AF from the prior year. The total quantity of surface water in storage in the Watershed on September 30, 2019, was 806,789 AF, of which 13,731 AF were SMR water and 793,058 AF were imported water.

Section 4 - Total local production, including groundwater extractions and surface diversions in 2018-19 was 29,002 AF. This compares with 32,958 AF in 2017-18, and represents a decrease of about 12.0%. Total annual local production for use for the period 2010 through 2019 is shown on Figure 1.1.

Section 5 - During 2018-19, 61,573 AF of net imports were distributed for use within the Watershed, as shown on Table 5.2. This compares with 75,119 AF in 2017-18, and represents a decrease of about 18.0%. Annual imports for the period 2010 through 2019 are shown on Figure 1.2 and Table 5.4. Exports of wastewater and native water for use outside the Watershed in 2018-19 were 19,171 AF. This compares with 17,661 AF in 2017-18, and represents an increase of approximately 8.5%.

Section 6 - Water rights consist primarily of riparian and overlying rights. Other rights include appropriative rights and federal reserved rights. Water purveyors in the SMRW also exercise groundwater appropriative rights. Except for surface water appropriative rights, water rights generally have not been quantified in the Watershed. Appropriative surface water rights on file with the State Water Resources Control Board (SWRCB) amount to 16,666.7 AF per year of direct diversion rights and 96,547.5 AF of active storage rights.

Figure 1.1

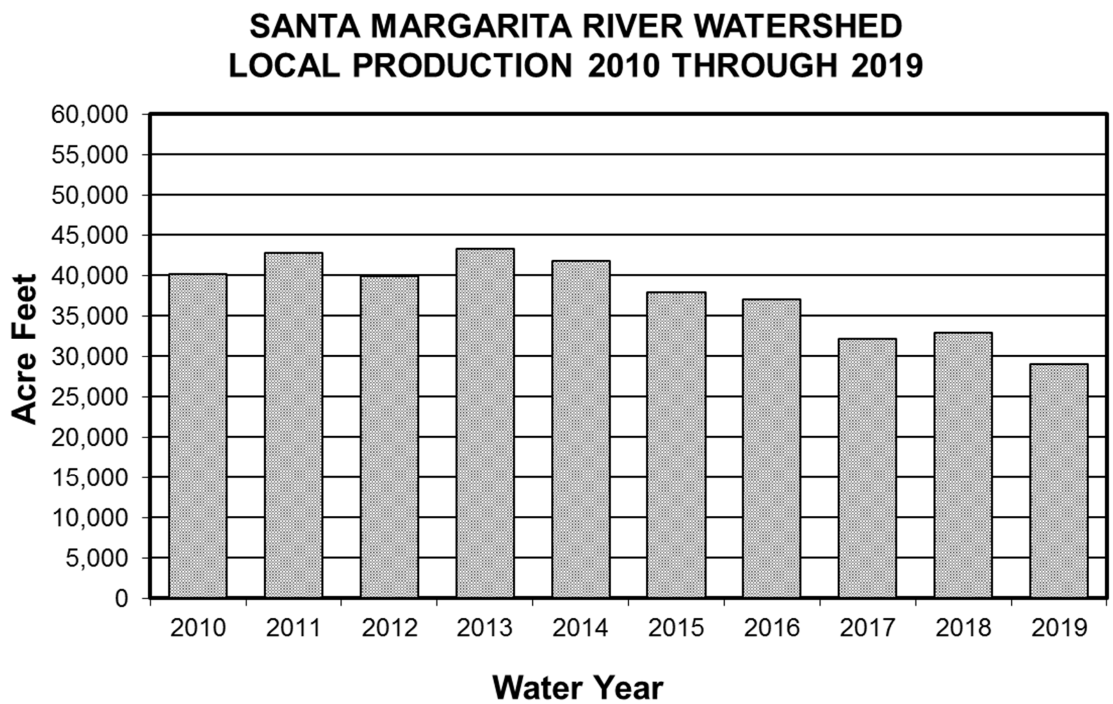
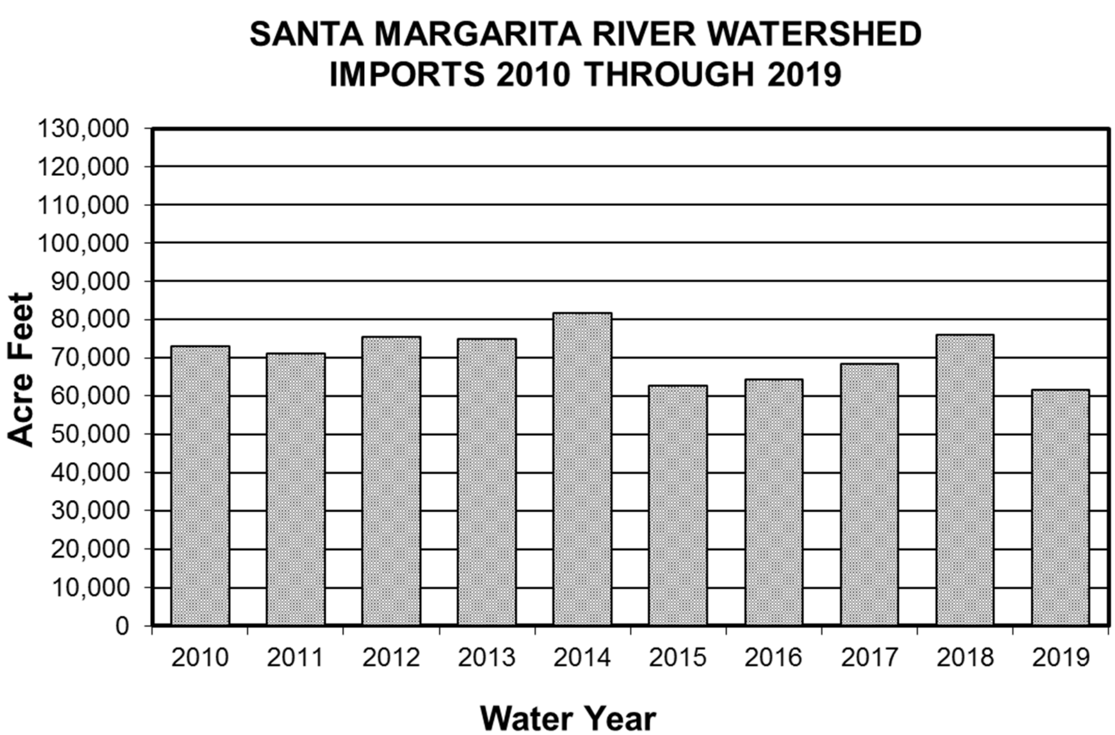


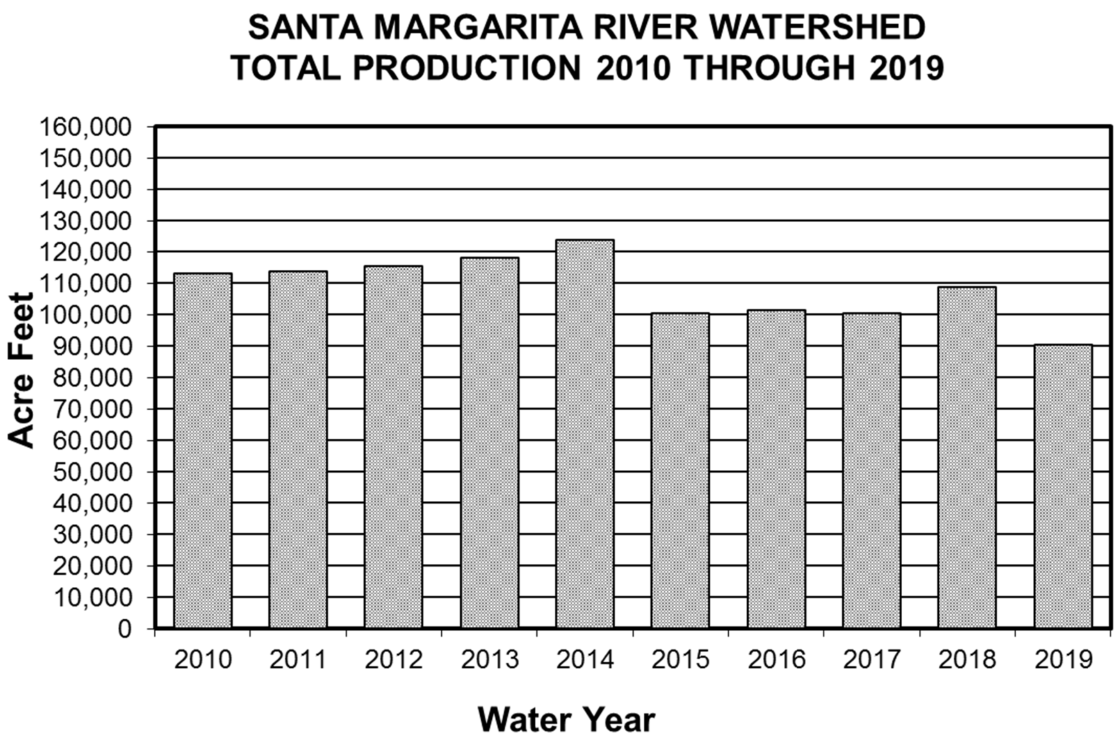
Figure 1.2



Section 7 – Total imported supplies plus local production during 2018-19 totaled 90,575 AF compared to 108,077 AF reported in 2017-18. Of that quantity, 22,148 AF were used for agriculture; 13,954 AF were used for commercial purposes; 41,477 AF were used for domestic purposes; 27 AF were discharged to Temecula Creek; 94 AF were discharged to Murrieta Creek; and 2,942 AF were discharged by Rancho California Water District (RCWD) from Metropolitan Water District of Southern California (MWD) Service Connection WR-34 and 65 AF from the potable connection during 2018-19, pursuant to the Cooperative Water Resource Management Agreement (CWRMA). It is noted, commercial use includes 468 AF of recycled water and thus the commercial use of production is 13,486 AF. The overall system loss was 4,091 AF. System gain or loss is the result of many factors including errors in measurement, differences between periods of use and periods of production, leakage and unmeasured uses. These data are shown on Table 7.1.

Total annual production for the period 2010 through 2019 is shown on Figure 1.3.

Figure 1.3



Section 8 - Use of water from small storage ponds may be unauthorized. Marine Corps Base Camp Pendleton (Camp Pendleton, or CPEN), represented by the United States, has taken the position that exportation of treated wastewater, the source of which is the native waters of the SMR system, without legal authority for such exportation, is an unauthorized use of water.

Section 9 - Threats to water supply include high nitrate levels in Rainbow Creek and Anza Valley in past years, potential overdraft conditions in the Murrieta-Temecula

Aguanga, and Anza groundwater basins, and salt balance issues in the upper Watershed. Additional threats have been recently identified, including high concentrations of nitrates in both Anza Valley and Murrieta-Temecula areas, arsenic, fluoride and manganese in the Murrieta-Temecula area, as well as the discovery of the quagga mussel in imported supplies.

Section 10 - The United States Geological Survey (USGS) monitored surface water quality at the Temecula gaging station on the SMR.

Groundwater samples from wells were analyzed for water quality by CPEN, Western Municipal Water District - Murrieta Division (WMWD), RCWD, the Pechanga Band (Pechanga), and in the Domenigoni Valley during 2018-19. The two primary constituents of interest are nitrates and total dissolved solids (TDS). The Basin Plan Objective for TDS of 750 mg/l met or exceeded in the eight wells sampled at CPEN. Two wells sampled by RCWD showed TDS concentrations exceeding 750 mg/l.

Section 11 - The CWRMA between CPEN and RCWD was approved by the District Court on August 20, 2002. During the 2019 calendar year, RCWD discharged 3,720 AF into the SMR to meet flow requirements under the CWRMA.

Section 12 - Projected Watermaster expenditures for the next five years are listed.

Section 13 – The actual Watermaster costs for 2018-19 were $836,054 (total operating expenses less depreciation) compared to the Court approved budget of $791,733, resulting in an unfavorable variance of $44,321. A total Watermaster budget for WY 2020-21 is proposed to be $814,811. This budget includes $551,691 for the Watermaster Office and $263,120 for operation of gaging stations and groundwater monitoring by USGS.

SECTION 2 - INTRODUCTION

2.1 Background

On January 25, 1951, the United States of America filed Complaint No. 1247 in the United States District Court for the Southern District of California (Court or District Court) to seek an adjudication of all water rights within the Santa Margarita River Watershed (SMRW, or Watershed). The Final Judgment and Decree was entered on May 8, 1963, and appealed to the U.S. Court of Appeals. A Modified Final Judgment and Decree was entered on April 6, 1966. Among other things, the Decree provides that the Court:

> . . . retains continuing jurisdiction of this cause as to the use of all surface waters within the watershed of the Santa Margarita River and all underground or sub-surface waters within the watershed of the Santa Margarita River, which are determined in any of the constituent parts of this Modified Final Judgment to be a part of the sub-surface flow of any specific river or creek, or which are determined in any of the constituent parts of this Modified Final Judgment to add to, contribute to, or support the Santa Margarita River stream system.

In March 1989, the Court issued an Order appointing a Watermaster to administer and enforce the provisions of the Modified Final Judgment and Decree and subsequent orders of the Court. The appointing Order described the Watermaster's powers and duties as well as procedures for funding and operating the Watermaster's office. Also in 1989, the Court appointed a Steering Committee that at the conclusion of 2017-18 was comprised of representatives from the United States, representing Marine Corps Base Camp Pendleton (CPEN), Eastern Municipal Water District (EMWD), Fallbrook Public Utility District (FPUD), Metropolitan Water District of Southern California (MWD), Pechanga Band of Luiseño Mission Indians (Pechanga), Western Municipal Water District (WMWD), and Rancho California Water District (RCWD). The purposes of the Steering Committee are to assist the Court, to facilitate litigation, and to assist the Watermaster.

2.2 Authority

Section II of the appointing Order requires that the Watermaster submit a written report containing findings and conclusions to the Court promptly after the end of each Water Year (WY).

2.3 Scope

The subjects addressed in this report are responsive to Section II of the appointing Order. Information and data contained in this report are based on information reported to the Watermaster by the various water users within the Watershed and others. Therefore, the Watermaster does not guarantee the completeness and accuracy of the information reported and presented in this report, although most of the data presented are based on measurements. Estimates by the Watermaster are so noted.

Page Intentionally Blank

SECTION 3 - SURFACE WATER AVAILABILITY AND USE

3.1 Surface Flow

Over the years, flows in the SMRW have been measured at the stations listed on Table 3.1. A number of these stations have been discontinued. During 2018-19, the USGS operated 13 stations under an agreement with the Watermaster. These include three stations where Riverside County Flood Control and Water Conservation District share the local costs with the Watermaster. In addition to stream flows, the United States Geological Survey (USGS) also measures water surface elevation and precipitation at Vail Lake.

The USGS also operates several stations in the Watershed under contract with CPEN. These include stream gaging stations on Fallbrook Creek and on the outlet channel and spillway for Lake O'Neill. The USGS also operates a tidal water level recorder at the mouth of the SMR.

Monthly flows for stations in 2018-19 are shown on Table 3.2. Those flows consist of final USGS discharge determinations approved for publication by the USGS. Official USGS discharges for 2018-19 are published by the USGS at the following website: *http://waterdata.usgs.gov/ca/nwis/sw*.

In considering the historical record of flow at these stations, it should be recognized that the long-term averages include variations in Watershed conditions such as level of development, groundwater production, return flows, impoundments and vegetative use as well as hydrologic conditions, changes in gaging station locations and other factors. Descriptions of the various historical locations of gaging stations may be found in the publication, Water Resources Data - California, which was published annually by the USGS in hard copy form through WY 2004. For subsequent years, the gaging station descriptions can be found at the website provided above.

TABLE 3.1

SANTA MARGARITA RIVER WATERSHED
STREAM GAGING STATIONS THROUGH WATER YEAR 2018-19

Station Name	Station No.	Area Sq. Miles	Entity	Period Of Record
Temecula Creek Near Aguanga	11042400	131	USGS	August 1957 to Present
Wilson Creek Above Vail Lake Near Radac	11042490	122	USGS	October 1989 to September 1994
Temecula Creek At Vail Dam	11042520	320	USGS	February 1923 to October 1977
Vail Lake Near Temecula (Reservoir Storage)	11042510	320	USGS	October 1948 to Present
Pechanga Creek Near Temecula	11042631	13.1	USGS	October 1987 to Present
Warm Springs Creek Near Murrieta	11042800	55.4	USGS	October 1987 to Present
Murrieta Creek Near Murrieta	11042700	30.0	USGS	October 1997 to Present
Santa Gertrudis Creek Near Temecula	11042900	90.2	USGS	October 1987 to Present
Murrieta Creek At Temecula	11043000	222	USGS	October 1924 to Present
Santa Margarita River Near Temecula	11044000	588	USGS	February 1923 to Present
Rainbow Creek Near Fallbrook	11044250	10.3	USGS	November 1989 to Present
Santa Margarita River At FPUD Sump 1/	11044300	620	USGS	October 1989 to Present
Sandia Creek Near Fallbrook	11044350	21.1	USGS	October 1989 to Present
Santa Margarita River Tributary Near Fallbrook	11044600	0.52	USGS	October 1961 to September 1965
DeLuz Creek Near DeLuz	11044800	33.0	USGS	October 1992 to Present
DeLuz Creek Near Fallbrook 2/	11044900	47.5	USGS/ USMC	October 1951 to September 1967 October 1989 to September 1990 April 2002 to February 2003
Santa Margarita River Near DeLuz Station	11045000	705	USGS	October 1924 to September 1926
Fallbrook Creek Near Fallbrook 3/	11045300	6.97	USGS/ USMC	October 1993 to Present
Santa Margarita River At Ysidora 4/	11046000	723	USGS	February 1923 to Present
Santa Margarita River At Mouth Near Oceanside	11046050	739	USGS	October 1989 to October 2010 October 2017 to Present

1/ Record includes measurements for Santa Margarita near Fallbrook (#11044500) for October 1924 to September 1980.
2/ Recorded by USMC, CPEN October 1967 to 1977.
3/ Recorded by USMC, CPEN for October 1964 to September 1977 and October 1989 to September 1993.
4/ Station temporarily operated as SMR at USMC Diversion Dam near Ysidora (#11045050) from February 26, 1999 to September 27, 2001.

TABLE 3.2

SANTA MARGARITA RIVER WATERSHED
MEASURED SURFACE WATER FLOW
2018-19
Quantities in Acre Feet[1/]

GAGING STATION	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	WY TOTAL	WY AVERAGE THROUGH 2019	YEARS OF RECORD THROUGH 2019
Temecula Creek Near Aguanga (11042400)	0	0	0	80	4,489	740	196	114	41	4	0	0	5,665	5,076 7/	62
Pechanga Creek Near Temecula 2/ (11042631)	0	0	0	0	557	0	0	0	0	0	0	0	557	389 7/	32
Warm Springs Creek Near Murrieta (11042800)	8	9	171	329	5,393	286	0	28	0	0	0	0	6,224	2,822 7/	32
Murrieta Creek Near Murrieta 3/, 4/ (11042700)	0	0	23	66	3,526	383	6	0	0	0	0	0	4,004	3,009 7/	22
Santa Gertrudis Creek Near Temecula (11042900)	39	22	161	240	3,045	332	0	0	0	0	0	0	3,839	2,435 7/	32
Murrieta Creek At Temecula (11043000)	31	262	643	1,275	13,168	1,376	14	69	8	7	4	7	16,862	10,279 7/	89
Santa Margarita River Near Temecula (11044000)	253	523	938	1,769	18,743	1,434	284	663	549	469	461	439	26,524	16,530 7/ 20,390	71 (1949-2019) 25 (1924-48)
Rainbow Creek Near Fallbrook (11044250)	13	63	71	190	1,963	506	91	95	16	4	1	0	3,012	2,217 7/	29
Santa Margarita River At FPUD Sump (11044300)	314	639	1,171	2,145	32,016	2,743	809	1,217	697	245	513	663	43,173	27,700 7/	29
Sandia Creek Near Fallbrook (11044350)	102	116	191	478	3,714	1,501	803	540	276	163	116	95	8,096	6,115 7/	29
DeLuz Creek Near DeLuz (11044800)	0	0	0	473	7,984	1,653	272	134	11	0	0	0	10,527	7,072 7/	26
Fallbrook Creek Near Fallbrook (11045300)	0	2	50	227	1,154	170	67	79	29	5	7	4	1,795	950 7/ 1,462 6/	26 (1994-2019) 12 (1965-76)
Santa Margarita River At Ysidora (11046000)	0	0	568	2,976	38,262	6,080	1,516	1,741	722	211	31	1	52,107	30,254 5/, 7/ 31,390	71 (1949-2019) 25 (1924-48)

1/ Totals may not add due to rounding.
2/ In summer 2006, gaging location was moved upstream 0.4 miles from prior location to current location 100 feet upstream of MWD pipe crossing, 0.4 miles upstream of the Rainbow Canyon Road/Old Highway 395 Bridge.
3/ Previously published as Murrieta Creek at Tenaja Road.
4/ Continuous record stopped on February 22, 2005, due to bridge construction. Only discharge measurements were taken from February 2005 until September 2007.
5/ Includes record of two years at Santa Margarita River at USMC Diversion Dam near Ysidora station.
6/ Includes wastewater flows.
7/ Annual averages computed by Watermaster Office.

Total flows at four long-term stations, for 2017-18 and 2018-19, are compared with their averages in the tabulation below. Average flows for the Santa Margarita River (SMR) gaging stations near Temecula and near Ysidora are shown for two periods: before and after Vail Dam was constructed (1923 to 1948, and 1949 to 2019). Values displayed are in acre feet (AF).

	TOTAL FLOW		AVERAGE FLOW	
	WY 2018 AF	WY 2019 AF	Through WY 2019 AF	
Temecula Creek Near Aguanga (11042400)	145	5,665	5,076	(1957-2019)
Murrieta Creek At Temecula (11043000)	2,117	16,862	10,279	(1925-2019)
Santa Margarita River Near Temecula (11044000)	6,928	26,524	16,530 20,390	(1949-2019) (1923-1948)
Santa Margarita River At Ysidora* (11046000)	6,530	52,107	30,254 31,390	(1949-2019) (1923-1948)

* At various locations

The foregoing tabulation indicates the flows for 2018-19 were above normal for all four stations. Flows for long-term stations on Temecula Creek near Aguanga, Murrieta Creek at Temecula, SMR near Temecula and SMR at Ysidora were 111.6%, 164.0%, 160.5% and 172.2% of their long-term averages, respectively.

The SMR near Temecula station is of particular interest relative to discharge requirements specified in the Cooperative Water Resource Management Agreement (CWRMA) between CPEN and RCWD, as described in Section 11. The long-term time series for annual streamflow for SMR near Temecula is provided on Figure 3.1, showing the 2018-19 flows were approximately 383% of the flows for the prior year.

Figure 3.1

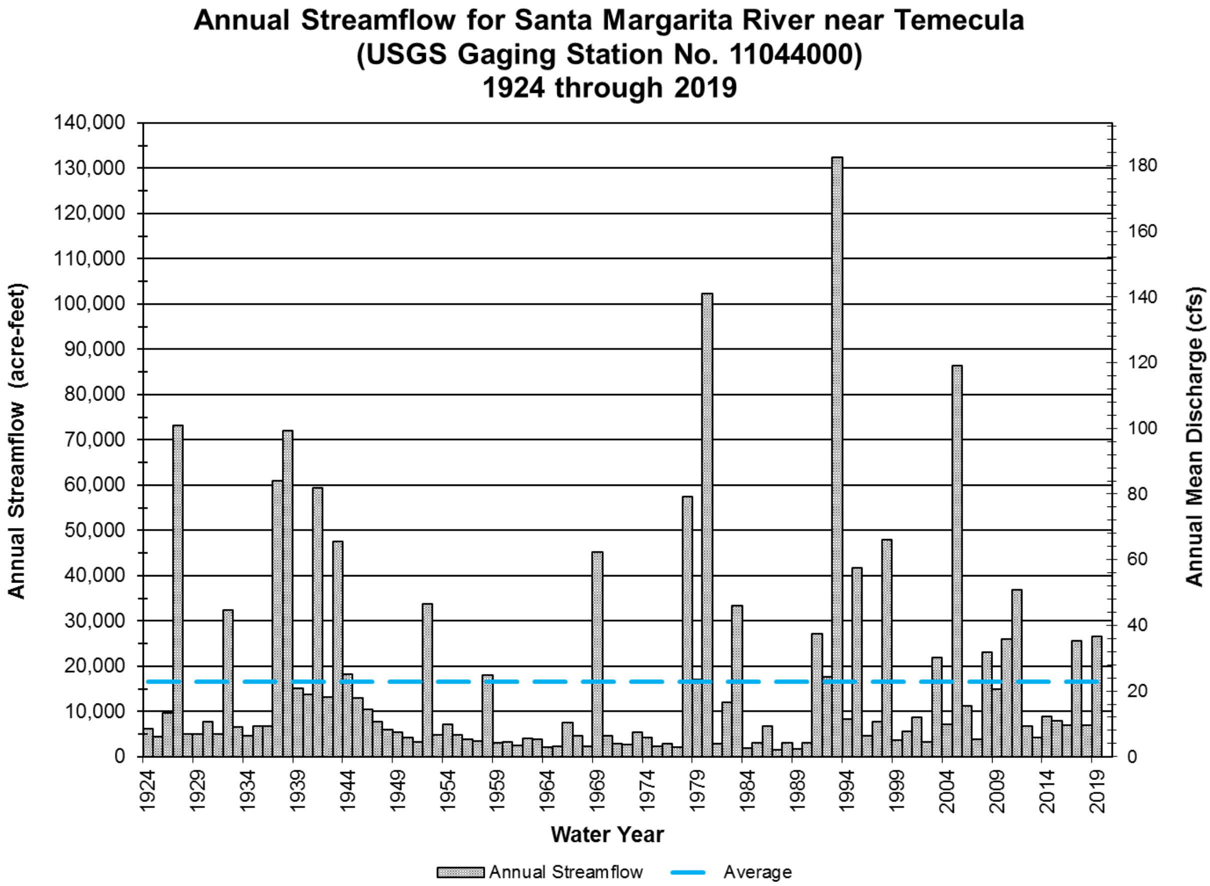
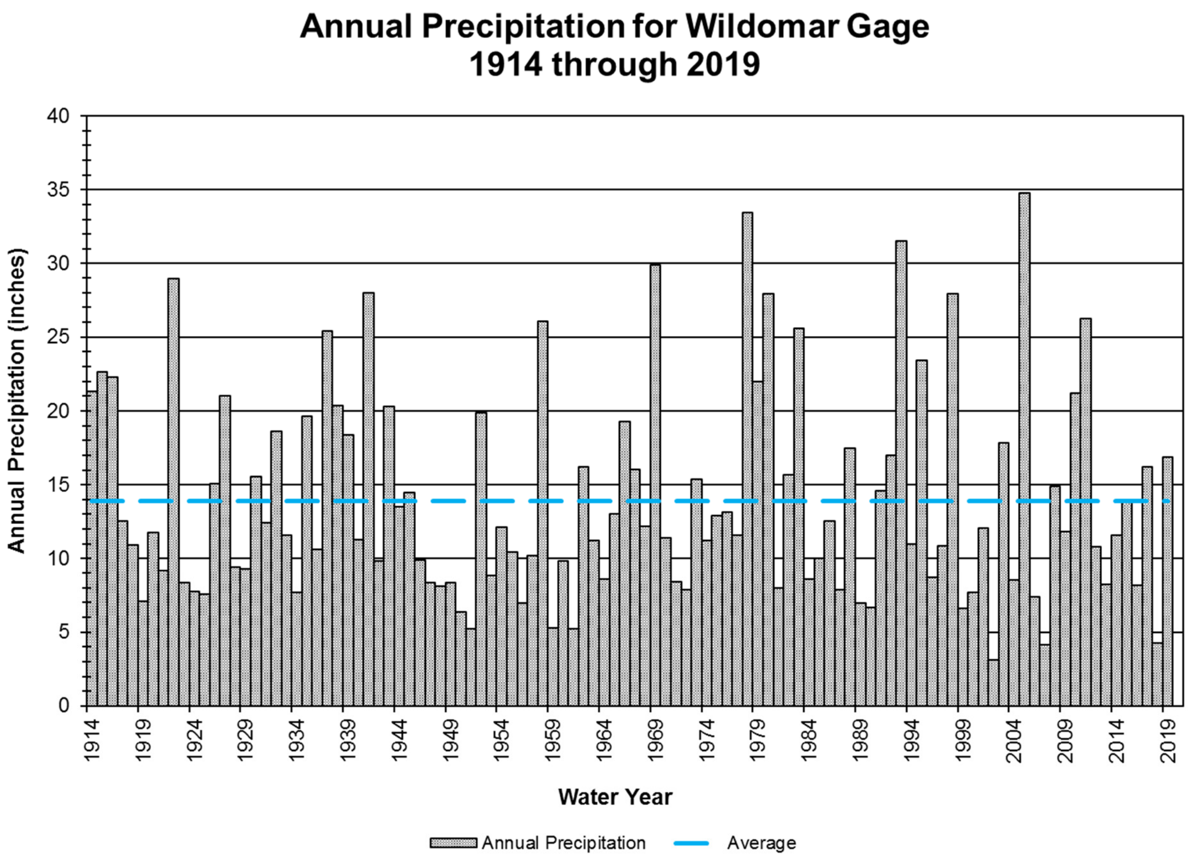


Figure 3.2 shows the long-term time series for annual precipitation for the Wildomar gage maintained by the Riverside County Flood Control and Water Conservation District. The Wildomar gage is specified in the CWRMA for determining hydrologic year types in establishing RCWD discharge requirements to meet flows for the SMR near Temecula. The long-term average precipitation for the Wildomar gage for the period 1914 through 2019 is 13.92 inches. The reported precipitation for 2018-19 is 16.88 inches, which is in the third quartile for the period of record.

Monthly flows shown on Table 3.2 consist primarily of naturally occurring surface runoff, including return flows, except for RCWD discharges into the SMR and some of its tributaries. Most of the RCWD discharges are pursuant to the CWRMA. During 2018-19, the total discharges from MWD Service Connection WR-34 into the SMR equaled 2,942 AF. The outlet from Service Connection WR-34 is located on the SMR immediately upstream of the Temecula gaging station. In 2009, RCWD extended a pipeline from its distribution system to discharge at the same location as the Service Connection WR-34. During 2018-19, there were 65 AF of discharges from the potable connection to the SMR and there were no discharges to Murrieta Creek from the System River Meter.

Figure 3.2



During 2018-19, RCWD also released 94 AF from wells into Murrieta Creek, and 27 AF from wells into Temecula Creek.

3.2 Surface Water Diversions

Surface diversions to surface water storage and groundwater storage are shown on Table 3.3 for Vail Lake and Table 3.4 for Lake O'Neill. In general, diversions to surface storage at Vail Lake and Lake O'Neill are computed as being equal to inflow less spill, however, diversion to surface storage at Vail Lake excludes inflow during the period from May 1 through October 31 when Permit 7032 does not allow such diversions. Inflow to Vail Lake is calculated as the sum of evaporation, spill, releases and change of storage. Inflow into Vail Lake during the period when diversions are not permitted is released and not credited to groundwater storage.

Direct surface diversions for 2018-19 are shown on Table 3.5. The use is primarily irrigation. Estimated consumptive uses, losses and returns are also shown.

3.3 Water Storage

Major water storage facilities in the SMRW are listed on Table 3.6, together with the water in storage on September 30, 2018 and September 30, 2019. Total SMR stream system water in storage at the end of 2018-19 totaled 13,731 AF, compared to 9,935 AF at the end of the previous year. Imported water in storage in Lake Skinner and Diamond Valley Lake is shown on Table 3.6.

TABLE 3.3

SANTA MARGARITA RIVER WATERSHED

SURFACE WATER DIVERSIONS TO STORAGE FOR VAIL LAKE

2018-19

Quantities in Acre Feet

	Surface Water Storage		
	2016-17	**2017-18**	**2018-19**
Storage End of Prior Year	8,280	11,420	9,289
Inflow - Total	6,261	1,270	7,210
Inflow to be Bypassed 1/	345	541	552
Spill	0	0	0
Diversions to Surface Storage 2/	5,916	729	6,658
Annual Evaporation	2,510	2,940	2,752
Releases - Total	611	461	1,107
Release to GW Storage 3/ 4/	266	(80)	555
Change of Storage	3,140	(2,131)	3,351
Storage End of Year	11,420	9,289	12,640
	Groundwater Storage		
Recharge Release from Vail Lake	266	(80)	555
Recovered Vail Lake Recharge Water from GW Storage 5/	266	(80)	555

Data reported by RCWD except end of year storage reported by USGS.

1/ Inflow to be bypassed Oct 1 through Oct 31 and May 1 through Sept 30.

2/ Inflow less Spill less Inflow to be Bypassed.

3/ Total Release less Inflow to be Bypassed.

4/ Vail Lake operations shown in Table 3.3 reflect water year operations to be consistent with reporting in the Annual Watermaster Report. However, Permit 7032 specifies calendar year reporting and a continuous operating season of May through October for bypasses overlapping two water years. The value of 555 AF for Release to GW Storage is correct but misleading because the bypass season continues into October 2019. Inspection of RCWD records for May through October 2019 shows total Inflow to be bypassed in the amount of 578 AF with Total Releases of 666 AF, resulting in 88 AF of excess releases during the Permit bypass season of May through October 2019.

5/ See Table 7.4.

TABLE 3.4

SANTA MARGARITA RIVER WATERSHED

SURFACE WATER DIVERSIONS TO STORAGE FOR LAKE O'NEILL

2018-19

Quantities in Acre Feet

	Surface Water Storage		
	2016-17	**2017-18**	**2018-19**
Storage End of Prior Year	418	1,133	646
Inflow - Total	2,821 1/	238 2/	2,521 3/
Spill	1,022 7/	0	1,009 7/
Diversions to Surface Storage	1,799 4/	238 4/	1,512 4/
Annual Evaporation	372	364	350
Releases - Total	267	107	52
Release to GW Storage	267	107	52
Apparent Seepage to GW	444 5/	253 5/	664 5/
Change of Storage	715	(486)	445
Storage End of Year	1,133	646	1,091
	Groundwater Storage		
Recharge Release from Lake O'Neill	711 6/	360 6/	716 6/
Deliveries to Recharge Ponds	636	2,900 8/	1,393
Indirect Recharge	612	0	1,058
TOTAL	1,959	3,260	3,167

1/ 660 AF diverted from the Santa Margarita River, 1,448 AF estimated inflow from Fallbrook Creek, 473 AF from local runoff, and 240 AF from rainfall on lake surface.
2/ 0 AF diverted from the Santa Margarita River, 135 AF from Fallbrook Creek, 47 AF estimated from local runoff, and 56 AF from rainfall on lake surface.
3/ 0 AF diverted from the Santa Margarita River, 1,794 AF from Fallbrook Creek, 535 AF from local runoff, and 192 AF from rainfall on lake surface.
4/ Inflow less Spill.
5/ Includes seepage losses, leakage through flashboards and gates, and unaccounted for water.
6/ Includes Release to GW Storage and Apparent Seepage to GW from Lake O'Neill.
7/ Estimated.
8/ Estimated discharge into Percolation Pond 1 from Conjunctive Use Project river dewatering operations (October 2017 to July 2018)

TABLE 3.5

SANTA MARGARITA RIVER WATERSHED
SURFACE WATER DIVERSIONS TO USE
2018-19
Quantities in Acre Feet

DIVERTER	Surface Diversions	Consumptive Use 1/	Loss 2/	Return 3/
James Carter	52.0	38.4	5.2	8.4
Chambers Family, LLC	8.0	5.9	0.8	1.3
Sage Ranch Nursery	100.0	73.8	10.0	16.2
Val Verde Partners 4/	5.0	3.7	0.5	0.8
Wilson Creek Development, LLC	380.0	280.4	38.0	61.6
Cahuilla Indian Reservation	17.9	13.2	1.8	2.9
San Diego State University 4/	41.4	30.6	4.1	6.7
TOTAL	604.4	446.0	60.4	97.9

1/ Consumptive Use equals 82% of Diversions less Losses.
2/ Losses equal 10% of Diversions.
3/ Returns equal 18% of Diversions less Losses.
4/ Water Use Report for current year not received. Values taken from last year reported.

TABLE 3.6

SANTA MARGARITA RIVER WATERSHED

SURFACE WATER IN STORAGE

2018-19

Quantities in Acre Feet

Santa Margarita River Storage	Total Capacity 1/	Water in Storage 9/30/2018	Water in Storage 9/30/2019
Dunn Ranch Dam	90	0	0
Upper Chihuahua Creek Reservoir	47	0	0
Vail Lake	49,370	9,289	12,640
Lake O'Neill	1,670	646	1,091
SUBTOTAL	**51,177**	**9,935**	**13,731**
Imported Water Storage			
Lake Skinner	44,000	38,241	37,205
Diamond Valley Lake	810,000	705,905	755,853
SUBTOTAL	**854,000**	**744,146**	**793,058**
TOTAL STORAGE	**905,177**	**754,081**	**806,789**

1/ Capacity shown is current capacity reported by owner. Original capacity or decreed capacity may not be reflected in this table.

Page Intentionally Blank

SECTION 4 - SUBSURFACE WATER AVAILABILITY

4.1 General

Much of the water from the SMR stream system is obtained by pumping subsurface water. The Court has identified two basic types of subsurface water in the interlocutory judgments incorporated into the 1966 Modified Final Judgment and Decree. One type is vagrant, local, percolating waters that do not add to, support or contribute to the SMR or its tributaries. Such waters have been determined to be outside the continuing jurisdiction of the Court. These waters are typically found in the basement complex and/or residuum deposits in the Watershed.

Other subsurface waters were found by the Court to add to, support and contribute to the SMR and/or its tributaries. Aquifers containing such waters have been designated by the Court as younger alluvium and older alluvium. Younger alluvial deposits are commonly exposed along streams and in valleys. Older alluvium may be found underneath younger alluvium and is not limited to areas along stream channels. Older alluvium may or may not be exposed at ground surface. The use of subsurface water found in younger and older alluvium is generally under the continuing jurisdiction of the Court and is reported herein.

4.2 Extractions

Total production of SMR water by substantial water users in the Watershed from all sources is listed on Table 4.1 by hydrologic area, along with estimated consumptive use and return flows. Recovery of imported water that has been directly recharged is not included on Table 4.1. Substantial water users include water purveyors as well as private irrigators who irrigate eight acres or more or use an equivalent quantity of water.

In 2018-19, production by water purveyors totaled 24,835 AF (including surface water appropriations), compared to 26,739 AF in 2017-18. Monthly quantities are shown in Appendix A and annual production for the period 1966 through 2019 is shown in Appendix B.

The quantities of subsurface extractions by private irrigators are based on the irrigated acreage and the crop type. These quantities are reported in Appendix C to total 3,564 AF in 2018-19. Of the subsurface extractions, 82% is estimated to have been consumptively used and 18% to have been return flow. Return flow is that portion of the total deliveries that is not consumed. Although return flows average about 18%, such flows are affected with the type of use (domestic, commercial and irrigation), the type of irrigation application (drip, micro-sprinkler, furrow), and exports from watersheds.

TABLE 4.1

SANTA MARGARITA RIVER WATERSHED

SANTA MARGARITA RIVER WATER PRODUCTION BY SUBSTANTIAL USERS[1/]

2018-19

HYDROLOGIC AREA	WATER PURVEYOR PRODUCTION ACRE FEET	OTHER IRRIGATED ACRES*	OTHER IRRIGATION PRODUCTION ACRE FEET*	TOTAL GROUNDWATER PRODUCTION ACRE FEET	SURFACE WATER DIVERSIONS ACRE FEET*	TOTAL PRODUCTION ACRE FEET	ESTIMATED CONSUMPTIVE USE ACRE FEET 2/, 3/	ESTIMATED RETURN FLOW ACRE FEET 3/
Wilson Creek **Above Aguanga GWA** Includes Anza Valley *(Lake Riverside, Anza MWC, (Cahuilla, Ramona, Hamilton Schools)*	457	286 [4/]	172	628	18	646	528	118
Temecula Creek **Above Aguanga GWA** *(Quiet Oaks MHP)*	16	235	965	981	0	981	805	177
Aguanga GWA *(Outdoor Resorts, Jojoba Hills Cottonwood Elementary)*	319	438	1,361	1,679	385	2,064	1,661	403
Upper Murrieta Creek (Warm Springs Creek above 7S/3W-14)	0	0	0	0	0	0	0	0
Lower Murrieta Creek (Santa Gertrudis/Tucalota Creek above 7S/2W-18 -- Includes FPUD Diversion from Lake Skinner)	89	310	44	132	100	232	182	50
Murrieta-Temecula GWA *(RCWD**, WMWD (Murrieta Division), EMWD, and Pechanga)*	18,341	651	654	18,995	52	19,047	15,614	3,433
Santa Margarita River Below the Gorge								
DeLuz Creek	0	197	282	282	8	290	237	53
Sandia Creek	0	69	82	82	0	82	68	15
Rainbow Creek	0	0	0	0	0	0	0	0
Santa Margarita River *(USMC)*	5,614	20	4	5,618	41	5,660	1,745	387
TOTAL	**24,835**	**2,205**	**3,564**	**28,398**	**604** [5/]	**29,002**	**20,840**	**4,635**

1/ Totals may not add due to rounding.
2/ Estimated consumptive use is equal to 82% of Total Groundwater Production plus 82% of Surface Diversions less 10% (CU = .82{GW + .90 * SW}).
3/ CPEN consumptive use and return flow calculated for portion of production used within SMRW. Portion of production used within SMRW for 2018-19 equals 2,087 AF.
4/ Includes lands overlying deep aquifer in Anza Valley.
5/ Includes surface water diversion for irrigation, commercial and domestic use.
* Data taken from Appendix C.
** RCWD pumped an additional 175 AF that was exported to the San Mateo Watershed and an additional 37 AF pumped directly into recycled water system.

4.3 Water Levels

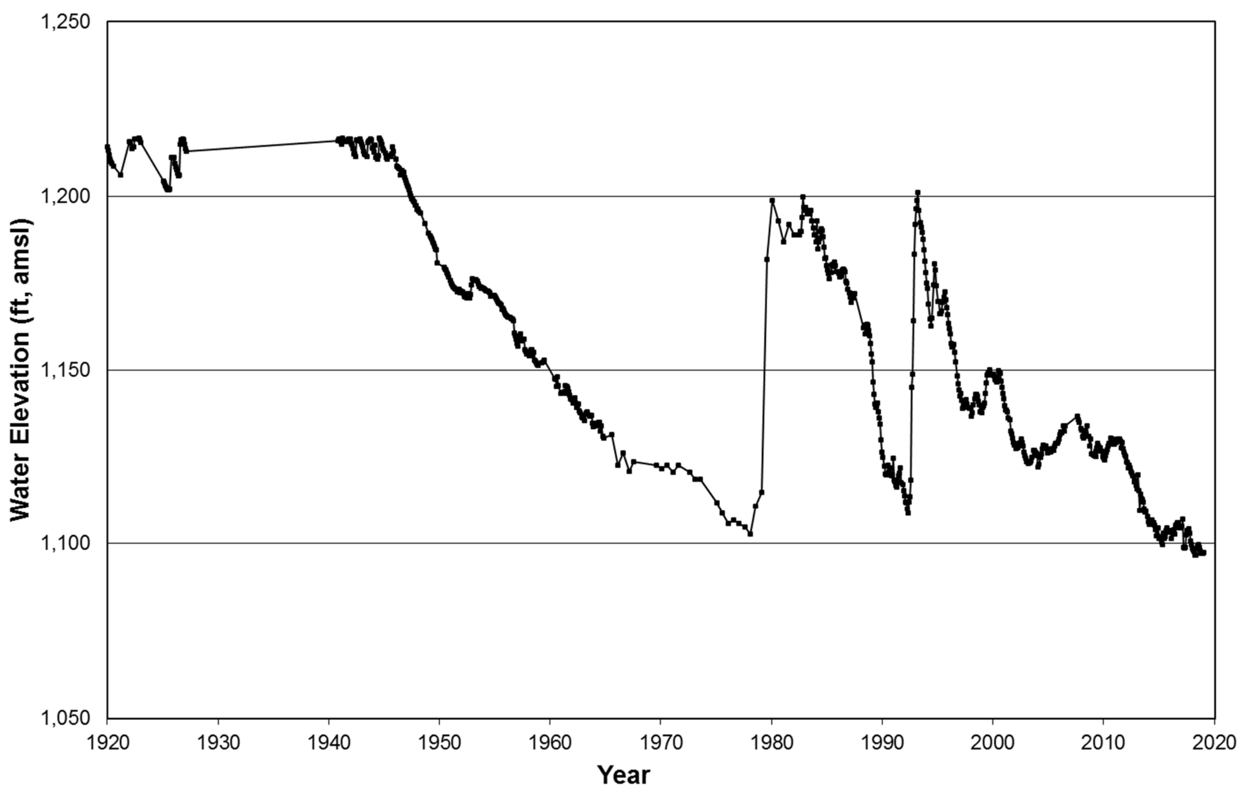
Water levels in selected wells in the Watershed are measured periodically by various entities. Historical water levels in wells at various locations in the Watershed are shown on Figures 4.1, 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.

Figure 4.1 shows water levels in Well No. 8S/2W-12H1 (Windmill Well) located in the RCWD service area downstream from Vail Lake. Note the extended drawdown from 1945 to 1978, the major recoveries during the wet years in 1980 and 1993, and the effect of relatively dry years after 1980 and after 1993. Water levels decreased by 0.5 feet between September 30, 2018 and September 30, 2019. The Windmill Well is located in Pauba Valley about 1.5 miles downslope from the Valle de los Caballos recharge area (VDC), where releases from Vail Lake as well as imported water are recharged. In 2018-19, 16,667 AF of imported water were recharged in the VDC of which 78% was recovered in the same year. As shown on Appendix Table A-7, a total of 1,003 AF of previously recharged import water was recovered from groundwater storage in 2018-19.

Figure 4.1

WATER LEVEL ELEVATIONS

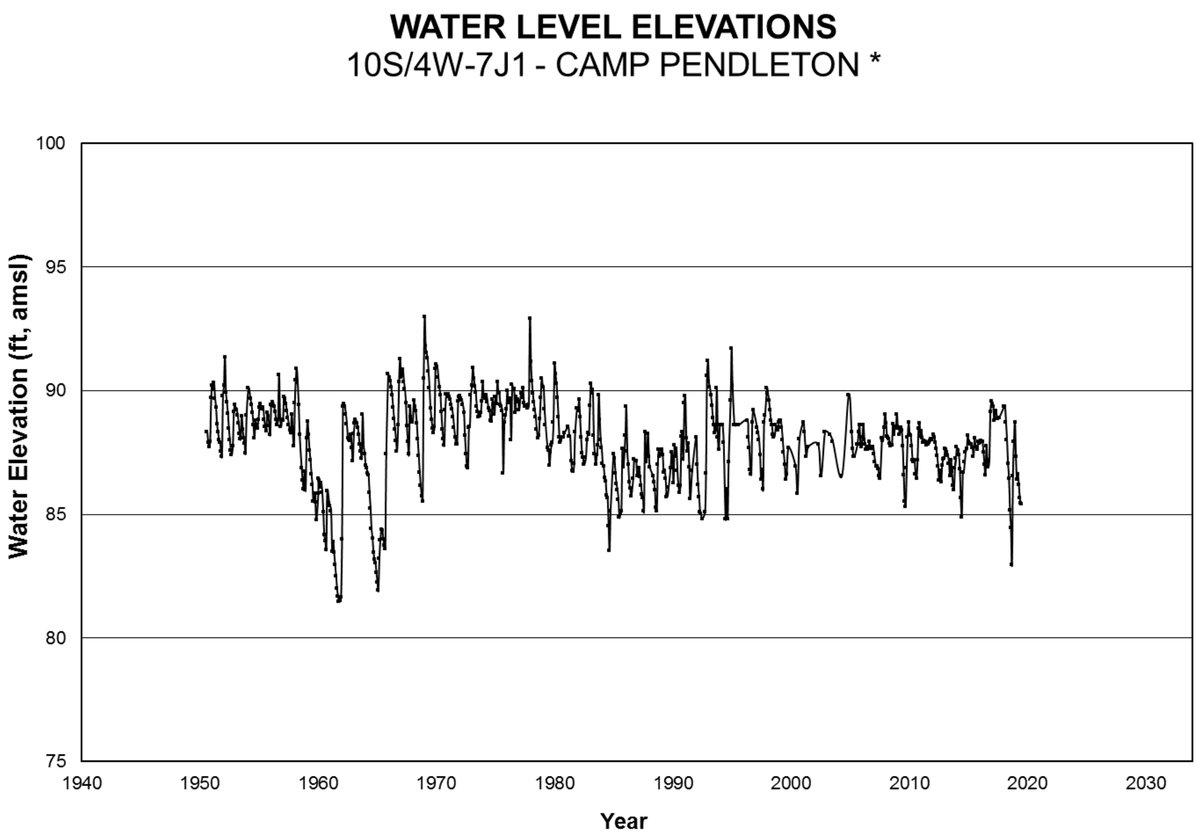
8S/2W-12H1 - RCWD WINDMILL WELL NO. 417



Collar El. 1,216.7 Feet; Depth 515 Feet; Drilled in Alluvium
Ref: RCWD reports (1920-2019)

Figure 4.2 shows water levels at CPEN in Well No. 10S/4W-7J1, a monitoring well located in the Upper Sub-basin. Fluctuations in recent years illustrate recharge during the winter months and drawdown each summer, with the water levels ranging from approximately 79 to 91 feet in elevation. Water levels in Well 7J1 increased 0.25 feet in the period between September 2018 and September 2019.

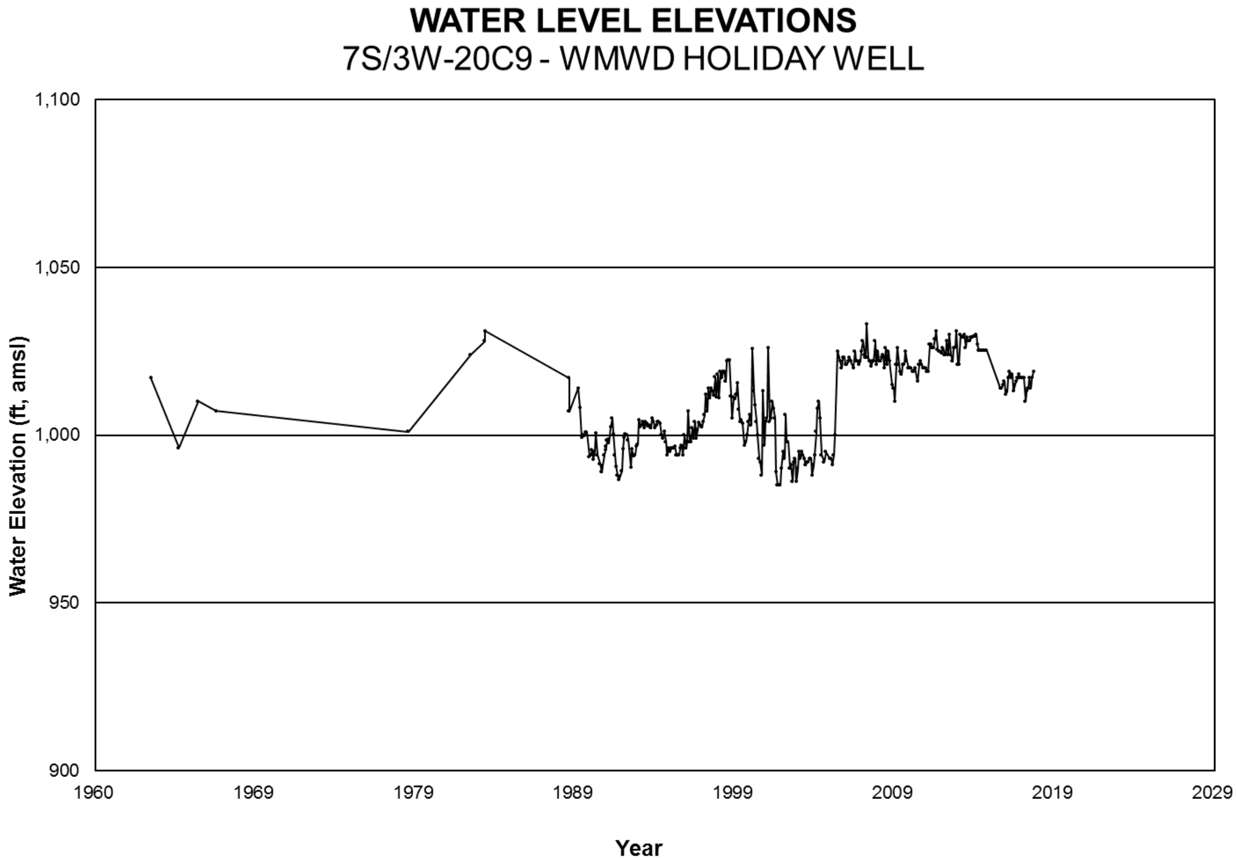
Figure 4.2



Ground El. 93.8 Feet; Depth 141 Feet; Perf. Unknown; Drilled in Alluvium
CPEN
* Data shown for Well No. 10S/4W-7J1 except for period October 1999 through September 2007 data shown for Well No. 10S/4W-7J4.

Figure 4.3 shows water levels from Holiday Well No. 7S/3W-20C9 in the Murrieta Division service area of WMWD. The Holiday Well was used as a production well until February 2006, but now is used only as a monitoring well. No water level measurements were taken during 2018-19.

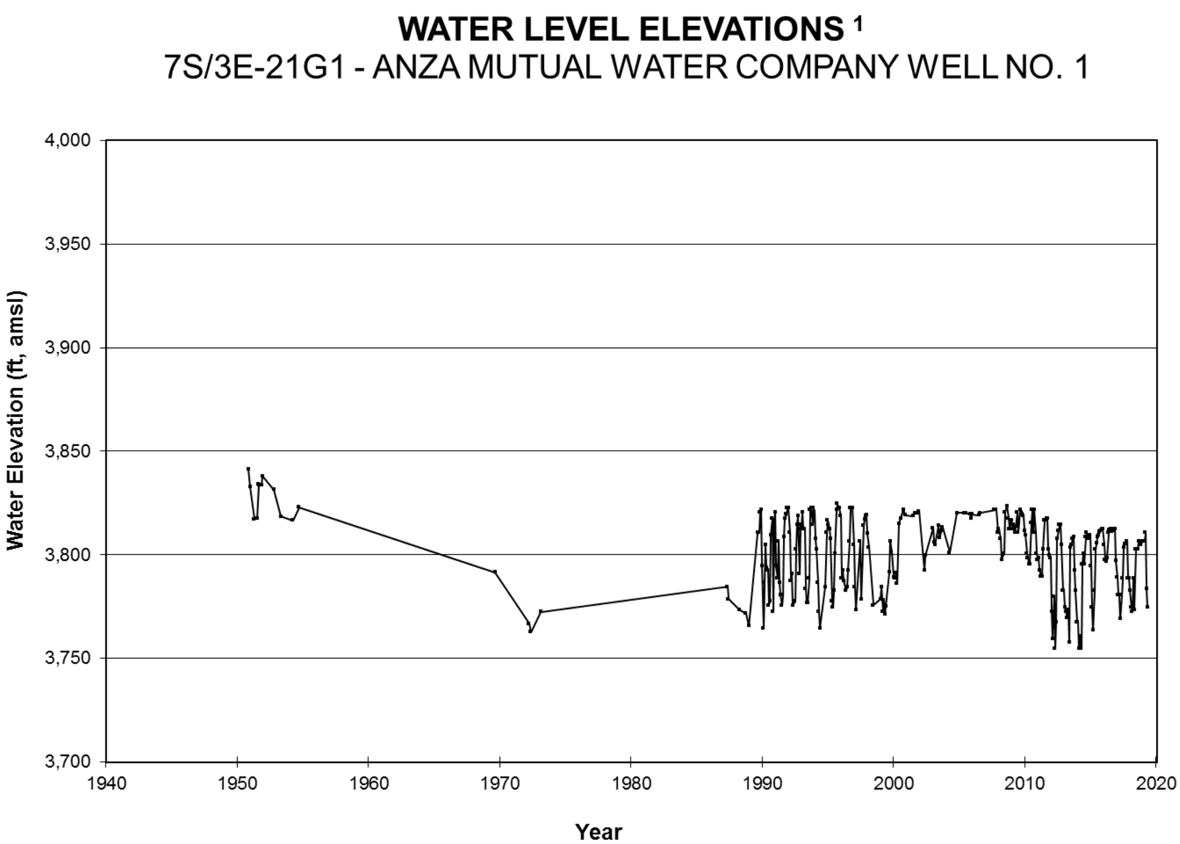
Figure 4.3



Ground El. 1,090 Feet; Depth 307 Feet; Perf. 60 - 307 Feet
WMWD

Figure 4.4 shows water levels for Well No. 7S/3E-21G1, Anza Mutual Water Company Well No. 1, a production well located in the Anza Valley. Water levels in this well increased by 1 foot between September 30, 2018 and September 30, 2019. As may be noted from Figure 4.4, recent measurements show annual 50 foot fluctuations in groundwater levels at this well, partly in response to the operation of nearby irrigation wells.

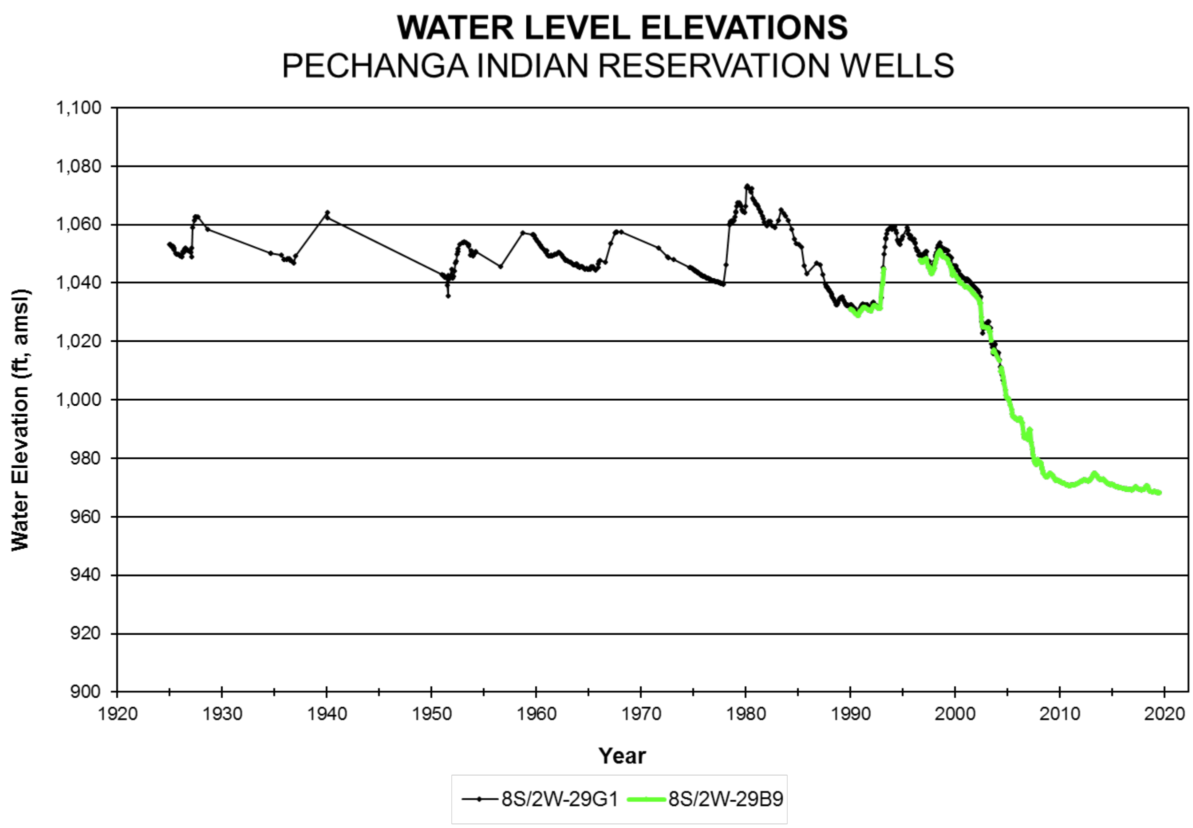
Figure 4.4



[1] Static water levels plotted after April 1999
Ground El. 3,862.6 Feet; Depth 260 Feet; Perf. 20 - 260 Feet; Drilled in Alluvium
Anza Mutual Water Co. Well No. 1 (1987-2019); DWR Bulletin 91-22 (1950-73)

Figure 4.5 shows water levels at Well No. 8S/2W-29G1, located in Wolf Valley on the Kelsey Tract of the Pechanga Indian Reservation. The well is not used for water production. Water levels collected since 1925 reflect unconfined groundwater levels. As shown on Figure 4.5, the groundwater levels have fluctuated within an approximate 40 foot range above and below elevation 1,050 feet in response to wet years and dry periods until recently. In November 2004, this well went dry due to the preceding relatively dry hydrological conditions and pumping of the nearby New Kelsey Well on the Pechanga Reservation. In order to continue to monitor water levels on the Pechanga Indian Reservation, water levels for Well No. 8S/2W-29B9 are also shown on Figure 4.5. Well No. 8S/2W-29B9 is completed in the younger alluvium. As shown on Figure 4.5, water levels for Well No. 8S/2W-29B9 coincide with water levels for the common period of record for Well No. 8S/2W-29G1. Water levels in Well 8S/2W-29B9 decreased by 1.0 feet between August 31, 2018 and September 3, 2019.

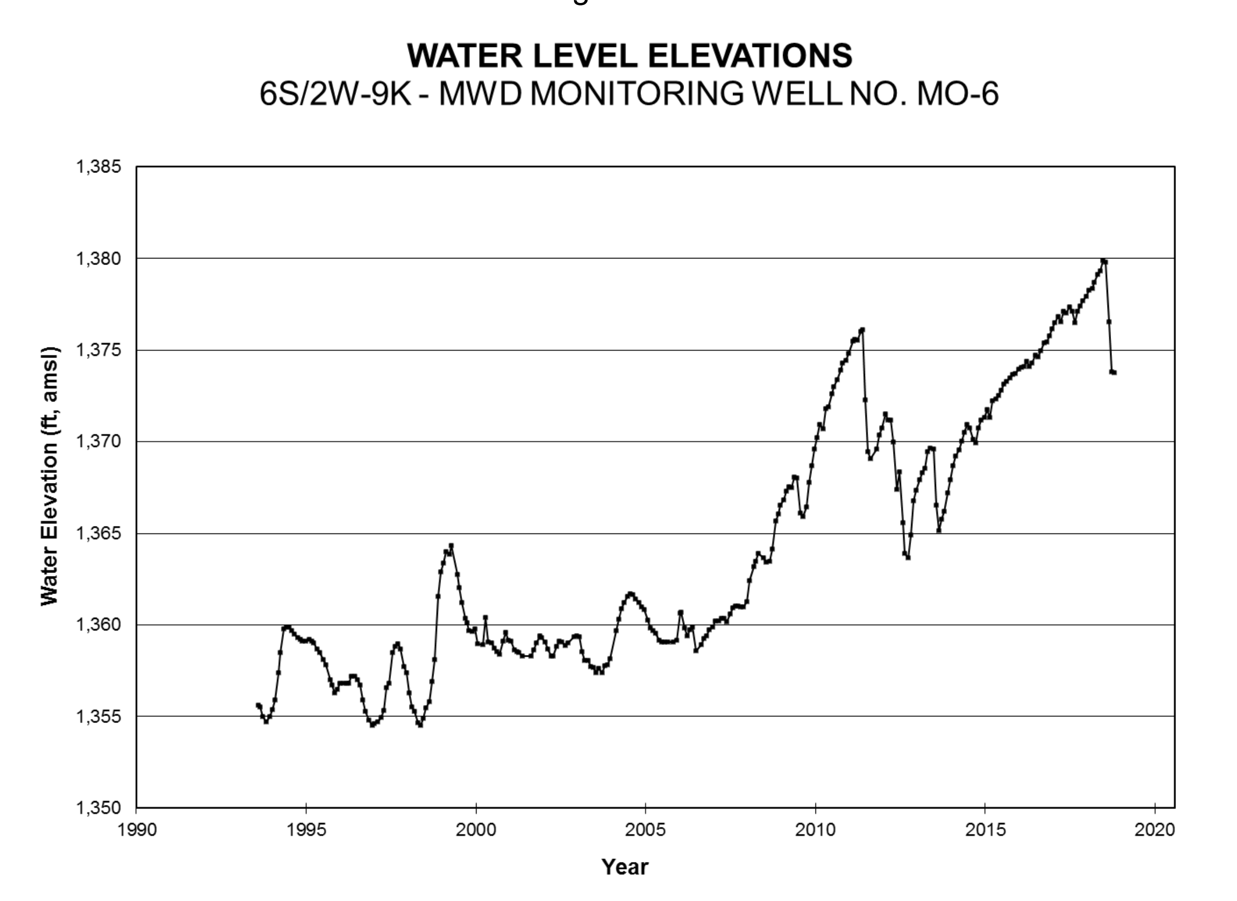
Figure 4.5



8S/2W-29G1: Ground El. 1,091.1 Feet; Depth 159.1 Feet
8S/2W-29B9: Ground El. 1,075.93 Feet; Depth 113.0 Feet
U.S. Geological Survey Records

Figure 4.6 shows water levels for Well No. 6S/2W-9K, MWD Monitoring Well No. MO-6, located in the Domenigoni Valley. Water levels in this well decreased by 3.6 feet between October 3, 2018 and October 1, 2019.

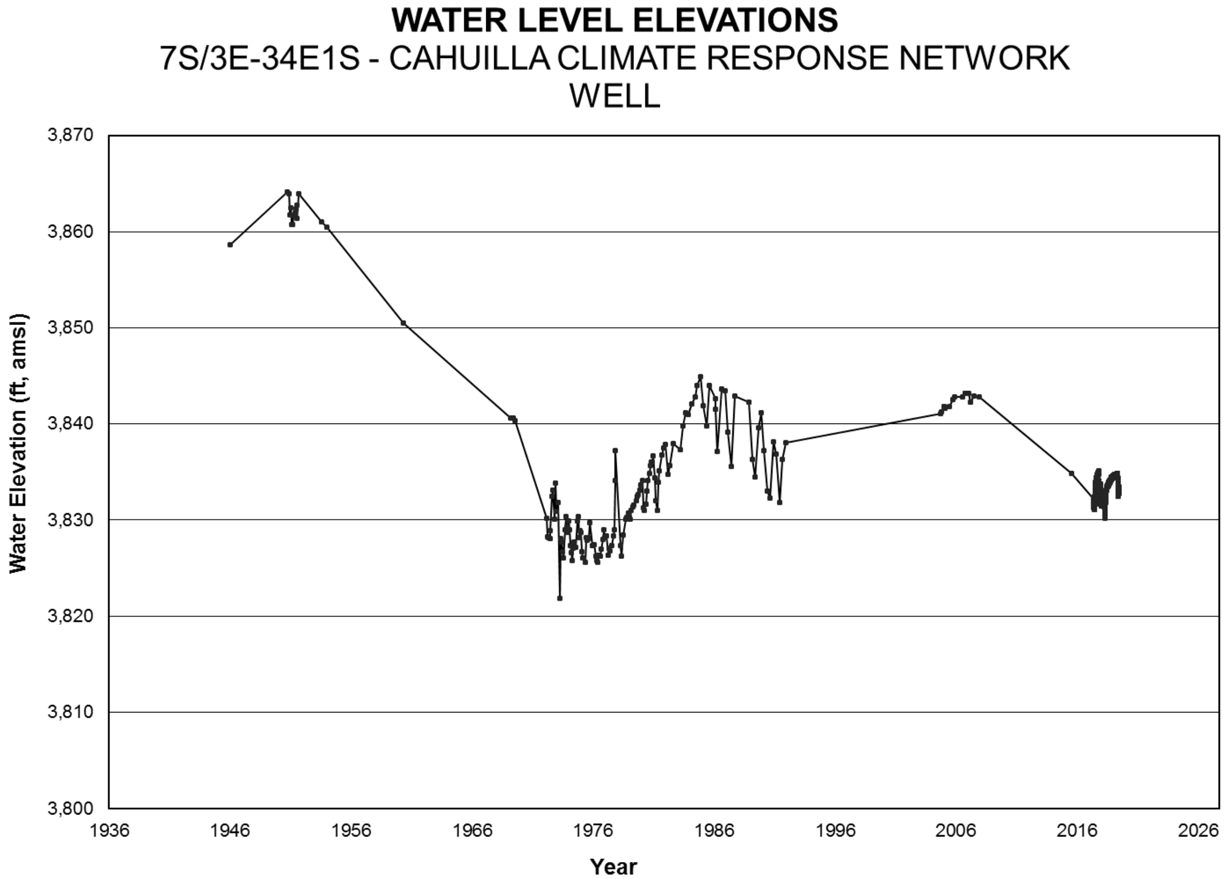
Figure 4.6



Ground El. 1,445.8 Feet; Depth 115 Feet; Perf. 30.5 - 110 Feet; Drilled in Alluvium
MWD

Figure 4.7 displays the historical record for the USGS/Cahuilla Climate Response Network Well No. 7S/3E-34E1S, dating back to 1946. The USGS established the existing well as a Climate Response Network well and automated water level measurements commenced at a 15-minute interval on August 31, 2017. As shown on Figure 4.7, water levels for the well increased by 0.2 feet between September 30, 2018, and September 30, 2019.

Figure 4.7



7S/3E-34E1S: Ground El. 3,898.65 Feet above NAVD88; Depth 182 Feet
USGS Records

Changes in water levels in the above noted wells between the end of the previous water year and the end of 2018-19 are shown below:

Well	Water Elevation WY 2018 Feet	Water Elevation WY 2019 Feet	Change in Water Level Feet	
RCWD 8S/2W-12H1	1,098.1	1,097.6	Down	0.5
CPEN 10S/4W-7J1	85.2 (R)	85.4	Up	0.25
WMWD 7S/3W-20C9	*1,019.0	n/a	n/a	---
Anza MWC 7S/3E-21G1	3,773.6	3,774.6	Up	1.0
Pechanga IR 8S/2W-29B9	969.2	968.2	Down	1.0
MWD 6S/2W-9K	**1,377.4	1,373.8	Down	3.6
Cahuilla/USGS 7S/3E-34E1S	3,833.3	3,833.5	Up	0.2

* Water level measurement taken 8/31/2018
** Water level measurement taken 10/3/2018
(R) - Revised

4.4 Groundwater Storage

Bulletin 118 Update 2003 prepared by the California Department of Water Resources (DWR) describes three groundwater basins that are located entirely within the SMRW: Santa Margarita Valley, Temecula Valley, and Coahuila (Cahuilla) Valley. These basins are also known as the Santa Margarita Groundwater Basin, the Murrieta-Temecula Groundwater Basin, and the Anza Groundwater Basin. A fourth groundwater basin identified in Bulletin 118, the San Jacinto Groundwater Basin, is partially located within the Watershed. The portion of the San Jacinto Groundwater Basin located within the Watershed is known as the Domenigoni Sub-basin.

Groundwater storage in each of the Santa Margarita, Murrieta-Temecula, and Anza basins is described in this section. Information related to groundwater storage for the Domenigoni Sub-basin is currently in development and is expected to be included in future Reports, as appropriate.

4.4.1 Santa Margarita Groundwater Basin

The Santa Margarita Groundwater Basin is located along the SMR at CPEN and includes three sub-basins: Upper, Chappo, and Ysidora. Useable groundwater storage in place is summarized on Table 4.2 and change in useable groundwater storage is summarized on Table 4.3. Table 4.2 shows that the total combined storage for all the sub-basins between the depths of 5 and 100 feet is 48,100 AF. However, much of that storage is below sea level. Thus, the useable capacity is considered to be 28,700 AF as shown on Table 4.2. It may be noted that classification of storage as useable is made without allowances for maintenance of riparian habitat.

Beginning in 2017, annual change in groundwater storage is computed using two methods: Watermaster Office method, and Groundwater Level Polygon method. Both methods use the average September groundwater levels (end of water year) to calculate the change in storage as well as specific yield for the sub-basins published by Worts and Boss (1954).

The Watermaster Office method uses average groundwater levels from one well located in each of the three sub-basins (Upper, Chappo, and Ysidora), along with the specific yield and sub-basin acreage, to determine the change in usable groundwater storage. In 2018-19, useable groundwater storage in place was computed for all three sub-basins to be 26,342 AF. The useable storage in place for the three sub-basins amounted to 24,463 AF in 2017-18. Thus, using the Watermaster Office method, there was an increase in groundwater storage in place of approximately 1,879 AF for 2018-19. Results are displayed in Table 4.2.

The Groundwater Level Polygon method uses average groundwater levels from fifteen key wells located throughout the sub-basins, along with specific yield and sub-basin acreage to determine the change in usable groundwater storage. It should be noted, the sub-basin acreage used in the Groundwater Level Polygon method differ when compared to the acreage used for the Watermaster Office method. In 2018-19, change in useable groundwater storage in place was computed for all three sub-basins and indicated an increase of approximately 1,891 AF. Results for WYs 2015 through 2019 are displayed in Table 4.3.

TABLE 4.2

SANTA MARGARITA RIVER WATERSHED
GROUNDWATER STORAGE - SANTA MARGARITA GROUNDWATER BASIN
Watermaster Office Method
2018-19
Quantities in Acre Feet

	Sub-basin			
I. Available Storage	Upper	Chappo	Ysidora	Total
A. Total Storage 1/	12,500	27,000	8,600	48,100
B. Useable Storage	12,500	15,000 2/	1,200 3/	28,700
II. Unused Storage				
A. Wells used for Depth	10S/4W-7J1	10S/4W-18L1 4/	11S/5W-11D4	
B. Land Surface Elevation - Feet 5/	93.8	75.9	18.8	----
C. End of Water Year Water Level - Feet	85.4	67.1	8.5	----
D. Depth to Water - Feet 6/	8.4	8.8	10.3	----
E. Depth below 5 Feet	3.4	3.8	5.3	----
F. Average Area - Acres 7/	840	2,500	1,060	----
G. Specific Yield 8/	0.216	0.130	0.090	----
H. Unused Storage below 5 Feet	617	1,235	505.6	2,358
III. Useable Storage in Place 9/	11,883	13,765	694	26,342
IV. Useable Storage in Place 2017-18	11,847	11,913	704	24,463
V. Change in Storage 2018-19	36	1,853	(10)	1,879

1/ Computed by USGS (Worts, F. C., Jr. and Boss, R. F., *Geology and Ground-Water Resources of Camp Pendleton, CA, July 1954)* as the storage between depths of 5 and 100 feet.
2/ Storage between 5 foot depth and sea level.
3/ Storage between 5 foot depth and 10 feet above sea level.
4/ Well 10S/4W-18L1 was destroyed during 2012, depth to water extrapolated from measurements for Well 10S/5W-13G1.
5/ Reported by CPEN based on NAVD88 datum.
6/ Reported by CPEN as average values for month of September unless noted otherwise.
7/ Average area estimated over depth interval for unused storage.
8/ From Worts and Boss for depth interval of 5 to 50 feet.
9/ Useable storage includes stored water reserved for riparian habitat; however specific amount stored for such purposes not delineated.

TABLE 4.3

SANTA MARGARITA RIVER WATERSHED

CHANGES IN USABLE GROUNDWATER STORAGE

SANTA MARGARITA RIVER GROUNDWATER BASIN

Groundwater Level Polygon Method

							Water Depth at End of Water Year Feet					Change in Depth Feet					Change in Storage in Water Year Acre Feet				
Sub-area	Key Aquifer	Specific Yield/ Storativity	Key Well		LSD ft, msl	Aquifer Area Acres	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
1	Upper	0.216	5E3		120.5	186	17.9	18.9	17.2	21.6	15.5	(0.43)	(1.09)	1.73	(4.39)	6.10	(17)	(44)	69	(176)	245
2	Upper	0.216	8D5		109.0	81	14.7	15.6	12.1	17.0	12.7	(0.38)	(0.84)	3.46	(4.88)	4.30	(7)	(15)	61	(85)	75
3	Upper	0.216	8D4		104.3	92	14.5	15.2	11.9	16.0	12.6	0.32	(0.70)	3.30	(4.10)	3.40	6	(14)	65	(81)	67
4	Upper	0.216	7H3		101.0	63	12.9	12.2	9.9	13.7	10.4	(1.62)	0.66	2.36	(3.82)	3.30	(22)	9	32	(52)	45
5	Upper	0.216	8E4		97.6	77	8.8	8.6	8.2	11.9	8.8	(0.13)	0.13	0.41	(3.68)	3.10	(2)	2	7	(61)	52
6	Upper	0.216	7J1		93.8	125	5.7	6.0	4.9	8.6	8.9	1.41	(0.33)	1.12	(3.68)	(0.30)	38	(9)	30	(99)	(8)
7	Upper	0.216	18B2	4/, 5/	90.7	162	8.1	8.2	7.3	10.7	9.2	1.76	(0.10)	0.90	(3.37)	1.50	61	(4)	31	(118)	52
8	Chappo	0.130	18L1	1/	75.9	655	10.5	12.1	9.4	14.4	8.8	3.27	(1.60)	2.66	(5.00)	5.60	279	(136)	227	(426)	477
	Chappo	0.130	13G1	2/	123.3	572	57.4	59.0	56.3	61.3	55.7	3.27	(1.60)	2.66	(5.00)	5.60	243	(119)	198	(372)	416
9	Chappo	0.130	6W-06C	5/	57.4	927	11.5	11.1	10.2	11.2	10.0	5.19	0.48	0.83	(0.98)	1.20	625	58	100	(118)	145
10	Chappo	0.130	2201	5/	46.6	420	8.6	8.0	6.2	8.6	4.3	2.94	0.61	1.86	(2.44)	4.30	161	33	102	(133)	235
11	Ysidora	0.090	35J2	3/	27.0	555	12.2	10.5	7.4	9.2	7.8	(0.95)	1.72	3.10	(1.87)	1.40	(47)	86	153	(92)	70
12	Ysidora	0.090	35R4		26.3	114	11.9	12.0	8.7	10.4	8.5	0.20	(0.14)	3.35	(1.71)	1.90	2	(1)	34	(18)	20
13	Ysidora	0.090	2B2		25.3	287	9.5	9.3	8.2	8.5	8.5	0.43	0.17	1.06	(0.28)	0.00	11	4	27	(7)	0
14	Ysidora	0.090	2E1		17.2	179	1.9	2.0	1.3	2.1	2.0	0.66	(0.11)	0.71	(0.80)	0.10	11	(2)	11	(13)	2
																Upper	57	(74)	295	(672)	527
																Chappo	1,308	(164)	626	(1,049)	1,273
																Ysidora	(24)	88	227	(129)	91
																Total	**1,342**	**(150)**	**1,148**	**(1,850)**	**1,891**

Specific Yield from Worts and Boss (1954). Values are for the 5-50 foot zones, except for 35R1, which is from the 50-100 foot zone.
Average September groundwater levels are based on hourly data collected from leveloggers installed in each well.

1/ Well 18L1 was destroyed. GWL adjusted 0.6 feet from Well 13G1 measured groundwater level.
2/ Well 13G1 is located in older alluvium on the bluff to the north side of the Chappo Subbasin. There is approximatly 20 feet of saturated aquifer (Worts and Boss, 1954 cross sections).
3/ Well 35J2 datalogger unavailable for 2016 water depth, field measured water level from 10/26/2016 was used.
4/ Well 18B2 was missing September 2017 data, September 2017 data for MW 26019 was used in its place.
5/ Missing historcal September data filled as follows: Well 26C1 (Nov 2015); Well 6W-06C (Nov 2014); Well 18B2 (Nov 2013)
6/ Missing September 2018 DTW for 2201, DTW was inferred from WSE graph.

4.4.2 Murrieta-Temecula Groundwater Basin

The Murrieta-Temecula Groundwater Basin is located along Murrieta and Temecula creeks in the Upper SMRW. Total groundwater storage at the end of WY 2001 was computed for each of 22 hydrologic sub-areas that make up the Groundwater Basin. These computations were based on the areal extent of each sub-area, the thickness of each of three aquifers, (younger alluvium, Pauba aquifer and Temecula aquifer), a specific yield for each aquifer, and the depth to water in each aquifer at the end of the water year. Specific yields were based on unconfined conditions for all aquifers. The total groundwater storage in the uppermost 500 feet as of September 30, 2001, was estimated at 1,340,556 AF.

Since 2001, annual changes in groundwater storage have been computed using two different methodologies for comparison; a water budget method and a groundwater level method.

The Water Budget method determines the change in storage as the difference between the major elements of inflow and outflow for the groundwater area. Table 4.4 shows the changes for WYs 2015 through 2019. The change in groundwater storage for 2018-19, using the Water Budget method, is calculated as a decrease of 4,682 AF. It is noted, the return flow from RCWD groundwater production was revised in 2014-15 to subtract the groundwater pumped directly to the recycled water system from the calculation as reflected in Footnote 6. The revision was applied to previous water years and is reflected on Table 4.4. Also, the return flow percentages were revised in 2016-17 and are incorporated into the calculations for this year.

The Groundwater Level method is based on the changes in water levels in key wells in hydrologic sub-areas. Changes in storage under the Groundwater Level method for WYs 2015 through 2019 are shown on Table 4.5. The change in groundwater storage for 2018-19, using the Groundwater Level method, is calculated as an increase of 2,350 AF.

The foregoing two methods are based on independent measurements and estimates. The estimates from the two methods are generally comparable for the period 2001 through 2019. However, the estimates from the two methods for certain years indicate differences in the results. It will take testing over a number of years under varying hydrologic conditions to refine these approaches. Such testing may include comparing the estimates obtained from these two methods with values computed with the groundwater model that is used for implementation of the CWRMA between CPEN and RCWD.

TABLE 4.4

SANTA MARGARITA RIVER WATERSHED
CHANGES IN GROUNDWATER STORAGE
MURRIETA-TEMECULA GROUNDWATER BASIN
Water Budget Method
Quantities in Acre Feet [1/]

	Water Year Ending				
Elements of Inflow	2015	2016	2017	2018	2019
Releases from Vail [2/]	773	5,116	611	461	1,107
Releases from Lake Skinner [3/]	100	70	30	66	190
Freshwater Releases to Stream [4/]	3,432	4,098	4,654	3,947	3,129
Reclaimed Water Released to Stream [5/]	0	0	0	0	0
Recharged Imported Water [6/]	12,248	10,228	13,620	13,392	16,677
Return Flow from RCWD Groundwater Production [7/]	8,579	7,577	3,818	4,213	4,055
Return Flow from Import Direct Use [8/]	2,268	2,669	1,634	1,904	1,213
Return Flow from Applied Wastewater [9/]	1,314	1,433	705	838	762
Underflow and Tributary Inflow [10/]	5,959	3,829	27,924	3,535	28,154
Subtotal	34,673	35,020	52,996	28,356	55,287
Elements of Outflow					
Riparian Evapotranspiration and Underflow [11/]	508	508	508	508	508
Total RCWD Groundwater Production [12/]	37,531	33,144	29,444	32,509	31,391
Net Pumping by Others [13/]	2,044	1,703	1,541	1,587	1,546
Surface Outflow [14/]	7,990	6,983	25,681	6,928	26,524
Subtotal	48,073	42,338	57,174	41,532	59,969
Change in Groundwater Storage	(13,400)	(7,318)	(4,178)	(13,176)	(4,682)

1/ Totals may not add due rounding
2/ Table 3.3, Total Releases.
3/ Section 5.4.
4/ Table A-7, SMR Release.
5/ Table A-7, Reclaimed Wastewater, Murrieta Creek Discharge (ceased October 18, 2002).
6/ Table A-7, Footnote 3. Includes direct recharge and Cyclic Storage deposited.
7/ Table 7.8, Total Production minus releases to streams, minus pumped directly to recycled water system, multiplied by 0.13.
8/ Rancho Division Direct Use Imports, Table A-7 Footnote 3, multiplied by 0.13.
9/ The sum of: (Reclaimed Wastewater Table A-7, Reuse in SMRW) plus (Table A-1, Reuse in SMRW), multiplied by 0.13.
10/ Murrieta Creek at Temecula Flow times 1.6697 which is based on a correlation between Murrieta Creek at Temecula flow and Tributary Inflow, Areal Recharge and Subsurface Inflow for the period 1977-1998 as shown in Table II-10, Vol. II, Geology and Hydrology, Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, California, dated January 31, 2003.
11/ Table II-10, Vol. II, Geology and Hydrology, Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, California, dated January 31, 2003.
12/ Table 7.8 Total Production.
13/ The sum of Groundwater Production from: [Table A-1 (EMWD), A-5 (Pechanga), A-10 (WMWD Murieta Division, previously A-5), Appendix C, Murrieta-Temecula Groundwater Area], multiplied by 0.87.
14/ Table 3.2 Santa Margarita River near Temecula.

TABLE 4.5

SANTA MARGARITA RIVER WATERSHED
CHANGES IN GROUNDWATER STORAGE
MURRIETA-TEMECULA GROUNDWATER BASIN
Groundwater Level Method

					Water Depth at End of Water Year Feet					Change in Depth Feet					Change in Storage in Water Year Acre Feet				
Sub-area	Key Aquifer	Specific Yield/ Storativity	Key Well	Aquifer Area Acres	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
1	Temecula	0.0036	510 [5/]	1,371	235.20	240.70	245.90	253.50	253.10	(1.70)	(5.50)	(5.20)	(7.60)	0.40	(8)	(27)	(26)	(38)	2
2	Pauba	0.0398	439	479	40.99	43.40	30.66	33.42	25.30	1.41	(2.41)	12.74	(2.76)	8.12	27	(46)	243	(53)	155
3	Pauba	0.0309	146	802	37.12	48.80	28.49	32.52	25.43	2.32	(11.68)	20.31	(4.03)	7.09	57	(289)	503	(100)	176
4	Pauba	0.0350	101 [2/]	694	172.06	63.54	48.89	41.71	33.17	(16.19)	108.52	14.65	7.18	8.54	(393)	2,636	356	174	207
5	Pauba	0.0319	102 [3/]	1,322	103.20	107.20	51.03	50.04	62.50	24.98	(4.00)	56.17	0.99	(12.46)	1,053	(169)	2,369	42	(525)
6	Pauba	0.0698	495	1,562	63.54	63.00	59.02	65.45	59.45	1.26	0.54	3.98	(6.43)	6.00	137	59	434	(701)	654
7	Pauba	0.0012	211	719	121.00	115.27	115.80	116.54	119.82	(3.00)	5.73	(0.53)	(0.74)	(3.28)	(3)	5	0	(1)	(3)
8	Qyal	0.20	492	339	28.44	29.30	29.02	30.16	30.92	0.41	(0.86)	0.28	(1.14)	(0.76)	28	(58)	19	(77)	(52)
	Pauba	0.0891	492	496	28.44	29.30	29.02	30.16	30.92	0.41	(0.86)	0.28	(1.14)	(0.76)	18	(38)	12	(50)	(34)
9	Temecula	0.0036	410	2,066	331.40	330.70	311.40	311.70	313.20	5.40	0.70	19.30	(0.30)	(1.50)	40	5	144	(2)	(11)
10	Qyal	0.20	426	1,438	39.31	38.60	40.98	40.95	41.20	(0.61)	0.71	(2.38)	0.03	(0.25)	(175)	204	(684)	9	(72)
	Pauba	0.0746	426	1,165	39.31	38.60	40.98	40.95	41.20	(0.61)	0.71	(2.38)	0.03	(0.25)	(53)	62	(207)	3	(22)
11	Qyal	0.20	422	1,405	73.32	77.20	78.60	80.29	81.03	(2.13)	(3.88)	(1.40)	(1.69)	(0.74)	(599)	(1,090)	(393)	(475)	(208)
	Pauba	0.0634	422	1,413	73.32	77.20	78.60	80.29	81.03	(2.13)	(3.88)	(1.40)	(1.69)	(0.74)	(191)	(348)	(125)	(151)	(66)
12	Qyal	0.20	417	1,769	115.33	115.20	111.80	118.61	119.14	(4.18)	0.13	3.40	(6.81)	(0.53)	(1,479)	46	1,203	(2,409)	(188)
	Pauba	0.0422	417	752	115.33	115.20	111.80	118.61	119.14	(4.18)	0.13	3.40	(6.81)	(0.53)	(133)	4	108	(216)	(17)
13	Qyal	0.20	484 [4/]	898	78.73	77.40	48.80	80.93	56.23	(4.61)	1.33	28.60	(32.13)	24.70	(828)	239	5,137	(5,771)	4,436
	Pauba	0.0198	484 [4/]	398	78.73	77.40	48.80	80.93	56.23	(4.61)	1.33	28.60	(32.13)	24.70	(36)	10	225	(253)	195
14	Temecula	0.0036	462	2,084	543.30	450.41	437.13	435.89	437.94	(178.73)	92.89	13.28	1.24	(2.05)	(1,341)	697	100	9	(15)
15	Temecula	0.0036	464	1,347	332.20	330.50	340.70	332.61	329.87	0.20	1.70	(10.20)	8.09	2.74	1	8	(49)	39	13
16	Temecula	0.0036	509 [6/]	1,967	548.90	550.60	557.20	563.30	558.13	(5.20)	(1.70)	(6.60)	(6.10)	5.17	(37)	(12)	(47)	(43)	37
17	Temecula	0.0036	139	2,008	568.90	576.10	579.47	574.00	575.69	2.01	(7.20)	(3.37)	5.47	(1.69)	15	(52)	(24)	40	(12)
18	Pauba	0.0967	129	1,546	245.51	260.00	249.10	254.77	256.10	(5.03)	(14.49)	10.90	(5.67)	(1.33)	(752)	(2,166)	1,630	(848)	(199)
19	Temecula	0.0036	466	1,562	352.93	343.70	339.56	319.76	352.04	(12.12)	9.23	4.14	19.80	(32.28)	(68)	52	23	111	(182)
20	Pauba	0.0738	493	3,231	281.33	290.30	282.50	280.34	289.88	4.79	(8.97)	7.80	2.16	(9.54)	1,142	(2,139)	1,860	515	(2,275)
21	Pauba	0.1392	463	2,303	60.00	60.10	59.08	60.44	59.33	(2.60)	(0.10)	1.02	(1.36)	1.11	(834)	(32)	327	(436)	356
*	Pauba	0.0325	Lynch [1/]	1,008	30.00	30.00	31.00	30.00	30.00	---	0.00	(1.00)	1.00	0.00	---	0	(33)	33	0
TOTAL															**(4,412)**	**(2,439)**	**13,138**	**(10,682)**	**2,350**

1/ Well not measured for year with dashes; Sub-area excluded for change in storage calculation for years with no measurement.
2/ Key Well 101 designated for Sub-area 4 in Year 2011; previously Well 401 designated as the Key Well.
3/ Key Well 102 designated for Sub-area 5 in Year 2011; previously Well 402 designated as the Key Well.
4/ Key Well 484 designated for Sub-area 13 in Year 2011; previously Well 414 designated as the Key Well.
5/ Key Well 510 for Sub-area 1 renamed in Year 2012; previously the well was named as Well 301.
6/ Key Well 509 for Sub-area 16 renamed in Year 2012; previously the well was named as Well 209.
* Sub-area is located within Murrieta Division of WMWD; Sub-areas 1 through 21 are located in RCWD.

4.4.3 Anza Groundwater Basin

The Anza Groundwater Basin is located along Cahuilla Creek in the upper portion of the SMRW.

The most recent study that determined storage volumes was conducted by Riverside County in 1990. That study concluded that the groundwater storage of about 182,200 AF in 1950 had decreased to about 165,000 AF in 1986. The study also concluded that ". . . basin hydrogeologic features, production facilities' conditions, and locations/depths of storage . . ." limited the useable portion to 40% of the groundwater storage or about 56,200 acre feet in 1986.

During WYs 2005 through 2009, groundwater level measurements were made by the USGS in Anza Valley under contract with the Bureau of Indian Affairs (BIA). In 2013, the USGS resumed groundwater level measurements as part of a study on behalf of the High Country Conservancy as the Local Project Sponsor under a DWR Integrated Regional Water Management (IRWM) Planning Grant. RCWD is the managing agency for the Upper Santa Margarita Watershed IRWM Planning Region and contracted with the USGS to conduct the groundwater level measurements. The results of the recent USGS study are published in the report *Aquifer Geometry, Lithology, and Water Levels in the Anza-Terwilliger Area – 2013, Riverside and San Diego Counties, California*, USGS Scientific Investigation Report 2015-5131. The data from these measurements are available at the USGS website: *http://nwis.waterdata.usgs.gov/ca/nwis/gwlevels*.

The wells included in the program can be located by selecting the latitude-longitude box selection criteria and specifying the following bounds:

North Latitude - 33° 37' 00"
South Latitude - 33° 30' 00"
West Longitude - 116° 48' 00"
East Longitude - 116° 38' 00"

Efforts are currently under way for an Anza Baseline Groundwater Management study. Planning proposals have been submitted to the DWR, IRWM Plan. Objectives include maximization of groundwater potential, protect and improve local surface water quality and promote economic, social, land use and environmental sustainability.

Page Intentionally Blank

SECTION 5 - IMPORTS/EXPORTS

5.1 General

Court Orders require the Watermaster to determine the quantities of imported water used in the Watershed. Most of the water imported into the SMRW is delivered by MWD to local districts. MWD obtains its water from the State Water Project (SWP) and the Colorado River. Both the SWP and the Colorado River system have major storage reservoirs to provide long-term carryover storage. The quantities of water in storage at the end of the water year in the major reservoirs in each system are indicated on Table 5.1. Total storage in the SWP for the last ten years is shown graphically on Figure 5.1. Similarly, total storage for the Colorado River Reservoirs for the last ten years is shown on Figure 5.2. It may be seen from Table 5.1 that during 2018-19, water in storage in the SWP increased from 2.70 million AF to 3.65 million AF. Storage at the end of 2018-19 corresponds to about 69% of the total SWP storage capacity.

Water in storage in the Colorado River system increased from 27.6 million AF on September 30, 2018 to 31.2 million AF on September 30, 2019. On September 30, 2019, those reservoirs contained 48% of their total combined capacity.

The DWR prepares projections of water availability in the SWP for the coming year (2020) on a monthly basis from February through May. The report DWR Bulletin 120-4-20 dated May 1, 2020, indicated that statewide precipitation for October 1 through April 30, 2019 was 70% of average compared to 125% last year. As of May 22, 2020, the SWP allocation for 2020 will meet 20% of contractors' requests. DWR Bulletin 120-4-20 can be found at: *https://cdec.water.ca.gov/reportapp/javareports?name=b120may20.pdf*

The following entities imported water directly or indirectly from MWD into the SMRW:

Eastern Municipal Water District
Elsinore Valley Municipal Water District
Fallbrook Public Utility District
Rainbow Municipal Water District
Rancho California Water District
U. S. Naval Weapons Station Seal Beach, Detachment Fallbrook
Western Municipal Water District

TABLE 5.1

SANTA MARGARITA RIVER WATERSHED
STORAGE IN STATE WATER PROJECT
AND COLORADO RIVER RESERVOIRS
Thousands of Acre Feet 1/

STATE WATER PROJECT RESERVOIRS

Reservoir	Total Capacity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Oroville	3,540	1,755	3,045	1,977	1,633	1,076	1,057	1,619	1,332	1,365	2,228
San Luis (State Share)	1,060	415	874	389	283	214	324	439	1,050	714	795
Pyramid	171	164	164	169	167	168	168	167	167	164	167
Castaic	324	260	284	264	285	108	114	232	283	280	290
Silverwood	73	70	71	71	72	71	68	73	69	72	73
Perris	132	61	66	72	73	55	47	48	59	103	98
Total	5,300	2,725	4,504	2,942	2,513	1,692	1,778	2,578	2,959	2,698	3,651
Percent of Capacity		51%	85%	56%	47%	32%	34%	49%	56%	51%	69%

MAJOR COLORADO RIVER RESERVOIRS

Reservoir	Total Capacity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Flaming Gorge	3,789	3,154	3,467	3,030	2,818	3,284	3,450	3,207	3,491	3,378	3,410
Blue Mesa	941	609	699	340	348	599	726	665	732	282	736
Navajo	1,709	1,412	1,327	1,035	933	1,081	1,392	1,310	1,289	919	1,388
Powell	27,000	15,267	17,593	13,929	10,934	12,286	12,333	12,824	14,664	11,028	13,277
Mead	28,537	10,092	12,977	13,135	12,362	10,121	9,854	9,620	10,182	9,870	10,261
Mohave	1,818	1,575	1,610	1,606	1,624	1,645	1,606	1,627	1,603	1,561	1,574
Havasu	648	560	585	561	560	583	581	579	564	598	600
Total	64,442	32,669	38,258	33,636	29,579	29,599	29,942	29,832	32,526	27,637	31,245
Percent of Capacity		51%	59%	52%	46%	46%	46%	46%	50%	43%	48%

1/ Storage reported for end of water year on September 30.

Figure 5.1

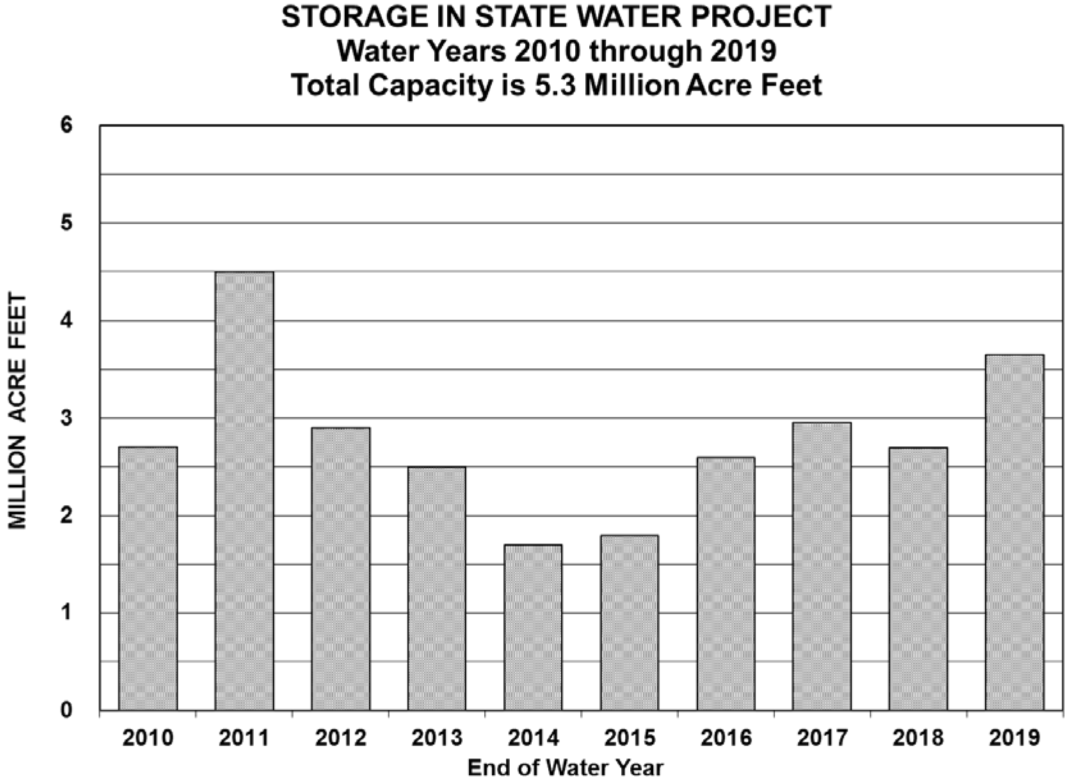
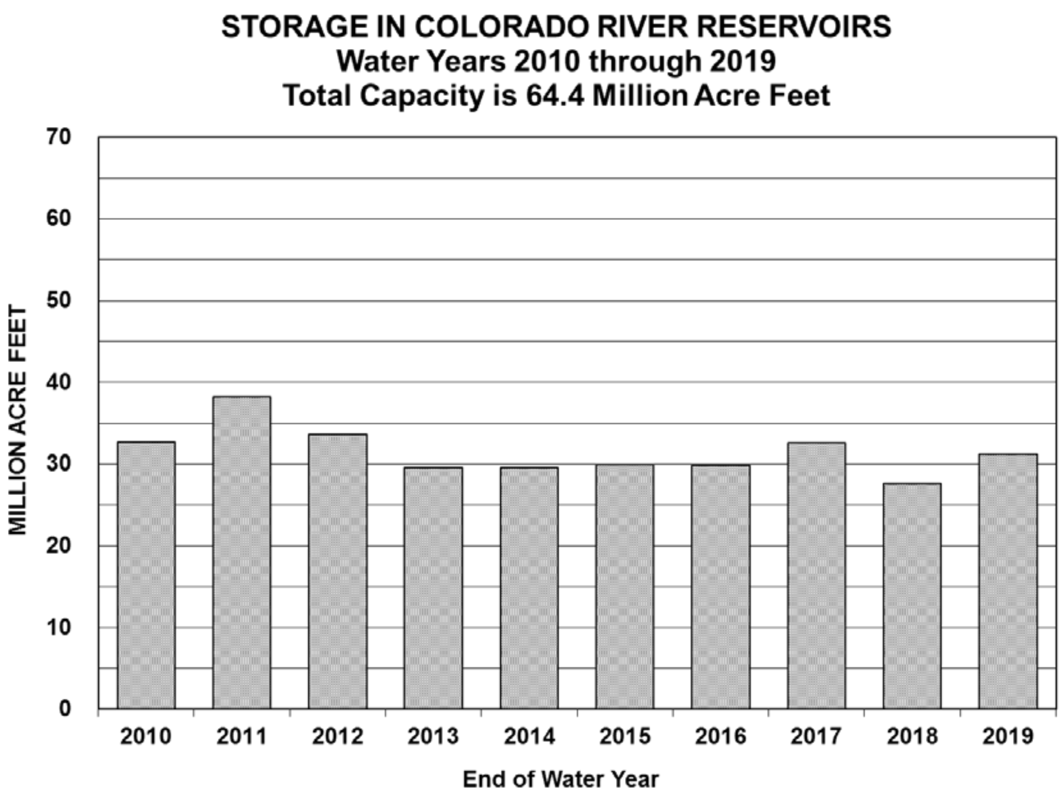


Figure 5.2



In addition to net deliveries through member agencies, MWD, pursuant to a Court Order, imported 554 AF of water into the SMRW for irrigation of lands in Domenigoni Valley during 2018-19.

Water is also imported into the SMRW from adjacent watersheds. Such importation occurs from the Santa Ana Watershed where Elsinore Valley Municipal Water District (EVMWD) delivers water to a portion of its service area that is inside the SMRW. EVMWD obtains its supply from imports or from wells outside the SMRW.

At CPEN there is a pipeline connection to wells located in the Las Flores Creek Watershed to the north of the SMRW. Water can be either imported or exported through that line, depending on relative water demands and pumping capacities.

Exportations from the SMRW include water pumped at CPEN that is used in the San Luis Rey River Watershed to the south or in the Las Flores Creek Watershed to the north. The wastewater that is derived from the exported potable water is returned to the Watershed for treatment at the Southern Region Tertiary Treatment Plant. Recycled water is used for irrigation both within and outside the Watershed. Treated wastewater in excess of recycled use is exported for discharge at the Oceanside Outfall. Wastewater from the Fallbrook area and the Naval Weapons Station Seal Beach, Detachment Fallbrook (NWS) is exported by the FPUD and wastewater in the EVMWD is exported by EVMWD. RCWD exports water into the San Mateo Creek Watershed.

EMWD uses a 24-inch pipeline along Winchester Road to transport wastewater from the Temecula Valley Regional Water Reclamation Facility (TVRWRF) to areas within the Watershed for reuse as well as for export of up to 10 million gallons per day (MGD) from the Watershed. EMWD uses a second, 48-inch pipeline along Palomar Valley for delivery of recycled water for reuse and export from the Watershed. RCWD also delivers wastewater to the Palomar Pipeline under an agreement with EMWD to provide coordinated operation of their respective wastewater systems and thus such wastewater originating from RCWD can also be reused or exported through the operation of the Palomar Pipeline by EMWD. The exported wastewater can be reused outside the Watershed, delivered to storage facilities or discharged to Temescal Creek. In 2018-19, EMWD's export of wastewater that was discharged to Temescal Creek was 2,959 AF. During 2018-19, RCWD had no deliveries of wastewater to the Palomar Pipeline and thus no export of wastewater for discharge to Temescal Creek can be attributed to wastewater originating from RCWD.

The following paragraphs describe imports and exports during 2018-19 and during the period 1966 through 2019. A discussion of MWD's Lake Skinner and Diamond Valley Lake operations is also provided.

5.2 Water Year 2019

During 2018-19, a total of 61,573 AF of net imported supplies were distributed for use in the Watershed. This compares with 75,119 AF in 2017-18 and represents a decrease of approximately 18.0%. The term net imports are used because several entities report gross imports into the SMRW but due to system configurations and operations, a portion of the gross imports may be transported to serve areas outside of the Watershed. Thus, the net imports reflect the quantities of imported supplies used within the SMRW. Net imports into the Watershed are listed on Table 5.2 for 2018-19.

The water exported from the Watershed for 2018-19 primarily includes wastewater except for CPEN and RCWD. As described in Section 7, CPEN exports native water for use outside the Watershed. Also, RCWD exports groundwater as part of a blended water supply to serve customers in the San Mateo Watershed. Exports from the Watershed for 2018-19 were 19,171 AF as shown on Table 5.2. This compares to 17,661 AF in 2017-18 and represents an increase of 8.5%.

The quality of the water supplies imported through the MWD system in 2018-19 is indicated by the average monthly Total Dissolved Solids (TDS) at the Skinner Treatment Plant effluent line as shown on Table 5.3. The table also shows the percent of imported water obtained from the SWP.

5.3 Water Years 1966 through 2019

Water quantities imported by districts into the SMRW during WYs 1966 through 2019 are shown on Table 5.4. Total imports to these districts are measured; however some districts serve lands outside the Watershed. For these districts, which include EMWD, EVMWD, FPUD and Rainbow Municipal Water District (RMWD), the portion delivered in the SMRW must be estimated.

Review of the historical trend of total imports shown on Table 5.4 indicates significant year-to-year variations with relatively low imports in wet years and higher imports in dry years, combined with an underlying growth rate to serve increasing municipal water demands in the Murrieta-Temecula area.

Exports over the period 1966 through 2019 are also shown on Table 5.4. These include estimated water exports on CPEN less estimated wastewater returns, as well as an estimate of exports by FPUD and the NWS after 1983, and EVMWD after 1986. Exports by EMWD were initiated in 1992-1993, and RCWD began quantifying export of water in 2002-03. Exports do not include water that naturally flows from the SMR into the Pacific Ocean.

TABLE 5.2

SANTA MARGARITA RIVER WATERSHED

IMPORTS/EXPORTS

2018-19

Quantities in Acre Feet[1/]

YEAR MONTH	NET IMPORTS: EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	MWD 2/	MURRIETA DIVISION WESTERN MWD	RAINBOW MWD	RANCHO CAL WD	U. S. NAVAL WS	WESTERN MWD 3/	TOTAL NET IMPORTS	EXPORTS 3/: CAMP PENDLETON EXPORTS 5/	CAMP PENDLETON WASTEWATER RETURNS 6/	CAMP PENDLETON NET EXPORT	U.S. NAVAL WS	EASTERN MWD 7/	ELSINORE VALLEY MWD	FALLBROOK PUD 8/	RANCHO CAL WD 9/	TOTAL EXPORTS
2018																			
OCT	1,335	612	434	95	180	107	3,184	3	3	5,953	545	133	411	0	911	132	66	18	1,538
NOV	1,325	535	409	72	124	161	2,441	5	3	5,074	451	107	344	0	871	121	66	19	1,421
DEC	1,015	388	262	14	72	44	1,216	3	2	3,017	378	78	300	0	1,059	122	66	10	1,556
2019																			
JAN	790	319	158	15	64	36	1,140	6	2	2,530	385	78	307	0	1,130	120	63	6	1,627
FEB	698	255	120	10	38	33	941	5	1	2,100	377	70	308	0	1,140	112	80	1	1,640
MAR	556	223	0	7	62	57	1,245	5	2	2,159	434	91	343	0	1,266	119	211	3	1,941
APR	677	278	193	46	133	97	2,419	7	2	3,852	486	114	373	0	1,170	118	64	14	1,737
MAY	1,188	626	293	42	128	54	2,370	8	2	4,711	495	118	377	0	1,040	127	89	21	1,653
JUNE	1,144	499	265	72	177	128	3,784	26	2	6,098	542	130	412	0	876	121	54	20	1,483
JULY	1,346	681	421	71	205	156	5,610	9	4	8,502	551	130	420	1	937	130	54	17	1,559
AUG	1,677	748	493	54	143	170	5,896	4	3	9,189	576	137	439	0	884	133	67	19	1,540
SEPT	1,702	705	471	58	205	128	5,114	4	3	8,389	571	136	435	0	840	129	44	27	1,475
TOTAL	13,453	5,870	3,519	554	1,529	1,170	35,362	85	30	61,573	5,790	1,323	4,467	1	12,122	1,484	922	175	19,171

1/ Totals may not add due to rounding.
2/ MWD direct deliveries in Domenigoni Valley as shown on Table A-4.
3/ Improvement District A - Rainbow Canyon Only (WR-13).
4/ All exports are wastewater except as noted for CPEN and RCWD.
5/ Agricultural and Camp Supply use outside the SMRW, recycled use outside the SMRW, plus export to Oceanside Outfall as shown on Table A-8.
6/ Estimated as recycled percentage of Camp Supply use outside the SMRW as shown on Table A-8.
7/ Includes Other Reuse shown on Table A-1, which includes changes of storage in Winchester and Sun City storage ponds, evaporation and percolation losses, and discharges to Temescal Creek in the Santa Ana Watershed.
8/ Includes 804 Af of wastewater and 118 AF of SMRW production served outside the watershed.
9/ Includes groundwater used in San Mateo Watershed and wastewater exported via Palomar Valley Pipeline. Wastewater exported via Palomar Valley Pipeline in 2018-19 was zero.

TABLE 5.3

SANTA MARGARITA RIVER WATERSHED
TOTAL DISSOLVED SOLIDS
CONCENTRATION OF IMPORTED WATER

YEAR MONTH	TOTAL DISSOLVED SOLIDS MG/L 1/		PERCENT STATE PROJECT WATER 2/	
	2017-18	2018-19	2017-18	2018-19
OCT	314	498	65	32
NOV	336	517	66	24
DEC	331	546	70	20
JAN	317	569	73	11
FEB	361	574	67	10
MAR	430	530	58	25
APR	518	374	30	62
MAY	590	316	13	76
JUNE	609	347	2	70
JULY	550	314	25	69
AUG	496	322	36	66
SEPT	476	343	35	64

1/ As measured in the Skinner Treatment Effluent line.
2/ Skinner Plant treated a blend of California State Project Water and Colorado River water.

TABLE 5.4

SANTA MARGARITA RIVER WATERSHED

IMPORTS/EXPORTS

Quantities in Acre Feet[1/]

WATER YEAR	NET IMPORTS: EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 2/	MWD 3/	MURRIETA DIVISION WESTERN MWD	RAINBOW MWD	RANCHO CAL WD 4/	U.S. NAVAL WS	WESTERN MWD 5/	TOTAL IMPORTS	EXPORTS 6/: CAMP PENDLETON EXPORTS	CAMP PENDLETON WASTEWATER RETURNS	CAMP PENDLETON NET EXPORT	U. S. NAVAL WS	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 8/	RANCHO CAL WD 9/	TOTAL EXPORTS
1966	1,604	N/R	3,351	0	0	1,308	0	0	24	6,287	3,251	974	2,277	0	0	0	0	N/R	2,277
1967	1,630	N/R	2,852	0	0	1,095	0	0	20	5,597	3,180	1,243	1,937	0	0	0	0	N/R	1,937
1968	1,464	N/R	3,423	0	0	1,377	0	0	27	6,291	3,368	1,214	2,154	0	0	0	0	N/R	2,154
1969	1,741	N/R	2,837	0	0	1,253	0	0 E	25	5,856	3,276	1,170	2,106	0	0	0	0	N/R	2,106
1970	1,417	N/R	3,538	0	0	1,689	0	0 E	31	6,675	3,809	1,113	2,696	0	0	0	0	N/R	2,696
1971	1,383	N/R	3,405	0	0	1,650	0	76 E	34	6,548	3,527	1,090	2,437	0	0	0	0	N/R	2,437
1972	1,470	N/R	3,916	0	0	2,037	0	115 E	34	7,572	3,543	1,168	2,375	0	0	0	0	N/R	2,375
1973	1,533	N/R	3,210	0	0	1,616	0	115 E	30	6,504	3,544	1,187	2,357	0	0	0	0	N/R	2,357
1974	1,601	N/R	3,967	0	0	2,049	0	115 E	36	7,768	3,532	1,140	2,392	0	0	0	0	N/R	2,392
1975	1,969	N/R	3,597	0	0	1,247	0	115 E	34	6,962	3,098	1,530	1,568	0	0	0	0	N/R	1,568
1976	2,493	N/R	4,627	0	0	2,239	119	115 E	35	9,628	3,619	1,497	2,122	0	0	0	0	N/R	2,122
1977	2,947	N/R	5,212	0	0	2,343	1,845	115 E	24	12,486	3,194	1,416	1,778	0	0	0	0	N/R	1,778
1978	2,551	569	5,202	0	0	2,188	5,774	115 E	26	16,425	3,071	1,283	1,788	0	0	0	0	N/R	1,788
1979	1,894	712	5,723	0	0	2,348	7,009	115 E	24	17,824	4,756	1,427	3,329	0	0	0	0	N/R	3,329
1980	1,192	696	6,404	0	0	2,489	10,126	115 E	25	21,047	3,651	1,405	2,246	0	0	0	0	N/R	2,246
1981	716	798	8,543	0	0	3,153	15,282	115 E	34	28,642	3,892	1,249	2,643	0	0	0	0	N/R	2,643
1982	1,112	678	7,079	0	0	2,460	13,378	115 E	34	24,856	3,761	1,273	2,488	0	0	0	0	N/R	2,488
1983	1,211	658	6,720	0	0	2,190	5,752	115 E	26	16,672	3,000	1,242	1,758	26 E	0	0	1,003	N/R	2,787
1984	699	816	8,506	0	0	3,068	6,716	115 E	26	19,946	3,243	1,120	2,123	26 E	0	0	1,032	N/R	3,181
1985	679	808	7,831	0	0	3,410	7,158	102	27	20,015	3,377	1,200	2,177	26 E	0	0	1,060	N/R	3,263
1986	760	882	8,585	0	0	2,945	11,174	94	34	24,474	3,326	981	2,345	16 P	0	0	1,096	N/R	3,457
1987	1,155	938	8,656	0	0	3,390	7,564	116	36	21,855	3,444	1,799	1,645	26	0	4	1,129	N/R	2,805
1988	2,047	1,032	8,033	0	0	2,985	17,854	120	36	32,108	3,457	1,872	1,585	26	0	55	1,154	N/R	2,820
1989	3,746	1,341	9,066	0	0	3,003	22,895	128	23	40,202	3,418	1,446	1,972	23	0	74	1,181	N/R	3,250
1990	5,601	2,255	10,103	0	0	3,818	22,030	145	22	43,974	2,971	1,451	1,520	27	0	114	1,271	N/R	2,932
1991	9,479	2,421	7,962	0	0	2,904	21,238	109	21	44,134	2,168	1,219	949	13	0	134	960	N/R	2,056
1992	8,593	2,190	7,893	0	0	2,277	16,931	99	25	38,008	2,426	1,548	878	7	0	140	1,083	N/R	2,108
1993	5,393	2,964 R	6,925	0	0	1,965	11,411	117	31	28,806	2,329	1,926	403	16	705	150	1,255	N/R	2,529
1994	7,150	3,232 R	7,250	0	0	1,651	16,386	73	37	35,779	2,702	1,501	1,201	5	3,159	170	1,068	N/R	5,603
1995	4,625	3,127 R	6,538	547	0	1,661	15,108	125	29	31,760	2,781	1,611	1,170	12	3,908	185	1,153	N/R	6,428
1996	4,960	4,197 R	7,993	1,005	0	1,815	23,600	100	35	43,705	3,577	1,493	2,084	5	2,993	213	1,035	N/R	6,330
1997	3,284	4,296 R	7,894	3,521	0	1,429	26,992	109	30	47,555	3,643	1,932	1,711	6	3,201	226	1,021	N/R	6,165
1998	5,117	5,100	6,382	5,023	0	1,601	19,584	97	31	42,935	3,742	2,073	1,669	8	4,513	247	1,482	N/R	7,919
1999	4,327	6,133 R	7,430	3,781	0	1,727	34,490	111	41	58,040	3,558	2,130	1,428	5	4,133	254	1,377	N/R	7,197
2000	7,256	7,174 R	9,365	712	0	2,217	55,409	104	42	82,279	4,072	2,115	1,957	7	3,649	279	1,419	N/R	7,311
2001	5,948	6,215 R	8,398	689	0	1,804	41,823	73	59	65,009	3,653	2,075	1,578	8	4,457	310	1,392	N/R	7,745
2002	8,117	7,596	9,580	595	0	1,676	54,148	97	64	81,873	3,701	1,950	1,751	9	5,325	412	1,225	N/R	8,722
2003	9,062	7,091	9,130	495	102	1,510	50,744	88	42	78,264	3,767	1,688	2,079	10	7,636	483	1,359	64	11,631
2004	9,138	8,438	11,749	766	330	1,888	62,408	73	50	94,840	4,951 7/	0	4,951	8	9,115	600	1,329	312	16,315
2005	10,858	8,215	8,108	556	75	1,610	47,614	40	62	77,138	4,625 7/	0	4,625	16	11,676	927	1,417	1,574	20,235
2006	14,161	9,819	10,573	506	316	1,851	60,611	64	66	97,967	4,912 7/	0	4,912	8	10,906	938	1,395	1,379	19,538
2007	15,398	10,811	12,292	660	723	2,262	63,818	70	45	106,079	5,152 7/	0	5,152	12	10,553	837	891	364	17,809
2008	14,952	9,951	8,920	493	2,180	1,790	50,683	82	54	89,105	4,774 7/	0	4,774	11	12,789	901	799	361	19,635
2009	14,472	9,075	8,557	607	1,654	1,852	50,270	74	51	86,612	5,362 10/	1,119	4,243	12	12,027	1,069	829	367	18,547
2010	13,552	7,926	7,183	385	1,462	1,453	40,894	69	62	72,986	5,143 10/	1,075	4,068	7	11,829	1,120	926	318	18,268

TABLE 5.4

SANTA MARGARITA RIVER WATERSHED

IMPORTS/EXPORTS

Quantities in Acre Feet[1/]

	NET IMPORTS										EXPORTS 6/								
											CAMP PENDLETON								
WATER YEAR	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 2/	MWD 3/	MURRIETA DIVISION WESTERN MWD	RAINBOW MWD	RANCHO CAL WD 4/	U.S. NAVAL WS	WESTERN MWD 5/	TOTAL IMPORTS	EXPORTS	WASTEWATER RETURNS	NET EXPORT	U. S. NAVAL WS	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 8/	RANCHO CAL WD 9/	TOTAL EXPORTS
2011	14,392	7,425	6,234	336	1,642	1,492	39,411	45	52	71,029	5,516 10/	1,441	4,075	8	12,381	1,130	901	302	18,797
2012	15,063	7,398	7,254	466	1,371	1,892	41,900	48	48	75,440	5,595 10/	1,672	3,923	9	12,550	1,205	928	284	18,898
2013	15,751	7,158	7,357	892	1,365	1,713	40,571	47	35	74,889	5,367 10/	1,254	4,113	3	11,775	1,245	900	289	18,325
2014	15,884	7,413	7,578	1,074	1,407	1,732	46,603	58	35	81,785	5,375 10/	1,099	4,276	6	11,744	1,307	896	289	18,518
2015	13,877	5,992	5,919	1,090	820	1,333	33,573	44	29	62,677	4,837 10/	1,127	3,710	3	11,698	1,328	1,086	251	18,076
2016	13,602	5,889	5,395	1,186	1,290	1,298	35,478	62	42	64,242	4,502 10/	1,178	3,324	1	10,778	1,431	724	202	16,460
2017	13,441	5,970	4,576	1,128	1,711	1,186	40,334	67	30	68,444	4,917 10/	1,213	3,704	1	11,982	1,468	791	163	18,109
2018	15,007	6,378	5,377	1,194	1,820	1,271	43,977	65	29	75,119	5,517 10/	1,170	4,347	0	10,918	1,489	731	176	17,661
2019	13,453	5,870	3,519	554	1,529	1,170	35,362	85	30	61,573	5,790 10/	1,323	4,467	1	12,122	1,484	922	175	19,171

1/ Totals may not add due to rounding.
2/ Includes DeLuz Heights MWD prior to 1991.
3/ MWD direct deliveries in Domenigoni Valley plus miscellaneous maintenance releases beginning 2009.
4/ For period 2003 to present, values shown are net imports excluding imported water delivered to San Mateo Watershed.
5/ Improvement District A - Rainbow Canyon Only (WR-13).
6/ All exports are wastewater except as noted for CPEN, FPUD, and RCWD.
7/ Includes export of native water plus wastewater from in-basin use.
8/ Includes wastewater and SMRW production served outside the watershed.
9/ Includes groundwater used in San Mateo Watershed and wastewater exported to Santa Ana Watershed.
10/ Includes export of native water plus recycled water.

N/R - Not Reported
P - Partial year data
E - Estimate
R - Revised

5.4 Lake Skinner

Lake Skinner is a 44,000 acre foot reservoir constructed by MWD on Tucalota Creek, within the SMRW. The purpose of Lake Skinner is to provide regulatory and emergency storage capacity for water imported to southern California. MWD does not have a water right to store or divert local water in Lake Skinner. Accordingly, a Memorandum of Understanding and Agreement on Operation of Lake Skinner (MOU), dated November 12, 1974, approved by the Court on January 16, 1975, contains provisions to protect SMRW water users from potential effects of Lake Skinner on either subsurface or surface flows.

Protection against a decrease in subsurface flows caused by the dam is afforded by a provision in the MOU that requires MWD release water from Lake Skinner into Tucalota Creek if groundwater levels in Well AV-28B fall below an elevation of 1,356.64 feet. During 2018-19, MWD released 15 AF for the specific purpose of groundwater replenishment to ensure the groundwater elevation in Well AV-28B was maintained above the indicated threshold elevation of 1,356.64 feet. For comparison purposes, the groundwater elevation was 1,357.70 feet on September 27, 2019, an increase of 1.0 feet compared to 1,356.70 feet on September 28, 2018.

In addition, operations at Lake Skinner periodically require miscellaneous maintenance releases from Lake Skinner into various creeks and their tributaries, including Tucalota Creek, Rainbow Creek, Warm Springs Creek, and Murrieta Creek that also replenish groundwater levels. In 2018-19, MWD released a total of 3.23 AF of maintenance releases from Lake Skinner. Also MWD periodically makes maintenance releases from various points throughout the MWD distribution system. In 2018-19, MWD made no maintenance releases from the distribution system.

The MOU also provides that all local surface inflow that enters Lake Skinner will be released into Tucalota Creek. In its 1980 modification, the MOU provides that local surface inflow is to be determined by using the hydrologic equation for Lake Skinner that is specified in the MOU. That equation is used to determine inflow and the related release for large flood events. However, in many years the local inflow is small compared to the large quantities of imported water inflow and outflow at Lake Skinner. The error of measurement for these large inflows and outflows is larger than the local inflow in many instances. Accordingly, MWD also monitors the flow in Tucalota Creek, Rawson Creek and Middle Creek during storms and uses those observations to supplement the hydrologic equation.

On February 16, 2005, the Court approved an Order Amending the MOU to provide for diversion from Lake Skinner on FPUD’s behalf after specified releases are made, according to SWRCB Permit 11356 and the amended Lake Skinner MOU. In 2018-19, MWD records show 379 AF of local inflow to Lake Skinner and subsequently there were 172 AF of required releases in accordance with the MOU. In 2018-19, 207 AF were accumulated in Lake Skinner for diversion to FPUD (inflow less required releases).

5.5 Diamond Valley Lake

Diamond Valley Lake is located in Diamond and Domenigoni Valleys within the SMRW. The lake was created by three dams, one each at the east and west ends of Domenigoni/Diamond Valley and a saddle dam at the low point on the north rim. The West Dam intercepts flows in the headwaters of Warm Springs Creek, a tributary of the SMR through Murrieta Creek. The drainage area for the headwaters of Warm Springs Creek above the West Dam is 17.2 square miles.

MWD does not have a water right to store local waters in the reservoir, now known as Diamond Valley Lake, so a Memorandum of Understanding and Agreement on Operation of Domenigoni Valley Reservoir was developed and approved by the Court on January 19, 1995. Among other things, this MOU provides:

> *The quantity and quality of surface runoff that would flow past the West Dam in the absence of the Reservoir will be determined and a like quantity of water of similar quality will be released from the Reservoir or San Diego Canal into Warm Springs Creek.*

The MOU specifies that the required releases into Warm Springs Creek will be determined by measuring the surface water inflows into Goodhart Canyon Detention Basin. The detention basin receives surface water inflows from Goodhart Creek, which is located in an adjoining watershed that is tributary to the Santa Ana River. The drainage area of Goodhart Creek upstream of the detention basin is 4.2 square miles. The rainfall-runoff characteristics of the Goodhart Creek drainage area were determined to be the same as the rainfall-runoff characteristics of the Warm Springs Creek headwaters above the West Dam. Thus the required releases into Warm Springs Creek are equal to 4.1 times the measured inflow into Goodhart Canyon Detention Basin, as determined as the ratio of the drainage areas for the respective watersheds.

The total required releases into Warm Springs Creek during 2018-19 were 18.49 AF.

Although all surface waters within the SMRW in Domenigoni Valley and Diamond Valley are subject to the continuing jurisdiction of the Court, groundwater contained within the alluvium, north of the south line of Section 9, Township 6 South, Range 2 West, San Bernardino Meridian (SBM) is not considered by the Court to be a part of the SMR system as long as groundwater levels are below an elevation of 1,400 feet. During 2018-19, groundwater elevations in Well MO-6, which is located along the south line of Section 9, decreased 3.62 feet from 1,377.40 feet at the beginning of the water year to 1,373.78 feet on October 1, 2019.

During 2018-19, there were no injections into the Domenigoni Valley groundwater basin pursuant to Agreements for Mitigation of Groundwater. However, pursuant to a Court Order, MWD imported 554 AF of water into the SMRW for irrigation of lands in Domenigoni Valley. As previously noted, the groundwater in the Domenigoni Valley groundwater basin is outside the Court's jurisdiction when groundwater levels are below an elevation of 1,400 feet.

Page Intentionally Blank

SECTION 6 - WATER RIGHTS

6.1 General

The SMRW is adjudicated in accordance with the Modified Final Judgment and Decree filed on April 6, 1966, in the U.S. District Court, Southern District of California in *United States v. Fallbrook Public Utility District*, *et al*. Water is used in the Watershed under a variety of water rights, as more specifically described in the Interlocutory Judgments incorporated into the Modified Final Judgment and Decree, as primarily riparian rights and overlying rights. Riparian rights belong to owners of land parcels located adjacent to streams in the Watershed or overlying younger alluvium deposits generally along the stream channels. Overlying rights were divided by the Court into two categories based on the location where the water is obtained and used. Water extracted from lands where subsurface waters add to, contribute to and support the SMR stream system was found to be subject to the continuing jurisdiction of the Court. Lands in this category were identified by the Court and listed in Interlocutory Judgments. In general, these parcels of land overlie younger or older alluvium deposits. The Court has stated that the issue of apportionment of water rights has not been presented to the Court, but the Court would rule on apportionment if and when in the future it becomes necessary to do so.

The other category of overlying use applies to parcels of land where subsurface flows do not add to, contribute to or support the SMR stream system. These parcels were also identified by the Court and found to be outside the continuing jurisdiction of the Court. In general, these lands overlie basement complex or residuum deposits.

The Court also described a number of other rights in the Watershed. These included surface water appropriative water rights that have been administered by the State of California since 1914. These rights are discussed in the following subsection.

In Interlocutory Judgment No. 41, the Court found that the United States reserved rights to the use of the waters of the SMR stream system which under natural conditions would be physically available on the Cahuilla, Pechanga and Ramona Indian Reservations, including rights to the use of groundwater, sufficient for the present and future needs of the Indians residing thereon. In Interlocutory Judgment No. 44, the Court recognized and reserved water rights for lands within the Cleveland and San Bernardino National Forests and for lands being administered pursuant to the Taylor Grazing Act.

Since the early 1960’s, there have been substantial changes in water use in the Watershed, especially in the Murrieta-Temecula Groundwater Area. During the 1950’s and early 1960’s most of the water use in the Murrieta-Temecula area consisted of individual property owners pumping water for use on their own properties. In 1965, the RCWD was formed. RCWD developed Agency Agreements with most of the landowners within the District. In these Agency Agreements, the landowners “...without transferring any water rights and privileges pertaining to said land...” designated RCWD as their exclusive agent for the development and management of their water supply. Thus, many landowners within the RCWD are not exercising their overlying rights. Instead, RCWD pumps groundwater and uses it throughout the District area as agent on behalf of the landowners.

The resulting change is that RCWD presently produces groundwater in the Murrieta-Temecula Groundwater Area under a variety of rights: (1) recovery of water appropriated at Vail Lake, (2) recovery of import return flows and recharged imported water, (3) groundwater appropriative rights, and (4) as agent on behalf of the overlying landowners. Classification of RCWD supplies into these various water right categories is discussed in Section 7 of this Report. Related to the change associated with RCWD production is the increased production by WMWD within its Murrieta Division. As discussed in Section 7 of this Report, all groundwater production in the Murrieta Division by WMWD is classified as production from the older alluvium under a groundwater appropriative right.

Another change from the early 1960's is the large scale importation of water into the SMRW by RCWD. A portion of such importation finds its way into the groundwater aquifers. The legal status of return flows from imported supplies as well as direct recharge of imported water was clarified in *City of Los Angeles v. City of San Fernando*, *et al.*, 1975 14 Cal. 3rd 199. This decision in the Supreme Court of the State of California made two major findings with respect to imported water.

The first was that agencies have the right to recharge and store imported water in a groundwater basin and to extract the imported water for use, subject to applicable state and federal laws. In addition, agencies that import and deliver water to lands overlying a groundwater basin have a continuing right to extract the return flow from such water. The return flow is that portion of the imported supply that percolates into the groundwater basin. In the San Fernando case this portion was found to range from 20% to 35.7% of imported supplies.

The Rancho Division of RCWD overlies the Murrieta-Temecula Groundwater Area. Thus a portion of the import supply delivered to the Rancho Division of RCWD percolates into the underlying aquifers. Imported water is also supplied to the Santa Rosa Division within RCWD, however only a relatively small part of this division overlies the Murrieta-Temecula Groundwater Area. Thus, there is less imported water return flow from the Santa Rosa Division.

CPEN, through the United States, contends that the Court can assert and exercise jurisdiction over imported water to the full extent that imported water operations and use affect any significant manner the water rights within the SMRW. Other parties are in dispute regarding the Court's jurisdiction over imported water.

6.2 Appropriative Surface Water Rights

Another broad category of water rights used in the Watershed is surface water appropriative rights. Since 1914, these rights have been administered by the SWRCB.

A list of current permits, licenses and other rights obtained from the SWRCB is shown on Table 6.1. A permit by the SWRCB authorizes water diversion, sets terms for the water project's completion and development of water use, and may impose other conditions. After the permittee demonstrates that construction is complete, water is being put to use and the permit conditions have been met, the SWRCB can issue a license. The license remains in effect as long as the license conditions are met and the water is put to beneficial use.

Active direct diversion rights and storage rights from creeks in the Watershed are summarized below:

	Direct Diversions AF/Year	Storage AF/Year
Cahuilla Creek/Valley	0.8	---
Cottonwood Creek	158.0	60
Cutca Creek/Spring	6.5	---
DeLuz Creek	5.3	100
Fern Creek	238.9	100
Kohler Canyon	177	40
Long Canyon Spring	0.34	---
Rainbow Creek	---	0.5
Rattlesnake Canyon	7.9	---
Temecula Creek	7.6	40,000
Tucalota Creek	---	10,000
Sandia Canyon	---	8
Sourdough Spring	0.1	---
Santa Margarita River	16,062.6	46,239
Nelson Creek	1.7	---
TOTAL	16,666.7	96,547.5

The value of 16,666.7 AF per year reflects the annual maximum allowed under the restrictions of such right. For example, rights associated with Rattlesnake Canyon (Application ID-A011161) show direct diversion of 12,000 gallons per day, with the restriction of diverting only from April 1 through October 31, which correlates to the listed 7.9 AF per year.

TABLE 6.1

SANTA MARGARITA RIVER WATERSHED
APPROPRIATIVE WATER RIGHTS

PERMITS AND LICENSES

APPLICATION I.D.	PERMIT I.D.	OWNER	FILING DATE	SOURCE OF WATER	POINT OF DIVERSION	AMOUNT	USE	STATUS
A006629	003584	William H. & Sandra J. Cyrus	4/9/1930	Cahuilla Valley	Sec. 4, 7S, 3E	DD-0.8 AF/yr	D	License
6893		Earl C. & Mamie LaBine	2/13/31	Temecula Creek	Sec. 20, 9S, 2E	DD-820 gpd	D/I	License Revoked
A007731		Earl C. & Mamie LaBine	11/02/33	Temecula Creek	Sec. 20, 9S, 2E	DD-7200 gpd	D/I	License Revoked
A009137	005090	Hill Springs Farms, LLC	10/7/1937	Temecula Creek	Sec. 12, 9S, 1E	DD-0.5 AF/yr	D	Revoked
A009291	005201	Richard W. Long	5/13/1938	DeLuz Creek	Sec. 23, 8S, 5W	DD-1.7 AF/yr	D	License
A010806	006279	James R., Phyllis & Bruce Grammer	4/22/1944	Temecula Creek	Sec. 34, 9S, 2E	DD-3.2 AF/yr	D	License
A011161	006499	Roy C. Pursche & Barbara Booth	9/26/1945	Rattlesnake Canyon	Sec. 28, 9S, 2E	DD-7.9 AF/yr	D/I	License
A011518	007032	Rancho California Water District	8/16/1946	Temecula Creek	Sec. 10, 8S, 1W	ST-40,000 AF/yr	D/I/IN/M/R	Permit
A011587 1/	008511	U.S. Department of the Navy, Marine Corps Base Camp Pendleton & Fallbrook Public Utitlity District	10/11/1946	Santa Margarita River	(17 Points, see Permit)	DD-22 cfs ST-10,000 AF/yr	D/I/M	Permit
A012178	011356	Fallbrook Public Utility District	11/28/1947	Tucalota Creek	Sec. 3, 7S, 2W	ST-10,000 AF/yr	D/I/M	Permit
A012179 1/	011357	U.S. Department of the Navy, Marine Corps Base Camp Pendleton & Fallbrook Public Utitlity District	11/28/1947	Santa Margarita River	(17 Points, see Permit)	DD-22 cfs ST-10,000 AF/yr	D/I/M	Permit
A013505	008166	Robert R. Baum	12/12/1949	Cottonwood Creek	Sec. 30, 8S, 4W	DD-158 AF/yr ST-42 AF/yr	R/S	License
A017239	012312	Joseph Vidov	8/15/1956	Temecula Creek	Sec. 20, 9S, 2E	DD-0.1 AF/yr	D/E	License
A020507	014715	Robert R. Baum	11/24/1961	Cottonwood Creek	Sec. 19, 8S, 4W Sec. 30, 8S, 4W	ST-18 AF/yr	I/R	License
A020608	014716	Pete and Dorothy Prestininzi	2/13/1962	DeLuz Creek	Sec. 20, 8S, 4W	ST-100 AF/yr	D/I/R	License
A020742	013913	U. S. Cleveland National Forest	4/24/1962	Sourdough Spring	Sec. 25, 9S, 1E	DD-0.1 AF/yr	E	License
A021074	014087	U. S. Cleveland National Forest	12/7/1962	Cutca Spring	Sec. 17, 9S, 1E	DD-0.1 AF/yr	S/W	License
A021471A 1/	015000A	U.S. Department of the Navy, Marine Corps Base Camp Pendleton & Fallbrook Public Utitlity District	9/23/1963	Santa Margarita River	(17 Points, see License)	DD-22 cfs ST-4,000 AF/yr	D/I/M/Z	License
A021471B 1/	015000B	U.S. Department of the Navy, Marine Corps Base Camp Pendleton & Fallbrook Public Utitlity District	9/23/1963	Santa Margarita River	(17 Points, see Permit)	DD-22 cfs ST-22,050 AF/yr	D/I/M/Z	Permit
A027756	019038	James R. Grammer	5/23/1983	Temecula Creek	Sec. 3, 10S, 2E	DD-4.3 AF/yr	I/W	License
A028133	019522	Charles D. Ruggles	5/14/1984	Cahuilla Creek	Sec. 15, 8S, 2E	ST-5 AF/yr	E/H/I/R/S	Revoked
				OTHER RIGHTS				
F005751S*	N/A	U. S. Cleveland National Forest	7/1/1984	Long Canyon Spring	Sec. 16, 9S, 1E	DD-0.34 AF/yr	E/R/S/W	Claimed
S000024**	N/A	Judge Dial Perkins	11/4/1966	Santa Margarita River	Sec. 12, 9S, 4W	DD-0.34AF/yr	D	Inactive
S000751**	N/A	Lawrence Butler	5/27/1967	Fern Creek	Sec. 31, 8S, 4W	DD-238.9 AF/yr ST-100 AF/yr	I	Inactive
S011411**	N/A	Agri Empire, Inc.	7/3/2008	Kohler Canyon	Sec. 33, 9S, 2E	DD-177 AF/yr ST-40 AF/yr	I/S	Claimed
S012235**	N/A	Lenny F. Kuszmaul	8/27/1985	DeLuz Creek	Sec. 4, 9S, 4W	DD-5.3 AF/yr	D/I	Inactive
S014009**	N/A	San Diego State University	7/11/2004	Santa Margarita River	Sec. 27, 8S, 3W	DD-73.3 AF/yr	D/I/Z	Claimed
001583***	N/A	George F. Yackey	12/27/1977	Sandia Canyon	Sec. 25, 8S, 4W	ST-8.0 AF/yr	S	Unknown
002380***	N/A	Chris R. & Jeanette L. Duarte	12/16/1977	Rainbow Creek	Sec. 12, 9S, 3W	ST-0.5 AF/yr	S	Revoked

KEY TO USE: *DD - Direct Diversion* *D - Domestic* *R - Recreation* *E - Fire Protection* *H - Fish Culture*
ST - Diversion to Storage *I - Irrigation* *M - Municipal* *S - Stockwatering* *Z - Other*
IN - Industrial *W - Fish & Wildlife Protection and/or Enhancement*

NOTES: ** Federal Filing* *** Statement of Diversion and Use* **** Stock Filing* *N/A Not Applicable*

1/ The total quantiy of water diverted under the rights pursuant to Permits 8511, 11357, 15000B and License 15000A shall not exceed 46,239 AF annually.

Storage rights shown in Table 6.1 include 46,050 AF of storage rights and 39,265 AF of direction division rights (combined total not to exceed 62,039 AF annually) on the SMR held by the U.S. Department of the Navy, Marine Corps Base Camp Pendleton and FPUD (Permits 008511, 11357, and 15000B and License 15000A). Changes that allow for the use of License 10494 and Permits 8511, 11357, and 15000 to divert and beneficially use water to support the Santa Margarita River Conjunctive Use Project (CUP), being developed jointly by the Department of the Navy Marine Corps Base, Camp Pendleton, and FPUD, were granted by the SWRCB in November 2018. Diversion of water under these rights are subject to oversight by the Watermaster. Camp Pendleton also exercises riparian and pre-1914 rights. Pre-1914 rights are show in Table 6.2.

Table 6.1 also lists other rights recognized by the SWRCB. These rights generally are based on Statements of Water Diversion and Use that have been filed with the SWRCB. Such statements include one by the United States on behalf of the Cleveland National Forest, which states that the diversion and use of water from Long Canyon Spring is made pursuant to a withdrawal and reservation of the land and resources for National Forest System purposes as of February 14, 1907.

Besides the federal filing, there are also Statements of Water Diversion and Use filed by other entities. Four of these statements represent riparian or pre-1914 appropriative diversions from DeLuz Creek, Fern Creek and SMR that have been reported to the SWRCB. The other statement represents a pre-1914 appropriative right to divert water from a spring in Kohler Canyon into a 40 AF reservoir.

The last two rights noted on Table 6.1 represent filings made in 1977 pursuant to Subchapter 2.5 to Chapter 3 of Title 23 of the California Code of Regulations. That subchapter deals with Water Rights for Stockponds.

In addition to appropriative rights under SWRCB jurisdiction, there are a number of non-statutory appropriative rights that were established prior to 1914. These rights continue to be used to support diversions of water from the SMR stream system. Such rights, which are listed in the various Interlocutory Judgments in this litigation, are shown on Table 6.2.

On November 19, 1998, the SWRCB adopted Order No. 98-08 entitled “Order Revising Declaration of Fully Appropriated Stream Systems” to revise its prior Order Nos. 89-25 and 91-07. These Orders list the SMR stream system as fully appropriated “from the mouth of the Santa Margarita River at the Pacific Ocean upstream including all tributaries where hydraulic continuity exists.”

TABLE 6.2

SANTA MARGARITA RIVER WATERSHED
PRE - 1914 APPROPRIATIVE WATER RIGHTS
Listed in Interlocutory Judgments

INTERLOCUTORY JUDGMENT	LISTED OWNER	CURRENT OWNER	DATE OF APPROPRIATION	SOURCE OF WATER	POINT OF DIVERSION	AMOUNT	USE
NO. 32	Anderson, Nina B.	Poladian, Jacqueline	April 11, 1892	Fern Creek	NW 1/4 of SE 1/4 Sec 31, T8S, R4W	32 gpm	Irrigation
NO. 32	Butler, Lawrence W. and Mary C.	Vanginkel, Norman Tr and Vanginkel, Deborah Tr San Diego Gas & Electric	Sept. 23, 1896	Fern Creek	NW 1/4 of SE 1/4 Sec 31, T8S, R4W	Capacity of 8 inch pipe	Irrigation
NO. 32	Wilson, Samuel M. and Hazel A.	Shirley, Bobbie	Aug. 3, 1911	DeLuz Creek	NW 1/4 of SW 1/4 Sec 32, T8S, R4W	50 miner's inches 65 AF/yr	Irrigation
NO. 24	United States	United States	1883	Santa Margarita River	Sec 5, T10S, R4W	20 cfs 1,200 AF/yr	Domestic Irrigation Stock Water

The consequences of this Order are as follows:

1. The SWRCB is precluded from accepting any application to appropriate water from the SMR System except where the proposed appropriation is consistent with conditions contained in the Declaration.

2. Initiation of a water right, pursuant to the Water Rights Permitting Reform Act of 1988 (Water Code Section 1228 *et seq.*), by registering small use domestic appropriations is precluded, except where the proposed appropriation is consistent with conditions contained in the Declaration. Small use domestic appropriations refer to uses that do not exceed direct diversions of 4,500 gallons per day or diversion by storage of 10 AF per year for incidental aesthetic, recreational, or fish and wildlife purposes.

3. Pursuant to Water Code Section 1206(a) the SWRCB is authorized, but not required, to cancel pending applications where inconsistent with conditions contained in the Declaration; previous Orders implement a procedure for disposition of such applications pending on the effective date of the Declaration.

The Order provides for reconsideration of the Order either upon petition of an interested party or upon the SWRCB's own motion.

6.3 FPUD Changes of Point of Diversion and Place of Use for Permit No. 11356

On November 20, 2001, the Chief of the Division of Water Rights of the SWRCB authorized an Order Approving Changes in Source Point of Diversion, Place of Use and Amending the Permit (No. 11356). The permit allows FPUD to divert and store up to 10,000 AF per year at Lake Skinner. The Court approved an Order Amending the Memorandum of Understanding and Agreement on Operation of Lake Skinner on February 16, 2005. The Amendment provides for such diversions from Lake Skinner after specified releases are made.

On December 18, 2009, FPUD filed a petition for a time extension for completion of beneficial use under Permit No. 11356. The petition was accepted and noticed by the SWRCB on February 23, 2009, and no protests were filed.

On May 25, 2012, the SWRCB issued Order WR 2012-0007-EXEC with an amended Permit No. 11356 extending the time to apply the water to full beneficial use by December 31, 2048.

6.4 Federal Reserved Water Rights for the Cahuilla and Ramona Indian Reservations

The Cahuilla and Ramona Indian Reservations are both located in the Anza area. The Court found in Interlocutory Judgment No. 41 that the United States reserved water rights for the reservations as specified below.

Order No. 3 in Interlocutory Judgment No. 41 specifies for the Cahuilla Indian Reservation the following:

> IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the United States of America intended to reserve, and did reserve, rights to the use of the waters of the Santa Margarita River which under natural conditions would be physically available on the Cahuilla Indian Reservation, including rights to the use of ground waters, sufficient for the present and future needs of the Indians residing thereon with priority dates of December 27, 1875, for lands transferred by the Executive Order of that date; March 14, 1887, for lands transferred by the Executive Order of that date; December 29, 1891, for lands transferred by the Executive Order of that date.

Order No. 1 in Interlocutory Judgment No. 41 specifies for the Ramona Indian Reservation the following:

> IT IS ORDERED, ADJUDGED AND DECREED that the United States of America when it established the Ramona Indian Reservation intended to reserve and did reserve rights to the use of waters of the Santa Margarita River stream system which under natural conditions would be physically available on the Ramona Reservation, including rights to the use of ground waters, sufficient for the present and future needs of the Indians residing thereon with a priority date of December 29, 1891.

On October 6, 2006, the Cahuilla Band of Indians filed a Motion to Intervene as Plaintiff-Intervenor in *United States v. Fallbrook Public Utility District*, *et al*. The Cahuilla Band also filed a Complaint asking the Court to quantify its federal reserved water rights by confirming elements of the water rights as declared and decreed by the Court in Interlocutory Judgment No. 41. On October 16, 2006, the Ramona Band of Cahuilla filed a similar motion and Complaint. On January 22, 2007, the Court issued an Order granting the Motions to Intervene and filing the Complaints in Intervention. On February 25, 2009, the Court ordered the Cahuilla Band and Ramona Band as plaintiffs to serve by April 30, 2009, all water right holders subject to the Court's jurisdiction within the entire Watershed. Service was completed and the parties commenced settlement negotiations. On April 1, 2009, the Cahuilla and Ramona Bands filed motions to dismiss claims against certain downstream defendants and to file second amended complaints to limit the claims to the Anza-Cahuilla Groundwater Area. On April 29, 2009, the Court issued an Order granting the motions. The parties are progressing with settlement negotiations and Court proceedings for quantification of each Band's federal reserved water rights based on the Second Amended Complaints.

6.5 Federal Reserved Water Rights for the Pechanga Indian Reservation

The Court found in Interlocutory Judgment No. 41 that the United States reserved water rights for the Pechanga Indian Reservation in accordance with Order No. 7:

> IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the United States of America intended to reserve, and did reserve, rights to the use of the waters of the Santa Margarita River stream system which under natural conditions would be physically available on the Pechanga Indian Reservation, including rights to the use of ground waters sufficient for the present and future needs of the Indians residing thereon with priority dates of June 27, 1882, for those lands transferred by the Executive Order of that date; January 9, 1907, for those lands transferred by the Executive Order of that date; August 29, 1893, for those lands added to the Reservation by Patent on that date; and May 25, 1931, for those lands added to the Reservation by Patent of that date.

In 1974, the Pechanga Band of Luiseño Mission Indians filed a Motion to Intervene as a Plaintiff-Intervenor in *United States v. Fallbrook Public Utility District*, *et al*., and in 1975 the Court granted the Motion. Rather than filing a complaint asking the Court to quantify its federal reserved water rights, the Pechanga Band partook in the process of resolving its claims to water rights in the SMRW through a comprehensive settlement agreement with the United States and principal water districts, including RCWD, EMWD, and MWD. On December 17, 2009, Pechanga and RCWD announced an agreement on a framework, developed with the assistance of MWD and the United States Federal Negotiating Team, to resolve Pechanga's water rights claims. On April 27, 2009, Pechanga and RCWD agreed to a Settlement Conceptual Agreement and on June 11, 2009, the RCWD Board approved the Settlement Conceptual Agreement. On November 16, 2009, the parties announced the Pechanga Water Rights Settlement Agreement was finalized. On December 11, 2009 and January 26, 2010, the Pechanga Indian Water Rights Settlement Act was introduced in the United States House of Representatives and Senate, respectively. The proposed legislation was reintroduced in the Senate on June 25, 2013, and in the House of Representatives on June 26, 2013. In 2015 and 2016, the parties continued negotiations for the settlement agreement and draft legislation in accordance with the February 26, 2015 guidance from the House Committee on National Resources and the Federal Criteria and Procedures. On February 3, 2016, Senate bill (S. 1983) was reported out of the Senate Committee on Indian Affairs. On June 23, 2016, a hearing on the proposed settlement was held before the House Natural Resources Subcommittee on Water, Power and Oceans. On November 29, 2017 the Pechanga Water Settlement Agreement was signed by the RCWD President, Pechanga Tribal Chairman, and the U.S. Secretary of the Interior. On June 18, 2018, the Court issued a judgment and decree adopting the Pechanga Band of Luiseño Mission Indians Water Rights Settlement Agreement.

6.6 California Statewide Groundwater Elevation Monitoring Program

On November 6, 2009, the Governor for the State of California approved Senate Bill SBx7-6 Groundwater Elevation Monitoring (SBx7-6). SBx7-6 provides for a statewide program of reporting groundwater elevation data for groundwater basins and is implemented by the DWR. The program is referred to as the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The Bill defines “basins” or “sub-basins” to mean a groundwater basin or sub-basin identified and defined in DWR Bulletin No. 118. Three such basins (plus a portion of a fourth basin) are identified in DWR Bulletin No. 118 for the SMRW:

1. Basin No. 9-4—Santa Margarita Valley Groundwater Basin (located in San Diego County on federal lands within CPEN).
2. Basin No. 9-5—Temecula Valley Groundwater Basin (located in Riverside County in the area including the cities of Murrieta and Temecula and the Pechanga Indian Reservation).
3. Basin No. 9-6—Cahuilla Valley Groundwater Basin (also known as the Anza-Cahuilla Groundwater Basin; located in Riverside County in the upper-most portion of the Watershed in the area within the town of Anza and the Cahuilla and Ramona Indian Reservations).
4. Basin No. 8-5—San Jacinto Groundwater Basin, Domenigoni Sub-basin (located in Riverside County in Domenigoni Valley which is southwest of Diamond Valley Lake).

SBx7-6 establishes a procedure for a Monitoring Entity to coordinate the monitoring activities for a basin and on September 24, 2012, RCWD was approved by DWR to become the Monitoring Entity for Basin No. 9-5 in the Temecula area. The monitoring plan was reviewed by the Watermaster and includes monitoring wells maintained by RCWD, WMWD, and the USGS with funding through the Watermaster budget.

On September 17, 2015, CPEN submitted a request to DWR to be the CASGEM Monitoring Entity for Basin No. 9-4, which is located on CPEN. On October 8, 2015, CPEN was designated as the Monitoring Entity for Basin No. 9-4. CPEN developed the CASGEM monitoring plan for Basin No. 9-4 in cooperation with San Diego County.

Presently, there is no CASGEM monitoring plan for Basin No. 9-6 but efforts are ongoing to establish the CASGEM Monitoring Entity and develop a CASGEM monitoring plan. EMWD is the approved Monitoring Entity for Basin No. 8-5.

Additional information regarding the CASGEM program, the approved monitoring plans, and groundwater monitoring data posted for Basin Nos. 8-5, 9-4, and 9-5 can be found at the following website:
https://water.ca.gov/Programs/Groundwater-Management/Groundwater-Elevation-Monitoring--CASGEM

6.7 Sustainable Groundwater Management Act

On September 16, 2014, Governor Brown signed the California Sustainable Groundwater Management Act (SGMA) that was established as part of a comprehensive three-bill package that includes AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley) to provide the framework for statewide groundwater management by local authorities. The state agencies charged with administration of the Act are both the DWR and the SWRCB.

SGMA pertains to all groundwater basins identified and defined in DWR Bulletin 118. However, SGMA includes an exemption for adjudicated basins as provided in §10720.8(a) that specifically lists the SMRW as an exempted adjudicated area. Thus, the four DWR Bulletin No. 118 basins located within the Watershed are not subject to the general requirements of SGMA. However, as specified in §10720.8(f), the Watermaster must comply with certain requirements under SGMA, including reporting to DWR commencing on or before April 1, 2016.

On March 23, 2016, in accordance with §10720.8, the Watermaster completed the required profile and initial submittal on the DWR SGMA Reporting for Adjudicated Areas Website for the SMRW adjudication. Additionally, as part of the required initial submittal, the Watermaster submitted to DWR a letter and DVD containing PDF files of the principal governing final judgments, orders, and decrees for the SMRW adjudication in *United States v. Fallbrook Public Utility District, et al*., Case No. 51-cv-1247-GPC-RBB. The submittal also contained copies of each of the annual reports prepared by the Watermaster under court order for submittal to the Court. These reports include the Annual Watermaster Report for 1989 through 2014 and the Annual CWRMA Report for 2011 through 2014. The SGMA Reporting for Adjudicated Areas Website can be found at the following website: https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Adjudicated-Areas

As part of the annual reporting requirements, the Watermaster will submit to DWR copies of the Annual Watermaster Report and the Annual CWRMA Report to provide information for the DWR Bulletin No. 118 basins within the Watershed. Reporting for WY 2018 was completed on June 9, 2020. In addition, the groundwater monitoring data for the basins under the CASGEM Program fulfills a portion of the reporting requirements specified in §10720.8(f)(3)(A).

Page Intentionally Blank

SECTION 7 - WATER PRODUCTION AND USE

7.1 General

Water production and use data were obtained from several types of substantial users including water purveyors, Indian Reservations, mobile home parks and private landowners. Private landowners who qualify as substantial water users are those who irrigate eight or more acres or who produce or use an equivalent quantity of water.

Major water purveyors, who reported production and use data in 2018-19, are listed as follows:

Anza Mutual Water Company
Eastern Municipal Water District
Elsinore Valley Municipal Water District
Fallbrook Public Utility District
Lake Riverside Estates
Metropolitan Water District of Southern California
Rainbow Municipal Water District
Rancho California Water District
U. S. Marine Corps, Camp Pendleton
U.S. Naval Weapons Station Seal Beach, Detachment Fallbrook
Western Municipal Water District

Lake Riverside Estates is listed with major water purveyors although it does not deliver water to customers. However, it does produce make-up water for losses from Lake Riverside.

In addition to the major purveyors, there are a number of smaller water systems in the Watershed. Of these, Quiet Oaks Mobile Home Park, Jojoba Hills SKP Resort, Rancho California Outdoor Resorts, Cottonwood Elementary, and Hamilton Schools are substantial users.

Three Indian Reservations, the Cahuilla, Pechanga and Ramona, are noted in Interlocutory Judgment No. 41, the Judgment that pertains to Water Rights on Indian Reservations in the Watershed. Estimates and/or measurements of water production and use are reported for the Cahuilla, Pechanga and Ramona Indian Reservations.

A portion of a fourth Reservation, the Pauma Mission Reserve Tract of the Pauma Yuima Band of Luiseño Mission Indians, is also located within the Watershed. However, this Reservation was not included in Interlocutory Judgment No. 41.

The final category of water users is private landowners who use water primarily for irrigation.

The water use data collected for 2018-19 is summarized on Table 7.1. Total imported supplies plus local production totaled 90,575 AF compared to 108,077 AF reported in 2017-18. Of that quantity, 22,148 AF were used for agriculture; 13,954 AF were used for commercial purposes; 41,477 AF were used for domestic purposes; 27 AF were discharged to Temecula Creek; 94 AF were discharged to Murrieta Creek; and 3,007 AF were discharged by RCWD during 2018-19, pursuant to the CWRMA. It is noted, the commercial use for Pechanga includes 468 AF of recycled water and thus this amount is double counted on Table 7.1 relative to production from the SMRW. Actual commercial use of production from the Watershed is 13,486 AF, reflecting the reduction of 468 AF of recycled water used by Pechanga. In order for the totals to balance on Table 7.1, the 468 AF of recycled water is subtracted from the indicated loss for Pechanga as reflected in Footnote 14 for Table 7.1.

The overall system loss was 4,091 AF, or 4.5% of total production. System gain or loss is the result of many factors including errors in measurement, differences between periods of use and periods of production, leakage and unmeasured uses.

Monthly production and use data for major water purveyors are found in Appendix A. Uses are listed under agricultural, commercial and domestic categories. The definition of agricultural, commercial and domestic uses varies for the different purveyors in the Watershed. The definitions for agricultural, commercial and domestic uses have varied over the years for the different purveyors in the Watershed. Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The reconciliation resulted in near uniformity in water use definitions among the major water purveyors. Accordingly, definitions of these uses for major water purveyors are shown on Table 7.2. Similar data for WYs 1966 through 2019 are summarized in tables presented in Appendix B. As noted above, water use definitions were updated in WY 2014 and thus water use reported for certain purveyors for prior years on the Appendix B tables can vary significantly as compared to the use categories for 2018-19. The reader is referred to Table 7.2, published in each annual report, to determine the particular use definitions for any particular year in question. Appendix C presents information on substantial users outside purveyor service areas.

7.2 Water Purveyors

7.2.1 Anza Mutual Water Company

Anza Mutual Water Company's service area is in the eastern part of the Watershed in the Anza Valley. Production is from two wells: Well No. 1 drilled in 1951, and perforated from 20 feet to 260 feet; and Well No. 2 drilled later to a depth of 287 feet and perforated in the bottom 130 feet. Production for 2018-19 was approximately 28.16 AF from Well No. 1. Production for 2018-19 was approximately 0.32 AF from Well No. 2. For 2018-19 total production from both wells was approximately 28.5 AF as shown in Appendix Table A-11. Water levels in Well No. 1 and Well No. 2 each rose by 1.0 feet during 2018-19.

TABLE 7.1

SANTA MARGARITA RIVER WATERSHED

WATER PRODUCTION AND USE

2018-19

Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/					
	WELL/ SURFACE	IMPORT	TOTAL	AG	COMM	DOM	LOSS	TOTAL	WATER RIGHT
WATER PURVEYORS									
Anza Mutual Water Company	28	0	28	0	0	26	3 [3/]	28	Appropriative
Eastern MWD	0	13,453	13,453	329	2,684	9,768	673	13,453	Appropriative
Elsinore Valley MWD	0	5,870	5,870	10	1,200	4,413	247	5,870	---------
Fallbrook PUD	89 [19/]	3,519	3,608	1,618	202	1,562	226	3,608	Appropriative
Lake Riverside Estates	321	0	321	0	321 [4/]	0	0	321	Appropriative
Metropolitan Water District	0	554 [16/]	554	554	0 [5/]	0	0	554	---------
Murrieta Division of Western MWD	365	1,529	1,895	0	622	1,264	8	1,895	Appropriative
Rainbow MWD	0	1,170	1,170	880	16	161	112	1,170	---------
Rancho California WD	17,200 [6/]	35,362 [7/]	52,561	14,649	7,714	22,043	8,155 [8/]	52,561	Various
U.S.M.C. - Camp Pendleton	5,614	0	5,614	0	------ [10/]	1,878	3,736 [3/ 11/]	5,614	Appropriative/ Riparian/Pre-1914
U.S. Naval Weapons Station	0	85	85	0	------ [10/]	77	9 [3/]	85	---------
Western MWD Improvement Dist. A Through Rancho California WD	0	30	30	0	27	0	3 [3/]	30	---------
INDIAN RESERVATIONS									
Cahuilla	106	0	106	18 [17/]	25 [18/]	63	0	106	Overlying/Reserved
Pechanga	775	0	775	0	902	123	(249) [14/]	775	Overlying/Reserved
Ramona	5	0	5	0	0	5	0	5	Overlying/Reserved
SMALL WATER SYSTEMS									
Quiet Oaks Mobile Home Park	16	0	16	0	3	11	2 [3/]	16	Riparian/Overlying
Outdoor Resorts	235	0	235	0	209	23	2 [3/]	235	Overlying
Jojoba Hills SKP Resort	67	0	67	0	0	61	7 [3/]	67	Overlying
Cottonwood Elementary	16	0	16	0	15	0	2 [3/]	16	Overlying
Hamilton Schools	14	0	14	0	13	0	1 [3/]	14	Overlying
OTHER SUBSTANTIAL USERS	4,150 [12/]	0	4,150	4,090	0	0	60 [13/]	4,150	
TOTAL	**29,002**	**61,573**	**90,575**	**22,148**	**13,954**	**41,477**	**12,996** [15/]	**90,575**	

1/ Totals may not add due to rounding.
2/ Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The updated definitions are provided in Table 7.2.
3/ Assumes 10% system loss.
4/ Recreational Use.
5/ Construction use at Diamond Valley Lake.
6/ Includes 17,429 AF of native production (including releases to stream) minus 175 AF exported to the San Mateo Watershed minus 37 AF pumped into recycled water system minus 18 AF (rounded) delivered to Pechanga Band.
7/ Includes 16,068 AF direct use; 12,958 AF VDC recharge; 2,942 AF from MWD WR-34; 3,719 AF of Cyclic Deposit minus 325 AF export.
8/ Includes 27 AF discharged into Temecula Creek, 94 AF into Murrieta Creek, 65 AF into SMR from potable system, 2,942 AF discharged into SMR from MWD WR-34, 2,715 AF of import remaining in storage, and a system loss of 2,311 AF.
9/ Listed with Agricultural use.
10/ Listed with Domestic use.
11/ Includes exports of 2,883 AF, brine production of 644 AF and a system loss of 209 AF.
12/ Includes 604 AF for surface diversion plus 3,652 AF from groundwater as shown in Appendix C, minus 106 AF on the Cahuilla Reservation.
13/ Loss is equal to 10% of surface diversions.
14/ Includes a system loss of 218 AF, minus 468 AF of reclaimed wastewater from EMWD, accounted for on Table A-1. See Table A-5 for Pechanga production and use.
15/ Includes an overall system loss of 4,091 AF. Overall system loss is calculated by estimating the traditional system loss of comparing total production versus total use for each water purveyor.
16/ An additional 18 AF were released by MWD from Lake Skinner into Tucalota Creek for maintenance purposes and groundwater replenishment and 172 AF for Lake Skinner MOU Required Releases.
17/ Stock Watering
18/ Includes approximately 7 AF for dust control, 8 AF for watering of turf grass, and 10 AF for casino purposes.
19/ Includes 207 AF of Lake Skinner Diversions minus 118 AF served outside the SMRW.

TABLE 7.2

SANTA MARGARITA RIVER WATERSHED
DEFINITIONS OF WATER USE
BY MUNICIPAL WATER PURVEYORS
2018-19

DISTRICT	AGRICULTURAL	DOMESTIC	COMMERCIAL
EASTERN MUNICIPAL WATER DISTRICT	Row crops, orchards, vineyards, sod farms, other commercially grown crops, dairies, horse ranches and other agricultural users, including agricultural allocation for agricultural/domestic meters	Single family and multi-family residential connections, including domestic allocation for agricultural/domestic meters	All other usage including commercial, industrial, institutional, golf courses, parks, recreation, landscaping, temporary and construction
ELSINORE VALLEY MUNICIPAL WATER DISTRICT	Same as EMWD	Same as EMWD	Same as EMWD
FALLBROOK PUBLIC UTILITY DISTRICT	Same as EMWD	Single family and multi-family residential connections, including first 20,000 gallons for agricultural/domestic meters	Same as EMWD
PECHANGA INDIAN RESERVATION	Same as EMWD	Same as EMWD	All other usage including resort, on-Reservation businesses, tribal facilities, commercial, industrial, institutional, golf courses, parks, recreation, landscaping, temporary and construction
RAINBOW MUNICIPAL WATER DISTRICT	Same as EMWD	Single family and multi-family residential connections, including first 19,448 gallons for agricultural/domestic meters	Same as EMWD
RANCHO CALIFORNIA WATER DISTRICT	Same as EMWD	Single family and multi-family residential connections, including first 1,600 cubic feet for agricultural/domestic meters	Same as EMWD
MURRIETA DIVISION OF WESTERN MUNICIPAL WATER DISTRICT	Same as EMWD	Same as EMWD	Same as EMWD
USMC, CAMP PENDLETON	Same as EMWD	Camp Supply - All usage except agricultural	Reported under Camp Supply

Interlocutory Judgment No. 33 divides aquifers in Anza Valley into two categories: the shallow aquifer and the deep aquifer. Based on information available to the Court, the shallow aquifer was determined to include the younger and older alluvial deposits in the Anza Groundwater Basin, and extend to a maximum but variable depth of approximately 100 feet. The deep aquifer underlies the shallow aquifer in an area about one-half mile in width and two miles in length, within portions of Sections 16, 17, 21, 22, 27 and 28 of Township 7 South, Range 3 East, SBM. Anza Mutual Water Company's wells are within the area of the deep aquifer. From the perforated intervals in the wells, it may be concluded that most of the production from Well No. 1 and all of the production from Well No. 2 are from the deep aquifer. Interlocutory Judgment No. 33 concluded that waters contained in the deep aquifer did not add to, support or contribute to the SMR stream system and were, therefore, declared to be outside the Court's jurisdiction.

Accordingly, some of the water produced by the Anza Mutual Water Company is outside the Court's jurisdiction. The portion pumped from the shallow aquifer in Well No. 1 is pumped under a groundwater appropriative right. Data for WYs 1989 through 2019 are shown on Appendix Table B-12.

7.2.2 Eastern Municipal Water District

EMWD is a member agency of MWD and its service area includes a portion of the RCWD and the Murrieta Division of WMWD. Within the Watershed, EMWD wholesales water to those districts and also retails water directly to consumers. Water sold to RCWD and the Murrieta Division of WMWD is not listed in this report as imported water to EMWD.

EMWD's service area outside RCWD and the Murrieta Division of WMWD is located in the northern part of the Watershed. Water for EMWD's retail service area is all imported with no groundwater production during 2018-19.

Imports, not including water wholesaled to RCWD or the Murrieta Division of WMWD, or delivered to EVMWD, totaled 14,963 AF (rounded). A portion of that import, amounting to 1,509 AF, was exported from the SMRW for delivery to EMWD's retail customers located outside the Watershed, resulting in net import to the Watershed of 13,453 AF. These data are shown on Appendix Table A-1.

In addition to importing fresh water, EMWD also reclaims wastewater at its TVRWRF. Disposition of wastewater from the TVRWRF service area for 2018-19 and 2018-19 is shown below:

Use	2017-18 Quantity AF	2017-18 Percent %	2018-19 Quantity AF	2018-19 Percent %
Reuse in SMRW	3,163	22.5	2,849	19.0
Reuse outside SMRW	7,902	56.1	5,439	36.3
Subtotal	11,065	78.6	8,288	55.3
Discharge to Dissipater at Temescal Creek	0	0	2,959	19.8
Other	3,016	21.4	3,724	24.9
TOTAL	14,081	100.0	14,974	100.0

It can be noted that the quantities of recycled water used within the SMRW decreased from 3,163 AF in WY 2018 to 2,849 AF in 2018-19. During the same period, reuse outside the SMRW decreased from 7,902 AF to 5,439 AF. In 2018-19, it may be concluded that 19.0% of the recycled water was used in the Watershed and 36.3% was used outside the Watershed. The quantity of wastewater discharged to the dissipater at Temescal Creek increased from 0 AF to 2,959 AF during 2018-19. The Other use increased from 3,016 AF to 3,724 AF. This Other use includes changes of storage in Winchester and Sun City storage ponds, as well as evaporation and percolation losses.

Due to concerns about the potential export of native Santa Margarita water, the sources of water supply to the TVRWRF service area were determined and are shown on Table 7.3. In 2018-19, about 20.7% of the supply to the service area was native. Thus, the percent of native supply was greater than the percentage of wastewater reused within the SMRW, and on a proportional basis there was some export of native waters.

On August 4, 2009, a Judgment was entered in *United States and Fallbrook Public Utility District v. Eastern Municipal Water District and Rancho California Water District* (CV 04-8182 CBM (RNBx), United States District Court, Central District of California) pertaining to the contractual obligations of the 1990 Four Party Agreement and the export of treated wastewater from the SMRW. On May 17, 2011, the United States Court of Appeals for the Ninth Circuit issued an Order granting the parties' joint motion to dismiss the appeals in this matter and thus the August 4, 2009 Judgment stands. For purposes of this annual report the export of treated wastewater will be reported consistent with prior annual reports with no changes pursuant to the Judgment.

Estimates of water production and use for EMWD for the period 1966 through 2019 are shown on Appendix Table B-1.

TABLE 7.3

SANTA MARGARITA RIVER WATERSHED

WATER DELIVERIES TO TEMECULA VALLEY
REGIONAL WATER RECLAMATION FACILITY SERVICE AREA

	2015		2016		2017		2018		2019[4/]	
Eastern MWD	AF	%	AF	%	AF	%	AF	%	AF	%
Deliveries to TVRWRF Service Area										
1. Native Water	0		0		0		0		0	
2. Import	13,877		13,602		13,441		15,007		13,453	
3. Total	13,877		13,602		13,441		15,007		13,453	
Rancho California WD										
Deliveries to TVRWRF Service Area										
1. Native Water 1/	8,201		9,029		6,916		5,974		6,218	
2. Import 2/	9,232		7,071		9,930		12,247		10,359	
3. Total 3/	17,433		16,100		16,847		18,221		16,577	
Total Deliveries to TVRWRF Service Area										
1. Native Water	8,201	26.2%	9,029	30.4%	6,916	22.8%	5,974	18.0%	6,218	20.7%
2. Import	23,109	73.8%	20,673	69.6%	23,371	77.2%	27,254	82.0%	23,812	79.3%
3. Total	31,310	100.0%	29,702	100.0%	30,288	100.0%	33,228	100.0%	30,030	100.0%

1/ Based on the ratio of native water to total production in Rancho Division of RCWD.
2/ Based on the ratio of import to total production in Rancho Division of RCWD.
3/ Total RCWD deliveries in TVRWRF Service Area.
4/ Beginning in WY 2019, Native Water defined as groundwater and surface water produced.

7.2.3 Elsinore Valley Municipal Water District

EVMWD provides water to its service area around Lake Elsinore, a portion of which is within the SMRW. EVMWD obtains its supply from ten wells, all located outside the Watershed, and also imports MWD water through EMWD and WMWD.

As shown on Appendix Table A-2, EVMWD reports for 2018-19 that 5,870 AF were imported into the portion of its service area that is inside the Watershed, and 1,484 AF of wastewater were exported from that same area. In 2013-14, EVMWD began using recycled water treated at the RCWD Santa Rosa Water Reclamation Facility via the EMWD Palomar Pipeline through a wheeling agreement. In 2018-19, a total of 233 AF of recycled water were received via EMWD and 96 AF were used within the Watershed.

Production and use for EVMWD for the period 1966 through 2019 are shown on Appendix Table B-2.

7.2.4 Fallbrook Public Utility District

The FPUD service area is located in both the San Luis Rey River and SMR watersheds. In 2018-19, FPUD imported a total of 7,688 AF, as shown on Appendix Table A-3. FPUD has three wells within the SMRW; however, in 2018-19, there was no production from these wells. Additionally, in 2018-19, FPUD reported 207 AF (rounded) of diversions from Lake Skinner, under Permit No. 11356, resulting in a total district-wide production of 7,894 AF. The total production for the portion of FPUD service area that is within the Watershed, as shown on Appendix Table A-3, is 3,608 AF, or about 45.7% of the total district wide production.

In 2018-19, FPUD treated 824 AF of wastewater from areas served within the Watershed, of which 19 AF were reused in the Watershed. The wastewater production and distribution for 2018-19 is shown on Appendix Table A-3.

Production during the period 1966 through 2019 included direct diversions from the SMR prior to 1972, as well as imported water and well production, as shown in Appendix B. During WY 2011, FPUD revised its reporting methods for both water production and wastewater operations. The historical water production and use for the period 1966 through 2010 are provided on Appendix Table B-3.1 reflecting prior reporting methods, particularly for previous estimates associated with the DeLuz portion of the service area. Appendix Table B-3.2 is provided to show the current water production and use reflecting the revised reporting methods. The revised reporting methods include metered deliveries for the reported uses within the Watershed and application of a district-wide loss factor.

The FPUD wastewater production and distribution for the period 1966 through 2019 are shown on Appendix Table B-4.

7.2.5 Lake Riverside Estates

Lake Riverside Estates pumps water from Well No. 7S/2E-32C1, into Lake Riverside to replace evaporation losses. Production for 2018-19 was approximately 321 AF as shown on Appendix Table A-11. The production well was drilled in 1962 and is located in an area of younger alluvium in the Cahuilla Groundwater Basin. The well was drilled to a depth of 338 feet.

Interlocutory Judgment No. 33 indicates that the owners of lands in the Cahuilla Groundwater Basin have correlative overlying rights to the use of the groundwater that is the basis for this production. Data for Lake Riverside Estates for the period 1989 through 2018 are shown on Appendix Table B-12.

7.2.6 Metropolitan Water District of Southern California

Pursuant to a Court Order, MWD imported 554 AF of water into the SMRW for irrigation of lands in Domenigoni Valley in 2018-19. MWD did not import any water for groundwater recharge and there was no water used for construction purposes. As previously noted, the groundwater in the Domenigoni Valley groundwater basin is outside this Court's jurisdiction when groundwater levels are below elevation 1,400 feet. This production is shown on Appendix Table A-4, and production for the period 1966 through 2019 is shown on Appendix Table B-5.

7.2.7 Rainbow Municipal Water District

RMWD is located in San Diego County in the south-central part of the Watershed. In 2018-19, the District imported a total of 13,934 AF of water as shown on Appendix Table A-6. However, most of the District is in the San Luis Rey River Watershed and only about 8.4% of the District's imported supply was delivered to the portion of the service area inside the SMRW. As shown on Appendix Table A-6, total deliveries of imported water in the SMRW in 2018-19 amounted to 1,170 AF.

RMWD import production for the period 1966 through 2019 is shown on Appendix Table B-7.

7.2.8 Rancho California Water District

RCWD serves water to a 99,600 acre service area in the central portion of the Watershed. RCWD produced water from 45 wells in 2018-19, and also imported water as shown on Appendix Table A-7. Use is shown under the categories of agriculture, commercial and domestic. In 2018-19, well production of native water included 17,374 AF from the Murrieta-Temecula Groundwater Area. A portion of the groundwater amounting to 175 AF (rounded) was exported for use in the San Mateo Watershed, resulting in a net well production of 17,200 AF.

Import supplies totaled 35,687 AF of which 16,068 AF were used for direct use; 12,958 AF were recharged; 3,719 AF was Cyclic Deposits; and 2,942 AF were discharged by RCWD to the SMR from MWD Service Connection WR-34 during 2018-19, pursuant to the CWRMA. A portion of that import amounting to 325 AF was exported from the SMRW to the San Mateo Watershed, resulting in net import to the Watershed of 35,362 AF.

During 2018-19, RCWD use totaled 52,561 AF including 14,649 AF for agriculture; 7,714 AF for commercial; 22,043 AF for domestic; 3,129 AF were released into Temecula

Creek, Murrieta Creek, and the SMR; and 2,311 AF were system loss. In 2018-19, a net amount of 1,003 AF of import water was produced from storage (Cyclic Withdraw).

In 2018-19, RCWD did not export reclaimed wastewater from the Watershed via EMWD's Palomar Valley Pipeline.

RCWD produces groundwater under a variety of rights as follows:

1. Recovery of water appropriated at Vail Lake
2. Recovery of import return flows and directly recharged imported water
3. Groundwater appropriative rights
4. As agent on behalf of overlying landowners

Vail Appropriation

RCWD's Vail Dam appropriative rights are described in Application No. 11518 as amended on June 17, 1947, and in Permit 7032 originally issued on February 18, 1948. Permit 7032 was subsequently amended on July 28, 1971, and April 22, 2009. The water right provides that RCWD may store up to 40,000 AF in Vail Lake each year between November 1 and April 30, subject to applicable limitations. The water so stored may be used for recreational uses at Vail Lake and municipal, domestic, industrial, and irrigation uses within the entire service area of RCWD. Such uses may be by direct diversion from Vail Lake or by recovery of water released from Vail Lake and spread downstream in Pauba Valley. Points of re-diversion for recovery from underground storage are permitted for 12 production wells: RCWD Wells 109, 110, 123, 132, 152, 153, 157, 158, 210, 232, 233, and 234. It should be noted, Wells 110 and 210 have been replaced by Wells 164 (February 2015) and 236 (August 2017), respectively.

There were 555 AF of releases from Vail Lake during 2018-19 for groundwater recharge. Releases from Vail Lake for groundwater recharge for the period 1980 through 2019 are shown on Appendix Table B-8.

It is noted, with the issuance of the amended Permit 7032 in 2009, the place of use, purposes of use, and permitted points of re-diversion were changed. Accordingly, the reporting of Permit 7032 operations was modified to reflect the changed conditions. Table 7.4 was modified in 2009 to reflect the changes subject to further refinement as part of the update of the CWRMA groundwater model. The reporting on Table 7.4 reflects the assumption that all water released from Vail Lake for recharge is recovered from the younger alluvium by pumping from the permitted recovery wells. The remainder of the pumping from the younger alluvium is apportioned to direct import recharge.

TABLE 7.4

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
PERMIT 7032 OPERATIONS
2018-19
Quantities in Acre Feet

Diversion to Storage in Vail Lake 1/	6,658
Release to Groundwater Storage 1/	555
Recovery from Groundwater Storage 2/ 3/	555
Vail Recharge Account Balance from 2017-18	54,927
Release minus Recovery	0
Vail Recharge Account Balance for 2018-19	54,927

1/ See Table 3.3.
2/ Permitted Points of Re-Diversion RCWD Wells 109, 110, 123 132, 152, 153, 157, 158, 210, 232, 233 and 234.
3/ Total pumping from Vail recovery wells is greater than amount shown as recovered under Permit 7032. Total pumping from the 12 recovery wells is shown on Table 7.8.

Imported Water Return Flows

Return flows for 2018-19, based on imported water use in the Rancho Division and Santa Rosa Division are shown on Tables 7.5 and Table 7.6, respectively.

In the following tables, imported water is allocated to agricultural, commercial and domestic uses in each of eight applicable hydrogeologic areas in the Rancho Division service area and three applicable hydrogeologic areas in the Santa Rosa Division service area. This allocation is the proportion of the total deliveries to each use that is made up of imported water. For 2018-19, 62.57% of the supply to the Rancho Division was imported and 64.78% of the supply to the Santa Rosa Division was imported. Percentages are based on proportion of Total Import Use to Total Use, as shown on Tables 7.5 and 7.6.

In general, the Santa Rosa Division does not overlie the groundwater area. However, there are several areas classified as being in the Santa Rosa Division that do overlie the groundwater area and generate return flows from imported supplies. Data from most of these lands have been reported since December 1991.

The percentage of imported water that becomes return flow varies according to the use as follows:

Agricultural Use	18%
Commercial Use	13%
Domestic Use	12%

Based on the foregoing factors, the total return flow credit for 2018-19 is computed to be 2,310.77 AF for the Rancho Division and 1,586.70 AF for the Santa Rosa Division, as shown on Tables 7.5 and 7.6, respectively.

Some of the hydrogeologic areas overlie older alluvium and some overlie younger alluvium. Comparison of exposures of younger alluvium with maps of RCWD's hydrogeologic areas indicate that the Santa Gertrudis, Pauba, a portion of North Murrieta and half of the Murrieta-Wolf areas overlie younger alluvium. The areas of the Santa Rosa Division that overlie the groundwater area in the younger and older alluvium varies and are identified on Table 7.6. Import return flows in these areas can be credited against pumping from the younger alluvium. The credits for 2018-19 are 600.59 AF for the Rancho Division and 40.96 AF for the Santa Rosa Division, as shown on Tables 7.5 and 7.6, respectively. The total return flow credit for 2018-19 to offset younger alluvium production in future years is 641.55 AF.

TABLE 7.5

SANTA MARGARITA RIVER WATERSHED

RANCHO CALIFORNIA WATER DISTRICT

RETURN FLOW CREDIT

2018-19

RANCHO DIVISION

Quantities in Acre Feet

HYDROGEOLOGIC AREAS

	0 NO HYDRO-GEO CODE	1 MURRIETA WOLF 1/2 QYAL 1/2 QTOAL	2 SANTA GERTRUDIS QYAL	3 LOWER MESA QTOAL	4 PAUBA QYAL	5 SOUTH MESA QTOAL	6 UPPER MESA QTOAL	7 PALOMAR QTOAL	8 NORTH MURRIETA 1/4 QYAL 3/4 QTOAL	TOTAL
AGRICULTURAL										
Total Use	1,111.52	6.67	0.00	31.35	462.49	73.62	1,029.66	988.11	0.00	3,703.41
% Import	61.83	62.71	0.00	26.55	27.90	0.00	0.00	61.91	0.00	
Import Use	687.25	4.18	0.00	19.55	287.23	45.50	643.71	611.74	0.00	2,299.15
% Credit	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	
Credit	123.70	0.75	0.00	3.52	51.70	8.19	115.87	110.11	0.00	413.85
COMMERCIAL										
Total Use	252.47	1,658.51	1,134.08	2,123.91	401.25	490.18	124.72	60.02	1.35	6,246.48
% Import	49.94	57.95	65.62	57.70	100.50	59.08	89.58	70.68	411.05	
Import Use	126.08	961.18	744.22	1,225.58	403.24	289.62	111.72	42.42	5.53	3,909.59
% Credit	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	
Credit	16.39	124.95	96.75	159.33	52.42	37.65	14.52	5.51	0.72	508.25
DOMESTIC										
Total Use	967.08	2,082.48	1,957.87	8,229.27	587.23	3,063.50	1,217.48	363.18	0.00	18,468.11
% Import	54.48	60.18	62.65	56.78	160.96	57.57	70.56	81.28	0.00	
Import Use	526.83	1,253.32	1,226.58	4,672.99	945.18	1,763.79	859.08	295.20	29.30	11,572.27
% Credit	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	
Credit	63.22	150.40	147.19	560.76	113.42	211.65	103.09	35.42	3.52	1,388.67
TOTAL USE	2,331.07	3,747.66	3,091.96	10,384.53	1,450.96	3,627.30	2,371.86	1,411.31	1.35	28,418.00
TOTAL										
Total Import Use	1,340.15	2,218.68	1,970.80	5,918.12	1,635.65	2,098.90	1,614.50	949.37	34.83	17,781.01
Total Credit	203.31 *	276.10	243.94	723.60	217.54	257.49	233.48	151.05	4.24	2,310.77
Total Credit Qyal		138.05	243.94		217.54				1.06	600.59
Total Credit Qtoal		138.05		723.60		257.49	233.48	151.05	3.18	1,506.86

* This credit not applied to either Qyal or Qtoal

TABLE 7.6

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
RETURN FLOW CREDIT
2018-19
SANTA ROSA DIVISION
Quantities in Acre Feet

HYDROGEOLOGIC AREAS

	0 No HYDRO- GEO CODE	1 MURRIETA WOLF 1/2 QYAL 1/2 QTOAL	2 SANTA GERTRUDIS 2/3 QYAL 1/3 QTOAL	8 NORTH MURRIETA 1/4 QYAL 3/4 QTOAL	TOTAL
AGRICULTURAL					
Total Use	10,923.42	0.00	0.00	21.94	10,945.36
% Import	64.69	0.00	0.00	65.50	
Import Use	7,066.90	0.00	0.00	14.37	7,081.28
% Credit	16.00	18.00	18.00	18.00	
Credit	1,201.37	0.00	0.00	2.59	1,203.96
COMMERCIAL					
Total Use	526.72	0.81	0.46	939.59	1,467.57
% Import	64.69	65.20	70.42	65.03	
Import Use	340.74	0.53	0.32	611.06	952.65
% Credit	11.00	13.00	13.00	13.00	
Credit	40.89	0.07	0.04	79.44	120.44
DOMESTIC					
Total Use	2,530.33	0.00	0.00	1,044.81	3,575.14
% Import	64.93	0.00	0.00	65.06	
Import Use	1,643.00	0.00	0.00	679.80	2,322.81
% Credit	10.00	12.00	12.00	12.00	
Credit	180.73	0.00	0.00	81.58	262.31
TOTAL USE	13,980.46	0.81	0.46	2,006.34	15,988.06
TOTAL					
Total Import Use	9,050.65	0.53	0.32	1,305.23	10,356.73
Total Credit	1,422.99 *	0.07	0.04	163.60	1,586.70
Total Credit Qyal		0.03	0.03	40.90	40.96
Total Credit Qtoal		0.03	0.01	122.70	122.75

* This credit not applied to either Qyal or Qtoal

RCWD imported an additional 12,958 AF of water for direct groundwater recharge in 2018-19. The total amount of imported recharge water that was recovered in 2018-19 was approximately 13,961 AF. Thus, 1,003 AF of recovered water were derived from groundwater storage.

Cyclic Storage

Beginning in October 2017, RCWD initiated a Cyclic Storage program with EMWD and MWD. The agreement allows MWD to deliver water to the groundwater basin in advance of demand for the water by EMWD and its member agency RCWD. At the beginning of 2018-19, the cyclic account carryover contained 1,074 AF. In 2018-19, a total of 3,719 AF (rounded) of water was imported and stored in the basin under the cyclic agreement. During 2018-19, a total of 1,003 AF of previously banked water was produced. Therefore, the amount of banked water remaining in storage under the cyclic agreement is 3,789 AF.

Cyclic Storage water carryover to 2018-19 includes the following:

		AF[1/]
1.	Carryover from 2017-18	1,074
2.	Cyclic water imported and banked in 2018-19	3,719
3.	Cyclic water recovered in 2018-19	(1,003)
4.	Total carryover at end of 2018-19	3,789

1/ Totals may not add due to rounding.

Division of Local Water

During 2018-19, RCWD pumped 31,390.5 AF of groundwater, comprised of 17,429.0 AF of local water (native alluvium and Vail recovery) and 13,961.5 AF of recovered import water (recharged and Cyclic Withdraw). The groundwater is pumped from both the younger alluvium and the older alluvium. The Court determined that water in both the younger alluvium and older alluvium adds to, contributes to and supports the SMR stream system. The primary reason for differentiating between younger alluvium and older alluvium production is that, in California, production from the younger alluvium is generally considered to be governed by water rights that apply to the regulation of surface waters. Production from the older alluvium is generally considered to be governed by regulations that apply to groundwater. Of the 17,429.0 AF of local water, 18 AF were delivered to the Pechanga Indian Reservation under the terms of the Wolf Valley Groundwater Management Agreement. This production is shown on Appendix Table A-5.

During joint development of a groundwater model of the area it was necessary to develop estimates of the transmissivity for each aquifer. These estimates were based on pumping tests. The resulting transmissivity values were then used to estimate the relative groundwater production from each aquifer. For RCWD wells, the percent production estimated to originate in the younger alluvium is shown on Table 7.7.

Production from the younger alluvium and older alluvium for 2018-19, using the percentages noted on Table 7.7 is presented on Table 7.8. In 2018-19, 14,154.8 AF were pumped from the younger alluvium and 17,235.7 AF were pumped from the older alluvium. The production of 14,154.8 AF from the younger alluvium, as shown on Table 7.8 is the recovery of 12,958.2 AF of direct import recharge, 555.0 AF of Vail releases, and the recovery of 641.6 AF of Cyclic Withdrawals. The production of 17,235.7 AF from the older alluvium, as shown on Table 7.8, is the recovery of 16,874.0 AF of local water (native groundwater and Vail recovery, when applicable) and 361.7 AF of Cyclic Storage.

Imported water carryover to 2018-19 includes the following:

		AF[1/]
1.	Carryover from 2017-18	71,363.0
2.	Direct recharge of imported water in 2018-19	12,958.2
3.	Imported recharge water recovered in 2018-19	(12,958.2)
4.	Import return flow credit for 2018-19	641.6
5.	Total carryover to 2018-19	72,004.6

1/ Totals may not add due to rounding.

Thus, the Imported Water Carryover Account balance of 72,004.6 AF remains available to offset younger alluvium production in future years.

TABLE 7.7

SANTA MARGARITA RIVER WATERSHED

PERCENT PRODUCTION FROM YOUNGER ALLUVIUM IN RANCHO CALIFORNIA WATER DISTRICT WELLS

RCWD WELL NO.	LOCATION TOWNSHIP/ RANGE/ SECTION	PERFORATED INTERVAL FEET	YOUNGER ALLUVIUM FEET	PERCENT YOUNGER ALLUVIUM %	REMARKS
106	7S/3W-26R1	130-210; 250-310; 340-440; 700-740; 780-980	0	0.0%	No. 108 Winchester, clay 0'-40'
107	7S/3W-26J1	60-120; 190-260; 280-300; 390-590	58	0.0%	No. 105 - gravel & clay 58'-84'
108	7S/3W-25E1	60-110; 190-280; 350-410; 430-450; 470-490; 530-590	55	0.0%	Formerly No. 109 gravel/sandy clay 55'-70'
109	8S/2W-17J1	70-150; 170-210	145 1/	84.0%	Brown clay and gravel 75' to 105'
110	8S/1W-6K1	75-155	165	97.0%	Clay 165'-190'. Prior to 10/23/97 perf int. 70-150; 200-240; 320-380; 420-460
113	7S/2W-25H1	96-136; 275-462; 482-542	Shallow	0.0%	
116	8S/1W-6J	60-120; 140-200; 220-260; 270-330; 370-390	150	94.0%	Clay 150'-170'
119	8S/2W-19J	170-260; 300-470		0.0%	Perforated below 170'
123	8S/1W-7B	100-260; 300-380; 420-500	125 1/	65.0%	Brown Sand Clay 135'-210'
129	7S/2W-20L	180-290; 416-480; 520-600	Shallow	0.0%	Qyal very shallow along Santa Gertrudis Creek
132	8S/1W-7D	70-390; 430-500	135	82.0%	Brown Clay Streaks 135'-175'
135	7S/3W-27M10	70-170	50	0.0%	Silty clay 50'-69'
141	8S/2W-11P	120-190; 215-235; 270-380; 430-510	104 1/	0.0%	Silt & sand 104'-185'; Well 11L1 is 112'
144	7S/3W-27D	983-1123; 1143-1283; 1343-1483; 1503-1743	25	0.0%	Sand with silty clay 25'-45'
146	7S/3W-28	50-190	42	0.0%	
150	7S/3W-27P	250-490; 510-950; 990-1070	125	0.0%	
152	8S/1W-5K	70-470; 490-540	130	90.8%	Forebay
153	8S/1W-5K3	50-220	170	99.0%	Forebay
154	8S/1W-5L2	50-220	100 1/	99.0% 2/	Forebay
157	8S/1W-5L	50-210	128	96.8%	Forebay
158	8S/1W-5K	50-210	128 1/	96.5%	Forebay
161	8S/1W-5	50-190	110	99.0% 3/	
164	8S/1W	70-165	150	97.0% 3/	
205	7S/3W-35A	150-1000	10	0.0%	Sandy clay 10'-20'
210	8S/2W-12K	48-228	140	94.0%	Clay cobblestones 160'-167', 175'-227'
218	8S/2W-20B5	48-289	40	0.0%	Old 28; clay with sand layer 40'-60'; now monitoring wells 427, 428 and 429
220	7S/3W-26Q1	114-450	58	0.0%	Clay 58' - 73'
223	8S/2W-20C1	48-250	163 1/	94.0%	CAT Well; east of Wildomar Fault; nearby Exh 16 wells 17Q @62' & 17M @55' are also east of Wildomar Fault
224	8S/2W-15D	48-250	166 1/	68.0%	Old Well 50, clay 106'-138'
230	8S/2W-11J1	24-31; 32.5-34; 35-40; 61-65; 70-76; 80-85; 86.5-91; 92.5-98.5	>119	100.0%	Old Well 30, depth of well is 119'
231	8S/2W-20B6	80-120; 150-270	140 1/	0.0%	Old 104, P-34, Clay 20'-23'; 35'-41'; East of Wildomar Fault
232	8S/2W-11J3	95-135; 175-215; 235-295	115 1/	92.0%	Old 111, 105, P-31; coarse sand & clay 135' - 155'
233	8S/2W-12K2	95-135; 175-215; 235-295	145	88.0%	Old 112, P32; sand and clay at 145'-220'
234	8S/2W-11P1	80-100; 120-140; 200-240; 280-320; 340-400	162 1/	74.0%	Brown Clay at 125'; sand and clay at 125'-140'
235	8S/3W-1Q1	Unknown	Shallow	0.0%	
236	8S/2W-12	80-220; 231-281	145	94.0% 3/	
237	7S/2W-34	660-695; 699-1000		0.0% 3/	
238	8S/2W-7	435-460; 480-570; 685-1055		0.0% 3/	
240	8S/2W-11L1	48-298	112	86.0%	Old Well No. 40; clay 112'-136'
301	7S/3W-18Q1	140-280; 280-520; 540-640	26	0.0%	Old JR1; blue clay 26'-32'
466	8S/3W-1P2	106-822	49	0.0%	Old 219, Cantarini, hard clay 49'-60'
467	8S/2W-12K1	50-100; 100-140	140	100.0%	Old 221, JK, Exh. 16, Monitoring well since 1983

1/ In 2015, Watermaster, Rancho California WD and Camp Pendleton agreed to the revised depths of younger alluvium for indicated wells. See discussion in Appendix F.
2/ Percent younger alluvium for Well No. 154 provided by Rancho California WD.
3/ Estimated by Watermaster for Reporting.

TABLE 7.8

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
WELL PRODUCTION FROM YOUNGER AND OLDER ALLUVIUM
2018-19
Quantities in Acre Feet[1/]

WELL NO.		QYAL	QTOAL	TOTAL
101	3/	0.0	0.0	0.0
102	3/, 4/	0.0	147.3	147.3
106	3/	0.0	117.7	117.7
108	3/	0.0	649.9	649.9
109	5/	465.3	115.9	581.2
113		0.0	505.3	505.3
119	2/	0.0	219.8	219.8
120		0.0	505.9	505.9
121		0.0	0.0	0.0
122	2/	0.0	245.3	245.3
123	5/	0.0	0.0	0.0
124		0.0	16.0	16.0
125		0.0	0.0	0.0
126		0.0	356.0	356.0
128		0.0	0.0	0.0
129		0.0	0.0	0.0
130		0.0	707.5	707.5
131		0.0	867.0	867.0
132	5/	387.0	84.9	471.9
133		0.0	626.8	626.8
135	4/	0.0	3.0	3.0
138		0.0	1,699.3	1,699.3
139		0.0	692.5	692.5
140		0.0	285.4	285.4
141		0.0	254.4	254.4
143		0.0	599.2	599.2
144		0.0	402.3	402.3
145		0.0	326.1	326.1
146	4/	0.0	0.0	0.0
149		0.0	190.9	190.9
151		0.0	471.1	471.1
152	5/	1,985.0	201.1	2,186.1
153	5/	1,455.3	14.7	1,470.0
154		653.1	6.6	659.7
155	4/	0.0	0.0	0.0
156		0.0	726.5	726.5
157	5/	1,424.1	47.1	1,471.2
158	5/	1,918.9	69.6	1,988.5
161		1,056.9	10.7	1,067.6
164	6/	940.9	29.1	970.0
201		0.0	0.0	0.0
203		0.0	501.8	501.8
205		0.0	0.0	0.0
207		0.0	0.0	0.0
208		0.0	0.0	0.0
209		0.0	0.0	0.0
210		0.0	0.0	0.0
211	2/	0.0	715.6	715.6
215		0.0	0.0	0.0
216	5/	0.0	0.0	0.0
217	5/	0.0	788.2	788.2
231	5/	0.0	0.0	0.0
232		655.7	57.0	712.8
233	7/	383.0	52.2	435.2
234		0.0	0.0	0.0
235		0.0	983.4	983.4
236		1,258.8	80.3	1,339.2
237		0.0	566.5	566.5
238		0.0	411.5	411.5
240		1,570.9	255.7	1,826.6
309		0.0	1,628.7	1,628.7
		14,154.8	**17,235.7**	**31,390.5**

1/ Totals may not add due to rounding.
2/ A total of 18 acre feet from Well Nos. 119, 122 and 211 was delivered to Pechanga Indian Reservation for their
3/ Includes 121 acre feet of releases to streams from Well Nos. 102, 106, 108 and 109.
4/ Includes 37 acre feet pumped directly to the recycled water system from Well Nos. 102, 121, 135, 146 and 155.
5/ Permitted point of re-diversion pursuant to Permit 7032.
6/ Replaced Well No. 110
7/ Replaced Well No. 210

7.2.9 Western Municipal Water District

WMWD operations within the SMRW are comprised of three categories. First, WMWD wholesales imported water to RCWD. Deliveries to RCWD are included under RCWD. Second, WMWD serves water to its Murrieta Division in the vicinity of the City of Murrieta. Third, WMWD serves imported water to its Improvement District A near the southern boundary of Riverside County, along the I-15 freeway. Improvement District A is operated by RCWD under an operations and maintenance contract on behalf of WMWD.

Murrieta Division

In November 2005, WMWD merged with the Murrieta County Water District assuming their operations in an area in the vicinity of the City of Murrieta. Prior Watermaster Reports present information under Murrieta County Water District.

All of the Murrieta Division of WMWD wells are located in the Murrieta-Temecula Groundwater Area. Interlocutory Judgment No. 30 indicates the younger alluvium deposits in Murrieta Valley extend in various depths to a maximum of approximately 30 feet from the ground surface.

The Court noted that it was impossible, based on evidence available in 1962, to determine with exactness the depth of the younger alluvial deposits throughout the Valley. However, the Court did retain continuing jurisdiction so that subsequent findings could be made, if needed.

Six of the seven Murrieta Division wells are perforated at depths of 106 feet or more. The Holiday Well has perforations beginning at a depth of 60 feet, which is well below the maximum depth of younger alluvium found by the Court in 1962. In addition, there has been no production from the Holiday Well since March 2006. Accordingly, all of Murrieta Division well production is from the older alluvium under a groundwater appropriative right.

In 2018-19, the Murrieta Division of WMWD produced 0 AF of water from the North Well and 365 acre feet from the New Clay Well for a total well production of approximately 365 acre feet. WMWD is rehabilitating its existing wells and will develop additional groundwater production wells within its Murrieta Division to restore groundwater production capacity to the quantity produced in WY 2006. WMWD imported 1,529 AF in 2018-19 as shown on Appendix Table A-10.

The following table itemizes the production from the Murrieta Division wells:

Well Designation 7S/3W	Well Name	WY 2019 Production AF	End of Water Year Depth to Groundwater in Feet 2018	2019	Well Depth Feet	Perforated Interval Feet
20	New Clay	365	328	309	940	300 – 350
						370 – 470
						680 – 790
						830 – 900
20C9	Holiday	0	71**	*	307	60 – 307
20G5	House	0	*	150	252	120 – 252
17R2	Lynch	0	30	30	212	172 – 212
18J2	North	0	221	211***	650	240 – 460
						500 – 640
20D	South	0	167	161	446	120 – 446
7M	Alson	0	*	*	416	106 – 416
TOTAL		365				

* Not reported.
** August 2018 measurement.
*** May 2019 measurement.

WMWD’s Murrieta Division production for the period 1966 through 2019 is shown on Appendix Table B-11.

Improvement District A

In 2017-18, imports to Improvement District A amounted to approximately 30 AF as shown on Appendix Table A-11. Deliveries to Improvement District A through turnout WR-13 for the period 1966 through 2019 are shown on Appendix Table B-12.

7.2.10 U. S. Marine Corps Base Camp Pendleton

CPEN is located on the coastal end of the SMRW. Water was provided by nine wells that produced 5,614 AF in 2018-19. This production is from the younger alluvium and is based on riparian, appropriative, and Pre-1914 rights. In 2018-19, there was no agricultural use and 5,614 AF were used for Camp Supply, including 0.5 AF from the SWFL Swamp Well (CUP environmental requirement). Camp Supply includes domestic and commercial uses as well as irrigation for landscaping and park areas. CPEN water use is located both inside and outside the Watershed, and is equal to total production less brine discharged to the Oceanside Outfall. A total of 2,087 AF were used inside the Watershed and 2,883 AF were exported to areas of the Base outside the Watershed. The production and use of water for CPEN are shown on Appendix Table A-8.

Beginning in December 2008, all southern wastewater for CPEN is treated at the Southern Region Tertiary Treatment Plant replacing Sewer Treatment Plant Nos. 1, 2, 3, and 13, all located in the southern half of CPEN (wastewater for the northern portion of the Base passes through the Northern Region Tertiary Treatment Plant. Wastewater from the central portion (Las Flores) passes through Sewage Treatment Plant 9 and then is injected along the coast). On March 11, 2009, the Regional Water Quality Control Board issued Order No. R9-2009-0021 for a Master Reclamation Permit for the CPEN Southern Region Tertiary Treatment Plant. Wastewater effluent is discharged to either: (1) approved areas for use of recycled water for irrigation purposes; or (2) the Oceanside Outfall under National Pollutant Discharge Elimination System Permit No. CA0109347, Order No. R9-2003-0155, and Order No. R9-2008-0096. The approved areas for use of recycled water are located both within and outside the Watershed. In 2018-19, the total amount of recycled water for CPEN was 2,281 AF as shown on Appendix Table A-8. Of the total amount of recycled water, 18 AF were used inside the Watershed; 289 AF were used outside the Watershed; and 1,974 AF were exported to the Oceanside Outfall. An additional 644 AF of brine byproduct from the Southern Advanced Water Treatment Plant were exported to the Oceanside Outfall. The total amount exported to the Oceanside Outfall in 2018-19 was 2,618 AF.

Production and estimated use inside and outside the Watershed, as well as wastewater reclamation and use, are shown in Appendix Table B-9 for the period 1966 through 2019. It is noted, the format and reporting shown on Appendix Table B-9 were changed for the Annual Watermaster Report for WY 2009. Prior reports show for the period 1966 through 2003, reclaimed use inside the Watershed reported as recharged wastewater from ponds and recharge areas. In addition, the prior reports distinguished the source of the recharged wastewater between wastewater treated within or outside the Watershed at the various regional treatment plants. The format and reporting for 2018-19, on Appendix Tables A-8 and B-9, reflect current and anticipated operations for the foreseeable future. Accordingly, the prior format is obsolete and the reader is directed to prior reports from 2008, and earlier, for additional information regarding historical wastewater operations.

7.2.11 U. S. Naval Weapons Station Seal Beach, Detachment Fallbrook

The NWS occupies about 9,148 acres northeast of CPEN. Since 1969, the NWS has relied on imported water delivered via FPUD for its supply. Wastewater is exported from the NWS, FPUD and the Watershed via an outfall line maintained by FPUD with an easement across CPEN. In 2018-19, 85 AF were imported of which 1 AF of wastewater were exported, as shown on Appendix Table A-9. Imports and use for the period 1966 through 2019 are shown on Appendix Table B-10.

7.3 Indian Reservations

Water is used on the Indian Reservations in the Watershed in accordance with federal reserved rights described in Section 6. Water use information for the Cahuilla, Pechanga and Ramona Indian Reservations in the Watershed is described in the following sections:

7.3.1 Cahuilla Indian Reservation

In general, domestic water use on the Cahuilla Indian Reservation is not measured; however reports for 2018-19 indicate that 361 people reside on the Reservation. These residents use water primarily for domestic purposes. Annual domestic water use, based on 157 gallons per capita per day, amounts to a total annual use of about 63 AF from wells listed in Appendix C. In addition, reports indicate Reservation non-irrigated lands are used for the grazing of 500 cattle. Based on a daily requirement of 32 gallons per head per day, the annual use is estimated to be about 18 AF. An additional 25 AF pumped from well 7S/2E-26B3 were put to commercial use for dust control, watering of turf grass, and at a casino.

7.3.2 Pechanga Indian Reservation

On December 21, 2006, the Pechanga Band of Luiseño Mission Indians and RCWD entered into a Groundwater Management Agreement for the Wolf Valley Groundwater Basin. The Pechanga Band and RCWD agreed to jointly manage groundwater pumping from the basin and to manage the basin to protect groundwater resources. Among other things, the agreement provides for RCWD to deliver pumped groundwater from its wells to Pechanga.

During 2018-19, Pechanga received 18 AF of delivered groundwater from RCWD. In addition, the Pechanga Water System produced 758 AF from wells, and received 468 AF of recycled water from EMWD, resulting in a total production for Pechanga of 1,243 AF (rounded). The monthly production and uses for the Pechanga Indian Reservation are shown on Appendix Table A-5. Information about Pechanga Water System wells is shown below:

Well Designation 8S/2W	Well Name	End of Water Year Depth to Groundwater in Feet 2018	2019	Well Depth Feet	Perforated Interval Feet
29A2	Kelsey	147.67	148.02	425	105 - 415
29B10	Eduardo[1/]	153.28	152.66	697	437 - 687
29B11	Eagle III[2/]	195.82	189.07	645	275 - 635
29J3	South Boundary	176.67	174.36	350	150 - 340
28M5	Cell Tower	81.93	81.10	518	372 - 432
					468 - 508
28R1	Ballpark Well	85.80	89.10	1,000	126 - 996
19Q1	Zone V Rock 1	43.00	39.85	451	210 - 430

1/ Measurements taken end of January 2018 and August 2019.
2/ Measurements taken end of May 2018 and September 2019.

The total groundwater pumping for the Pechanga Water System wells decreased from 772 AF in 2017-18, to 758 AF in 2018-19. The total pumping in Wolf Valley by RCWD Wells 119, 122 and 211, for both the District's use and for delivery to Pechanga, decreased from 1,562 AF in 2017-18 to 1,181 AF in 2018-19. Therefore, the total pumping in Wolf Valley for 2018-19 decreased by 395 AF.

The wells listed above are in areas of younger alluvium at ground surface. The depth of the younger alluvium in Wolf Valley was estimated by representatives of RCWD and the United States, for RCWD Well No. 495 (8S/2W-20E) and Well No. 119 (8S/2W-19J), to be in the range of 120 to 170 feet in depth. Thus, based on available well construction data, production is from both the younger alluvium and the older alluvium. Under state law, production from the wells that originate in the older alluvium can be considered to be under a groundwater appropriative right or an overlying right, depending on the circumstances at each well.

Production and uses for the Pechanga Indian Reservation for WYs 1991 through 2019 are shown on Appendix Table B-6.

7.3.3 Ramona Indian Reservation

The Ramona Indian Reservation occupies 560 acres of land of which 321 acres are inside the Watershed. The water supply is provided for domestic use by two individual wells. Total production for 2018-19 is reported as 4.56 AF.

7.4 Small Water Systems

There are a number of small water systems in the Watershed. These range from relatively permanent structures, to those catering to recreational vehicles and campgrounds. Water production from wells is shown on Appendix Table A-11 for Quiet Oaks Mobile Home Park, Rancho California Outdoor Resorts, Jojoba Hills SKP Resort, Cottonwood Elementary, and Hamilton Schools. Data for previous WYs are shown on Appendix Table B-12.

7.5 Irrigation Water Use

Estimated water production reported by substantial users for irrigation in the SMRW is shown on Table 7.1 to be 4,150 AF. This quantity includes 3,564 AF (rounded) of well production and approximately 586 AF of surface diversion as shown in Appendix C.

Page Intentionally Blank

SECTION 8 - UNAUTHORIZED WATER USE

8.1 General

From time to time, there are complaints of unauthorized water uses of various types in the Watershed. Such complaints are investigated in accordance with the powers and duties of the Watermaster. The status of the current list of unauthorized uses is described as follows:

8.2 Unauthorized Small Storage Ponds

Many small dams and reservoirs have been constructed on streams in the Watershed. The legal basis for these ponds is described in the 1988-89 Watermaster Report. Basically, the Court has held that storage of water in ponds less than 10 AF in capacity and used for stock watering is a valid use of riparian water. The Court has also held that:

> The temporary or non-seasonal impoundment by riparian owners for the purpose of providing a head for irrigation or for the purpose of temporarily accumulating sufficient water to make possible efficient irrigation is a proper riparian use of water.

Criteria for determining non-seasonal storage of irrigation water have yet to be developed.

8.3 Rancho California Water District Water Use

A number of unauthorized water use issues raised by the United States are settled so long as the CWRMA between the United States, on behalf of CPEN, and RCWD is in effect. As further explained in Section 11, many of these issues are described in Appendix F.

8.4 Exportation of Treated Wastewater Derived from Native Waters

CPEN continues to assert that the exportation of treated wastewater, the source of which is the native waters of the SMR System, without a legal basis for such exportation is an unauthorized water use. On May 17, 2011, the United States Court of Appeals for the Ninth Circuit issued an Order granting the parties' joint motion to dismiss the appeals in *United States and Fallbrook Public Utility District v. Eastern Municipal Water District and Rancho California Water District* (CV 04-8182 CBM (RNBx), United States District Court, Central District of California) and thus the August 4, 2009 Judgment in this case stands.

Page Intentionally Blank

SECTION 9 - THREATS TO WATER SUPPLY

9.1 General

General threats to the long-term water supply in the SMRW, which have been described in previous Watermaster reports, are as follows:

1. High nitrate concentrations in Rainbow Creek, Anza Valley and the Murrieta-Temecula areas.

2. Potential overdraft conditions at various locations in the Watershed.

3. Potentially adverse salt balance conditions in the upper SMR area.

4. High concentrations of arsenic, fluoride, and manganese in the Murrieta-Temecula area.

5. Quagga mussel infestation in imported supplies from the Colorado River system.

9.2 High Nitrate Concentrations

In past years, high concentrations of nitrate have been measured in Anza Valley and in Rainbow Creek. Conditions in Anza Valley were generally described in the 1993-94 report. Additional water quality data for Anza Valley have been collected periodically by the Riverside County Department of Health Services and the USGS. Historic nitrate concentrations for these wells, in addition to other wells located in the Anza Valley groundwater basin area as reported by Riverside County Department of Environmental Health, are listed in Appendix D-13.

As described in prior Watermaster reports, in 1999 the Regional Water Quality Control Board, San Diego Region (Regional Board) began preparation of a plan for Total Maximum Daily Loads (TMDLs) for Total Nitrogen and Total Phosphorus on Rainbow Creek. On February 9, 2005, the Regional Board adopted Resolution No. R9-2005-0036, an amendment to the Basin Plan to include the Total Nitrogen and Total Phosphorus TMDLs and implementation plan. The SWRCB, on November 16, 2005, and the Office of Administrative Law, on February 1, 2006, subsequently approved the Basin Plan amendment. The U.S. Environmental Protection Agency granted final approval of the TMDLs on March 22, 2006.

The full plan and implementation programs are presented on the Regional Board's website:
http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/rainbowcreek.html

Recent data show high concentrations of nitrate pose a risk to water supplies from the Murrieta-Temecula Groundwater Area. In January 2006, WMWD ceased production from the Holiday Well because nitrate concentrations exceeded the Maximum Contaminant Level (MCL) of 45 mg/l. The depth to the top of the perforated interval for the Holiday Well is only 60 feet and the high nitrate concentrations appear to be a result of nearby septic systems and agricultural practices. Concentrations of nitrate for some of the other WMWD and RCWD wells in the Murrieta-Temecula Groundwater Area have been detected in the range of 20 to 26 mg/l, which is below the MCL. The other WMWD and RCWD wells have deeper perforated intervals than the Holiday Well.

9.3 Potential Overdraft Conditions

Previous Watermaster reports have noted concerns about overdraft conditions in Anza Valley and in the Murrieta-Temecula Groundwater Area. Previous studies for Anza Valley include 1976 and 1988 reports by the USGS and a 1990 report by a consultant to Riverside County. No further studies relative to groundwater use in Anza Valley are currently available. Historical measurements of groundwater levels for Anza Mutual Water Company's Well No. 1 (7S/3E-21G1) located in Anza Valley are plotted in this report on Figure 4.4. Water levels in Anza Mutual Water Company Well No. 1 increased by 1.0 feet between September 30, 2018 and September 30, 2019. Groundwater levels for the USGS/Cahuilla Climate Response Network Well No. 7S/3E-34E1S located on/near the Cahuilla Indian Reservation increased by 0.2 feet between September 30, 2018 and September 30, 2019, as shown on Figure 4.7.

No recent published studies of safe yield are available for the Murrieta-Temecula Groundwater Area. Groundwater resources in the area are managed by RCWD, WMWD, and the Pechanga Band. Annual groundwater production programs are prepared with the goal of maximizing production within the apparent safe yield of the basin. Each year, groundwater levels and well production combined with other information including water quality, natural and artificial recharge, pump settings, and well construction factors, are used to develop the recommended production programs for several hydrogeologic sub-areas. Production rates are commonly lowered in sub-areas where water levels have declined over several years, and production rates are increased in sub-areas where decline has not occurred. As a final check, the recommended production rates are checked using the groundwater model for the Murrieta-Temecula Groundwater Area.

In addition, RCWD in cooperation with CPEN is in the process of developing a multi-level groundwater monitoring network, pursuant to the CWRMA. The purpose of the network is to collect data for use in assessing safe yield operations. In September 2006, the USGS began drilling and constructing the Pala Park Groundwater Monitoring Well as part of this network. The monitoring well was completed with six piezometers and continuous water level recording devices. In 2009, the groundwater monitoring network was expanded to include the Wolf Valley Monitoring Well previously constructed by the USGS under a cooperative program with the Pechanga Band. In 2013, two additional groundwater monitoring wells were constructed by the USGS under contract with RCWD. The two additional wells are the Temecula Creek Groundwater Monitoring Well and the VDC Recharge Basin Groundwater Monitoring Well. Groundwater levels and water quality data for the four monitoring wells are reported in the annual CWRMA report.

Groundwater level data for three additional wells in the Murrieta-Temecula Groundwater Area are included in this report as Figures 4.1, 4.3 and 4.5. Water levels in the Windmill Well (8S/2W-12H1) located at the eastern part of Pauba Valley decreased by 0.5 feet in 2018-19. Water level data was not taken in Well 7S/3W-20C9 in the Murrieta Division of WMWD during 2018-19.

Well 8S/2W-29G1 on the Pechanga Indian Reservation in Wolf Valley became dry at the end of 2003-04. The declining water levels in Well 8S/2W-29G1 appear to be attributed to recent relatively dry hydrologic conditions and pumping of the nearby New Kelsey Well. To allow continued monitoring of water levels on the Reservation, Well No. 29G1 has been replaced with Well No. 8S/2W-29B9 which showed water levels decreased by 1.0 feet in 2018-19.

Unincorporated areas within Court jurisdiction are of concern with regard to increasing demand and unknown supply reliability, specifically safe yields. Unlike the Murrieta-Temecula and Santa Margarita groundwater basins, the alluvial basins in unincorporated areas do not have the capability of importing water to augment the natural supply. The unknown nature of unincorporated areas constitutes a potential threat to water supply sustainability.

Declining water levels have been reported in the Aguanga groundwater area. Parties have reported wells going dry, requiring the deepening and/or replacing of some domestic wells. Information is currently being compiled to better understand the nature of the reported declining water levels in Aguanga Valley. Potential well interference, water quality, water waste, and water rights of parties are being investigated with respect to Aguanga Valley. It is anticipated that subsurface water availability analysis will be conducted based on hydrologic parameters of Aguanga Valley, and findings will be reported to the Court. For more information on water rights associated with Aguanga Valley, the reader is referred to Interlocutory Judgement 40: Aguanga Groundwater Area (and associated exhibits).

9.4 Salt Balance

A key issue in management of a groundwater basin is potential build-up of salts from imported water supplies and use of recycled water. Such a build-up could decrease the usability of waters in a basin. Consideration must be given to measures that allow desalination of water supplies and export of salts from a basin to offset the salt load in water entering the groundwater basin.

The TDS concentration for imported supplies into the Watershed is shown on Table 5.3. During 2018-19, the reported TDS concentrations ranged from 314 to 574 mg/L as compared to concentrations for 2017-18 ranging from 314 to 609 mg/L.

The salt balance for the Murrieta-Temecula Groundwater Area is of interest due to increased imported supplies to meet existing and future demands, and also increased use of reclaimed wastewater for irrigation. The potential salt loading can be illustrated by estimating the total salts imported into the basin by the major purveyors overlying the groundwater area. The net imported supplies for the major purveyors are provided on Table 5.2 and the individual production and use tables are included in Appendix A. Assuming the groundwater area is subject to salt loading from net imports for EMWD, EVMWD, WMWD (Murrieta Division), and RCWD (Rancho Division); the total net imports for 2018-19 were 46,861 AF. It is noted, imports for a portion of the RCWD, Santa Rosa Division, potentially contribute to salt loading for the groundwater area but such contribution is ignored for this illustration. Applying monthly TDS concentrations from Table 5.3 to monthly net imports for these major purveyors result in an estimated total annual salt import for 2018-19 of approximately 25,800 tons compared to the estimated salt import of 31,600 tons for 2017-18 and 26,200 tons for 2016-17.

The salt balance for the Murrieta-Temecula Groundwater Area is affected by the export of wastewater from the Watershed. In 2018-19, EVMWD exported 1,484 AF of wastewater for treatment outside the Watershed. During 2018-19, EMWD exported 5,439 AF of treated wastewater for reuse outside the Watershed. Additional treated wastewater may have been exported from the Watershed through recirculation in the system, but such additional amounts have not been determined. At an average TDS concentration of 650 mg/l, there are approximately 1,768 pounds of salt in every acre foot of wastewater. Thus in 2018-19, approximately 6,100 tons of salt were exported by EVMWD and EMWD through the export of 6,923 AF of wastewater. For comparison in 2017-18, approximately 8,300 tons of salt were exported with the export of 9,391 AF of wastewater.

The use of recycled water for irrigation is also a consideration in evaluating the salt balance for the Murrieta-Temecula Groundwater Area. The reuse within the groundwater area does not import additional salts into the Watershed; rather the source of water supply further concentrates the salts in contrast to relatively lower TDS levels for other sources of water supplies. The total use of recycled water by EMWD, EVMWD, RCWD, and the Pechanga Band within the SMRW for 2018-19 was 6,066 AF compared to 6,527 AF in 2017-18, and compared to 690 AF in 1986-87. Assuming an average TDS concentration of wastewater of 650 mg/l, the salt loading for 6,066 AF of recycled water is approximately 5,400 tons. It is expected that the use of recycled water within the Watershed will increase in the future.

The salt balances of the Murrieta-Temecula Groundwater Area, the SMR, and the groundwater basins on CPEN are affected by operational and maintenance discharges by RCWD from wells into Temecula Creek and Murrieta Creek. In 2018-19, wells discharged approximately 121 AF, as shown below, together with the TDS for the most recent sample for each well. Additional water quality data for the wells are provided in Appendix D.

Well No.	Releases AF	TDS mg/l	Most Recent Sample Date
102	1	560	8/15/19
106	14	450	7/1/19
108	79	430	8/20/19
109	27	680	7/11/19
Total	121		

The salt balances for the SMR, and the groundwater basins on CPEN, are also influenced by discharges by RCWD of imported supplies into SMR as part of make-up flows under the CWRMA. During 2018-19, the discharge of imported supplies to the SMR as make-up flows from Service Connection WR-34 was 2,942 AF. During 2018-19, 65 AF were discharged from the potable connection to the SMR. Discharges from the potable connection are comprised of a blend of groundwater and imported supplies.

In March 2014, RCWD completed the Temecula Valley Basin Salt and Nutrient Management Plan. The plan was prepared pursuant to the SWRCB Recycled Water Policy adopted by Resolution No. 2009-0011 on February 3, 2009, as amended by Resolution No. 2013-0003 on January 22, 2013. In November 2012, CPEN completed the *Salt and Nutrient Management Plan, Southern MCB Camp Pendleton*, also prepared pursuant to the SWRCB Recycled Water Policy cited above.

9.5 High Arsenic Concentrations

The MCL for arsenic is 10 ug/l. High concentrations of arsenic have been detected in groundwater wells for both the Murrieta Division of WMWD and RCWD, posing a risk to water supplies in the Murrieta-Temecula Groundwater Area. In November 2007, WMWD ceased pumping from the New Clay Well due to arsenic levels exceeding the MCL. Pumping from the New Clay Well resumed in September 2012, under an approved monitoring plan after WMWD completed well renovation measures. Pumping from the New Clay Well was again ceased in April 2013 due to arsenic levels exceeding the MCL. In April 2014, pumping from the New Clay Well was again resumed.

The elevated arsenic levels have significantly impacted groundwater pumping and distribution system operations for RCWD. Two wells have been taken out of production due to arsenic levels exceeding the MCL. In 2018-19, three other wells (Wells 126, 143, and 151) showed levels exceeding the MCL with the wells still in operation. Two additional wells (Wells 124 and 240) showed levels approaching the MCL and may be included in a blending plan in the future.

9.6 High Fluoride Concentrations

The MCL for fluoride is 2 mg/l, and samples exhibiting high concentrations of arsenic often show high concentrations of fluoride in the Murrieta-Temecula Groundwater Area. High levels of fluoride are impacting operations for RCWD. In 2018-19, two wells (Wells 126 and 151) showed fluoride levels exceeding the MCL.

9.7 High Manganese Concentrations

The MCL for manganese is 50 ug/l, and high concentrations of manganese have been detected in wells for both the Murrieta Division of WMWD and RCWD. In 2018-19, the two RCWD wells that were previously in operation under approved manganese sequestering plans (Wells 101 and 118) did not produce, and therefore, did not operate under sequestering plans. During 2018-19, one other RCWD well (Well 102) showed levels exceeding the MCL. In 2018-19, seven out of eight active groundwater supply wells for CPEN showed manganese levels exceeding the MCL with groundwater treated under approved treatment plans. One other well was in production for part of the year, but no water quality samples were taken.

9.8 Quagga Mussel

In early January 2007, the invasive, non-native quagga mussel was discovered in Lake Mead. Subsequently, upon thorough inspection, MWD discovered the mussel throughout the Colorado River Aqueduct system including in August 2007, finding the mussels in Lake Skinner. MWD has not placed any Colorado River water into Diamond Valley Lake since 2005 and no mussels have been found in the lake to date.

The quagga mussel is indigenous to Ukraine and was discovered in the United States in September 1989 with the first sighting in the Great Lakes. The quagga mussel is a small freshwater mollusk ranging in size from microscopic in the embryonic state to about two inches in length at the adult stage. The mussels can be transported during the larval stage with currents or running water, and at the adult stage by attaching to hard surfaces, such as boats.

The quagga mussel is a filter feeder removing food and nutrients from the water column, decreasing the food source for zooplankton and therefore, altering the food web. The filtration of the water also alters water clarity impacting aquatic plants and water chemistry. The economic impact is also significant because these species can rapidly colonize hard surfaces, clogging water intake structures, pipes, and screens and reducing pumping and distribution capacities. Costs are also associated with maintenance of facilities and control of the species.

Since the discovery of quagga mussels in the Colorado River Aqueduct, Lake Mathews, and Lake Skinner, MWD has implemented various control measures. The outlet of Copper Basin, a few miles downstream of MWD's intake in the Colorado River, is continuously chlorinated. Water leaving Lake Skinner and Lake Mathews is also continuously chlorinated downstream of the outlet tower. In addition, the outlet towers are usually chlorinated for two weeks every quarter to ensure that quagga mussels do not colonize the tower and interfere with operations and water deliveries. Also, MWD routinely shuts down the Colorado River Aqueduct every year (typically in the first quarter) for ongoing system maintenance. These shutdowns provide an opportunity to inspect for attached quagga mussels in the normally submerged structures and facilities, and to kill any exposed mussels by desiccation.

Effective October 10, 2007, Assembly Bill 1683 added Section 2301(a)(1) to the California Fish and Game Code prohibiting the release of quagga mussels into the waters of the State. Assembly Bill 1683 also requires development of a Quagga Mussel Control Plan. On December 8, 2007, MWD temporarily suspended required releases of water to Tucalota Creek from Lake Skinner and Warm Springs Creek from the San Diego Canal near Diamond Valley Lake. These required releases would have been made in accordance with Memoranda of Agreement for releasing native inflows from the reservoirs. On March 6, 2008, MWD provided notice to the parties in *United States v. Fallbrook Public Utility District*, *et al.*, regarding the temporary suspension of required releases of native water inflows from Lake Skinner and Diamond Valley Lake.

On June 23, 2008, MWD provided notice to the parties in *United States v. Fallbrook Public Utility District*, *et al.*, regarding the resumption of required releases of native water inflows from Lake Skinner and Diamond Valley Lake, according to MWD's original Quagga Mussel Control Plan. MWD is operating under a revised Quagga Mussel Control Plan for its entire system, approved by California Department of Fish and Wildlife (CDFW) in 2013, and a specific raw water discharge plan for Tucalota Creek, from Lake Skinner, approved by CDFW in October, 2015. To meet release requirement at Diamond Valley Lake, MWD is operating under the 2013 Quagga Mussel Control Plan and a raw water discharge plan (approved by CDFW in January, 2018) for releases to Warm Springs Creek from the lake or the San Diego Canal. However, since Diamond Valley Lake does not contain quagga mussels, releases directly from the lake do not pose a danger of infestation to downstream waterbodies.

Infestation by the quagga mussels have also altered RCWD operations in accordance with the CWRMA. Beginning on April 10, 2008, RCWD periodically ceased making releases of raw water from Service Connection WR-34 on the MWD San Diego Pipeline No. 5 to meet make-up flow requirements for the SMR. Alternatively, RCWD releases make-up flows from its treated water distribution system at the System River Meter located just upstream of the Murrieta Creek at Temecula gaging station, or from the potable connection to the Service Connection WR-34 discharge location. The treated water is de-chlorinated prior to release into Murrieta Creek.

In response to the threat of infestation of quagga mussels, RCWD has developed three separate control plans that constitute an overall action plan. These plans were updated in 2012 and are comprised of the following: (1) Dreissena Mussel Response and Control Action Plan, (2) Vail Lake Rapid Response Plan, and (3) Vail Lake Conveyance System Dreissena Mussel Control Plan, collectively referred to as the Plans. On September 14, 2012, the CDFW approved the amended Plans that include the following key components:

- Substrate monitoring utilizing coupon sampling equipment at Vail Lake and the SMR at a sampling location approximately 100 feet downstream of the Service Connection WR-34 for releases of make-up water in accordance with CWRMA.
- Raw MWD water is released into the SMR only when chlorination is being performed at Lake Skinner.
- All watercraft vessels, trailers, and equipment are being inspected before launching in Vail Lake.
- Installation of chlorination, filtration, and turbulence devices within the Vail Lake Pipeline to result in 100% mortality of mussels passing through the system for delivery of imported supplies to Vail Lake.

9.9 Illegal Cannabis Grow Sites

In recent years, there has been an increasing amount of illegal cannabis cultivation occurring in the SMRW, especially occurring in unincorporated portions of the watershed such as Anza. Efforts were taken to better understand illegal cannabis growing and whether there are threats to water supply and water quality with its cultivation. Further information on illegal cannabis grow sites was presented in the 2017-18 Report and Appendix H thereto.

Page Intentionally Blank

SECTION 10 - WATER QUALITY

10.1 Surface Water Quality

The USGS collected continuous water quality measurements for dissolved oxygen, pH, specific conductance, and temperature at the SMR near Temecula gaging station during 2018-19. Data collected at the station are published by the USGS. The highest average daily high and the lowest average daily low for each parameter for each month are shown on Table 10.1 for 2018-19.

Surface water quality data collected by the USGS in 2004-05 for Cahuilla Creek are shown on Appendix Table D-12. No surface water quality data for Cahuilla Creek were collected in 2018-19.

Surface water quality data collected in prior years by CPEN, EMWD, and RCWD are listed in earlier Watermaster reports.

10.2 Groundwater Quality

During 2018-19, water quality data was collected from wells at WMWD – Murrieta Division, RCWD, Pechanga Indian Reservation, and CPEN.

WMWD – Murrieta Division sampled one well in 2018-19 as shown in Appendix Table D-3. The New Clay Well was subjected to twelve standard chemical analysis. Concentrations of nitrates were below the MCL of 45 mg/l, or 10 mg/l as nitrogen (as N), with results reported to be below the laboratory detection limit.

Water quality data for RCWD wells are shown on Appendix Table D-4. Samples were collected from 42 wells during 2018-19. Nitrate concentrations ranged up to 6.5 mg/l as nitrogen (as N), with the MCL being 10 mg/l (as N). Samples from two wells (Wells 109 and 119) showed TDS concentrations exceeding 750 mg/l, the Basin Plan objective. Wells 122, 158, and 233, which showed TDS concentrations exceeding 750 mg/l in prior years, showed reduced TDS concentrations for 2018-19, ranging from 450 to 740 mg/l.

Beginning in October 2017, groundwater samples were taken from 24 monitoring and production wells in the Domenigoni Basin, and from seepage weirs in the Owen (West) Dam as part of a Domenigoni Basin Groundwater Monitoring Plan. The West Dam includes five seepage weirs that outlet to an unlined channel in the Domenigoni Basin area. Seepage Weirs 1, 2 and 3 are located on the north end of the West Dam. Seepage Weirs 4 and 5 are located on the south end of the West Dam. All effluent from the 5 weirs is routed through lined channels to a pipe. The outlet deposits effluent into an unlined channel. Weir flow data from 2000 to present is maintained by MWD. Results of the monitoring plan are expected to be reported in future reports.

TABLE 10.1

SANTA MARGARITA RIVER WATERSHED

RANGES IN AVERAGE DAILY CONCENTRATION OF DISSOLVED OXYGEN, PH, SPECIFIC CONDUCTANCE AND TEMPERATURE AT SANTA MARGARITA RIVER NEAR TEMECULA

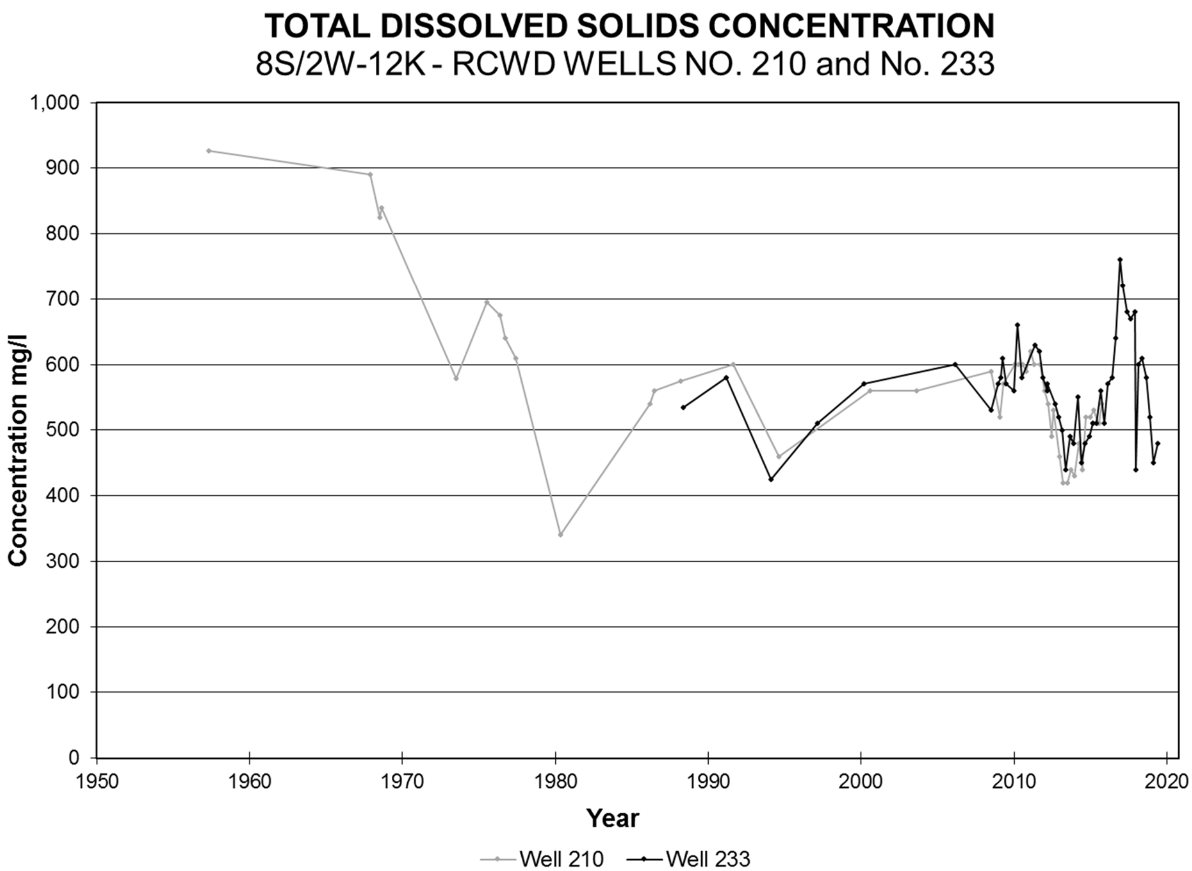
Water Year 2018-19

COLLECTION MONTH/YEAR	DISSOLVED OXYGEN mg/l		pH		SPECIFIC CONDUCTANCE microsiemens/cm		TEMPERATURE Degrees Celsius	
	High	Low	High	Low	High	Low	High	Low
2018								
October	8.3	2.9	7.8	6.8	1,380.0	421.0	25.4	17.7
November	9.7	6.8	8.2	7.2	1,390.0	241.0	22.2	12.5
December	10.1	6.7	8.1	7.2	1,330.0	172.0	18.4	10.0
2019								
January	11.3	8.3	8.2	7.2	1,490.0	252.0	16.1	8.4
February	11.9	8.4	8.1	7.1	1,340.0	69.0	16.9	6.0
March	13.9	8.0	8.4	7.5	1,520.0	347.0	20.3	11.0
April	17.1	8.1	8.5	7.6	1,620.0	596.0	22.4	15.2
May	12.3	6.4	8.4	7.5	1,320.0	466.0	19.6	15.4
June	10.0	8.3	8.2	7.7	896.0	573.0	20.8	16.3
July	8.7	7.4	8.1	7.7	655.0	534.0	25.9	19.8
August	8.9	7.5	8.1	7.7	626.0	534.0	28.9	20.3
September	8.6	7.8	7.9	7.5	681.0	549.0	24.8	21.8

**- Partial Record: Indicates months with interruptions in record at times due to malfunction of recording equipment. High and low values indicated for days with reported data. Daily data and number of days with no record can be viewed at the following website: http://web10capp.er.usgs.gov/adr06_lookup/search.jsp searching by site number 11044000.

TDS concentrations for RCWD Well No. 210 are shown on Figure 10.1 for samples collected since 1957, when the well was constructed. Due to the fact that Well No. 210 is currently offline, data for Well No. 233, dating back to 1988, is included on the figure. Well No. 233 was chosen for this figure due to its proximity to Well No. 210. The figure shows a decline in TDS from approximately 900 mg/l for the samples collected during the 1960's to the 400-600 mg/l range in recent years (Well No. 210). Trend analyses for other wells throughout the Murrieta-Temecula area show a mix of increasing and decreasing trends in TDS levels depending upon location and aquifer.

Figure 10.1



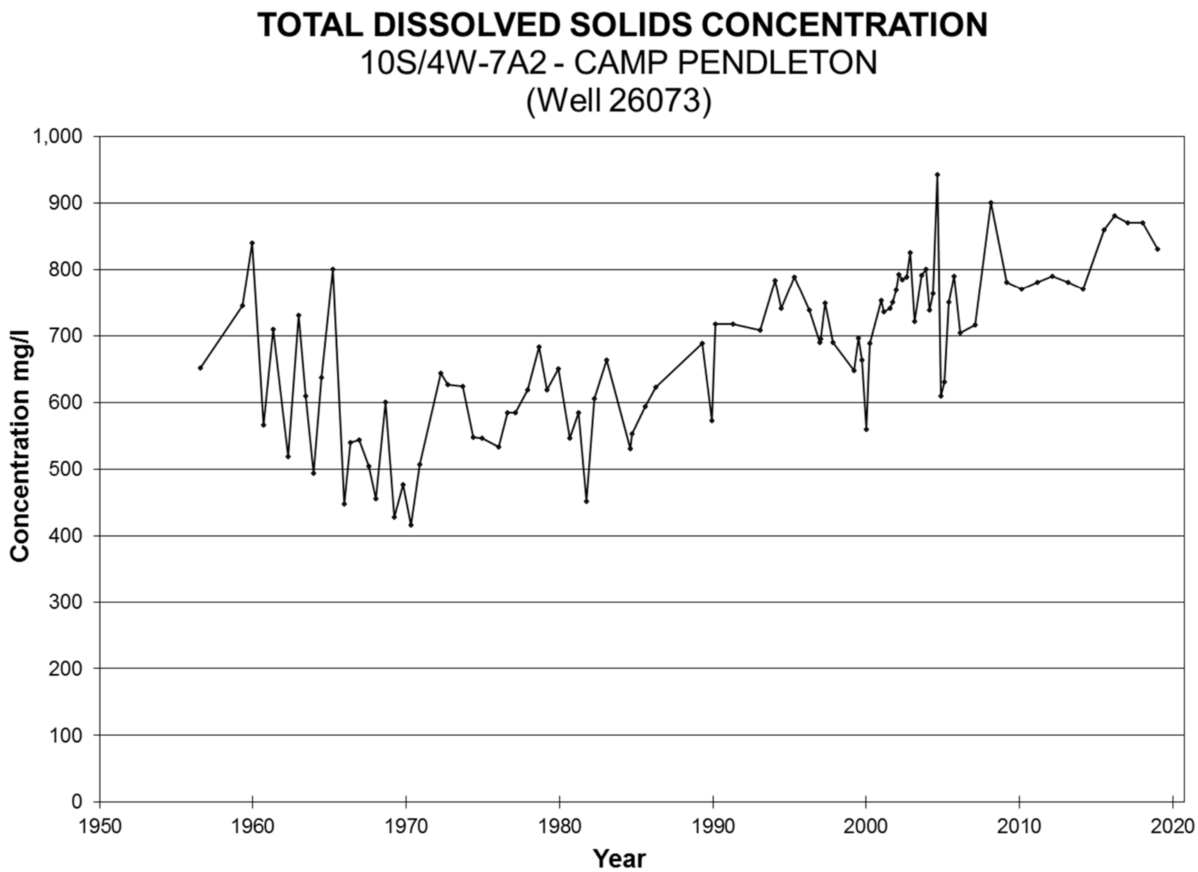
Appendix Table D-5 shows water quality data collected by the USGS from wells on Indian Reservations. In 2018-19, samples were collected from five wells on the Pechanga Indian Reservation. For the Pechanga wells, TDS concentrations ranged from 232 to 337 mg/l.

In 2018-19, no samples were collected from wells on the Cahuilla Indian Reservation.

During 2018-19, groundwater samples were collected from eight wells at CPEN as shown on Appendix Table D-6. All eight wells were subjected to standard chemical analysis. During 2018-19, samples show all eight wells with TDS concentrations reaching/exceeding the Basin Plan Objective of 750 mg/l. One well indicated a TDS concentration that was the highest on record. While one well indicated an increase in TDS concentration compared to the previous year, seven well showed a decline of TDS concentration.

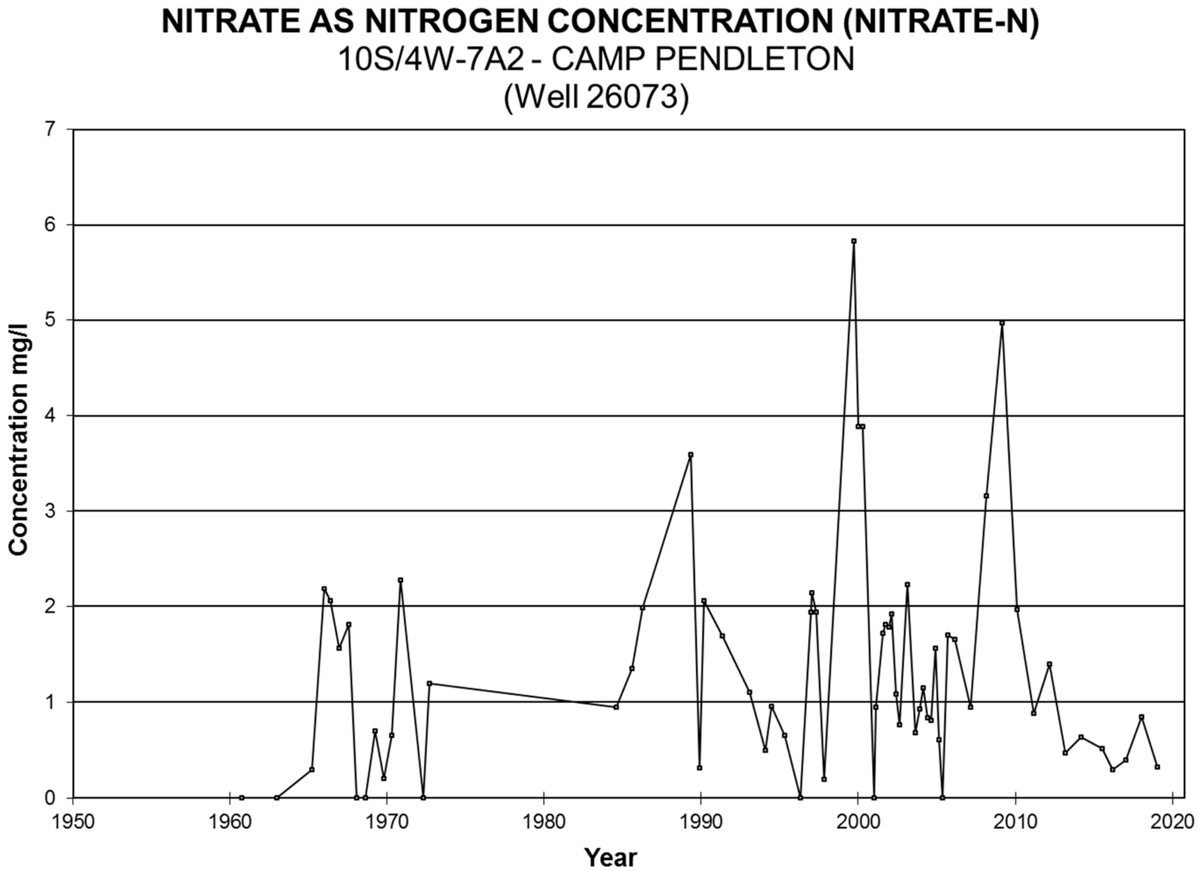
Historical TDS concentrations for CPEN Well 7A2 are shown on Figure 10.2 for samples collected since mid-1950. The figure shows a decline between mid-1950 and 1970, then a period of increasing concentrations to levels in the 550-950 mg/l range. Analysis of the sample collected in 2018-19 indicated TDS concentration of 830 mg/l, a reported decrease from 870 mg/l when compared to the sample collected in 2017-18.

Figure 10.2



Historical nitrate concentrations for the same well (7A2) are shown on Figure 10.3. The one sample collected in 2018-19 indicated a nitrate concentration of 0.32 mg/l as N.

Figure 10.3



Page Intentionally Blank

SECTION 11 – COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

11.1 General

On August 20, 2002, the CWRMA between CPEN and RCWD was approved by the Court. The CWRMA accounting is reported on a calendar year basis and, accordingly, Section 11 and Appendix E present data reported on a calendar year basis. However, the remainder of the Annual Watermaster Report is prepared on a water year basis requiring the CWRMA calendar year reporting to be converted to a water year basis to be incorporated into other sections of the report. The water year period begins on October 1 and concludes on September 30 of the following year.

It is noted that prior Annual Watermaster Reports served as the annual report required under CWRMA. Beginning in calendar year 2011, a separate annual report has been prepared by the Watermaster and submitted to the Court to meet the requirements of CWRMA. Section 11 continues to be included in the Annual Watermaster Report focusing on the accounting and operations related to Make-Up Water releases and flow requirements for the SMR at the Gorge. Section 11 also includes an overview of other topics included in the stand-alone Annual CWRMA Report.

The CWRMA provides that on May 1 of each year, the Technical Advisory Committee is to compute a hydrologic index for the year based on streamflow and precipitation between October and April. In May 2019, the hydrologic index was determined and the year classified as an "Above Normal" hydrologic year. The hydrologic year establishes the required flows at the SMR near Temecula gaging station for the calendar year. Required flows for 2019, an "Above Normal" year, are listed in Section 5 of the CWRMA and are shown on Table 11.1.

As indicated above, CWRMA calendar year accounting must be converted to a water year basis for other sections of the annual report. The data for October through December 2018 for the various accounts are needed to convert the amounts shown on Table 11.1 to water year values. These data for October through December 2018 were reported in the prior year Annual Watermaster Report. To assist the reader in calculating water year amounts for various CWRMA operations, Table 11.2 in the current report is a repeat of Table 11.1 from the prior year's report. Additional information concerning the operations underlying the values reported on Table 11.2 can be found in the prior year's report.

Prior to implementation of the CWRMA, each year there were contentions raised by CPEN with respect to various aspects of the Annual Watermaster Report. These contentions are settled so long as that agreement is in effect. Accordingly, there is no need to raise those particular issues or publish them in the main text of the annual report or in related correspondence. Rather, the issues are provided in Appendix F.

TABLE 11.1

SANTA MARGARITA RIVER WATERSHED

MONTHLY SUMMARY OF REQUIRED FLOWS, DISCHARGES, CREDITS AND ACCOUNTS COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

2019 CALENDAR YEAR - ABOVE NORMAL YEAR

Month	USGS Official Discharge AF	USGS Website Daily Discharge AF	Minimum Flow Maintenance Requirement cfs 1/, 6/	Section 5 Flows cfs 2/	No. of Days 10-day Running Average is Less than Required Flow	Discharge from WR-34 AF 3/, 7/	Climatic Credits Earned AF 4/	Camp Pendleton Groundwater Bank 5/	
								Input AF	Cumulative Balance AF
Jan	1,769.3	1,748.8	4.6	17.8	3.0	97.1	0.0	424.7	5,000.0
Feb	18,742.7	18,860.4	4.6	17.8	0.0	1.3	0.0	383.6	5,000.0
Mar	1,433.7	1,402.5	4.6	17.8	0.0	30.7	0.0	424.7	5,000.0
Apr	284.0	284.1	4.6	17.8	14.0	203.7	0.0	411.0	5,000.0
May	662.9	662.6	11.5	11.7	18.0	474.6	0.0	12.4	5,000.0
Jun	548.7	548.8	9.4	9.4	9.0	462.3	0.0	0.0	5,000.0
Jul	469.3	481.1	7.8	7.8	0.0	432.6	0.0	0.0	5,000.0
Aug	461.2	469.2	7.6	7.6	0.0	445.4	0.0	0.0	5,000.0
Sep	439.2	434.8	7.4	7.4	10.0	408.5	0.0	0.0	5,000.0
Oct	466.2	466.2	7.7	7.7	17.0	460.4	0.0	0.0	5,000.0
Nov	2,089.8	2,089.8	8.8	8.8	0.0	452.3	0.0	0.0	5,000.0
Dec	2,822.4	2,810.4	8.8	10.4	3.0	251.3	0.0	99.2	5,000.0
CALENDAR YEAR TOTAL	**30,189.4**	**30,258.7**			**74**	**3,720.2**	**0.0**	**1,755.6**	**FULL**

1/ Required flows for January through April are equal to 11.5 cfs less 6.9 cfs of credits (1,107 AF Climatic Credit earned in 2018 plus 534 AF CAP Credit remaining from 2017).
2/ The Table in Section 5 of the CWRMA sets forth guaranteed monthly flows at the Gorge once the Hydrologic Condition for the calendar year is established.
3/ CAP Credits equal the WR-34 discharge in excess of 4,000 AF. CAP Credits of 0 AF earned in 2018.
4/ Climatic Credits equal the WR-34 discharges less actual Flow Requirements, which is the flow indicated in Section 5 of the CWRMA less applicable credits but not less than 3.0 cfs. Climatic Credits of 1,107 AF earned in 2018.
5/ CPEN's rights to groundwater equal the flow indicated in Section 5 of the CWRMA less the Actual Flow Maintenance Requirement, which cannot be less than 3.0 cfs. Input to the Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.
6/ December 2019 flow requirement reduced from 10.4 cfs to 8.8 cfs per Camp Pendleton's request to foregoe water.
7/ As reported by RCWD and MWD.

TABLE 11.2

SANTA MARGARITA RIVER WATERSHED

MONTHLY SUMMARY OF REQUIRED FLOWS, DISCHARGES, CREDITS AND ACCOUNTS COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

2018 CALENDAR YEAR - CRITICALLY DRY YEAR

								Camp Pendleton Groundwater Bank 5/	
Month	USGS Official Discharge AF	USGS Website Daily Discharge AF	Minimum Flow Maintenance Requirement cfs 1/	Section 5 Flows cfs 2/	No. of Days 10-day Running Average is Less than Required Flow	Discharge from WR-34 AF 3/, 6/, 7/	Climatic Credits Earned AF 4/	Input AF	Cumulative Balance AF
Jan	2,970.8	2,943.7	9.3	4.5	0.0	472.5	301.2	93.0	5,000.0
Feb	516.3	516.3	9.3	4.5	0.0	466.1	298.1	84.0	5,000.0
Mar	670.5	670.6	9.3	4.5	0.0	342.7	176.9	93.0	5,000.0
Apr	555.3	555.3	9.3	4.5	9.0	510.4	330.4	90.0	5,000.0
May	248.8	247.6	3.8	3.8	9.0	166.6	0.0	0.0	5,000.0
Jun	209.5	202.3	3.3	3.3	4.0	159.5	0.0	0.0	5,000.0
Jul	204.7	205.1	3.0	3.0	0.0	165.6	0.0	0.0	5,000.0
Aug	194.2	194.3	3.0	3.0	0.0	174.1	0.0	0.0	5,000.0
Sep	184.7	184.7	3.0	3.0	1.0	152.3	0.0	0.0	5,000.0
Oct	253.2	246.0	3.0	3.0	3.0	160.9	0.0	0.0	5,000.0
Nov	522.5	518.1	3.0	3.0	0.0	160.2	0.0	0.0	5,000.0
Dec	937.6	937.6	3.3	3.3	0.0	130.0	0.0	0.0	5,000.0
CALENDAR YEAR TOTAL	**7,468.1**	**7,421.6**			**26**	**3,060.9**	**1,106.6**	**360.0**	**FULL**

1/ Required flows for January through April are equal to 11.5 cfs less 2.2 cfs of credits (50% of the 1,069 AF CAP Credit earned in 2017).
2/ The Table in Section 5 of the CWRMA sets forth guaranteed monthly flows at the Gorge once the Hydrologic Condition for the calendar year is established.
3/ CAP Credits equal the WR-34 discharge in excess of 4,000 AF. CAP Credits of 0 AF earned in 2018.
4/ Climatic Credits equal the WR-34 discharges less actual Flow Requirements, which is the flow indicated in Section 5 of the CWRMA less applicable credits but not less than 3.0 cfs. Climatic Credits of 1,107 AF earned in 2018.
5/ CPEN's rights to groundwater equal the flow indicated in Section 5 of the CWRMA less the Actual Flow Maintenance Requirement, which cannot be less than 3.0 cfs. Input to the Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.
6/ Value for November 2018 revised from 166.5 AF.
7/ As reported by RCWD and MWD.

11.2 Required Flows

Under the CWRMA, RCWD guarantees that the ten-day running average of the measured flows at the SMR near Temecula gaging station shall meet the required flows for each month during the year. In order to meet the required flows, RCWD discharges Make-Up Water from two primary sources, both discharging into the river at the same location immediately upstream from the USGS gaging station for SMR near Temecula. The first primary source of Make-Up Water is raw water from MWD Aqueduct No. 5 discharged at Service Connection WR-34. The second primary source of Make-Up Water is from the RCWD treated water distribution system through a potable connection to the Service Connection WR-34 outlet pipe. In prior years, Make-Up Water was also discharged from the treated water distribution system to Murrieta Creek from two system discharge meters collectively referred to as the System River Meter. The two discharge meters are located on opposite sides of Murrieta Creek, immediately downstream of the USGS gaging station for Murrieta Creek at Temecula, which is located approximately 2,000 feet upstream of the confluence of Temecula Creek and Murrieta Creek. The System River Meter is operable as a secondary source of Make-Up Water if needed.

Flow requirements are based on two-thirds of the median natural flow of the SMR at the Gorge for a given hydrologic year type. During the winter period (January through April), RCWD shall maintain a ten-day running average equal to 11.5 cfs, less carry-over credits, less requested foregone Make-Up Water, but not less than 3.0 cfs. RCWD may earn Climatic Credits in Below Normal and Critically Dry years if it has provided Make-Up Water in excess of the Actual Flow Requirement. The Climatic Credit is equal to the Make-Up Water released, less the Actual Flow Requirement, less credits. The Actual Flow Requirement is determined on May 1 of each year and applied retroactively to the flows during the winter period. During the non-winter period (May through December), RCWD shall maintain a ten-day running average equal to the flow requirements specified in the CWRMA as determined on May 1st, less any foregone Make-Up Water agreed to by CPEN and RCWD. When RCWD is required to provide Make-Up Water in any calendar year in excess of 4,000 AF, it may apply CAP Credits for such excess during the following two winter periods. At no time is RCWD required to make up more than 11.5 cfs.

The measured daily flows, the ten-day running average, and the differences between the running average and the required flows are shown in Appendix E. Two listings of daily discharges are shown in the tables in Appendix E: the USGS official discharge and the USGS website discharge. The discharges shown on the website are those that dictate daily decisions regarding the quantities of Make-Up Water required and those discharges are used to compute the ten-day running average. The official discharge is a more refined estimate developed later by the USGS for publication.

The number of days each month when the ten-day running average was less than the required flows is summarized on Table 11.1. For calendar year 2019, there were 74 days when the running average was less than the required flows under normal CWRMA operations.

During calendar year 2019, the total releases by RCWD to meet CWRMA flow requirements were 3,720 AF as shown on Table 11.1.

1,107 AF of Climatic Credits were used in calendar year 2019, and no Climatic Credits were earned in calendar year 2019 in accordance with CWRMA provisions. In calendar year 2019, 534 AF of CAP Credits were used and no CAP Credits were accumulated for use in subsequent years to meet any required releases by RCWD.

The CWRMA also provides that CPEN may acquire rights to groundwater above the Gorge by foregoing its right to Make-Up Water, or to the extent that the Actual Flow Maintenance Requirements are less than the flows in the table in Section 5 of CWRMA. The maximum cumulative balance for the CPEN groundwater account is 5,000 AF. During calendar year 2019, 1,755.6 AF were calculated as input to the groundwater account but the balance was already at the maximum balance of 5,000 AF and no additional water was credited to the account.

11.3 Water Quality

The USGS continuously monitors four parameters of water quality at the SMR near Temecula gaging station, including dissolved oxygen, pH, specific conductance, and temperature. The daily averages for each of these parameters are reported annually. Monthly highs and lows for each parameter are listed in Table 10.1 for the water year ending September 30, 2019.

11.4 Monitoring Programs

The CWRMA provides for the establishment of two monitoring programs: (1) Section 5(g) provides for a program to assess the impacts of operations on water supply, water quality and riparian habitat within CPEN, and; (2) Section 7(d) provides for a program to assess safe yield operations of RCWD through the use of a multi-level groundwater monitoring network and periodic updates of the CWRMA Groundwater Model.

During 2007-08, CPEN initiated the Section 5(g) program named as the Lower Santa Margarita River Watershed Monitoring Program (LSMRWM Program) to evaluate whether the increased flows under CWRMA influence threatened and endangered species, riparian and wetland habitats, or water quality downstream. The LSMRWM Program will also support other water quality monitoring and watershed management activities in the SMRW. A copy of the Statement of Work for the LSMRWM Program was provided in the 2007 and 2008 Annual Watermaster Reports. The monitoring was funded for a two-year period and the final report, *Hydrological and Biological Support to Lower Santa Margarita River Watershed Monitoring Program Water Years 2008-2009* was published on February 21, 2010, under a cooperative program between CPEN and the United States Bureau of Reclamation.

In September 2006, the USGS under contract with CPEN and RCWD constructed a multi-level monitoring well for the Murrieta-Temecula Groundwater Basin in accordance with Section 7(d) of CWRMA. The Pala Park Groundwater Monitoring Well is located near the confluence of Pechanga and Temecula creeks and was completed to a total depth of 1,499 feet. Six piezometers were installed for continuous water level recording in the saturated zone for the lower five screened intervals and for the upper-most screened interval to detect moisture in the unsaturated zone. The USGS monitoring program for the Pala Park Groundwater Monitoring Well is included in the ongoing Watermaster budget beginning in WY 2008.

In 2009, the groundwater monitoring program was expanded to include the Wolf Valley Monitoring Well that was previously constructed under a cooperative agreement between the USGS and the Pechanga Band. Two piezometers are installed at the Wolf Valley Well. The groundwater level monitoring for the Wolf Valley Monitoring Well was previously funded by the Pechanga Band, but is now included in the ongoing Watermaster budget beginning in WY 2010.

In 2013, two additional groundwater monitoring wells were constructed by the USGS under contract with RCWD. The groundwater level monitoring for these additional wells is also included in the ongoing Watermaster budget. The Temecula Creek Groundwater Monitoring Well was drilled in April 2013 to a depth of 1,720 feet, and was completed with five piezometers. The VDC Recharge Basin Groundwater Monitoring Well was drilled in August 2013 to a depth of 1,033 feet, and was completed with six piezometers.

Information concerning the construction of the monitoring wells, groundwater levels, and water quality data can be found at the following website: http://ca.water.usgs.gov/temecula/. Information obtained from the website as well as supplemental information for the groundwater monitoring wells is provided in the Annual CWRMA Report.

In 2010, 2011, and 2012, the water quality monitoring program also included collecting data for the two sources of supply for recharge at the head of Pauba Valley: (1) imported supplies for recharge at RCWD VDC Recharge Facilities, and; (2) native supplies from Temecula Creek as sampled at Vail Lake. Funding from the Watermaster budget was used to collect and analyze the data which are provided in the Annual CWRMA Report.

In 2012, the water quality monitoring program also included collecting data from selected groundwater production wells operated by RCWD within Pauba Valley. These wells were selected to compliment the water quality data for the monitoring wells and the two sources of supply for recharge at the head of Pauba Valley. Previously, groundwater production wells operated by RCWD were included in the 2004 and 2007 sampling programs for the Groundwater Ambient Monitoring and Assessment (GAMA) program implemented by the SWRCB. Data reported for 2013 were collected with funding from the

Watermaster budget. In 2013, funding from the Watermaster budget was used to analyze archived, age-dating samples that were collected during 2012. The samples from two groundwater production wells, Wells 109 and 234, were analyzed for tritium and carbon isotopes.

11.5 Groundwater Model

In 2007, CPEN and RCWD initiated an effort to update the CWRMA Groundwater Model in accordance with Section 7(d). Work on updating the groundwater model was completed in 2014 and 2015 with publication of the April 25, 2014 (revised January 8, 2015) report prepared by GEOSCIENCE Support Services, Inc., entitled *Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, California, Model Update and Refinement Report*. The model update included the following: (1) development of GSFLOW which is a coupled surface water and groundwater model that includes a Precipitation-Runoff Modeling System and MODFLOW, (2) refinement of the groundwater model cell size, active/inactive boundaries and locations of recharge and discharge, (3) development of a three-dimensional lithologic model based on lithologic and geophysical borehole logs from wells in the area, (4) refinement of groundwater model layer elevations based on the results from the lithologic model, and (5) update of the surface water and groundwater model with data through 2008.

In 2016 and 2017, CPEN and RCWD continued efforts to update the CWRMA Groundwater Model and conduct groundwater model runs to evaluate various aspects of the management of the Murrieta-Temecula Groundwater Basin. Model updates included (1) GSFLOW model update and recalibration for the period 1988 through 2014, (2) extend the model with updated hydrogeologic data for the period 1988 through 2014, (3) update of land use and model flux terms for the period 1988 through 2014, (3) refinement of groundwater model layer elevations, and (4) re-calibrate the model. The process in which to update, refine, and re-calibrate the model is summarized in the report prepared by GEOSCIENCE Support Services, Inc., entitled *Surface and Ground Water Model of the Murrieta-Temecula Groundwater Basin Model Report Addendum: CWRMA Model Watermaster and Sustainable Yield Runs*, dated July 27, 2017. Results from the model are anticipated to be included in future CWRMA and Watermaster annual reports.

Page Intentionally Blank

SECTION 12 - FIVE YEAR PROJECTION OF WATERMASTER OFFICE ACTIVITIES

12.1 General

Projected tasks over the next five years are listed below in two categories: normal tasks, which are part of the usual Watermaster office operation; and additional tasks, which are foreseen but are not part of the normal office operations.

12.2 Normal Tasks

Tasks that are normally part of the Watermaster Office operation are as follows:

1. Update List of Substantial Users
2. Collect Water Production, Use, Import and Availability Data
3. Collect Well Location, Construction and Water Level Data
4. Administer Water Rights
5. Collect Water Quality Data
6. Monitor Water Quality and Water Right Activities
7. Administer Lake Skinner and Diamond Valley Lake MOU's
8. Administer Steering Committee Matters
9. Prepare Court Reports/Budgets
10. Monitor Streamflow and Water Quality Measuring
11. Data Management
12. Administer CWRMA
13. Jurisdictional determination for Riverside County Technical, Managerial, Financial process
14. SGMA Support
15. CUP Support

12.3 Additional Tasks

Tasks that have been identified but which are not part of normal operations are as follows:

1. Prepare List of All Water Users under Court Jurisdiction
2. Prepare Inventory of Ponds and Reservoirs
3. Determine Salt Balance

12.4 Projected Expenditures

Projected expenditures for the current year and over the next five years are listed as follows:

Year		Watermaster Office	USGS Groundwater Monitoring	USGS Gaging Stations	Total
Current Year	2019-20	$548,440	$69,950	$207,900	$826,290
Projected Years	2020-21	$551,691	$70,170	$192,950	$814,811
	2021-22	$596,300	$80,696	$221,893	$898,888
	2022-23	$630,200	$84,730	$232,987	$947,917
	2023-24	$660,100	$88,967	$244,636	$993,703
	2024-25	$690,900	$93,415	$256,868	$1,041,183

SECTION 13 - WATERMASTER OFFICE BUDGET

The budget for the Watermaster Office is established on an annual basis and is approved by the Court upon acceptance of the Annual Watermaster Report. The budget is presently funded from equal assessments paid by the Steering Committee; however, the Court retains the right to assess other parties in the future. An audit is conducted annually by an independent auditor and the independent auditor's report is submitted for review by the parties and the Court as part of the Annual Watermaster Report.

13.1 Comparison of Budget and Actual Costs for 2018-19

The Watermaster Budget for 2018-19 of $791,733 was approved by the Court upon acceptance of the December 2018 Annual Watermaster Report for WY 2017. The Independent Auditor's Report and Report to the Steering Committee for Watermaster of the SMRW for Fiscal Year Ended September 30, 2019 is included in Appendix G. A comparison of the budget and actual costs for 2018-19 is shown on Table 13.1. The actual costs for 2018-19 were $836,922 (total operating expenses less depreciation) compared to the budget of $791,733, resulting in an unfavorable variance of $45,189. An explanation of individual line item variances is provided in Appendix G.

13.2 Proposed Budget for 2020-21

The proposed Watermaster Budget for 2020-21 is published in the Annual Watermaster Report for 2018-19 and is determined to be final and accepted by the Court upon noticing and completion of the 30-day period for parties to file an objection to the report. Accordingly, the budget for 2020-21 is referred to in this report as the proposed budget. The proposed Watermaster Budget for 2019-20, along with a comparison to the approved budget for 2019-20 is shown on Table 13.2. The total budget for 2020-21 is $814,811. This budget includes $551,691 for the Watermaster Office and $263,120 for USGS gaging station operations and monitoring. The budgeted cost for services provided by the USGS is based on the annual renewal of a cooperative agreement with the Watermaster.

TABLE 13.1

SANTA MARGARITA RIVER WATERSHED

COMPARISON OF WATERMASTER BUDGET AND ACTUAL COSTS

WATER YEAR 2018-19

Line Item	Water Year 2018-19 Approved Budget 2018-19 1/	Actual Costs 2018-19 2/, 3/	Actual Costs Minus Approved Budget 2018-19	
Watermaster Office	**$**	**$**	**$**	**%**
Accounting Services	$7,500	$5,271	-$2,229	-29.7%
Audit	7,000	6,000	-1,000	-14.3%
IT System/Computer	3,000	0	-3,000	-100.0%
Legal Services	30,000	38,153	8,153	27.2%
Miscellaneous	2,500	216	-2,284	-91.4%
Postage	1,500	1,452	-48	-3.2%
Printing	7,000	2,468	-4,532	-62.7%
Watermaster Services				
Consulting Services	439,258	501,695	62,437	14.2%
Travel Reimbursement	25,000	14,806	-10,194	-40.8%
SUBTOTAL WATERMASTER OFFICE	**$522,758**	**$570,061**	**$47,303**	**9.0%**
USGS				
Gaging Station	$188,975	$187,994	-$981	-1.0%
Surface Water Quality	17,000	$16,388	-113	-1.0%
Groundwater Monitoring - Water Levels	63,000	$61,113	-1,888	-1.0%
Groundwater Monitoring - Water Quality	0	0	0	0.0%
SUBTOTAL USGS	**$268,975**	**$265,994**	**-$2,981**	**-1.0%**
TOTAL	**$791,733**	**$836,054**	**$44,321**	**5.3%**

1/ Budget for 2018-19 approved by the Court as reported in the Annual Watermaster Report for WY 2017 published December 2018.
2/ Actual Costs from Financial Statements for period ending September 30, 2019.
3/ Does not include annual retainer of $5,000.

TABLE 13.2

SANTA MARGARITA RIVER WATERSHED

PROPOSED WATERMASTER BUDGET FOR WATER YEAR 2020-21

Line Item	Water Year 2020-21 Proposed Budget 2020-21 1/	Approved Budget 2019-20 2/	Increase Over Approved Budget 2019-20	
Watermaster Office	**$**	**$**	**$**	**%**
Accounting Services	$6,000	$7,500	-$1,500	-25.0%
Audit	6,000	6,000	0	0.0%
IT System/Computer	0	1,000	-1,000	-100.0%
Legal Services	30,000	30,000	0	0.0%
Miscellaneous	500	2,500	-2,000	-400.0%
Postage	100	600	-500	-500.0%
Printing	0	1,500	-1,500	-100.0%
Watermaster Services				
Consulting Services	506,591	484,340	22,251	4.4%
Travel Reimbursement	2,500	15,000	-12,500	-500.0%
SUBTOTAL WATERMASTER OFFICE	**$551,691**	**$548,440**	**$3,251**	**0.6%**
USGS				
Gaging Station	$174,620	$190,800	-$16,180	-9.3%
Surface Water Quality	18,330	17,100	1,230	6.7%
Groundwater Monitoring - Water Levels	70,170	69,950	220	0.3%
Groundwater Monitoring - Water Quality	0	0	0	0.0%
SUBTOTAL USGS	**$263,120**	**$277,850**	**-$14,730**	**-5.6%**
TOTAL	**$814,811**	**$826,290**	**-$11,479**	**-1.4%**

1/ Proposed budget for 2020-21; final budget to be approved by the Court upon acceptance of the Annual Watermaster Report for 2018-19.

2/ Budget for 2019-20 approved by the Court as reported in the Annual Watermaster Report for WY 2018, published in November 2019.

Page Intentionally Blank

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX A

WATER PRODUCTION AND USE

WATER YEAR 2018-19

November 2020

TABLE A-1

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

EASTERN MUNICIPAL WATER DISTRICT

2018-19

Quantities in Acre Feet[1/]

	PRODUCTION					USE						RECYCLED WATER			
MONTH YEAR	**WELLS**	**IMPORT 2/**	**EXPORT FROM SMRW 3/**	**NET IMPORT**	**TOTAL**	**AG**	**COMM**	**DOM**	**TOTAL**	**LOSS 4/**	**TOTAL USE**	**REUSE IN SMRW 5/**	**REUSE OUTSIDE SMRW**	**OTHER REUSE 6/**	**TOTAL**
2018															
OCT	0	1,335	0	1,335	1,335	20	328	920	1,268	67	1,335	318	410	501	1,229
NOV	0	1,325	0	1,325	1,325	20	292	948	1,259	66	1,325	321	554	317	1,192
DEC	0	1,015	0	1,015	1,015	16	196	753	964	51	1,015	120	136	923	1,179
2019															
JAN	0	790	0	790	790	18	105	626	750	39	790	145	42	1,088	1,275
FEB	0	698	0	698	698	25	83	555	663	35	698	105	30	1,110	1,245
MAR	0	556	0	556	556	24	68	437	528	28	556	116	65	1,201	1,382
APR	0	1,124	447	677	677	23	95	526	643	34	677	159	410	760	1,329
MAY	0	1,188	0	1,188	1,188	24	240	865	1,129	59	1,188	275	538	502	1,315
JUNE	0	1,443	300	1,144	1,144	21	221	844	1,086	57	1,144	247	621	255	1,123
JULY	0	1,478	132	1,346	1,346	24	303	952	1,278	67	1,346	309	888	49	1,246
AUG	0	1,843	166	1,677	1,677	48	380	1,166	1,594	84	1,677	367	848	36	1,251
SEPT	0	2,166	464	1,702	1,702	65	375	1,177	1,617	85	1,702	367	897	(57)	1,207
TOTAL	0	14,963	1,509	13,453	13,453	329	2,684	9,768	12,781	673	13,453	2,849	5,439	6,683	14,971

1/ Totals may not add due to rounding.
2/ Does not include deliveries to RCWD, EVMWD or WMWD.
3/ Portion of imported supplies exported for delivery to EMWD's retail customers located outside the Watershed.
4/ Loss = 5%
5/ No sewage diverted to RCWD for WY 2019 for treatment at Santa Rosa Water Reclamation Facility. Reuse within Watershed includes 1,058 AF sold to RCWD, 472 AF sold to Pechanga Band, and 120 AF sold to EVMWD.
6/ Other Reuse includes changes of storage in Winchester and Sun City storage ponds, evaporation and percolation losses. There were a total of 2,959 AF discharged to Temescal Creek in the Santa Ana Watershed in WY 2019.

TABLE A-2

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

ELSINORE VALLEY MUNICIPAL WATER DISTRICT

2018-19

Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/						WASTEWATER EXPORTED			RECYCLED WATER 4/		
MONTH YEAR	WELLS	IMPORT	TOTAL	AG	COMM	DOM	TOTAL DELIVERED	LOSS 3/	TOTAL USE	UNTREATED WASTEWATER	REUSE OUTSIDE SMRW	TOTAL WASTEWATER EXPORT	REUSE INSIDE SMRW	REUSE OUTSIDE SMRW	TOTAL REUSE
2018															
OCT	0	612	612	2	145	440	586	26	612	111	21	132	12	21	32
NOV	0	535	535	1	116	396	513	22	535	109	12	121	9	12	21
DEC	0	388	388	1	63	309	372	16	388	114	8	122	5	8	12
2019															
JAN	0	319	319	0	38	267	305	13	319	115	5	120	3	5	8
FEB	0	255	255	0	21	223	244	11	255	110	2	112	0	2	2
MAR	0	223	223	0	17	197	214	9	223	117	2	119	0	2	2
APR	0	278	278	1	41	224	266	12	278	112	6	118	4	6	10
MAY	0	626	626	1	131	467	600	26	626	115	12	127	9	12	21
JUNE	0	499	499	1	101	377	478	21	499	110	10	121	11	10	22
JULY	0	681	681	1	160	491	652	29	681	113	18	130	13	18	31
AUG	0	748	748	2	186	529	717	31	748	112	21	133	15	21	36
SEPT	0	705	705	2	181	493	675	30	705	109	21	129	14	21	35
TOTAL	0	5,870	5,870	10	1,200	4,413	5,623	247	5,870	1,346	138	1,484	96	138	233

1/ Totals may not add due to rounding.

2/ Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The updated definitions are provided in Table 7.2.

3/ Loss percentage within the SMRW is determined using the calculation to determine District-wide unaccounted for water by comparing District-wide annual supply and customer deliveries, and is assumed to be constant for all months.

4/ EVMWD receives recycled water treated at the RCWD Santa Rosa Water Reclamation Facility via EMWD Palomar Pipeline through a wheeling agreement. In WY 2019, 905 AF of wastewater were delivered from EVMWD to RCWD for treatment at the Santa Rosa Water Reclamation Facility. In WY 2019, EVMWD received 233 AF of recycled water via EMWD and re-used 96 AF within the Watershed.

TABLE A-3

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

FALLBROOK PUBLIC UTILITY DISTRICT

2018-19

Quantities in Acre Feet[1/]

	DISTRICT WIDE PRODUCTION				SMRW PRODUCTION				SMRW USE						WASTEWATER			
MONTH YEAR	TOTAL LAKE SKINNER DIVERSIONS 2/	LAKE SKINNER DIVERSIONS DELIVERED	TOTAL DISTRICT IMPORT 3/	TOTAL DISTRICT SUPPLY 4/	SMRW LAKE SKINNER	SMRW IMPORT	TOTAL SMRW PRODUCTION	EXPORT	AG	COMM	DOM	TOTAL DELIVERED IN SMRW	LOSS 5/	TOTAL USE IN SMRW	FROM SMRW	REUSE IN SMRW	FROM U.S. NWS 6/	EXPORT FROM SMRW
2018																		
OCT	0	0	798	798	0	434	434	0	220	22	165	407	27	434	68	2	0	66
NOV	0	0	747	747	0	409	409	0	208	19	157	384	26	409	67	2	0	66
DEC	0	0	374	374	0	262	262	0	99	21	126	246	16	262	66	0	0	66
								0										
2019								0										
JAN	0	0	322	322	0	158	158	0	32	12	104	148	10	158	63	0	0	63
FEB	207	0	202	202	0	120	120	0	9	11	92	113	8	120	80	0	0	80
MAR	0	207	346	553	89	0	89	118	4	10	69	83	6	89	93	0	0	93
APR	0	0	687	687	0	193	193	0	66	11	103	181	12	193	65	2	0	64
MAY	0	0	526	526	0	293	293	0	129	16	129	275	18	293	89	1	0	89
JUNE	0	0	750	750	0	265	265	0	110	17	121	248	17	265	56	2	0	54
JULY	0	0	1,003	1,003	0	421	421	0	225	20	150	395	26	421	58	3	1	54
AUG	0	0	977	977	0	493	493	0	260	23	179	462	31	493	70	3	0	67
SEPT	0	0	955	955	0	471	471	0	255	22	165	441	29	471	47	3	0	44
TOTAL	207	207	7,688	7,894	89	3,519	3,608	118	1,618	202	1,562	3,382	226	3,608	824	19	1	804

1/ Totals may not add due to rounding.

2/ Diverted under Permit No. 11356.

3/ Includes 70.3 AF from Capra Well located in San Luis Rey Watershed and remaining supply from San Diego County Water Authority.

4/ A portion of the District is outside the SMRW.

5/ Loss percentage within the SMRW is determined using the calculation to determine District-wide unaccounted for water by comparing District-wide annual supply and customer deliveries, and is assumed to be constant for all months.

6/ United States Naval Weapons Station Seal Beach, Detachment Fallbrook.

TABLE A-4

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

METROPOLITAN WATER DISTRICT
DELIVERIES IN DOMENIGONI VALLEY
2018-19
Quantities in Acre Feet[1/]

	PRODUCTION			USE					
MONTH YEAR	WELLS	IMPORT TO SMRW	TOTAL IN SMRW	AG	COMM/ DOM 2/	GW RECHARGE	TOTAL DELIVERED	LOSS 3/	TOTAL USE
2018									
OCT	0	95	95	95	0	0	95	0	95
NOV	0	72	72	72	0	0	72	0	72
DEC	0	14	14	14	0	0	14	0	14
2019									
JAN	0	15	15	15	0	0	15	0	15
FEB	0	10	10	10	0	0	10	0	10
MAR	0	7	7	7	0	0	7	0	7
APR	0	46	46	46	0	0	46	0	46
MAY	0	42	42	42	0	0	42	0	42
JUNE	0	72	72	72	0	0	72	0	72
JULY	0	71	71	71	0	0	71	0	71
AUG	0	54	54	54	0	0	54	0	54
SEPT	0	58	58	58	0	0	58	0	58
TOTAL	0	554	554	554	0	0	554	0	554

1/ Totals may not add due to rounding.
2/ Construction water.
3/ Points of delivery located at metered pumps on San Diego Canal and thus the losses in the MWD system are zero.

TABLE A-5

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

PECHANGA INDIAN RESERVATION

2018-19

Quantities in Acre Feet[1/]

	PRODUCTION				USE 5/					
MONTH YEAR	WELLS ON RESERVATION 2/	DELIVERED GROUNDWATER FROM RCWD 3/	RECYCLED WATER FROM EMWD 4/	TOTAL	AG	COMM	DOM	TOTAL DELIVERED	LOSS 6/	TOTAL USE
2018										
OCT	78	16	45	140	0	83	9	92	48	140
NOV	64	0	31	95	0	66	21	86	8	95
DEC	84	0	39	123	0	59	5	64	59	123
2019										
JAN	49	0	9	58	0	37	5	42	16	58
FEB	39	0	8	47	0	29	7	36	11	47
MAR	46	0	11	57	0	36	9	45	12	57
APR	58	0	45	102	0	81	8	89	13	102
MAY	56	0	27	83	0	65	14	78	5	83
JUNE	65	0	27	93	0	70	10	79	13	93
JULY	74	0	80	154	0	128	13	141	13	154
AUG	75	1	77	153	0	122	11	133	20	153
SEPT	69	0	69	138	0	127	12	139	(1)	138
TOTAL	758	18	468	1,243	0	902	123	1,025	218	1,243

1/ Totals may not add due to rounding.
2/ Total production attributed to Eduardo, Eagle III, and Kelsey wells.
3/ Water provided from RCWD Well Nos. 119, 122, and 211.
4/ Recycled water provided by EMWD via Wheeling Agreement with RCWD shown as a component of production for Table A-5 only to illustrate water budget for Reservation. Actual production for Watershed accounted for on Table A-1 and Table 7.1 for EMWD.
5/ Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The updated definitions are provided in Table 7.2. Based upon the revised definitions adopted by the Watermaster, Pechanga had no agricultural use in the SMR Watershed during WY 2019.
6/ Loss determined as Total Production less Total Delivered.

TABLE A-6

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

RAINBOW MUNICIPAL WATER DISTRICT
2018-19
Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/					
MONTH YEAR	**LOCAL**	**IMPORT TO DISTRICT**	**TOTAL IN SMRW**	**AG**	**COMM**	**DOM**	**TOTAL DELIVERED**	**LOSS 3/**	**TOTAL USE**
2018									
OCT	0	1,732	107	81	2	14	97	10	107
NOV	0	1,129	161	119	3	24	145	15	161
DEC	0	702	44	29	1	10	39	4	44
2019									
JAN	0	362	36	23	1	9	33	3	36
FEB	0	244	33	22	1	7	30	3	33
MAR	0	424	57	41	1	9	52	5	57
APR	0	1,337	97	74	1	12	87	9	97
MAY	0	1,074	54	37	1	11	49	5	54
JUNE	0	1,227	128	101	1	13	116	12	128
JULY	0	2,189	156	122	1	17	141	15	156
AUG	0	1,986	170	133	2	19	154	16	170
SEPT	0	1,538	128	99	2	15	116	12	128
TOTAL	0	13,943	1,170	880	16	161	1,058	112	1,170

1/ Totals may not add due to rounding.

2/ Water use definitions for all major water purveyors were updated and reconciled for Water Year 2014. The updated definitions are provided in Table 7.2.

3/ Loss percentage within the SMRW is determined using the calculation to determine District-wide unaccounted for water by comparing District-wide annual supply and customer deliveries, and is assumed to be constant for all months.

TABLE A-7

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

RANCHO CALIFORNIA WATER DISTRICT

2018-19

Quantities in Acre Feet[1/]

	PRODUCTION							USE								VAIL	RECYCLED WATER
MONTH YEAR	WELLS 2/	EXPORT 3/	NET WELLS	IMPORT 4/	EXPORT 5/	NET IMPORT	TOTAL	AG	COMM	DOM	SMR RELEASE 6/	IMPORT RECHARGE TO STORAGE 7/	TOTAL USE	LOSS 8/	TOTAL	RELEASE AND RECHARGE 9/	REUSED IN SMRW 10/
2018																	
OCT	1,628	18	1,611	3,223	39	3,184	4,794	1,797	906	2,397	251	(94)	5,257	(463)	4,794	84	270
NOV	1,748	19	1,728	2,471	31	2,441	4,169	1,604	705	2,005	168	(82)	4,401	(232)	4,169	0	263
DEC	799	10	789	1,231	14	1,216	2,005	607	440	1,473	134	(70)	2,585	(580)	2,005	0	275
2019																	
JAN	670	6	664	1,151	11	1,140	1,804	321	298	1,174	99	(67)	1,826	(22)	1,804	0	282
FEB	105	1	104	953	12	941	1,045	151	251	958	3	(62)	1,301	(257)	1,045	0	105
MAR	426	3	423	1,253	8	1,245	1,668	73	252	867	33	(75)	1,149	519	1,668	71	101
APR	1,734	14	1,720	2,436	17	2,419	4,140	1,035	499	1,495	206	(86)	3,149	991	4,140	136	295
MAY	1,923	21	1,902	2,385	14	2,370	4,272	993	590	1,728	477	434	4,222	51	4,272	0	293
JUN	2,323	20	2,302	3,813	28	3,784	6,087	1,406	767	2,119	464	437	5,192	895	6,087	93	278
JUL	1,879	17	1,862	5,658	47	5,610	7,472	2,027	940	2,462	434	608	6,471	1,001	7,472	0	279
AUG	1,842	19	1,824	5,952	56	5,896	7,720	2,349	1,052	2,697	448	595	7,141	579	7,720	116	300
SEP	2,299	27	2,271	5,161	47	5,114	7,385	2,285	1,014	2,670	411	1,177	7,557	(172)	7,385	55	268
TOTAL	17,374	175	17,200	35,687	325	35,362	52,561	14,649	7,714	22,043	3,129	2,715	50,250	2,311	52,561	555	3,009

1/ Totals may not add due to rounding.

2/ Wells recovered 31,391 AF (including stream releases). Does not include 12,958 AF of direct recharge/recovery, 1,003 AF of cyclic withdrawal, 37 AF fom Wells 102, 121, 135, 146 and 155 directly into recycled water system. For WY 2019, there were an additional 18 AF of deliveries to Pechanga Indian Reservation and is shown on Table A-5.

3/ Groundwater used in San Mateo Watershed.

4/ Includes 16,068 AF direct use (9,330.2 AF to Rancho Division and 6,737.4 AF to Santa Rosa Division); 12,958 AF direct recharge; 3,719 AF (rounded) of cyclic deposit; and 2,942 AF from MWD WR-34.

5/ Import used in San Mateo Watershed.

6/ 94 AF into Murrieta Creek from Wells 102, 106 and 108; 27 AF into Temecula Creek from Well 109; 65 AF into SMR from potable system; 2,942 AF from MWD Outlet WR-34.

7/ 3,719 AF cyclic deposit, less 1,003 AF cyclic withdraw, rounded.

8/ Loss includes un-accounted for water and is equal to total production less total use.

9/ Vail releases and the related Vail recharge are computed as Total Release less Inflow to be bypassed.

10/ Includes 37 AF pumped from Wells 102, 121, 135, 146, and 155 directly into recycled water system. Does not include 1,543 AF recycled water purchased from EMWD.

TABLE A-8

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

U.S.M.C. - CAMP PENDLETON

2018-19

Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/						WASTEWATER 5/					EXPORTS		
MONTH YEAR	AG LOCAL	CAMP SUPPLY	TOTAL 11/	AGRICULTURE 3/ IN SMRW	AGRICULTURE 3/ OUT SMRW	CAMP SUPPLY 4/ IN SMRW	CAMP SUPPLY 4/ OUT SMRW	TOTAL EXPORT	TOTAL IN SMRW	RECYCLED USE 6/ IN SMRW	RECYCLED USE 6/ OUT SMRW	EXPORTED TO OCEANSIDE OUTFALL RECYCLED 7/	EXPORTED TO OCEANSIDE OUTFALL BRINE 8/	TOTAL	TOTAL 9/	WASTEWATER RETURNS 10/	NET EXPORT
2018																	
OCT	0	567	567	0	0	211	291	291	211	2	15	173	66	256	545	133	411
NOV	0	455	455	0	0	169	234	234	169	1	12	153	52	218	451	107	344
DEC	0	328	328	0	0	123	170	170	123	1	8	165	36	209	378	78	300
2019																	
JAN	0	337	337	0	0	123	169	169	123	1	2	169	45	217	385	78	307
FEB	0	295	295	0	0	110	152	152	110	0	0	192	33	226	377	70	308
MAR	0	370	370	0	0	144	199	199	144	2	2	206	27	237	434	91	343
APR	0	490	490	0	0	180	248	248	180	2	36	140	62	241	487	114	373
MAY	0	498	498	0	0	186	257	257	186	2	24	159	54	240	495	118	377
JUNE	0	555	555	0	0	205	283	283	205	2	39	153	66	260	542	130	411
JULY	0	556	556	0	0	206	284	284	206	2	59	142	66	269	551	130	420
AUG	0	585	585	0	0	216	299	299	216	2	51	157	69	279	576	137	438
SEPT	0	578	578	0	0	214	296	296	214	1	42	165	68	275	571	136	435
TOTAL	0	5,614	5,614	0	0	2,087	2,883	2,883	2,087	18	289	1,974	644	2,925	5,790	1,323	4,467

1/ Totals may not add due to rounding.
2/ Use equals Production less Brine byproduct from Southern Advanced Water Treatment Plant beginning February 2013. Assumes no other losses.
3/ There was no agricultural irrigation in WY 2019.
4/ Camp Supply water use is divided with 42% used inside the SMRW and 58% used outside the SMRW.
5/ All southern wastewater treated at Southern Regional Tertiary Treatment Plant beginning December 2008.
6/ Recycled use for irrigation of golf course, landscaping and park areas.
7/ Recycled water not used but rather exported to Oceanside Outfall.
8/ Brine from Southern Advanced Water Treatment Plant exported to Oceanside Outfall.
9/ Agriculture and Camp Supply use outside the SMRW, recycled use outside the SMRW, plus Oceanside Outfall.
10/ Percent Camp Supply reclaimed estimated as (2,925-644) AF divided by (5,614-644) AF equals 45.89%. Wastewater returns estimated at 45.89% of Camp Supply use outside of SMRW.
11/ Includes approximatly 0.5 AF proudced from the SWFL Swamp Well.

TABLE A-9

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

U. S. NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT FALLBROOK
2018-19
Quantities in Acre Feet[1/]

	PRODUCTION			USE				WASTEWATER
MONTH YEAR	LOCAL	IMPORT TO SMRW 2/	TOTAL	AG	COMM/DOM	LOSS 3/	TOTAL USE	EXPORTED
2018								
OCT	0	3	3	0	3	0	3	0
NOV	0	5	5	0	5	0	5	0
DEC	0	3	3	0	3	0	3	0
2019								
JAN	0	6	6	0	5	1	6	0
FEB	0	5	5	0	4	0	5	0
MAR	0	5	5	0	5	0	5	0
APR	0	7	7	0	7	1	7	0
MAY	0	8	8	0	7	1	8	0
JUNE	0	26	26	0	24	2	26	0
JULY	0	9	9	0	8	1	9	1
AUG	0	4	4	0	3	0	4	0
SEPT	0	4	4	0	3	0	4	0
TOTAL	0	85	85	0	78	8	85	1

1/ Totals may not add due to rounding.
2/ Import via FPUD.
3/ Loss = 10% of Use.

TABLE A-10

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

WESTERN MUNICIPAL WATER DISTRICT
MURRIETA DIVISION
2018-19
Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/					
MONTH YEAR	WELLS	IMPORT	TOTAL	AG	COMM	DOM	TOTAL DELIVERED	LOSS 3/	TOTAL USE
2018									
OCT	33	180	213	0	65	128	193	20	213
NOV	32	124	155	0	48	100	148	8	155
DEC	37	72	109	0	37	81	118	(9)	109
2019									
JAN	34	64	99	0	29	68	97	2	99
FEB	30	38	68	0	23	53	77	(9)	68
MAR	34	62	97	0	33	70	103	(6)	97
APR	33	133	166	0	51	101	152	14	166
MAY	32	128	160	0	62	122	184	(24)	160
JUNE	34	177	211	0	68	131	199	11	211
JULY	32	205	237	0	81	159	240	(3)	237
AUG	0	143	143	0	83	165	248	(105)	143
SEPT	33	205	238	0	43	85	128	110	238
TOTAL	365	1,529	1,895	0	622	1,264	1,887	8	1,895

1/ Totals may not add due to rounding.
2/ Water use definitions for all major water purveyors were updated and reconciled for Water Year 2014. The updated definitions are provided in Table 7.2. Based upon the revised definitions adopted by the Watermaster, WMWD had no agricultural use in the SMR Watershed during WY 2019.
3/ Loss = Total Production less Total Delivered

TABLE A-11

SANTA MARGARITA RIVER WATERSHED

MISCELLANEOUS WATER PRODUCTION AND IMPORTS

2018-19

Quantities in Acre Feet

	IMPORT	PRODUCTION						
MONTH YEAR	**WESTERN MWD IMPORTS TO IMPROVEMENT DISTRICT A**	**ANZA MUTUAL WATER COMPANY**	**RANCHO CALIFORNIA OUTDOOR RESORTS 1/**	**QUIET OAKS MOBILE HOME PARK 1/, 2/**	**LAKE RIVERSIDE ESTATES**	**JOJOBA HILLS SKP RESORT**	**COTTONWOOD ELEMENTARY 3/**	**HAMILTON SCHOOLS 4/**
2018								
OCT	3.40	2.49	18.76	1.20	47.91	6.60	1.83	1.95
NOV	2.90	1.95	17.62	0.80	36.85	5.83	0.97	0.99
DEC	2.20	1.73	3.31	0.50	0.36	4.81	0.19	0.29
2019								
JAN	1.80	1.71	3.07	0.60	0.29	3.86	0.09	0.44
FEB	1.30	1.54	3.35	0.80	0.27	2.01	0.08	0.46
MAR	2.20	1.41	3.58	1.20	0.26	2.93	0.08	0.60
APR	1.90	2.05	29.69	1.50	15.31	6.45	1.61	0.81
MAY	2.00	1.97	16.81	1.70	43.10	5.94	2.15	1.77
JUNE	2.30	2.73	24.98	1.90	43.21	6.97	2.47	1.04
JULY	3.80	3.13	42.12	2.20	48.28	7.19	2.81	2.15
AUG	3.40	4.76	36.03	2.00	51.09	7.61	2.08	1.91
SEPT	3.20	3.01	35.57	1.70	33.83	7.08	2.08	1.91
TOTAL	30.40	28.48	234.89	16.10	320.76	67.28	16.44	14.33

1/ Annual production estimated based on partial-year meter readings, monthly quantities calculated assuming typical monthly distribution.
2/ Monthly quantities calculated using monthly distribution estimate based on total annual gallons produced.
3/ Cottonwood Elementary is in the Hemet Unified School District, located in Aguanga and within the Watershed Boundary.
4/ Includes both Hamilton High School and Hamilton Elementary in Anza. Both schools are in the Hemet Unified School District and are within the Watershed Boundary.

Page Intentionally Blank

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX B

WATER PRODUCTION AND USE

WATER YEAR 1965-66 THROUGH WATER YEAR 2018-19

November 2020

TABLE B-1

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

EASTERN MUNICIPAL WATER DISTRICT

Quantities in Acre Feet[1/]

	PRODUCTION					USE 3/						RECYCLED WATER					
WATER YEAR	WELLS	IMPORT 2/	EXPORT FROM SMRW	NET IMPORT	TOTAL	AG	COMM	DOM	TOTAL	LOSS	TOTAL USE	REUSE IN SMRW 4/	REUSE OUTSIDE SMRW	OTHER REUSE 5/	RELEASE TO RIVER	RECHARGE	TOTAL
1966	0	1,604	0	1,604	1,604	1,520	0	4	1,524	80	1,604	0	0		0	100	100
1967	0	1,630	0	1,630	1,630	1,544	0	4	1,548	82	1,630	0	0		0	100	100
1968	0	1,464	0	1,464	1,464	1,386	0	5	1,391	73	1,464	0	0		0	100	100
1969	0	1,741	0	1,741	1,741	1,648	0	6	1,654	87	1,741	0	0		0	100	100
1970	0	1,417	0	1,417	1,417	1,340	0	7	1,346	71	1,417	0	0		0	101	101
1971	0	1,383	0	1,383	1,383	1,306	0	8	1,314	69	1,383	0	0		0	119	119
1972	0	1,470	0	1,470	1,470	1,388	0	8	1,396	74	1,470	0	0		0	242	242
1973	0	1,533	0	1,533	1,533	1,447	0	10	1,456	77	1,533	0	0		0	217	217
1974	0	1,601	0	1,601	1,601	1,511	0	10	1,521	80	1,601	0	0		0	193	193
1975	0	1,969	0	1,969	1,969	1,859	0	11	1,871	98	1,969	0	0		0	253	253
1976	145	2,493	0	2,493	2,638	2,356	0	150	2,506	132	2,638	134	0		0	155	289
1977	431	2,947	0	2,947	3,378	2,723	64	423	3,209	169	3,378	244	0		0	70	314
1978	375	2,551	0	2,551	2,926	2,409	0	371	2,780	146	2,926	300	0		0	75	375
1979	289	1,894	0	1,894	2,183	1,784	0	290	2,074	109	2,183	350	0		0	147	497
1980	281	1,192	0	1,192	1,473	1,116	0	283	1,399	74	1,473	375	0		0	220	595
1981	282	716	0	716	998	663	0	285	948	50	998	375	0		0	304	679
1982	321	1,112	0	1,112	1,433	1,038	0	323	1,361	72	1,433	375	0		0	386	761
1983	106	1,211	0	1,211	1,317	1,131	0	120	1,251	66	1,317	375	0		0	466	841
1984	236	699	0	699	935	644	0	244	888	47	935	400	0		0	525	925
1985	314	679	0	679	993	624	0	319	943	50	993	450	0		0	565	1,015
1986	229	760	0	760	989	700	0	239	940	49	989	600	0		0	509	1,109
1987	89	1,155	0	1,155	1,244	638	0	543	1,182	62	1,244	650	0		0	554	1,204
1988	4	2,047	0	2,047	2,051	524	0	1,424	1,948	103	2,051	650	0		0	650	1,300
1989	685	3,746	0	3,746	4,431	1,146	0	3,064	4,209	222	4,431	1,058	0		0	1,636	2,694
1990	492	8,578	2,977	5,601	6,093	978	0	4,810	5,788	305	6,093	1,567	0		0	2,160	3,727
1991	456	16,621	7,142	9,479	9,935	851	0	8,587	9,438	497	9,935	1,282	0		0	2,272	3,554
1992	527	13,486	4,893	8,593	9,120	29	0	8,635	8,664	456	9,120	1,323	0		245	2,385	3,953
1993	524	7,287	1,894	5,393	5,917	36	0	5,585	5,621	296	5,917	1,709	990	(285)	192	2,020	4,626
1994	232	10,082	2,932	7,150	7,382	0	0	7,013	7,013	369	7,382	2,687	2,465	694	0	0	5,846
1995	182	11,539	6,914	4,625	4,807	16	0	4,551	4,567	240	4,807	2,154	1,357	2,551	0	0	6,062
1996	299	11,730	6,770	4,960	5,259	0	0	4,996	4,996	263	5,259	2,979	2,473	520	0	0	5,972
1997	408	5,093	1,809	3,284	3,692	0	0	5,226	5,226	(1,534)	3,692	3,126	2,319	882	0	0	6,327
1998	240	6,609	1,492	5,117	5,357	0	0	5,090	5,090	267	5,357	2,949 *6/*	2,139	2,374	0	0	7,462
1999	669	7,118	2,719	4,327	4,996	0	0	4,746	4,746	250	4,996	3,741 *7/*	3,070	1,063	0	0	7,874
2000	630	9,179	1,923	7,256	7,886	0	0	7,493	7,493	393	7,886	4,669 *8/*	3,664	(15)	0	0	8,318
2001	355	9,219	3,271	5,948	6,303	0	0	5,989	5,989	314	6,303	4,571 *9/*	3,249	1,208	0	0	9,028

TABLE B-1

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

EASTERN MUNICIPAL WATER DISTRICT
Quantities in Acre Feet[1/]

	PRODUCTION					USE 3/						RECYCLED WATER					
WATER YEAR	WELLS	IMPORT 2/	EXPORT FROM SMRW	NET IMPORT	TOTAL	AG	COMM	DOM	TOTAL	LOSS	TOTAL USE	REUSE IN SMRW 4/	REUSE OUTSIDE SMRW	OTHER REUSE 5/	RELEASE TO RIVER	RECHARGE	TOTAL
2002	13	12,777	4,954	8,117	8,130	0	0	7,724	7,724	406	8,130	4,843 *10/*	4,863	462	0	0	10,168
2003	0	14,175	5,113	9,062	9,062	0	0	8,610	8,610	452	9,062	3,542 *11/*	2,955	4,681	0	0	11,178
2004	0	17,381	8,243	9,138	9,138	0	0	8,960	8,960	178	9,138	3,221	3,688	5,427	0	0	12,336
2005	0	16,336	5,478	10,858	10,858	0	0	10,749	10,749	109	10,858	2,664 *12/*	2,690	8,986	0	0	14,340
2006	0	21,034	6,873	14,161	14,161	0	0	13,453	13,453	708	14,161	3,108 *13/*	3,510	7,396	0	0	14,014
2007	0	21,161	5,763	15,398	15,398	0	0	14,628	14,628	770	15,398	3,550 *14/*	5,960	4,593	0	0	14,103
2008	0	18,714	3,762	14,952	14,952	0	0	14,204	14,204	748	14,952	1,450	5,925	6,864	0	0	14,239
2009	0	16,919	2,447	14,472	14,472	0	0	13,748	13,748	724	14,472	2,615	6,786	5,241	0	0	14,642
2010	0	15,024	1,472	13,552	13,552	0	0	12,874	12,874	678	13,552	2,882	7,026	4,803	0	0	14,711
2011	0	14,675	283	14,392	14,392	131	2,879	10,662	13,672	720	14,392	2,561	7,241	5,140	0	0	14,942
2012	0	16,419	1,356	15,063	15,063	96	3,137	11,076	14,309	754	15,063	2,364	8,025	4,525	0	0	14,914
2013	0	16,208	457	15,751	15,751	117	3,388	11,459	14,964	787	15,751	2,937	8,316	3,459	0	0	14,712
2014	0	23,935	8,051	15,884	15,884	142	3,553	11,395	15,090	794	15,884	2,937	8,117	3,627	0	0	14,681
2015	0	15,448	1,571	13,877	13,877	144	2,982	10,057	13,183	694	13,877	2,717	7,002	4,696	0	0	14,415
2016	0	14,123	521	13,602	13,602	140	3,399	9,383	12,922	680	13,602	3,278	6,952	3,826	0	0	14,056
2017	0	14,252	811	13,441	13,441	311	2,780	9,678	12,769	672	13,441	2,631	7,139	4,843	0	0	14,613
2018	0	15,836	829	15,007	15,007	413	3,290	10,554	14,257	750	15,007	3,163	7,902	3,016	0	0	14,081
2019	0	14,963	1,509	13,453	13,453	329	2,684	9,768	12,781	673	13,453	2,849	5,439	6,683	0	0	14,971

1/ Totals may not add due to rounding.
2/ Does not include deliveries to RCWD, EVMWD and WMWD.
3/ Beginning in 2011, Use reported based on metered customer demands.
Prior years reporting based on supply meter data and is not complete
for all categories.
4/ Reuse within Watershed includes noted amount of sewage distributed to RCWD for
treatment by RCWD, recycled water sold to RCWD for delivery to RCWD customers,
and beginning in 2009, recycled water sold to the Pechanga Band. Beginning in 2014, also includes recycled water delivered to EVMWD.
5/ Other Reuse includes changes in storage in Winchester and Sun City storage ponds, evaporation and percolation losses, and discharges to the Santa Ana Watershed.

6/ Includes 905 AF of sewage diverted to RCWD.
7/ Includes 1,159 AF of sewage diverted to RCWD.
8/ Includes 1,162 AF of sewage diverted to RCWD.
9/ Includes 1,201 AF of sewage diverted to RCWD.
10/ Includes 1,219 AF of sewage diverted to RCWD.

11/ Includes 1,056 AF of sewage diverted to RCWD.
12/ Includes 574 AF of sewage diverted to RCWD.
13/ Includes 910 AF of sewage diverted to RCWD.
14/ Includes 797 AF of sewage diverted to RCWD.

TABLE B-2

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

ELSINORE VALLEY MUNICIPAL WATER DISTRICT

Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/						WASTEWATER EXPORTED			RECYCLED WATER 4/		
WATER YEAR	WELLS	IMPORT	TOTAL	AG	COMM	DOM	TOTAL DELIVERED	LOSS 3/	TOTAL USE	UNTREATED WASTEWATER	REUSE OUTSIDE SMRW	TOTAL WASTEWATER EXPORT	REUSE INSIDE SMRW	REUSE OUTSIDE SMRW	TOTAL REUSE
1966															
1967															
1968															
1969															
1970															
1971															
1972															
1973															
1974															
1975															
1976															
1977															
1978	0	569	569				569	0	569						
1979	0	712	712				712	0	712						
1980	0	696	696				696	0	696						
1981	0	798	798				798	0	798						
1982	0	678	678				678	0	678						
1983	0	658	658				658	0	658						
1984	0	816	816				816	0	816						
1985	0	808	808				808	0	808						
1986	0	882	882				882	0	882						
1987	0	938	938				938	0	938	4					
1988	0	1,032	1,032				1,032	0	1,032	55					
1989	0	1,341	1,341				1,341	0	1,341	74					
1990	0	2,255	2,255				2,255	0	2,255	114					
1991	0	2,421	2,421				2,421	0	2,421	134					
1992	0	2,190	2,190				2,190	0	2,190	140					
1993	0	2,964	2,964	539	84	2,341	2,964	0	2,964	150					
1994	0	3,232	3,232	687	93	2,452	3,232	0	3,232	170					

TABLE B-2

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

ELSINORE VALLEY MUNICIPAL WATER DISTRICT
Quantities in Acre Feet1/

	PRODUCTION			USE 2/						WASTEWATER EXPORTED			RECYCLED WATER 4/		
WATER YEAR	WELLS	IMPORT	TOTAL	AG	COMM	DOM	TOTAL DELIVERED	LOSS 3/	TOTAL USE	UNTREATED WASTEWATER	REUSE OUTSIDE SMRW	TOTAL WASTEWATER EXPORT	REUSE INSIDE SMRW	REUSE OUTSIDE SMRW	TOTAL REUSE
1995	0	3,127	3,127	520	100	2,507	3,127	0	3,127	185					
1996	0	4,197	4,197	871	109	3,217	4,197	0	4,197	213					
1997	0	4,296	4,296	848	118	3,330	4,296	0	4,296	226					
1998	0	5,100	5,100	667	1,396	3,037	5,100	0	5,100	247					
1999	0	6,133	6,133	921	1,626	3,586	6,133	0	6,133	254					
2000	0	7,174	7,174	1,089	1,971	4,114	7,174	0	7,174	279					
2001	0	6,215	6,215	925	1,815	3,475	6,215	0	6,215	310					
2002	0	7,596	7,596	1,173	1,902	4,521	7,596	0	7,596	412					
2003	0	7,091	7,091	63	2,665	4,363	7,091	0	7,091	483					
2004	0	8,438	8,438	96	3,238	5,104	8,438	0	8,438	600					
2005	0	8,215	8,215	104	3,044	5,067	8,215	0	8,215	927					
2006	0	9,819	9,819	127	4,118	5,574	9,819	0	9,819	938					
2007	0	10,811	10,811	150	4,509	6,152	10,811	0	10,811	837					
2008	0	9,951	9,951	115	4,149	5,687	9,951	0	9,951	901					
2009	0	9,075	9,075	147	2,015	6,913	9,075	0	9,075	1,069					
2010	0	7,926	7,926	133	1,718	6,075	7,926	0	7,926	1,120					
2011	0	7,425	7,425	94	1,517	5,539	7,150	275	7,425	1,130					
2012	0	7,398	7,398	27	1,723	5,426	7,176	222	7,398	1,205					
2013	0	7,158	7,158	16	1,637	5,227	6,880	278	7,158	1,245					
2014	0	7,413	7,413	16	1,693	5,601	7,310	103	7,413	1,271	36	1,307	53	36	89
2015	0	5,992	5,992	12	1,165	4,472	5,649	343	5,992	1,237	91	1,328	108	91	199
2016	0	5,889	5,889	10	1,147	4,396	5,553	336	5,889	1,270	161	1,431	109	161	270
2017	0	5,970	5,970	12	1,291	4,488	5,791	179	5,970	1,311	157	1,468	99	157	256
2018	0	6,378	6,378	14	1,416	4,846	6,276	102	6,378	1,312	176	1,489	107	176	283
2019	0	5,870	5,870	10	1,200	4,413	5,623	247	5,870	1,346	138	1,484	96	138	233

1/ Totals may not add due to rounding.
2/ Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The updated definitions are provided in Table 7.2.
3/ For period prior to 2011, assumes no loss. For 2011 to present, loss percentage within the SMRW is determined using the calculation to determine District-wide unaccounted for water by comparing District-wide annual supply and customer deliveries, and is assumed to be constant for all months.
4/ EVMWD receives recycled water treated at the RCWD Santa Rosa Water Reclamation Facility via EMWD Palomar Pipeline through a wheeling agreement.

TABLE B-3.1

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

FALLBROOK PUBLIC UTILITY DISTRICT
Quantities in Acre Feet[1/]

	PRODUCTION									**USE**				
WATER YEAR	**TOTAL LAKE SKINNER DIVERSIONS**	**LAKE SKINNER DIVERSIONS DELIVERED**	**WELLS**	**TOTAL DISTRICT IMPORT**	**DELUZ AREA IMPORT**	**FALLBROOK AREA IMPORT**	**FALLBROOK SMRW IMPORT**	**TOTAL SMRW IMPORT**	**TOTAL SMRW PRODUCTION 2/**	**AG**	**COMM/ DOM**	**TOTAL IN SMRW**	**LOSS 3/**	**TOTAL USE IN SMRW**
1966			176	11,169	0	11,169	3,351	3,351	3,404	2,735	328	3,063	341	3,404
1967			16	9,508	0	9,508	2,852	2,852	2,857	2,253	319	2,572	285	2,857
1968			13	11,411	0	11,411	3,423	3,423	3,427	2,554	531	3,085	342	3,427
1969			178	9,458	0	9,458	2,837	2,837	2,891	1,787	814	2,601	290	2,891
1970			305	11,794	0	11,794	3,538	3,538	3,630	2,649	617	3,266	364	3,630
1971			7	11,350	0	11,350	3,405	3,405	3,407	2,386	681	3,067	340	3,407
1972			0	13,054	0	13,054	3,916	3,916	3,916	2,749	775	3,524	392	3,916
1973			0	10,610	38	10,572	3,172	3,210	3,210	2,156	732	2,888	322	3,210
1974			0	12,911	134	12,777	3,833	3,967	3,967	2,703	868	3,571	396	3,967
1975			0	11,492	213	11,279	3,384	3,597	3,597	2,420	816	3,236	361	3,597
1976			0	13,147	431	12,716	4,196	4,627	4,627	3,200	965	4,165	462	4,627
1977			20	13,435	587	12,848	4,625	5,212	5,232	3,536	1,174	4,710	522	5,232
1978			97	12,626	651	11,975	4,551	5,202	5,299	3,504	1,265	4,769	530	5,299
1979			187	12,865	961	11,904	4,762	5,723	5,910	3,820	1,498	5,318	592	5,910
1980			192	13,602	1,191	12,411	5,213	6,404	6,596	4,258	1,678	5,936	660	6,596
1981			87	16,878	1,994	14,884	6,549	8,543	8,630	5,688	2,144	7,832	798	8,630
1982			0	13,270	1,805	11,465	5,274	7,079	7,079	4,614	1,862	6,476	603	7,079
1983			0	12,298	1,969	10,329	4,751	6,720	6,720	4,320	1,871	6,191	529	6,720
1984			0	15,429	2,609	12,820	5,897	8,506	8,506	5,814	2,077	7,891	615	8,506
1985			0	14,256	2,358	11,898	5,473	7,831	7,831	5,187	2,135	7,322	509	7,831
1986			0	15,383	2,794	12,589	5,791	8,585	8,585	5,698	2,319	8,017	568	8,585
1987			0	15,313	2,986	12,327	5,670	8,656	8,656	5,793	2,281	8,074	582	8,656
1988			28	14,460	2,559	11,901	5,474	8,033	8,061	5,181	2,348	7,529	532	8,061
1989			94	16,179	3,007	13,172	6,059	9,066	9,160	5,620	2,706	8,326	834	9,160
1990			15	17,568	3,745	13,823	6,358	10,103	10,118	6,275	2,878	9,153	965	10,118
1991			46	13,939	2,871	11,068	5,091	7,962	8,008	5,146	2,314	7,460	548	8,008
1992			45	13,698	2,950	10,748	4,943	7,893	7,938	5,285	2,201	7,486	452	7,938
1993			86	12,695	2,010	10,685	4,915	6,925	7,011	4,329	2,349	6,678	333	7,011
1994			83	13,124	2,246	10,878	5,004	7,250	7,333	4,282	2,666	6,948	385	7,333

TABLE B-3.1

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

FALLBROOK PUBLIC UTILITY DISTRICT

Quantities in Acre Feet[1/]

	PRODUCTION									USE				
WATER YEAR	**TOTAL LAKE SKINNER DIVERSIONS**	**LAKE SKINNER DIVERSIONS DELIVERED**	**WELLS**	**TOTAL DISTRICT IMPORT**	**DELUZ AREA IMPORT**	**FALLBROOK AREA IMPORT**	**FALLBROOK SMRW IMPORT**	**TOTAL SMRW IMPORT**	**TOTAL SMRW PRODUCTION 2/**	**AG**	**COMM/ DOM**	**TOTAL IN SMRW**	**LOSS 3/**	**TOTAL USE IN SMRW**
1995			3	11,620	2,208	9,412	4,330	6,538	6,541	3,818	2,798	6,316	225	6,541
1996			0	14,168	2,733	11,435	5,260	7,993	7,993	4,411	3,247	7,658	335	7,993
1997			0	14,005	2,688	11,317	5,206	7,894	7,894	4,351	3,249	7,600	294	7,894
1998			0	11,757	1,803	9,954	4,579	6,382	6,382	3,245	2,798	6,043	339	6,382
1999			0	14,307	1,572	12,735	5,858	7,430	7,430	3,748	3,271	7,019	411	7,430
2000			0	15,983	2,705	14,478	6,660	9,365	9,365	5,138	3,903	9,041	324	9,365
2001			0	15,249	2,562	12,687	5,836	8,398	8,398	4,413	3,537	7,950	448	8,398
2002			0	17,422	2,900	14,522	6,680	9,580	9,580	5,185	4,036	9,221	359	9,580
2003			0	15,864	3,393	12,471	5,737	9,130	9,130	6,041	3,737	9,778	(648)	9,130
2004			0	19,640	5,027	14,613	6,722	11,749	11,749	7,018	4,222	11,240	509	11,749
2005	1,261	1,261	0	13,986	3,101	10,885	5,007	8,108	9,369	4,654	3,581	8,235	1,134	9,369
2006	106	106	0	18,297	3,994	14,303	6,579	10,573	10,679	5,958	4,019	9,977	702	10,679
2007	0	0	0	20,750	5,087	15,664	7,205	12,292	12,292	7,271	4,500	11,771	521	12,292
2008	31	31	0	15,508	3,307	12,202	5,613	8,920	8,951	4,492	3,962	8,454	497	8,951
2009	0	0	0	15,355	2,767	12,588	5,790	8,557	8,557	4,151	3,896	8,047	510	8,557
2010	20	20	0	12,752	2,438	10,314	4,754	7,183	7,203	3,576	3,195	6,771	432	7,203

1/ Totals may not add due to rounding.
2/ Total SMRW production equals SMRW Import plus 30% local (1966-1971).
3/ Loss = Total production less total use.

TABLE B-3.2

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

FALLBROOK PUBLIC UTILITY DISTRICT
Quantities in Acre Feet[1/]

DISTRICT WIDE PRODUCTION					SMRW PRODUCTION				SMRW USE					
WATER YEAR	TOTAL LAKE SKINNER DIVERSIONS 2/	LAKE SKINNER DIVERSIONS DELIVERED	TOTAL DISTRICT IMPORT 3/	TOTAL DISTRICT SUPPLY 4/	SMRW LAKE SKINNER	SMRW IMPORT	TOTAL SMRW PRODUCTION	EXPORT	AG	COMM	DOM	TOTAL DELIVERED IN SMRW	LOSS 5/	TOTAL USE IN SMRW
2011	284	284	11,264	11,548	284	6,234	6,518		3,742	327	1,990	6,059	459	6,518
2012	0	0	12,579	12,579	0	7,254	7,254		4,261	337	2,060	6,658	596	7,254
2013	0	0	12,593	12,593	0	7,357	7,357		4,541	300	2,140	6,981	376	7,357
2014	0	0	13,068	13,068	0	7,578	7,578		4,688	359	2,129	7,176	402	7,578
2015	0	0	10,639	10,639	0	5,919	5,919		3,434	304	1,826	5,564	355	5,919
2016	0	0	9,998	9,998	0	5,395	5,395		3,039	218	1,701	4,958	437	5,395
2017	0	0	8,959	8,959	0	4,576	4,576		2,272	209	1,784	4,265	311	4,576
2018	0	0	10,200	10,200	0	5,377	5,377		2,839	234	1,932	5,005	373	5,377
2019	207	207	7,688	7,894	89	3,519	3,608	118	1,618	202	1,562	3,382	226	3,608

1/ Totals may not add due to rounding.
2/ Diverted under Permit No. 11356.
3/ Includes production from Capra Well located in San Luis Rey Watershed and supply from San Diego County Water Authority.
4/ A portion of the District is outside the SMRW.
5/ Loss percentage within the SMRW is determined using the calculation to determine District-wide unaccounted for water by comparing District-wide annual supply and customer deliveries, and is assumed to be constant for all months.

TABLE B-4

SANTA MARGARITA RIVER WATERSHED

ANNUAL WASTEWATER PRODUCTION AND DISTRIBUTION

FALLBROOK PUBLIC UTILITY DISTRICT

Quantities in Acre Feet[1/]

WATER YEAR	TOTAL WASTEWATER PRODUCTION 2/	PERCENT WASTEWATER FROM SLR WATERSHED 3/	WASTEWATER IMPORTED FROM SLR WATERSHED	PERCENT WASTEWATER FROM SMRW	WASTEWATER FROM SMRW	WASTEWATER REUSED IN SMRW	WASTEWATER FROM U.S. NWS 4/	WASTEWATER EXPORTED FROM SMRW 5/
1966	395	19	75	81	320		0	0
1967	460	20	92	80	368		0	0
1968	524	20	105	80	419		0	0
1969	588	21	123	79	465		0	0
1970	652	22	143	78	509		0	0
1971	717	22	158	78	559		0	0
1972	782	23	180	77	602		0	0
1973	847	24	203	76	644		0	0
1974	912	25	228	75	684		0	0
1975	976	25	244	75	732		0	0
1976	1,040	26	270	74	770		0	0
1977	1,105	27	298	73	807		0	0
1978	1,170	28	328	72	842		0	0
1979	1,234	28	346	72	888		0	0
1980	1,298	29	376	71	922		0	0
1981	1,363	30	409	70	954		0	0
1982	1,428	31	443	69	985		0	0
1983	1,492	31	463	69	1,029		26 E	1,003
1984	1,556	32	498	68	1,058		26 E	1,032
1985	1,621	33	535	67	1,086		26 E	1,060
1986	1,685	34	573	66	1,112		18 P	1,094
1987	1,750	34	595	66	1,155		27	1,128
1988	1,815	35	635	65	1,180		25	1,155
1989	1,881	36	677	64	1,204		22	1,182
1990	1,952	34	664	66	1,298		27	1,271
1991	1,622	40	649	60	973		11	962
1992	1,730	37	639	63	1,090		7	1,083
1993	2,051	38	780	62	1,271		16	1,255
1994	1,834	42	761	58	1,073		5	1,068
1995	1,941	40	776	60	1,165		12	1,153
1996	1,799	42	759	58	1,040		5	1,035
1997	1,780	42	753	58	1,027		6	1,021

TABLE B-4

SANTA MARGARITA RIVER WATERSHED

ANNUAL WASTEWATER PRODUCTION AND DISTRIBUTION

FALLBROOK PUBLIC UTILITY DISTRICT

Quantities in Acre Feet[1/]

WATER YEAR	TOTAL WASTEWATER PRODUCTION 2/	PERCENT WASTEWATER FROM SLR WATERSHED 3/	WASTEWATER IMPORTED FROM SLR WATERSHED	PERCENT WASTEWATER FROM SMRW	WASTEWATER FROM SMRW	WASTEWATER REUSED IN SMRW	WASTEWATER FROM U.S. NWS 4/	WASTEWATER EXPORTED FROM SMRW 5/
1998	2,297	35	807	65	1,490		8	1,482
1999	2,175	36	793	64	1,382		5	1,377
2000	2,164	34	738	66	1,426		7	1,419
2001	2,191	35	767	65	1,424	24	8	1,392
2002	2,061	39	799	61	1,262	28	9	1,225
2003	2,276	39	886	61	1,390	21	10	1,359
2004	2,199	38	836	62	1,363	26	8	1,329
2005	2,505	42	1,048	58	1,457	24	16	1,417
2006	2,479	42	1,050	58	1,429	26	8	1,395
2007	1,951	52	1,019	48	932	29	12	891
2008	1,940	57	1,102	43	838	28	11	799
2009	1,900	54	1,028	46	872	31	12	829
2010	1,972	51	1,012	49	960	27	7	926
2011	2,006	54	1,076	46	930	21	8	901
2012	1,955	51	997	49	958	21	9	928
2013	1,886	51	963	49	923	20	3	900
2014	1,840	50	916	50	924	22	6	896
2015	2,006	45	899	55	1,107	19	3	1,086
2016	1,581	53	839	47	742	17	1	724
2017	1,720	53	913	47	807	15	1	791
2018	1,592	53	841	47	751.3	20.2	0.2	730.9
2019	1,697	51	873	49	823.5	18.7	1.2	803.6

1/ Totals may not add due to rounding.
2/ Measured quantities available for Total Wastewater in WY 1969 and July 1989. All other quantities are estimated (1966-1989).
3/ San Luis Rey Watershed
4/ United States Naval Weapons Station
5/ Prior to 1983, Wastewater was discharged into Fallbrook Creek, located in the SMRW. After 1983, Wastewater was discharged into an ocean outfall located outside the SMRW.
E - Estimated
P - Partial Year Data

TABLE B-5

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

METROPOLITAN WATER DISTRICT
DELIVERIES IN DOMENIGONI VALLEY

Quantities in Acre Feet[1/]

	PRODUCTION				USE					
WATER YEAR	**WELLS**	**IMPORT TO SMRW**	**TOTAL IN SMRW**		**AG**	**COMM/ DOM 2/**	**GW RECHARGE**	**TOTAL DELIVERED**	**LOSS 3/**	**TOTAL USE**
1966	0	0	0	||	0	0	0	0	0	0
1967	0	0	0	||	0	0	0	0	0	0
1968	0	0	0	||	0	0	0	0	0	0
1969	0	0	0	||	0	0	0	0	0	0
1970	0	0	0	||	0	0	0	0	0	0
1971	0	0	0	||	0	0	0	0	0	0
1972	0	0	0	||	0	0	0	0	0	0
1973	0	0	0	||	0	0	0	0	0	0
1974	0	0	0	||	0	0	0	0	0	0
1975	0	0	0	||	0	0	0	0	0	0
1976	0	0	0	||	0	0	0	0	0	0
1977	0	0	0	||	0	0	0	0	0	0
1978	0	0	0	||	0	0	0	0	0	0
1979	0	0	0	||	0	0	0	0	0	0
1980	0	0	0	||	0	0	0	0	0	0
1981	0	0	0	||	0	0	0	0	0	0
1982	0	0	0	||	0	0	0	0	0	0
1983	0	0	0	||	0	0	0	0	0	0
1984	0	0	0	||	0	0	0	0	0	0
1985	0	0	0	||	0	0	0	0	0	0
1986	0	0	0	||	0	0	0	0	0	0

TABLE B-5

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

METROPOLITAN WATER DISTRICT
DELIVERIES IN DOMENIGONI VALLEY

Quantities in Acre Feet[1/]

	PRODUCTION			USE					
WATER YEAR	**WELLS**	**IMPORT TO SMRW**	**TOTAL IN SMRW**	**AG**	**COMM/ DOM 2/**	**GW RECHARGE**	**TOTAL DELIVERED**	**LOSS 3/**	**TOTAL USE**
1987	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	547	547	354	193	0	547	0	547
1996	0	1,005	1,005	763	242	0	1,005	0	1,005
1997	0	3,521	3,521	591	2,891	39	3,521	0	3,521
1998	0	5,023	5,023	193	4,403	427	5,023	0	5,023
1999	0	3,781	3,781	404	2,978	399	3,781	0	3,781
2000	0	712	712	92	356	264	712	0	712
2001	0	689	689	505	0	184	689	0	689
2002	0	595	595	569	26	0	595	0	595
2003	0	496	495	495	0	0	495	0	495
2004	0	766	766	766	0	0	766	0	766
2005	0	556	556	556	0	0	556	0	556
2006	0	506	506	506	0	0	506	0	506
2007	0	660	660	660	0	0	660	0	660

TABLE B-5

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

METROPOLITAN WATER DISTRICT
DELIVERIES IN DOMENIGONI VALLEY

Quantities in Acre Feet[1/]

	PRODUCTION				USE					
WATER YEAR	WELLS	IMPORT TO SMRW	TOTAL IN SMRW		AG	COMM/ DOM 2/	GW RECHARGE	TOTAL DELIVERED	LOSS 3/	TOTAL USE
2008	0	493	493	| |	493	0	0	493	0	493
2009	0	465	465	| |	465	0	0	465	0	465
2010	0	372	372	| |	372	0	0	372	0	372
2011	0	336	336	| |	336	0	0	336	0	336
2012	0	466	466	| |	466	0	0	466	0	466
2013	0	892	892	| |	892	0	0	892	0	892
2014	0	1,074	1,074	| |	1,074	0	0	1,074	0	1,074
2015	0	1,090	1,039	| |	1,090	0	0	1,090	0	1,090
2016	0	1,186	1,186	| |	1,186	0	0	1,186	0	1,186
2017	0	1,128	1,128	| |	1,128	0	0	1,128	0	1,128
2018	0	1,194	1,194	| |	1,194	0	0	1,194	0	1,194
2019	0	554	554	| |	554	0	0	554	0	554

1/ Totals may not add due to rounding.
2/ Construction Water
3/ Points of delivery located at metered pumps on San Diego Canal and thus the losses in the MWD system are zero.

TABLE B-6

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

PECHANGA INDIAN RESERVATION

Quantities in Acre Feet[1/]

	PRODUCTION 2/						USE 3/, 5/					
WATER YEAR	SURFACE DIVERSION	WELLS ON RESERVATION	DELIVERED GROUNDWATER FROM RCWD	RECYCLED WATER FROM EMWD	TOTAL		AG	COMM	DOM	TOTAL DELIVERED	LOSS 4/	TOTAL USE
1966						||						
1967						||						
1968						||						
1969						||						
1970						||						
1971						||						
1972						||						
1973						||						
1974						||						
1975						||						
1976						||						
1977						||						
1978						||						
1979						||						
1980						||						
1981						||						
1982						||						
1983						||						
1984						||						
1985						||						
1986						||						
1987						||						
1988						||						
1989						||						
1990						||						
1991	0	58	0	0	58	||	0	0	58	N/R	N/R	58

TABLE B-6

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

PECHANGA INDIAN RESERVATION
Quantities in Acre Feet[1/]

	PRODUCTION 2/						USE 3/, 5/					
WATER YEAR	**SURFACE DIVERSION**	**WELLS ON RESERVATION**	**DELIVERED GROUNDWATER FROM RCWD**	**RECYCLED WATER FROM EMWD**	**TOTAL**		**AG**	**COMM**	**DOM**	**TOTAL DELIVERED**	**LOSS 4/**	**TOTAL USE**
1992	0	66	0	0	66	||	0	0	66	N/R	N/R	66
1993	0	91	0	0	91	||	0	0	91	N/R	N/R	91
1994	0	70	0	0	70	||	0	0	70	N/R	N/R	70
1995	0	63	0	0	63	||	0	4	59	N/R	N/R	63
1996	0	145	0	0	145	||	0	45	100	N/R	N/R	145
1997	4	167	0	0	171	||	0	25	146	N/R	N/R	171
1998	4	175	0	0	179	||	0	62	117	N/R	N/R	179
1999	4	241	0	0	245	||	33	84	128	N/R	N/R	245
2000	4	370	0	0	374	||	51	182	141	N/R	N/R	374
2001	4	291	0	0	295	||	56	85	154	N/R	N/R	295
2002	4	460	0	0	464	||	73	194	174	441	23	464
2003	4	600	0	0	604	||	78	354	148	580	24	604
2004	4	721	0	0	725	||	81	537	71	689	36	725
2005	0	608	0	0	608	||	140	401	61	602	6	608
2006	0	754	0	0	754	||	159	401	194	N/R	N/R	754
2007	0	919	154	0	1,073	||	275	517	229	1,021	52	1,073
2008	0	865	412	0	1,277	||	599	370	282	1,251	26	1,277
2009	0	702	250	268	1,220	||	548	441	195	1,184	36	1,220
2010	0	561	230	394	1,185	||	531	364	235	1,130	55	1,185
2011	0	632	201	326	1,159	||	468	418	257	1,143	16	1,159
2012	0	669	177	329	1,175	||	513	405	215	1,133	42	1,175
2013	0	798	77	393	1,268	||	611	415	219	1,245	23	1,268
2014	0	765	171	442	1,378	||	0	1,133	162	1,295	83	1,378
2015	0	804	11	358	1,173	||	0	1,017	115	1,132	41	1,173
2016	0	755	0	387	1,142	||	0	960	101	1,061	81	1,142
2017	0	695	2	353	1,050	||	0	897	115	1,012	38	1,050

TABLE B-6

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

PECHANGA INDIAN RESERVATION
Quantities in Acre Feet[1/]

WATER YEAR	PRODUCTION 2/ SURFACE DIVERSION	WELLS ON RESERVATION	DELIVERED GROUNDWATER FROM RCWD	RECYCLED WATER FROM EMWD	TOTAL		USE 3/, 5/ AG	COMM	DOM	TOTAL DELIVERED	LOSS 4/	TOTAL USE
2018	0	772	53	481	1,306	||	0	1,075	173	1,248	59	1,306
2019	0	758	18	468	1,243	||	0	902	123	1,025	218	1,243

1/ Totals may not add due to rounding
2/ Records prior to 1991 not available.
3/ For period 1991 through 2006, use shown as reported to Watermaster and published in prior Watermaster reports.
4/ For 2007, loss assumed to be 5% for all use types; for prior years any losses shown as reported to Watermaster.
For 2008 to present, loss determined as Total Production less Total Delivered.
5/ Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The updated definitions are provided in Table 7.2. Based upon the revised definitions adopted by the Watermaster, Pechanga Band had no agricultural use in the SMRW beginning in WY 2014. An undetermined amount of agricultural use reported in prior years would be reported as commercial use under the revised definitions.
N/R-Not reported.

TABLE B-7

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RAINBOW MUNICIPAL WATER DISTRICT
Quantities in Acre Feet1/

	PRODUCTION			USE					
WATER YEAR	**LOCAL**	**IMPORT TO DISTRICT**	**TOTAL IN WATERSHED 2/**	**AG 3/**	**COMMERCIAL 4/, 5/**	**DOMESTIC 4/**	**TOTAL DELIVERED**	**LOSS 6/, 7/**	**TOTAL USE**
1966	0	14,538	1,308	1,049		140	1,189	119	1,308
1967	0	12,167	1,095	878		117	995	100	1,095
1968	0	15,301	1,377	1,104		147	1,252	125	1,377
1969	0	13,917	1,253	1,005		134	1,139	114	1,252
1970	0	18,764	1,689	1,354		181	1,535	154	1,689
1971	0	18,338	1,650	1,324		177	1,500	150	1,650
1972	0	22,633	2,037	1,634		218	1,852	185	2,037
1973	0	17,955	1,616	1,296		173	1,469	147	1,616
1974	0	22,768	2,049	1,643		219	1,863	186	2,049
1975	0	13,856	1,247	1,000		133	1,134	113	1,247
1976	0	24,878	2,239	1,796		240	2,035	204	2,239
1977	0	26,038	2,343	1,879		251	2,130	213	2,343
1978	0	24,312	2,188	1,755		234	1,989	199	2,188
1979	0	26,084	2,348	1,883		251	2,134	213	2,347
1980	0	27,660	2,489	1,997		266	2,263	226	2,489
1981	0	35,036	3,153	2,529		337	2,866	287	3,153
1982	0	27,334	2,460	1,973		263	2,236	224	2,460
1983	0	24,957	2,190	1,735		256	1,991	199	2,190
1984	0	32,526	3,068	2,483		306	2,789	279	3,068
1985	0	28,612	3,410	2,798		302	3,100	310	3,410
1986	0	29,023	2,945	2,353		324	2,677	268	2,945
1987	0	29,449	3,390	2,765		317	3,082	308	3,390
1988	0	29,070	2,985	2,372		342	2,714	271	2,985
1989	0	32,034	3,003	2,385		345	2,730	273	3,003

TABLE B-7

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RAINBOW MUNICIPAL WATER DISTRICT
Quantities in Acre Feet 1/

	PRODUCTION			USE					
WATER YEAR	LOCAL	IMPORT TO DISTRICT	TOTAL IN WATERSHED 2/	AG 3/	COMMERCIAL 4/, 5/	DOMESTIC 4/	TOTAL DELIVERED	LOSS 6/, 7/	TOTAL USE
1990	0	34,612	3,818	3,003		468	3,471	347	3,818
1991	0	27,754	2,904	2,276		364	2,640	264	2,904
1992	0	26,056	2,277	1,877		193	2,070	207	2,277
1993	0	23,766	1,965	1,655		132	1,787	178	1,965
1994	0	22,173	1,651	1,368		133	1,501	150	1,651
1995	0	20,935	1,661	1,398		112	1,510	151	1,661
1996	0	24,835	1,815	1,487		163	1,650	165	1,815
1997	0	24,638	1,429	1,139		160	1,299	130	1,429
1998	0	19,693	1,601	1,315		141	1,456	145	1,601
1999	0	24,961	1,727	1,411		159	1,570	157	1,727
2000	0	30,446	2,217	1,861		154	2,015	202	2,217
2001	0	27,214	1,804	1,439		202	1,641	163	1,804
2002	0	32,854	1,676	1,368		156	1,524	152	1,676
2003	0	29,156	1,510	1,237		136	1,373	137	1,510
2004	0	33,686	1,888	1,567		149	1,716	172	1,888
2005	0	25,135	1,610	1,331		133	1,464	146	1,610
2006	0	29,797	1,851	1,529		154	1,683	168	1,851
2007	0	32,939	2,262	1,871		185	2,056	206	2,262
2008	0	24,390	1,790	1,461		167	1,628	162	1,790
2009	0	27,075	1,852	1,463		220	1,683	169	1,852
2010	0	20,769	1,453	1,147		174	1,321	132	1,453
2011	0	18,599	1,492	1,251		105	1,356	136	1,492
2012	0	21,152	1,892	1,602		118	1,720	172	1,892
2013	0	21,863	1,713	1,441		116	1,557	156	1,713
2014	0	22,926	1,732	1,410	0	191	1,601	131	1,732

TABLE B-7

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RAINBOW MUNICIPAL WATER DISTRICT
Quantities in Acre Feet[1/]

	PRODUCTION				USE					
WATER YEAR	LOCAL	IMPORT TO DISTRICT	TOTAL IN WATERSHED 2/		AG 3/	COMMERCIAL 4/, 5/	DOMESTIC 4/	TOTAL DELIVERED	LOSS 6/, 7/	TOTAL USE
2015	0	18,358	1,333	||	1,111	0	168	1,279	54	1,333
R 2016	0	18,103	1,356	||	1,058	31	158	1,247	109	1,356
R 2017	0	16,460	1,246	||	966	20	154	1,140	106	1,246
R 2018	0	19,739	1,320	||	1,041	18	172	1,231	89	1,320
2019	0	13,943	1,170	||	880	16	161	1,058	112	1,170

1/ Totals may not add due to rounding.
2/ 1966 through 1982 estimated to be 9% of total District imports.
3/ 1966 through 1982 estimated to be 80.2% of total deliveries to SMRW.
4/ For 1966 through 2013, Commercial Use and Domestic Use reported as combined Commercial/Domestic Use; Table B-7 now shows the combined amount under the Domestic Use category. For 1966 through 1982, combined Commercial/Domestic Use estimated to be 10.7% of total deliveries to SMRW.
5/ There is minimal commercial use within the SMRW portion of the District service area. Beginning in 2014, an undetermined amount of Commercial Use is now reported under Agricultural Use category.
6/ From 1989 through 2013, Loss was calculated as 10% of total deliveries.
7/ Beginning in 2014, Loss percentage within the SMRW is determined using the calculation to determine District-wide unaccounted for water by comparing District-wide annual supply and customer deliveries, and is assumed to be constant for all months.
R - Revised

TABLE B-8

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RANCHO CALIFORNIA WATER DISTRICT
Quantities in Acre Feet[1/]

	PRODUCTION							USE 13/									VAIL LAKE		RECYCLED WATER	
YEAR	WELLS	EXPORT 2/	NET WELLS	IMPORT	EXPORT 3/	NET IMPORT	TOTAL	AG	AG/DOM 4/	COMM 5/	DOM	SMR RELEASE	IMPORT RECHARGE TO STORAGE	TOTAL USE	LOSS 6/	TOTAL	RELEASE AND RECHARGE	IRRIGATION 7/	REUSE IN SMRW	MURRIETA CREEK DISCHARGE 8/
1966				0	0	0	0						0				0	185	0	0
1967	4,288			0	0	0	4,288						0				0	1,136	0	0
1968	5,100			0	0	0	5,100						0				0	398	0	0
1969	3,617			0	0	0	3,617						0				0	697	0	0
1970	6,721			0	0	0	6,721						0				0	540	0	0
1971	7,960			0	0	0	7,960						0				0	1,541	0	0
1972	8,369			0	0	0	8,369						0				0	203	0	0
1973	7,726			0	0	0	7,726						0				0	524	0	0
1974	10,163			0	0	0	10,163						0				0	1,066	0	0
1975	10,357			0	0	0	10,357						0				0	369	0	0
1976	11,809			119	0	119	11,928						0				0	50	0	0
1977	10,522			1,845	0	1,845	12,367						0				0	0	0	0
1978	8,930			5,774	0	5,774	14,704						0				0	0	0	0
1979	11,371			7,009	0	7,009	18,380						0				0	0	0	0
1980	12,621			10,126	0	10,126	22,747						0				10,944	0	0	0
1981	15,612			15,282	0	15,282	30,894						0				6,802	0	0	0
1982	12,631			13,378	0	13,378	26,009						0				6,058	0	0	0
1983	16,675			5,752	0	5,752	22,427						0				12,113	715	0	0
1984	25,660 9/			6,716	0	6,716	32,376						0				6,612	1,144	0	0
1985	24,373			7,158	0	7,158	31,531						0				5,027	1,201	0	0
1986	26,997			11,174	0	11,174	38,171						0				8,722	1,053	0	0
1987	33,735			7,564	0	7,564	41,299						0				8,089	273	48	0
1988	21,367			17,854	0	17,854	39,221						0				4,844	0	82	0
1989	26,131			22,895	0	22,895	49,026	25,333		3,316	13,198	852	0 10/	42,699	6,327	49,026	0	0	168	0
1990	33,241			22,030	0	22,030	55,271	27,643		3,940	14,916	902	0	47,401	7,870	55,271	0	0	133	0
1991	26,503			21,238	0	21,238	47,741	32,924		2,941	10,603	785	0 11/	47,253	488	47,741	6,253	0	352	0
1992	29,968			16,931	0	16,931	46,899	30,651		2,406	9,672	683	0	43,412	3,487	46,899	2,244	0	374	0
1993	31,029			11,411	0	11,411	42,440	29,265		2,141	10,618	519	0	42,543	(103)	42,440	31,704	0	378	0
1994	32,725			16,386	0	16,386	49,111	32,534		2,322	12,370	467	0	47,693	1,418	49,111	8,469	0	1,936	0
1995	33,111			15,108	0	15,108	48,219	31,081		2,526	13,779	1,464	0	48,850	(631)	48,219	11,158	0	1,753	0
1996	36,086			23,600	0	23,600	59,686	35,912		2,752	16,330	2,149	0	57,143	2,543	59,686	9,427	0	2,264	0
1997	33,980			26,992	0	26,992	60,972	38,287		3,350	18,635	2,978	164	63,414	(2,442)	60,972	1,725	0	693 12/	0
1998	26,851			19,584	0	19,584	46,435	28,307		2,805	16,273	459	0	47,844	(1,409)	46,435	4,514	0	1,376 12/	1,179
1999	30,598			34,490	0	34,490	65,088	37,157		3,674	19,610	1,044	2,286	63,771	1,317	65,088	1,010	0	1,524 12/	1,654
2000	27,938			55,409	0	55,409	83,347	40,672	3,339	2,162	23,783	1,067	8,008	79,031	4,316	83,347	(49)	0	3,550 12/	1,854
2001	26,421			41,823	0	41,823	68,244	30,383	4,525	4,053	22,866	514	2,374	64,715	3,529	68,244	(361)	0	3,719 12/	2,015
2002	24,895			54,148	0	54,148	79,043	35,747	5,345	5,285	26,573	715	1,454	75,119	3,924	79,043	(314)	0	4,519 12/	2,180
2003	25,238	64	25,174	50,927	183	50,744	75,918	30,277	4,645	4,457	26,044	4,896	2,750	73,069	2,849	75,918	(658)	0	3,780 12/	104
2004	25,353	312	25,041	63,170	762	62,408	87,449	33,467	5,549	4,883	29,314	3,201	5,094	81,508	5,941	87,449	(101)	0	3,257 12/	0
2005	27,606	319	27,287	48,192	578	47,614	74,901	25,819	5,083	4,790	26,656	3,384	5,162	70,894	4,007	74,901	(1,269)	0	4,284 12/	0
2006	27,559	317	27,242	61,336	725	60,611	87,853	30,888	6,448	5,190	30,209	4,923	6,163	83,821	4,032	87,853	1,399	0	4,796 12/	0
2007	27,645	364	27,281	64,792	974	63,818	91,099	34,810	7,049	5,063	31,820	3,859	2,247	84,848	6,251	91,099	704	0	4,730 12/	0
2008	26,239	361	25,878	51,453	770	50,683	76,561	26,388	5,621	4,785	31,759	4,092	1,417	74,062	2,499	76,561	4,845	0	4,355 12/	0

TABLE B-8

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RANCHO CALIFORNIA WATER DISTRICT
Quantities in Acre Feet[1/]

	PRODUCTION							USE 13/									VAIL LAKE		RECYCLED WATER	
YEAR	WELLS	EXPORT 2/	NET WELLS	IMPORT	EXPORT 3/	NET IMPORT	TOTAL	AG	AG/DOM 4/	COMM 5/	DOM	SMR RELEASE	IMPORT RECHARGE TO STORAGE	TOTAL USE	LOSS 6/	TOTAL	RELEASE AND RECHARGE	IRRIGATION 7/	REUSE IN SMRW	MURRIETA CREEK DISCHARGE 8/
2009	27,820	367	27,453	50,988	718	50,270	77,723	26,811	5,986	4,306	30,159	5,302	2,357	74,921	2,802	77,723	1,236	0	4,191 12/	0
2010	25,685	318	25,367	41,407	513	40,894	66,261	21,456	4,886	3,766	26,778	3,913	2,075	62,874	3,387	66,261	801	0	3,998 12/	0
2011	27,725	302	27,423	39,842	431	39,411	66,834	20,954	5,010	3,847	25,747	4,399	5,239	65,196	1,638	66,834	2,470	0	3,488 12/	0
2012	24,942	284	24,658	42,395	495	41,900	66,558	22,871	5,785	4,217	26,604	3,708	702	63,887	2,671	66,558	(5)	0	3,237 12/	0
2013	27,445	289	27,156	41,112	541	40,571	67,727	24,111	6,331	4,401	27,594	2,530	325	65,292	2,435	67,727	2,614	0	2,929 12/	0
2014	26,412	289	26,123	47,137	534	46,603	72,726	26,154	0	10,956	28,925	4,126	(264)	69,897	2,829	72,726	85	0	3,145 12/	0
R 2015	24,982	251	24,731	33,922	349	33,573	58,304	21,025	0	8,742	23,910	3,432	(83)	57,026	1,278	58,304	147	0	2,994 12/	0
R 2016	26,025	202	25,823	35,836	358	35,478	61,301	20,859	0	7,895	21,819	4,098	3,300	57,971	3,330	61,301	4,418	0	2,953 12/	0
2017	19,260	163	19,097	40,704	370	40,334	59,431	17,529	0	8,333	22,624	4,654	3,493	56,633	2,799	59,431	266	0	2,774 12/	0
2018	18,828	176	18,652	44,417	440	43,977	62,629	21,547	0	9,112	24,781	3,947	(178)	59,209	3,421	62,629	(80)	0	3,257 12/	0
2019	17,374	175	17,200	35,687	325	35,362	52,561	14,649	0	7,714	22,043	3,129	2,715	50,250	2,311	52,561	555	0	3,009 12/	0

1/ Totals may not add due to rounding.
2/ Groundwater used in San Mateo Watershed.
3/ Import used in San Mateo Watershed.
4/ Beginning in 2014, the Domestic and Agricultural portions of AG/DOM are reported in their respective categories of use.
5/ Beginning in 2014, Commercial use includes golf course and landscape uses, previously these uses were reported as Agricultural use.
6/ Loss = Total production less total use.
7/ Irrigation 1966 to 1976 by pumping from Vail Lake. Figures from 1966 to 1971 supplied by USGS; 1972 to present supplied by RCWD.
8/ Discharge from 2MGD Demonstration project.
9/ Includes 98 acre feet from wells out of groundwater area.
10/ Import recharge was 2,294 AF but portion remaining in storage was not computed due to lack of data.
11/ Import recharge was 701 AF but portion remaining in storage was not computed due to lack of data.
12/ Does not include EMWD recycled water production.
13/ Water Use definitions for all major water purveyors were updated and reconciled in Water Year 2013-14. The updated definitions are provided on Table 7.2.
R-Revised

TABLE B-9

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

U.S.M.C. - CAMP PENDLETON

EXCLUDING NAVAL WEAPONS STATION SHOWN ON TABLE B-10

Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/						WASTEWATER 5/					
				AGRICULTURE 3/		CAMP SUPPLY 4/				RECYCLED USE 6/, 7/		EXPORTED TO OCEANSIDE OUTFALL			
WATER YEAR	AG LOCAL	CAMP SUPPLY	TOTAL	IN SMRW	OUT SMRW	IN SMRW	OUT SMRW	TOTAL EXPORT	TOTAL IN SMRW	IN SMRW	OUT SMRW	RECYCLED 8/	BRINE 9/	TOTAL	NET EXPORT 10/
1966	1,101	4,605	5,706	429	672	2,026	2,579	3,251	2,455	1,893				1,893	
1967	796	4,811	5,607	310	486	2,117	2,694	3,180	2,427	2,156				2,156	
1968	986	4,939	5,925	385	601	2,172	2,767	3,368	2,557	2,080				2,080	
1969	940	4,821	5,761	367	573	2,058	2,763	3,276	2,485	2,189				2,189	
1970	1,106	5,481	6,587	431	675	2,347	3,134	3,809	2,778	2,145				2,145	
1971	819	5,291	6,110	319	500	2,264	3,028	3,527	2,583	2,011				2,011	
1972	817	5,323	6,140	319	498	2,278	3,045	3,543	2,597	2,068				2,068	
1973	1,003	5,121	6,124	391	612	2,189	2,932	3,544	2,580	2,137				2,137	
1974	909	5,202	6,111	355	554	2,224	2,978	3,532	2,579	2,055				2,055	
1975	757	4,593	5,350	295	462	1,957	2,636	3,098	2,252	2,519				2,519	
1976	885	5,384	6,269	345	540	2,305	3,079	3,619	2,650	2,447				2,447	
1977	994	4,506	5,500	388	606	1,918	2,588	3,194	2,306	2,358				2,358	
1978	176	5,177	5,353	69	107	2,213	2,964	3,071	2,282	2,446				2,446	
1979	1,070	7,213	8,283	417	653	3,109	4,104	4,756	3,527	2,493				2,493	
1980	835	5,495	6,330	326	509	2,353	3,142	3,651	2,679	2,506				2,506	
1981	1,464	5,240	6,704	571	893	2,241	2,999	3,892	2,812	2,368				2,368	
1982	1,447	5,024	6,471	564	883	2,146	2,878	3,761	2,710	2,254				2,254	
1983	942	4,215	5,157	367	575	1,790	2,425	3,000	2,157	2,494				2,494	
1984	1,078	4,501	5,579	420	658	1,916	2,585	3,243	2,336	2,443				2,443	
1985	1,069	4,764	5,833	417	652	2,039	2,725	3,377	2,456	2,619				2,619	
1986	953	4,807	5,760	372	581	2,062	2,745	3,326	2,434	2,240				2,240	
1987	1,098	4,838	5,936	428	670	2,064	2,774	3,444	2,492	3,166				3,166	
1988	1,223	4,721	5,944	477	746	2,010	2,711	3,457	2,487	3,396				3,396	
1989	856	5,044	5,900	334	522	2,148	2,896	3,418	2,482	2,747				2,747	
1990	855	4,228	5,083	333	522	1,779	2,449	2,971	2,112	2,728				2,728	
1991	554	3,159	3,713	216	338	1,329	1,830	2,168	1,545	2,289	362			2,651	
1992	898	3,254	4,152	350	548	1,376	1,878	2,426	1,726	2,481	279			2,760	
1993	1,067	2,879	3,946	416	651	1,201	1,678	2,329	1,617	2,975	205			3,180	
1994	1,471	3,150	4,621	574	897	1,345	1,805	2,702	1,919	2,535	279			2,814	
1995	985	3,768	4,753	384	601	1,588	2,180	2,781	1,972	2,453	280			2,733	
1996	1,000	5,199	6,199	390	610	2,232	2,967	3,577	2,622	2,444	330			2,774	
1997	1,066	5,238	6,304	416	650	2,244	2,994	3,644	2,660	2,920	509			3,429	
1998	1,026	5,468	6,494	400	626	2,352	3,116	3,742	2,752	3,008	222			3,230	
1999	1,064	5,054	6,118	415	649	2,145	2,909	3,558	2,560	3,023	205			3,228	
2000	1,296	5,765	7,061	506	790	2,483	3,282	4,072	2,989	3,152	411			3,563	
2001	1,025	5,341	6,366	399	626	2,314	3,027	3,653	2,713	3,140	454			3,594	
2002	1,184	5,269	6,453	462	722	2,290	2,979	3,701	2,752	2,900	469			3,369	

TABLE B-9

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

U.S.M.C. - CAMP PENDLETON
EXCLUDING NAVAL WEAPONS STATION SHOWN ON TABLE B-10
Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/						WASTEWATER 5/					
				AGRICULTURE		CAMP SUPPLY				RECYCLED USE		EXPORTED TO OCEANSIDE OUTFALL			
WATER YEAR	AG LOCAL	CAMP SUPPLY	TOTAL	IN SMRW 3/	OUT SMRW	IN SMRW 4/	OUT SMRW	TOTAL EXPORT	TOTAL IN SMRW	IN SMRW 6/, 7/	OUT SMRW	RECYCLED 8/	BRINE 9/	TOTAL	NET EXPORT 10/
2003	1,270	5,210	6,480	495	775	2,218	2,992	3,767	2,713	2,687	415			3,102	
2004	1,227	5,538	6,765	479	748	2,396	3,142	3,890	2,875	0	444	2,544		2,988	
2005	1,317	4,902	6,219	514	803	2,134	2,768	3,571	2,648	0	489	2,526		3,015	
2006	1,530	5,311	6,841	597	933	2,301	3,010	3,943	2,898	0	449	2,298		2,747	
2007	1,385	5,850	7,235	540	845	2,535	3,315	4,160	3,075	0	416	2,309		2,725	
2008	1,606	5,315	6,921	579	1,027	2,603	2,712	3,739	3,182	0	357	2,430		2,787	
2009	882	5,516	6,398	273	609	2,593	2,923	3,532	2,866	49	488	1,966		2,503	4,243
2010	645	5,137	5,782	202	443	2,672	2,465	2,908	2,874	6	396	1,839		2,241	4,068
2011	76	5,165	5,241	24	52	2,583	2,582	2,634	2,607	0	320	2,562		2,882	4,075
2012	0	4,676	4,676	0	0	1,869	2,807	2,807	1,869	18	393	2,395		2,788	3,923
2013	0	5,744	5,744	0	0	2,690	2,690	2,690	2,690	0	403	1,956	364	2,723	4,233
2014	0	5,814	5,814	0	0	2,523	2,733	2,733	2,523	29	484	1,600	558	2,671	4,276
2015	0	4,690	4,690	0	0	1,816	2,311	2,311	1,816	49	401	1,562	563	2,575	3,710
2016	0	4,228	4,228	0	0	1,789	2,277	2,277	1,789	41	423	1,640	161	2,266	3,324
2017	0	4,874	4,874	0	0	2,219	2,502	2,502	2,219	29	347	1,915	153	2,444	3,704
2018	0	5,834	5,834	0	0	2,535	2,747	2,747	2,535	31	391	1,828	551	2,801	4,347
2019	0	5,614	5,614	0	0	2,087	2,883	2,883	2,087	18	289	1,974	644	2,925	4,467

1/ Totals may not add due to rounding.
2/ Use equals Production less Brine byproduct from Southern Advanced Water Treatment Plant (SAWTP) beginning February 2013. Assumes no other losses.
3/ For years 1966 through 2007, agricultural water use is divided with 39% used inside SMRW and 61% used outside SMRW, thereafter proportions provided by Camp Pendleton.
4/ Prior to 1969, 44% used inside the SMRW and 56% used outside the SMRW. For years 1969 through 2007, Camp Supply water use inside SMRW equals 44% of sum of Camp Supply production plus Naval Weapons Station (NWS) Import, less the NWS Import. Annual proportions provided by Camp Pendleton beginning 2008.
5/ All southern wastewater treated at Southern Regional Tertiary Treatment Plant (SRTTP) beginning December 2008.
6/ For years 1966 through 2003, recycled use inside SMRW reported as recharged wastewater from ponds and recharge areas. See prior reports from 2008 and earlier for additional information.
7/ Recycled use for irrigation of golf course, landscaping and park areas.
8/ Recycled water not used but rather exported to Oceanside Outfall.
9/ Brine from SAWTP exported to Oceanside Outfall.
10/ Net Export equals the sum of Agriculture Out, Camp Supply Out, Recycled Out and Export to Oceanside Outfall, minus Wastewater Return, as shown on Table A-8.

TABLE B-10

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

U. S. NAVAL WEAPONS STATION, FALLBROOK ANNEX

Quantities in Acre Feet[1/]

	PRODUCTION			USE				WASTEWATER
WATER YEAR	LOCAL	IMPORT TO WATERSHED 2/	TOTAL	AG	COMM/ DOM	LOSS 3/	TOTAL USE	EXPORTED
1966	87	0	87	0	79	9	87	0
1967	92	0	92	0	83	9	92	0
1968	108	0	108	0	97	11	108	0
1969	138	0	138	0	113	25	138	0
1970	152	0	152	0	125	27	152	0
1971	39	76	115	0	100	15	115	0
1972	0	115	115	0	105	10	115	0
1973	0	115	115	0	105	10	115	0
1974	0	115	115	0	105	10	115	0
1975	0	115	115	0	105	10	115	0
1976	0	115	115	0	105	10	115	0
1977	0	115	115	0	105	10	115	0
1978	0	115	115	0	105	10	115	0
1979	0	115	115	0	105	10	115	0
1980	0	115	115	0	105	10	115	0
1981	0	115	115	0	105	10	115	0
1982	0	115	115	0	105	10	115	0
1983	0	115	115	0	105	10	115	26
1984	0	115	115	0	105	10	115	26

TABLE B-10

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

U. S. NAVAL WEAPONS STATION, FALLBROOK ANNEX
Quantities in Acre Feet[1/]

	PRODUCTION			USE				WASTEWATER
WATER YEAR	LOCAL	IMPORT TO WATERSHED 2/	TOTAL	AG	COMM/ DOM	LOSS 3/	TOTAL USE	EXPORTED
1985	0	102	102	0	93	9	102	26
1986	0	94	94	0	85	9	94	18
1987	0	116	116	0	105	11	116	27
1988	0	120	120	0	109	11	120	25
1989	0	128	128	0	116	12	128	22
1990	0	145	145	0	132	13	145	27
1991	0	109	109	0	99	10	109	11
1992	0	99	99	0	90	9	99	7
1993	0	117	117	0	106	11	117	16
1994	0	73	73	0	66	7	73	5
1995	0	125	125	0	114	11	125	12
1996	0	100	100	0	91	9	100	5
1997	0	109	109	0	99	10	109	6
1998	0	97	97	0	88	9	97	8
1999	0	111	111	0	101	10	111	5
2000	0	104	104	0	95	9	104	7
2001	0	73	73	0	66	7	73	8
2002	0	97	97	0	88	9	97	9
2003	0	88	88	0	80	8	88	10
2004	0	73	73	0	66	7	73	8

TABLE B-10

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

U. S. NAVAL WEAPONS STATION, FALLBROOK ANNEX
Quantities in Acre Feet[1/]

	PRODUCTION			USE				WASTEWATER
WATER YEAR	LOCAL	IMPORT TO WATERSHED 2/	TOTAL	AG	COMM/ DOM	LOSS 3/	TOTAL USE	EXPORTED
2005	0	40	40	0	36	4	40	16
2006	0	64	64	0	58	6	64	8
2007	0	70	70	0	64	6	70	12
2008	0	82	82	0	75	7	82	11
2009	0	74	74	0	67	7	74	12
2010	0	69	69	0	63	6	69	7
2011	0	45	45	0	41	4	45	8
2012	0	48	48	0	44	4	48	9
2013	0	47	47	0	43	4	47	3
2014	0	58	58	0	53	5	58	6
2015	0	44	44	0	40	4	44	3
2016	0	62	62	0	57	6	62	1
2017	0	67	67	0	61	6	67	1
2018	0	65	65	0	59	6	65	0
2019	0	85	85	0	78	8	85	1

1/ Totals may not add due to rounding.
2/ Estimate 1969 through 1984 - Records not available
3/ Loss = 10% of Use

TABLE B-11

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

WESTERN MUNICIPAL WATER DISTRICT
MURRIETA DIVISION

Quantities in Acre Feet[1/]

	PRODUCTION				USE 2/					
WATER YEAR	WELLS	IMPORT	TOTAL		AG	COMM	DOM	TOTAL DELIVERED	LOSS 3/	TOTAL USE
1966	41	0	41	||	0	0	37	37	4	41
1967	45	0	45	||	0	0	41	41	4	45
1968	54	0	54	||	0	0	49	49	5	54
1969	54	0	54	||	0	0	49	49	5	54
1970	73	0	73	||	0	0	66	66	7	73
1971	83	0	83	||	3	0	72	75	8	83
1972	111	0	111	||	10	0	91	101	10	111
1973	92	0	92	||	11	0	72	84	8	92
1974	132	0	132	||	14	0	107	120	12	132
1975	153	0	153	||	18	0	121	139	14	153
1976	117	0	117	||	22	0	84	106	11	117
1977	170	0	170	||	21	0	134	155	15	170
1978	169	0	169	||	19	0	135	154	15	169
1979	197	0	197	||	19	0	160	179	18	197
1980	218	0	218	||	20	0	178	198	20	218

TABLE B-11

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

WESTERN MUNICIPAL WATER DISTRICT
MURRIETA DIVISION

Quantities in Acre Feet[1/]

	PRODUCTION			USE 2/					
WATER YEAR	WELLS	IMPORT	TOTAL	AG	COMM	DOM	TOTAL DELIVERED	LOSS 3/	TOTAL USE
1981	265	0	265	30	0	211	241	24	265
1982	230	0	230	21	0	188	209	21	230
1983	216	0	216	14	0	182	196	20	216
1984	304	0	304	26	0	250	276	28	304
1985	308	0	308	19	0	261	280	28	308
1986	305	0	305	22	0	255	277	28	305
1987	326	0	326	23	0	273	296	30	326
1988	303	0	303	13	35	262	275	28	303
1989	286	0	286	11	72	262	344	(4)	286
1990	465	0	465	13	76	266	355	110	465
1991	459	0	459	15	88	250	353	106	459
1992	492	0	492	6	122	302	430	62	492
1993	508	0	508	4	105	323	432	76	508
1994	512	0	512	10	103	324	437	75	512
1995	521	0	521	12	99	321	432	89	521

TABLE B-11

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

WESTERN MUNICIPAL WATER DISTRICT

MURRIETA DIVISION

Quantities in Acre Feet[1/]

WATER YEAR	PRODUCTION WELLS	PRODUCTION IMPORT	PRODUCTION TOTAL		USE 2/ AG	USE 2/ COMM	USE 2/ DOM	USE 2/ TOTAL DELIVERED	USE 2/ LOSS 3/	USE 2/ TOTAL USE
1996	629	0	629	||	88	113	384	585	44	629
1997	638	0	638	||	76	99	392	567	71	638
1998	603	0	603	||	79	90	362	531	72	603
1999	827	0	827	||	79	125	548	752	75	827
2000	1,123	0	1,123	||	199	365	519	1,083	40	1,123
2001	1,389	0	1,389	||	163	414	740	1,317	72	1,389
2002	1,679	0	1,679	||	230	348	1,115	1,693	(14)	1,679
2003	1,748	102	1,850	||	272	275	1,340	1,887	(37)	1,850
2004	1,979	330	2,309	||	282	407	1,479	2,168	141	2,309
2005	2,098	75	2,173	||	262	274	1,539	2,075	98	2,173
2006	2,233	316	2,549	||	338	396	1,696	2,430	119	2,549
2007	1,978	723	2,701	||	467	276	1,980	2,723	(22)	2,701
2008	210	2,180	2,390	||	408	251	1,827	2,486	(96)	2,390
2009	861	1,654	2,515	||	396	219	1,723	2,338	177	2,515
2010	753	1,462	2,215	||	264	140	1,642	2,046	169	2,215

TABLE B-11

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATER PRODUCTION AND USE

WESTERN MUNICIPAL WATER DISTRICT

MURRIETA DIVISION

Quantities in Acre Feet[1/]

	PRODUCTION				USE 2/					
WATER YEAR	**WELLS**	**IMPORT**	**TOTAL**		**AG**	**COMM**	**DOM**	**TOTAL DELIVERED**	**LOSS 3/**	**TOTAL USE**
2011	559	1,642	2,201	||	324	239	1,497	2,060	141	2,201
2012	750	1,371	2,121	||	250	340	1,418	2,008	113	2,121
2013	1,014	1,365	2,379	||	431	166	1,653	2,250	129	2,379
2014	951	1,407	2,358	||	0	657	1,640	2,297	61	2,358
2015	1,041	820	1,861	||	0	546	1,274	1,820	41	1,861
2016	642	1,290	1,932	||	0	723	1,168	1,891	41	1,932
2017	362	1,711	2,073	||	0	800	1,182	1,982	91	2,073
2018	414	1,820	2,234	||	0	929	1,293	2,222	12	2,234
2019	365	1,529	1,895	||	0	622	1,264	1,887	8	1,895

1/ Totals may not add due to rounding.

2/ Water use definitions for all major water purveyors were updated and reconciled for WY 2014. The updated definitions are provided in Table 7.2. Based upon the revised definitions adopted by the Watermaster, WMWD had no agricultural use in the SMRW during WY 2015. An undetermined amount of agricultural use reported in prior years would be reported as commercial use under the revised definitions.

3/ Loss = Total Production less Total Delivered

TABLE B-12

SANTA MARGARITA RIVER WATERSHED
MISCELLANEOUS WATER PRODUCTION AND IMPORTS

Quantities in Acre Feet

	IMPORT	PRODUCTION							
WATER YEAR	**WESTERN MWD IMPORTS TO IMPROVEMENT DISTIRCT A**	**ANZA MUTUAL WATER COMPANY**	**OUTDOOR RESORTS RANCHO CALIFORNIA**	**QUIET OAKS MOBILE HOME PARK**	**LAKE RIVERSIDE ESTATES**	**HAWTHORN WATER SYSTEM 1/**	**JOJOBA HILLS SKP RESORT**	**COTTONWOOD ELEMENTARY**	**HAMILTON SCHOOLS**
1966	23.50								
1967	20.40								
1968	27.00								
1969	24.60								
1970	30.60								
1971	34.40								
1972	34.10								
1973	30.20								
1974	36.40								
1975	34.20								
1976	35.00								
1977	24.20								
1978	26.00								
1979	24.00								
1980	24.70								
1981	34.30								
1982	34.20								
1983	26.00								
1984	26.00								
1985	27.00								
1986	34.40								
1987	35.50								
1988	35.70								
1989	22.80	33.00	42.00	23.50	249.52				
1990	21.90	37.00	50.69	23.50	247.42				
1991	20.70	35.06	50.59	12.21	339.77				
1992	24.60	31.21	42.86	12.24	279.04				
1993	31.40	32.16	42.44	12.20	192.09				
1994	36.60	37.32	38.04	23.82	262.69				

TABLE B-12

SANTA MARGARITA RIVER WATERSHED

MISCELLANEOUS WATER PRODUCTION AND IMPORTS

Quantities in Acre Feet

	IMPORT	PRODUCTION							
WATER YEAR	WESTERN MWD IMPORTS TO IMPROVEMENT DISTIRCT A	ANZA MUTUAL WATER COMPANY	OUTDOOR RESORTS RANCHO CALIFORNIA	QUIET OAKS MOBILE HOME PARK	LAKE RIVERSIDE ESTATES	HAWTHORN WATER SYSTEM 1/	JOJOBA HILLS SKP RESORT	COTTONWOOD ELEMENTARY	HAMILTON SCHOOLS
1995	29.10	45.69	69.54	22.60	130.06				
1996	35.10	45.53	58.59	21.96	219.73				
1997	30.40	43.87	83.42	30.25	233.56				
1998	31.00	39.54	87.42	24.41	134.96				
1999	40.70	33.30	70.74	25.70	209.55				
2000	41.90	44.67	90.10	24.58	316.57		53.28		
2001	58.70	45.00	208.64	23.21	274.25		74.87		
2002	64.40	41.10	216.13	24.43	323.65	82.87	91.83		
2003	42.40	44.04	201.63	34.56	255.93	81.61	74.70		
2004	50.30	40.44	216.77	32.20	350.80	94.19	74.89		
2005	62.20	38.26	187.06	18.09	208.08	55.87	66.95		
2006	65.80	51.36	198.92	27.30	268.60	40.25	64.68		
2007	45.30	39.33	480.70	19.80	421.56	37.22	66.98		
2008	53.90	34.13	483.69	23.30	334.31	21.56	65.50		
2009	50.90	34.13	492.26	23.30	347.51	25.36	67.86		19
2010	62.30	36.97	510.42	23.30	255.19	24.01	55.39		N/R
2011	52.10	27.17	494.40	23.30	270.44	19.27	56.97		N/R
2012	48.50	26.22	506.40	23.30	310.31	26.37	69.12		N/R
2013	34.84	28.30	655.20	34.30	341.29	16.76	76.77		15
2014	35.40	29.28	560.30	27.30	378.96	8.91	75.17		15.60
2015	29.20	24.80	454.55	23.20	368.06	6.40	71.89	14.17	10.86
2016	42.38	23.69	312.90	17.70	379.04	6.40	69.08	14.27	12.04
2017	30.30	22.36	517.18	17.70	410.17	6.40	60.83	11.04	14.20
2018	29.22	28.77	337.72	16.10	434.76	N/A	69.42	16.36	15.70
2019	30.40	28.48	234.89	16.10	320.76	N/A	67.28	16.44	14.33

1/ Requirements for reporting to the Watermaster removed as of WY 2018.
N/R -- Not reported.

Page Intentionally Blank

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX C

SUBSTANTIAL USERS OUTSIDE

ORGANIZED WATER SERVICE AREAS

November 2020

APPENDIX C

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

	CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
	AGUANGA GROUNDWATER AREA								
	Vail Custodial Services	43425 Sage Road	917-050-007	82.19	Total				
	(Sundance Meadows)	44175 Sage Road	917-050-009	309.74	||	Lawn	8S/1W-12(1)	30.28	
	and	Aguanga, CA 92536	581-070-011	85.99	||				
	Rancho California		581-070-013	43.10	||				
	Water District		581-070-015	2.73	||				
			581-070-016	157.21	of				
			581-150-013	120.56	||				
			581-150-014	79.82	||		8S/1E-7N(1)	0.00	
			581-150-016	25.37	20.00		8S/1E-7N(2)	0.00	
							8S/1E-7Q(1)	0.00	
							8S/1E-7Q(2)	0.00	
1/	Val Verde Partners	43023 Hwy 79	583-040-022	93.78	13.45	Pasture	8S/1E-19Q(1)	0.00	
		Aguanga, CA 92536	583-040-021	13.45	5.00	Sorghum	8S/1E-19Q(2)	1.00	
		m/t 393 Requeza Street	583-130-055	40.00			8S/1E-19Q(3)	7.50	
		Encinitas, CA 92024	583-120-092	160.00					
			583-060-003	41.60					
							8S/1E-29L - Diversion		5.00
	Zen-Kamata, LLC	42551 Hwy 79	583-020-006	9.54	0.00				
		Aguanga, CA 92536	583-020-010	9.00	0.00				
		m/t 2635 N. First St., Ste. 213	583-030-005	3.72	0.00				
		San Jose, CA 95134	583-040-002	1.04	0.00				
			583-040-024	23.48	0.00				
			583-040-025	23.12	0.00				
			583-040-026	23.16	0.00				
			583-040-027	22.64	0.00				
			583-040-028	25.52	0.00				
			583-040-029	19.89	0.00		8S/1E-19K	0.00	
							8S/1E-19G4	0.00	
							8S/1E-29L - Diversion		0.00
	Lee, Chong Suk and	43900 Highway 79	583-130-029	10.09	8.09	Row Crops,	8S/1E-29	53.50	
	Juyeon P.	Aguanga, CA 92536	583-130-030	11.64	8.52	Grapes & Fruit			
		m/t 7720 Stenton Ave Ste. 310							
		Philadephia, PA 19118							
1/	Aguanga	44375 Hwy 79	583-120-083	68.09	Total	Row Crops	8S/1E-28N1	Total	
	Properties, LLC	Aguanga, CA 92536			||		8S/1E-28N2	||	
	(Twin Creek Ranch)	m/t 444 W Oceanside Blvd	583-120-090	132.82	||	Row Crops	8S/1E-29H	||	
		Ste. 1508	583-120-091	39.57	||	Row Crops		of	
		Long Beach, CA 90802	583-140-014	48.03	||	Row Crops	8S/1E-33F	||	
			583-140-015	40.00	of	Row Crops	8S/1E-33G1	||	
			583-140-016	40.00	||	Row Crops	8S/1E-33B	120.00	
			583-140-018	10.09	||				
			583-140-019	10.12	||				
			583-140-020	10.15	||				
			583-150-001	80.00	30.00	Row Crops			
	*Acres Irrigated and Well Production estimated by Watermaster Office								
	Twin Legacy, LLC	41750 Highway 79	917-050-006	233.57	70.00	Row Crops	8S/1W-13Q1	Total	
	Yanik, Robert	Aguanga, CA 92536					8S/1W-13Q2	||	
			917-170-003	80.81	38.00	Row Crops		of	
			917-290-001	126.26	38.00	Row Crops		||	
			917-290-002	82.25	16.00	Compost		689.00	

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

	CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
	AGUANGA GROUNDWATER AREA (Cont.)								
	The Harris Revocable	m/t 44700 Sage Rd-H	581-160-025	18.10	17.00	Citrus & Grass	8S/1E-18J(1)	0.00	
	Trust of 1988, Leslie K.	Aguanga, CA 92536					8S/1E-18J(2)	0.00	
	Harris-Trustee								
			581-150-009	7.00	10.00	Fruit			
			581-160-015	7.42	6.00	Fruit			
			581-180-004	20.00	0.00				
			581-180-020	20.00	0.00		8S/1E-17M	20.15	
			581-180-021	2.15	0.00		8S/1E-17E	43.66	
			581-180-022	30.00	0.00				
	Valley Wide Recreation &	m/t 901 W Esplanade Ave	581-170-009	7.82	7.82	Grass	8S/1E-18H(1)	0.00	
	Parks Dist.	San Jacinto, CA 92582							
							8S/1E-18H(2)	0.00	
	Wilson Creek Farms	44200 Sage Road	581-170-012	190.40	40.00	Row Crops**	8S/1E-17B	375.00	
		Aguanga, CA 92536	581-170-013	99.63	60.00	Hay/Vegetables	8S/1E-17H	10.00	
		m/t P. O. Box 347	581-180-005	2.76					
		Aguanga, CA 92536	581-180-009	120.00	20.00	Row Crops			
			581-190-013	280.00	20.00	Row Crops			
			581-190-014	40.00					
	Wilson Creek	44200 Sage Road	581-070-002	160.00					
	Development, LLC	Aguanga, CA 92536	581-070-005	640.00			8S/1E-9Q - Diversion		380.00
		m/t P. O. Box 2921	581-100-013	80.00	5.00	Trees	8S/1E-10	5.00	
		Hemet, CA 92546	581-100-019	30.00					
			581-100-020	10.00					
			581-100-022	20.00					
			581-100-038	9.53					
			581-100-039	9.23					
			581-100-040	8.91					
					** Plus riparian restoration.				
1/	Zhang, Aiguo	m/t 39171 Trail Creek Lane	581-120-006	200.00	5.00	Vineyard	8S/1E-8K2	5.50	
		Temecula, CA 92591							
	TOTAL AGUANGA GROUNDWATER AREA				**437.88**			**1,360.59**	**385.00**

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

APPENDIX C

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
TEMECULA CREEK ABOVE AGUANGA GROUNDWATER AREA								
Agri-Empire, Inc.	m/t P. O. Box 490 San Jacinto, CA 92383							
CHIHUAHUA VALLEY		113-090-01*	377.07	0.00				
		113-090-03*	21.46	0.00				
		113-090-04*	43.96	0.00				
		113-090-05*	541.26	0.00				
		113-100-01*	389.81	0.00		9S/2E-11B - Diversion		0.00
		113-130-01*	150.09	0.00		9S/2E-17D - Spring		0.00
		113-140-01 **	358.62	0.00		9S/2E-16B(1)	0.00	
						9S/2E-16B(2)	0.00	
						9S/2E-16G	0.00	
		113-140-02 **	38.75	0.00				
		113-140-03	196.54	0.00	Aesthetics	9S/2E-16N2	62.80	
		113-140-04*	503.24	0.00	Aesthetics	9S/2E-16M	126.60	
		113-140-05*	45.09	0.00	Aesthetics	9S/2E-16F1	30.60	
		113-140-06*	93.44	0.00	Aesthetics	9S/2E-16N1	18.80	
						9S/2E-16F2	0.00	
						9S/2E-16K - Diversion		0.00
DODGE VALLEY		114-020-09	37.16	0.00				
		114-020-10*	20.30	0.00				
		114-020-12**	108.78	0.00				
		114-030-07	93.38	0.00				
		114-030-33*	194.29	0.00		9S/2E-22	0.00	
		114-030-34	137.50	0.00				
		114-030-35*	13.32	0.00				
		114-030-36	29.55	0.00				
* Land leased from the State of California								
**Land leased from Arlie W. and Coral R. Bergman	37126 Hwy 79 Warner Springs, CA 92086							
Hill Springs Farm, LLC	38642 Highway 79	112-030-38	40.00	Total		9S/1E-12A	Domestic	
	Warner Springs, CA 92086	112-030-040	161.46	||				
	m/t P.O. Box 1946	112-030-67	67.41	||				
	Duarte, CA 91009	112-030-68	52.59	||				
		112-030-72	129.90	||				
		112-030-73	62.20	of		9S/1E-1M - Diversion		0.00
		112-030-74	70.50	||	Grapes	9S/1E-1Q(1)	0.00	
				||	Winery/	9S/1E-1Q(2)	71.50	
		113-060-12	63.21	65.00	Landscape	9S/2E-7D	9.00	
						9S/2E-7E - Diversion		0.00
1/ Bergman, Arlie and Coral	Highway 79	113-130-03	115.75					
	Warner Springs, CA 92086	113-130-04	39.65		Data Not Provided			
	m/t 37126 Highway 79	114-030-10	41.51					
	Warner Springs, CA 92086							

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
TEMECULA CREEK ABOVE AGUANGA GROUNDWATER AREA (Cont.)								
Lovingier Family Trust	35490 Highway 79	114-070-07	76.42	Total	Pasture	9S/2E-27R1	Total	
	Warner Springs, CA 92086			||		9S/2E-27R2	||	
				||		9S/2E-27J	||	
		114-070-27	19.15	||			||	
		114-070-28	19.15	of			of	
		114-070-34	167.94	|			||	
		114-080-14	42.51	||			||	
		114-080-13	21.30	||			||	
		114-120-42	78.41	||		9S/2E-35D2	||	
				||		9S/2E-35D2	645.81	
		114-120-24	20.66	169.95				
TOTAL TEMECULA CREEK ABOVE AGUANGA GROUNDWATER AREA				**234.95**			**965.11**	**0.00**
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA ANZA VALLEY								
Greenwald Trust	55255 Mitchell Road	573-180-001	156.38	0.00		7S/3E-17E	0.00	
	Anza. CA 92539							
	m/t 640 S San Vincente Blvd							
	Ste. 475							
	Los Angeles, CA 90048							
Miller, Frank C.	55520 Hwy 371	573-200-007	18.88	18.00	Row Crops			
Grabowski-Miller, Jan	Anza, CA 92539	573-200-008	18.31	0.00				
		573-200-009	36.40	12.00	Grapes/Row Crops	7S/3E-17(M)	8.00	
	m/t 702 Sundance Drive			26.00	Row Crops	7S/3E-17(N)	0.00	
	Verona, WI 53593					7S/3E-17(P)	64.00	
						7S/3E-17(1)	1.00	
Anza Development Corp	m/t 1907 James Gaynor St	573-200-004	18.24	0.00				
	Fallbrook, CA 92028	573-200-005	18.50	0.00				
		573-200-006	18.89	0.00				
		573-200-010	18.68	0.00				

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
ANZA VALLEY (Cont.)								
Agri-Empire, Inc.	P.O. Box 490 San Jacinto, CA 92383							
	Section 10	575-050-044	14.36	0.00				
	Section 11	575-060-002	133.93	0.00		7S/3E-11N4	0.00	
						7S/3E-11P3	0.00	
	Section 13	575-100-009	19.94	0.00				
		575-100-032	89.02	0.00				
		575-100-033	89.08	0.00				
		575-100-034	37.63	0.00				
		575-100-035	157.20	0.00				
		575-100-036	27.91	0.00				
		575-100-037	57.80	0.00				
		575-100-039	7.91	0.00				
		575-100-040	0.88	0.00				
		575-100-041	19.93	0.00				
		575-100-042	0.60	0.00				
	Section 14	575-110-021	143.75	0.00		7S/3E-14D1	0.00	
		575-110-027	54.45	0.00				
		575-110-030	74.86	0.00				
		575-310-002	39.09	0.00		7S/3E-14C2	0.00	
		575-310-011	80.00	0.00				
		575-310-012	80.00	0.00				
		575-310-013	17.46	0.00				
		575-310-014	0.75	0.00				
		575-310-027	17.46	0.00				
		575-310-028	0.92	0.00				
	Section 15	575-080-010	4.77	0.00				
		575-080-014	9.92	0.00				
		575-080-015	4.35	0.00				
		575-080-017	9.75	0.00				
		575-080-018	10.13	0.00				
		575-080-019	31.29	0.00				
		575-080-021	20.00	Total				
		575-080-022	20.00	||				
		575-080-024	20.00	of				
		575-080-027	20.00	0.00				
		575-090-010	38.80	0.00				
	Section 17	573-180-011	39.74	0.00				
	Section 20	576-060-009	8.26	Total				
		576-060-031	16.09	||				
		576-060-033	79.45	||				
		576-060-038	5.41	of				
		576-070-003	80.00	||				
		576-070-005	116.57	0.00				

Well No. in parentheses designated by Watermaster.

1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT

WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA
ANZA VALLEY (Cont.)

Agri-Empire, Inc. (Cont)	Section 21	576-100-061	37.71	0.00				
		576-110-001	160.00	150.00	Organic Crop	7S/3E-21P(1)	0.00	
						7S/3E-21P(2)	1.16	
		576-110-002	28.00	0.00				
		576-110-003	2.00	0.00				
		576-110-004	50.00	0.00				
		576-110-006	19.29	Total				
		576-110-007	17.82	||				
		576-110-008	17.00	of		7S/3E-21R3	0.00	0.00
				||		7S/3E-21R(4)	0.00	
		576-110-009	18.41	0.00				
	Section 22	575-130-003	19.55	0.00				
		575-130-006	40.89	0.00				
		575-130-008	18.56	Total				
		575-130-009	20.06	||				
		575-130-010	20.07	||				
		575-130-011	19.19	of				
		575-130-012	18.18	||				
		575-130-013	19.02	||				
		575-130-014	19.00	||				
		575-130-015	17.58	0.00				
		575-120-012	88.03	0.00				
		575-120-018	20.45	0.00				
		575-120-019	20.45	0.00				
		575-120-032	4.69	0.00				
		575-120-033	4.69	0.00				
		575-120-034	4.68	0.00				
		575-120-035	4.28	0.00				
	Section 23	575-140-006	9.90	0.00				
		575-140-020	90.48	0.00				

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

APPENDIX C

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
ANZA VALLEY (Cont.)								
Cahuilla Indian	ommercial Wells Reported by Bureau of Indian Affairs						Total	
Reservation	Wells in	Wells out of					||	
	Basement Complex	Watershed	Wells with QYAL and/or QTOAL				||	
							||	
	7S/2E-14L1	8S/3E-2A1	7S/2E-14J1	7S/2E-28Q1	7S/3E-31L		||	
	7S/2E-25D1	8S/3E-2B1	7S/2E-14M1	7S/2E-33C1	7S/3E-31L2		||	
	7S/2E-26B1	8S/3E-2D1	7S/2E-14M2	7S/2E-33E1	7S/3E-34E1		||	
	7S/2E-26B2	8S/3E-2E1	7S/2E-14R1	7S/2E-33N1	7S/3E-34N1		||	
	7S/2E-26B3	8S/3E-2G1	7S/2E-23A1	7S/3E-27C1	7S/3E-34Q1		||	
	7S/2E-34E1	8S/3E-2H1	7S/2E-23D1	7S/3E-27C2	8S/2E-4D1		||	
	7S/2E-36A1	8S/3E-2K1	7S/2E-23F1	7S/3E-27H1	8S/2E-4N1		||	
	7S/2E-36J1		7S/2E-23G1	7S/3E-27M1	8S/2E-4N2		||	
	7S/2E-36R1		7S/2E-23H1	7S/3E-28A1	8S/2E-4P1		||	
	7S/3E-26A1		7S/2E-23K1	7S/3E-28A2	8S/2E-4R1		||	
	7S/3E-29Q1		7S/2E-23M1	7S/3E-28D1	8S/2E-4R2		of	
	7S/3E-30H1		7S/2E-23P1	7S/3E-29C1	8S/3E-5Q1		||	
	7S/3E-31A1		7S/2E-23Q1	7S/3E-29M1	8S/3E-6J1		||	
	7S/3E-31N1		7S/2E-25C1	7S/3E-30P1			||	
	7S/3E-31Q1		7S/2E-25F1	7S/3E-30Q1			||	
	7S/3E-32D1		7S/2E-25R1	7S/3E-30R1			||	
	7S/3E-32D2		7S/2E-26E1	7S/3E-30R2			||	
	8S/3E-6B1		7S/2E-26L1	7S/3E-30R3			||	
	8S/3E-6B2		7S/2E-27A1	7S/3E-31C1			||	
	8S/3E-6G1		7S/2E-27H1	7S/3E-31F1			||	
	8S/3E-6R1		7S/2E-28N1			Domestic	63.49	
						Commercial*	24.90	
* Commercial Use includes Casino, Dust Control, and Watering of Turf Grass						Stock Watering		17.92
SUBTOTAL ANZA VALLEY				**206.00**			**162.55**	**17.92**
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
LEWIS VALLEY								
Moon Mountain Farms, LLC Moon Valley Nursery (Green Shell Co)	39850 Hwy 79 Anza, CA 92539 m/t 19820 North 7th Street, #260 Phoenix, AZ 85024 m/t 1210 Rainbow Hills Rd Fallbrook, CA 92028	571-080-012	80.00	80.00	Olive Trees	7S/1E-20Q	97.60	
SUBTOTAL LEWIS VALLEY				**80.00**			**97.60**	**0.00**
TOTAL WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA				**286.00**			**260.15**	**17.92**

Well No. in parentheses designated by Watermaster.

1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

	CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
	MURRIETA-TEMECULA GROUNDWATER AREA								
	Louidar	32320 La Serena Way	943-040-011	19.22	0.00	Citrus	7S/2W-28L*	0.00	
		Temecula, CA 92591	943-060-010	90.76	0.00	N/A			
			943-060-011	26.47	0.00	Citrus			
		33820 Rancho California Rd.	943-120-045	87.29	30.00	Grapes			
		Temecula, CA 92591	943-120-046	88.24	0.00	Grapes			
					0.00	Grapes			
		m/t PO Box 891510			0.00	Grapes			
		Temecula, CA 92591							
	*Well is no longer in use								
	Cavaletto, Selina J Et Al	c/o McMillan Farm Mgt.	942-180-002	40.28	40.00	Citrus			
	Lassalette Enterprise	29379 Rancho Cal. Rd, #201	942-240-003	40.83	40.00	Citrus			
		Temecula, CA 92390	942-240-004	40.83	40.00	Citrus			
			942-240-006	39.08	35.00	Citrus	7S/2W-26B1(1)	127.00	
							7S/2W-26B2(2)	154.00	
1/	Baida Birdie Trust	m/t 35853 Calle Nopal	917-240-016	5.98	0.00				
	(Mendoza, Bertha)	Temecula, CA 92592	917-240-019	54.13	0.00				
	Giddings, Richard	38055 Highway 79 South	917-150-002	117.76	0.00				
		Aguanga, CA							
	Dynamic Financial	38695 Highway 79 South	917-240-015	20.00	65.00	Citrus			
	Corporation	Aguanga, CA	917-150-006	120.00	45.00	Avocado	8S/1W-21K(1)	0.00	
		m/t 853 E. Valley Boulevard,					8S/1W-21K(2)	34.00	
		Suite 200					8S/1W-21P(1)	18.00	
		San Gabriel, CA 91776					8S/1W-21P(2)	0.00	
	Carter, James A	Highway 79 South	942-120-007	26.14	26.00	Grapes			
	109 Acres	Temecula, CA	943-230-007	5.65	0.00		7S/2W-26L	0.00	
	Wild Horse Peak	m/t 3719 South Plaza Drive	943-230-008	107.03	60.00	Grapes	8S/1W-25Q(1)	0.00	
	Vineyard Mountain Inc.	Santa Ana, CA 92704	917-250-004	80.00	Total		8S/1W-25P(1)	26.50	
			917-250-005	80.00	of		8S/1W-25N(1) - Spring 3		0.00
			917-250-007	240.00	||	Grapes	8S/1W-36K - Spring 4		0.00
					220.00		8S/1W-36H - Spring 6		0.00
							8S/1W-36K(1)	26.00	
							8S/1W-36K(2)	26.00	
							8S/1W-36K(3)	75.00	
							8S/1W-36L - Stream Diversion		52.00

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

APPENDIX C

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

	CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
	MURRIETA-TEMECULA GROUNDWATER AREA (Cont.)								
	Pechanga Resorts Inc.	44501 Rainbow Cyn Rd.	922-220-002	86.11	Total		8S/2W-19(D)	157.97	
	Temecula Creek Golf	Temecula, CA 92592	922-220-003	5.75	||				
		m/t 45000 Pechanga Pkwy	922-220-008	4.26	||				
		Temecula, CA 92592	922-220-031	67.28	||				
			922-230-002	59.29	of				
			922-230-007	25.00	||				
			922-230-008	16.11	||				
			922-230-003	1.00	||				
			922-230-004	40.00	47.00	Grass			
	* Portion of water purchased from RCWD for Water Year 2018-19.								
	Carson, Carol J.	25471 Hayes Ave	909-260-036	8.87	0.00		7S/3W-29G	9.50	
	Murrieta Six Cs LLC	Murrieta, CA 92562	909-260-042	4.31	2.50	Pasture			
		m/t 42882 Ivy St.							
		Murrieta, CA 92562							
	TOTAL MURRIETA-TEMECULA GROUNDWATER AREA				**650.50**			**653.97**	**52.00**
	SANTA MARGARITA RIVER BELOW GORGE								
	DE LUZ CREEK								
	Stehly Family Holdings,	40922 DeLuz Road	101-271-28	45.01	10.00	Avocados	8S/4W-29D(1)	1.00	
	LLC	Fallbrook, CA 92028				and Citrus	8S/4W-29D(2)	16.00	
		m/t 13268 McNally Road							
		Valley Center, CA 92082							
1/	Prestininzi, Pete	2525 E. Mission Road	101-220-12	31.63	6.00	Pasture & Flowers			
	and Dorothy N.	Fallbrook, CA 92028	101-210-53	50.44	12.00	Avocados	8S/4W-20A(1)	16.00	
		m/t 22460 Bundy Canyon Road				and Citrus	8S/4W-20H(1)	16.00	
		Wildomar, CA 92595					8S/4W-20H(2)	14.00	
							8S/4W-20A - Diversion		0.00
	Alfred Varela Sr.	41125 DeLuz Road	101-210-11	15.23	8.50	Avocados	8S/4W-20Q(1)	Total of	
	Family Living Trust	Fallbrook, CA 92028			0.50	Citrus	8S/4W-20Q(2)	21.60	
	Varela, Alfred								
1/	De La Cruz Living Trust	41257 DeLuz Road	101-210-12	30.28	0.00		8S/4W-20Q(1)	0.00	
		Fallbrook, CA 92028			0.00		8S/4W-20Q(2)	0.00	
		m/t P.O. Box 3778			0.00		8S/4W-20Q(3)	0.00	
		San Dimas, CA 91773							
	Bryant, Warren and Lori	40724 De Luz Road	101-271-19	19.08			8S/4W-29E (1)		
		Fallbrook, CA 92028	101-271-20	5.02					
			101-271-21	11.86			8S/4W-29E (2)		
			101-271-22	6.41				0.00	0.00
	Garnsey Family Trust 2003	40635 De Luz Road	101-271-29	73.11	13.35	Goards	8S/4W-29E(1)	0.33	
		Fallbrook, CA 92028							

Well No. in parentheses designated by Watermaster.

1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

APPENDIX C

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
SANTA MARGARITA RIVER BELOW GORGE								
DE LUZ CREEK (Cont.)								
Wagner Family Trust	41128 DeLuz Road	101-210-22	4.55	3.00	Persimmons			
	Fallbrook, CA 92028	101-210-23	17.19	15.00	Avocados	8S/4W-20P(1)	0.00	
						8S/4W-20P(2)	0.00	
						8S/4W-20P(3)	0.00	
						8S/4W-20P(4)	39.30	
Lee, Charles and	44952 Vista Del Mar	933-120-016	9.39	9.00	Avocados,			
Catherine	Temecula, CA 92590	933-120-017	9.48	9.00	Citrus and			
		933-120-018	8.47	8.00	Macadamia Nuts			
		933-120-019	9.63	9.00				
		933-120-042	20.00	12.00	Avocados	8S/4W-15L	0.00 **	
**Water purchased from RCWD								
Chambers Family, LLC	40888 DeLuz-Murrieta Road	101-571-03	41.72	25.00	Flowers	8S/4W-28A	25.00 *	
	38664 DeLuz Road	102-130-42	54.37	30.00	Flowers/Fruit Trees	9S/4W-9B(1)	30.00	
	Fallbrook, CA 92028					9S/4W-9B(2)	1.00	
	m/t Thomas Montllor					9S/4W-9B(3)	30.00	
	910 N. Pacific St., Apt. 38							
	Oceanside, CA 92054					8S/4W-28A - Diversion		8.00
* Portion of water purchased from FPUD for Water Year 2018-19								
Welburn Family Trust	40787 DeLuz-Murrieta Rd.	101-571-19	4.01	4.00	Fallow			
Welburn, Douglas	Fallbrook, CA 92028	101-571-20	4.00	4.00	Gourds			
and Sue		101-571-21	14.28	1.50	Fruit Trees, Gourds and Avocados	8S/4W-28G1	30.65	
1/ Cedano, Andres and Laura	De Luz Rd	101-312-01	82.29	0.00	No Data Provided	8S/4W-31L		
	Fallbrook, CA 92028					8S/4W-31L - Diversion		
	m/t 2581 Pioneer Ave #A	101-312-02	58.17	0.00		8S/4W-31K(1)		
	Vista, CA 92081					8S/4W-31K(2)		
						8S/4W-31K(3)		
Norman and Deborah	39452 DeLuz Road	101-312-03	80.00	0.00		8S/4W-31J(2)	11.00	
Vanginkel Trust	Fallbrook, CA 92028					8S/4W-31J(3)	0.00	
	m/t 21136 Trailside Drive					8S/4W-31J(4)	30.00	
	Yorba Linda, CA 92887					8S/4W-31J(5)	0.00	
		102-052-04	22.04	17.00	Avocados			
		102-731-02	4.26					
Ross Lake, LLC	39985 Daily Road	101-430-30	16.39	0.00				
Rose, William	Fallbrook, CA 92028	101-480-14	13.20	0.00		8S/4W-34- Lake Diversion		** 0.00
and Joanne		101-500-01	16.62	0.00				
** All water purchased from FPUD for Water Year 2018-19								
SUBTOTAL DELUZ CREEK				**196.85**			**281.88**	**8.00**

Well No. in parentheses designated by Watermaster.
1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

APPENDIX C

SANTA MARGARITA RIVER WATERSHED

SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 2018-19	IRRIGATED CROP 2018-19	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
SANTA MARGARITA RIVER BELOW GORGE (Cont.)								
SANDIA CREEK								
Serafina Holdings, LLC	40376 Sandia Creek	101-360-40	126.32	18.00	Avocados	8S/4W-25P(1)	22.72	
	Fallbrook, CA 92028			11.00	Grapes	8S/4W-25P(2)	12.02	
				40.00	Olives	8S/4W-25P(3)	47.68	
						8S/4W-25P - Diversion		0.00
SUBTOTAL SANDIA CREEK				**69.00**			**82.42**	**0.00**
SANTA MARGARITA RIVER								
1/ San Diego State	47981 Willow Glen Rd.	918-040-011	120.00	5.00	Citrus	8S/3W-33Q1	4.31	
University Foundation	Temecula, CA 92592	918-060-017	40.00	15.00	Avocados	8S/3W-33Q(2)	0.00	
	SDSU Foundation					8S/3W-33Q - Diversion		41.44
	5200 Campanile Dr.							
	San Diego, CA 92182-4614							
1/ Carabello, Victor	47585 Via Vaquero Road	938-150-004	21.47		No Data Provided			
	Temecula, CA 92590							
	m/t 1849 Calle Suenos							
	Glendale, CA 91208							
SUBTOTAL SANTA MARGARITA RIVER				**20.00**			**4.31**	**41.44**
TOTAL SANTA MARGARITA RIVER BELOW GORGE				**285.85**			**368.61**	**49.44**
LOWER MURRIETA								
Ronnenberg Family	42522 E. Benton Rd.	571-020-046	81.09	Total				
Trust	Aguanga, CA 92536	571-020-047	40.80	||				
(Sage Ranch Nursery)	m/t c/o Cliff Ronnenberg	571-020-048	36.75	||				
	11292 Western Avenue	571-020-049	148.86	||		7S/1E-7D	5.50	
	Stanton, CA 90680	571-520-004	1.50	||				
		571-520-007	109.50	||				
		571-520-008	99.43	of				
		571-520-009	80.23	||				
		571-520-012	77.54	||				
		915-140-069	91.56	||				
		915-140-070	21.54	||				
		470-210-007	53.62	||				
		470-220-004	109.23	300.00	Olive trees	7S/1E-7E - Diversion		100.00
EG High Desert	39800 E. Benton Rd.	915-120-045	37.45	10.00	Pasture	7S/1W-10R(1)	Total	
Properties, LLC	Temecula, CA 92390					7S/1W-10R(2)	of	
	m/t 12881 Bradley Avenue					7S/1W-10R(3)	||	
	Sylmar, CA 91342					7S/1W-10R(4)	38.00	
						7S/1W-10R(5)	Domestic	
						7S/1W-10R(6)	0.00	
						7S/1W-10R(7)	0.00	
TOTAL LOWER MURRIETA				**310.00**			**43.50**	**100.00**
GRAND TOTAL				**2,205.18**			**3,651.93**	**604.36**
GRAND TOTAL (Not including Cahuilla Indian Reservation)				**2,205.18**			**3,563.54**	**586.44**

Well No. in parentheses designated by Watermaster.

1/ Water Use Report Form not recieved for water year, indicated value for irrigated acreage, production, and surface diversion assumed to be the same as last year reported.

Page Intentionally Blank

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX D

WATER QUALITY DATA

November 2020

TABLE D-3

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
Alson Well										
6/6/1990	1,520	915	138.0	46.0	110.0	1.0	250.0	81.0	433.0	7.0
7/21/1998	1,260	880	100.0	37.0	120.0	ND	180.0	92.0	330.0	5.2
9/9/1998	1,200	850	110.0	39.0	120.0	ND	180.0	100.0	320.0	5.2
5/3/2000	-	-	-	-	-	-	-	-	-	4.5
5/19/2000	1,290	800	97.0	36.0	110.0	ND	180.0	96.0	330.0	4.3
11/28/2001	1,290	750	93.0	33.0	110.0	ND	180.0	96.0	310.0	3.8
3/6/2002	-	-	-	-	-	-	-	-	-	4.5
7/1/2002	-	650	-	-	-	-	-	-	270.0	-
10/3/2003	880	550	80.0	26.0	95.0	-	ND	ND	259.0	ND
1/27/2005	1,100	640	100.0	32.0	110.0	-	150.0	81.0	320.0	-
1/26/2006	1,500	870	120.0	41.0	120.0	1.2	230.0	120.0	-	4.1
4/12/2006	-	-	-	-	-	-	-	-	-	4.3
5/10/2006	-	-	-	-	-	-	-	-	-	4.1
6/28/2006	-	-	-	-	-	-	-	-	-	4.5
7/26/2006	-	-	-	-	-	-	-	-	-	4.5
8/23/2006	-	-	-	-	-	-	-	-	-	4.1
9/27/2006	-	-	-	-	-	-	-	-	-	4.8
10/25/2006	-	-	-	-	-	-	-	-	-	5.0
11/22/2006	-	-	-	-	-	-	-	-	-	5.0
12/27/2006	-	-	-	-	-	-	-	-	-	4.8
1/24/2007	-	-	-	-	-	-	-	-	-	5.0
2/28/2007	-	-	-	-	-	-	-	-	-	5.0
3/29/2007	-	-	-	-	-	-	-	-	-	5.2
4/25/2007	-	-	-	-	-	-	-	-	-	4.3
Holiday Well										
6/16/1989	1,300	775	122.0	39.0	100.0	2.0	178.0	66.0	372.0	9.0
10/18/1991	-	-	-	-	-	-	-	-	-	5.7
11/15/1991	-	-	-	-	-	-	-	-	-	5.9
12/13/1991	-	-	-	-	-	-	-	-	-	6.3
1/10/1992	-	-	-	-	-	-	-	-	-	6.1
2/7/1992	-	-	-	-	-	-	-	-	-	6.1
5/1/1992	-	-	-	-	-	-	-	-	-	7.2
5/29/1992	-	-	-	-	-	-	-	-	-	6.3
8/21/1992	-	-	-	-	-	-	-	-	-	6.1
1/22/1993	960	605	83.0	29.0	83.0	2.0	130.0	84.0	278.0	7.5
10/15/1993	-	-	-	-	-	-	-	-	-	7.2
3/30/1994	-	-	-	-	-	-	-	-	-	10.0
6/22/1994	-	-	-	-	-	-	-	-	-	7.9
9/14/1994	-	-	-	-	-	-	-	-	-	7.0
12/7/1994	-	-	-	-	-	-	-	-	-	6.8
3/1/1995	-	-	-	-	-	-	-	-	-	7.2
6/21/1995	-	-	-	-	-	-	-	-	-	2.5
9/13/1995	-	-	-	-	-	-	-	-	-	6.1
12/6/1995	-	-	-	-	-	-	-	-	-	5.9
3/27/1996	-	-	-	-	-	-	-	-	-	3.4
6/6/1996	-	-	-	-	-	-	-	-	-	5.4
9/11/1996	-	-	-	-	-	-	-	-	-	5.0
11/8/1996	-	-	-	-	-	-	-	-	-	12.4
11/14/1996	-	-	-	-	-	-	-	-	-	5.7
12/5/1996	-	-	-	-	-	-	-	-	-	5.4
3/27/1997	-	-	-	-	-	-	-	-	-	4.5
6/18/1997	-	-	-	-	-	-	-	-	-	4.8
12/3/1997	-	-	-	-	-	-	-	-	-	4.1
3/25/1998	-	-	-	-	-	-	-	-	-	4.8
4/22/1998	1,090	680	89.0	29.0	85.0	1.0	150.0	76.0	290.0	5.0
6/17/1998	-	-	-	-	-	-	-	-	-	5.2
10/1/1998	-	-	-	-	-	-	-	-	-	5.7
12/2/1998	-	-	-	-	-	-	-	-	-	6.3
2/24/1999	-	-	-	-	-	-	-	-	-	7.5
3/24/1999	-	-	-	-	-	-	-	-	-	5.9
9/9/1999	-	-	-	-	-	-	-	-	-	8.1
12/3/1999	-	-	-	-	-	-	-	-	-	7.2
7/12/2000	-	-	-	-	-	-	-	-	-	4.8
8/4/2000	1,290	790	110.0	36.0	99.0	-	180.0	110.0	320.0	4.8
10/24/2001	-	-	-	-	-	-	-	-	-	3.8
3/6/2002	-	-	-	-	-	-	-	-	-	3.4
7/11/2002	-	780	-	-	-	-	-	-	310.0	-
10/3/2003	-	800	113.0	-	-	-	-	-	332.0	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-3

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/21/2004	-	-	-	-	-	-	-	-	-	2.5
1/27/2005	-	980	160.0	47.0	-	-	-	-	440.0	-
3/30/2005	-	-	-	-	-	-	-	-	-	7.9
1/26/2006	1,700	1,000	160.0	48.0	130.0	1.6	240.0	130.0	-	10.4
1/30/2006	-	-	-	-	-	-	-	-	-	11.1
House Well										
6/16/1989	660	345	34.0	3.0	95.0	2.0	87.0	60.0	153.0	ND
2/27/1991	770	-	-	-	-	-	110.0	65.0	168.0	ND
3/1/1991	730	-	-	-	-	-	110.0	-	-	ND
3/8/1991	680	420	42.0	5.0	90.0	2.0	110.0	68.0	122.0	ND
5/10/1991	750	-	-	-	-	-	-	-	-	ND
10/11/1991	-	-	-	-	-	-	-	-	-	ND
11/8/1991	-	-	-	-	-	-	-	-	-	ND
5/22/1992	-	-	-	-	-	-	-	-	-	ND
8/14/1992	-	-	-	-	-	-	-	-	-	ND
1/22/1993	720	415	40.0	5.0	106.0	2.0	100.0	68.0	168.0	ND
9/7/1994	-	-	-	-	-	-	-	-	-	ND
3/22/1995	-	-	-	-	-	-	-	-	-	ND
6/14/1995	-	-	-	-	-	-	-	-	-	ND
9/6/1995	-	-	-	-	-	-	-	-	-	ND
12/27/1995	-	-	-	-	-	-	-	-	-	ND
3/20/1996	-	-	-	-	-	-	-	-	-	ND
6/12/1996	-	-	-	-	-	-	-	-	-	ND
9/4/1996	-	-	-	-	-	-	-	-	-	ND
12/26/1996	-	-	-	-	-	-	-	-	-	ND
3/19/1997	-	-	-	-	-	-	-	-	-	ND
6/12/1997	-	-	-	-	-	-	-	-	-	ND
12/30/1997	-	-	-	-	-	-	-	-	-	ND
3/18/1998	-	-	-	-	-	-	-	-	-	ND
4/15/1998	660	360	30.0	3.0	94.0	1.0	91.0	62.0	130.0	ND
6/10/1998	-	-	-	-	-	-	-	-	-	ND
10/1/1998	-	-	-	-	-	-	-	-	-	ND
12/23/1998	-	-	-	-	-	-	-	-	-	ND
2/17/1999	-	-	-	-	-	-	-	-	-	ND
3/17/1999	-	-	-	-	-	-	-	-	-	ND
6/9/1999	-	-	-	-	-	-	-	-	-	ND
9/1/1999	-	-	-	-	-	-	-	-	-	ND
12/22/1999	-	-	-	-	-	-	-	-	-	ND
3/15/2000	640	370	29.0	3.0	92.0	2.0	82.0	61.0	130.0	ND
6/7/2000	-	-	-	-	-	-	-	-	-	ND
9/27/2000	-	-	-	-	-	-	-	-	-	ND
10/24/2001	-	-	-	-	-	-	-	-	-	ND
3/6/2002	-	-	-	-	-	-	-	-	-	ND
7/11/2002	-	440	-	-	-	-	-	-	170.0	-
10/3/2003	630	380	34.0	3.0	103.0	-	87.0	-	140.0	ND
4/21/2004	-	-	-	-	-	-	-	-	-	ND
Lynch Well										
6/16/1989	760	410	70.0	17.0	55.0	1.0	86.0	30.0	262.0	1.8
Morris Well										
9/7/1990	530	280	38.0	7.0	68.0	3.0	50.0	49.0	168.0	0.7
New Clay Well										
3/9/2004	480	340	23.0	1.0	87.0	1.0	79.0	64.0	98.0	ND
1/26/2006	590	310	20.0	1.2	93.0	1.2	85.0	57.0	-	ND
1/31/2006	-	-	-	-	-	-	-	-	-	1.6
4/4/2006	-	-	-	-	-	-	-	-	-	ND
4/12/2006	-	-	-	-	-	-	-	-	-	ND
5/10/2006	-	-	-	-	-	-	-	-	-	ND
6/7/2006	-	-	-	-	-	-	-	-	-	ND
7/5/2006	-	-	-	-	-	-	-	-	-	ND
8/2/2006	-	-	-	-	-	-	-	-	-	ND
9/6/2006	-	-	-	-	-	-	-	-	-	ND
10/4/2006	-	-	-	-	-	-	-	-	-	ND
11/1/2006	-	-	-	-	-	-	-	-	-	ND
12/6/2006	-	-	-	-	-	-	-	-	-	ND
1/4/2007	-	-	-	-	-	-	-	-	-	ND
2/7/2007	-	-	-	-	-	-	-	-	-	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-3
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
3/7/2007	-	-	-	-	-	-	-	-	-	ND
4/4/2007	-	-	-	-	-	-	-	-	-	ND
5/2/2007	-	-	-	-	-	-	-	-	-	ND
6/6/2007	-	-	-	-	-	-	-	-	-	ND
7/5/2007	-	-	-	-	-	-	-	-	-	ND
8/1/2007	-	-	-	-	-	-	-	-	-	ND
8/15/2007	510	270	13.0	ND	91.0	1.0	65.0	50.0	83.0	ND
9/5/2007	-	-	-	-	-	-	-	-	-	ND
12/4/2007	-	-	-	-	-	-	-	-	-	ND
3/26/2008	-	-	-	-	-	-	-	-	-	ND
4/23/2008	-	-	-	-	-	-	-	-	-	ND
5/5/2008	-	-	-	-	-	-	-	-	-	ND
6/2/2008	-	-	-	-	-	-	-	-	-	ND
7/7/2008	-	-	-	-	-	-	-	-	-	ND
9/2/2008	-	-	-	-	-	-	-	-	-	ND
1/19/2009	-	-	-	-	-	-	-	-	-	ND
11/13/2009	630	350	25.0	4.7	97.0	1.5	84.0	76.0	110.0	ND
11/17/2009	-	-	-	-	-	-	-	-	-	ND
8/25/2011	700	380	30.0	2.7	110.0	1.8	97.0	62.0	150.0	ND
5/21/2012	-	-	-	-	-	-	-	-	-	ND
6/1/2012	590	340	19.0	ND	93.0	1.4	83.0	56.0	110.0	ND
10/4/2012	600	340	20.0	ND	96.0	1.1	84.0	55.0	110.0	ND
11/5/2012	560	320	18.0	ND	93.0	1.1	82.0	60.0	100.0	ND
11/14/2012	-	-	-	-	-	-	-	-	-	ND
12/4/2012	550	340	16.0	ND	91.0	ND	74.0	58.0	96.0	ND
12/10/2012	-	-	-	-	-	-	-	-	-	ND
1/7/2013	560	340	19.0	ND	96.0	1.1	78.0	57.0	93.0	ND
1/14/2013	-	-	-	-	-	-	-	-	-	ND
2/5/2013	540	300	17.0	ND	85.0	2.0	75.0	57.0	98.0	ND
2/11/2013	-	-	-	-	-	-	-	-	-	ND
3/4/2013	590	300	19.0	ND	98.0	ND	82.0	58.0	150.0	ND
3/11/2013	-	-	-	-	-	-	-	-	-	ND
4/9/2013	520	280	18.0	ND	91.0	1.0	74.0	56.0	80.0	ND
5/5/2014	610	340	23.0	ND	93.0	1.3	84.0	60.0	100.0	ND
5/12/2014	-	-	-	-	-	-	-	-	-	ND
5/28/2014	-	-	23.0	ND	100.0	1.3	-	-	-	-
6/2/2014	580	340	22.0	ND	94.0	1.1	81.0	58.0	100.0	ND
6/16/2014	-	-	-	-	-	-	-	-	-	ND
7/7/2014	560	310	21.0	ND	94.0	1.2	80.0	56.0	94.0	ND
8/11/2014	560	270	21.0	ND	92.0	1.2	81.0	62.0	98.0	ND
11/3/2014	580	360	20.0	ND	95.0	1.2	82.0	59.0	95.0	ND
12/1/2014	-	-	-	-	-	-	-	-	-	ND
1/6/2015	-	-	-	-	-	-	-	-	-	ND
2/3/2015	-	-	-	-	-	-	-	-	-	ND
3/3/2015	-	-	-	-	-	-	-	-	-	ND
4/7/2015	-	-	-	-	-	-	-	-	-	ND
5/5/2015	-	-	-	-	-	-	-	-	-	ND
6/15/2015	-	-	-	-	-	-	-	-	-	ND
7/6/2015	-	-	-	-	-	-	-	-	-	ND
9/1/2015	-	-	-	-	-	-	-	-	-	ND
10/6/2015	600	310	20.0	ND	96.0	ND	85.0	59.0	100.0	ND
11/3/2015	590	360	20.0	ND	97.0	ND	87.0	61.0	96.0	ND
12/1/2015	580	340	20.0	ND	100.0	1.1	83.0	56.0	94.0	ND
1/7/2016	620	440	18.0	ND	95.0	1.0	86.0	60.0	90.0	ND
2/9/2016	880	540	69.0	14.0	99.0	1.7	120.0	61.0	230.0	ND
9/15/2016	590	320	18.0	ND	97.0	ND	78.0	55.0	87.0	ND
10/9/2016	630	350	19.0	ND	98.0	ND	85.0	60.0	92.0	ND
11/1/2016	600	310	19.0	ND	95.0	1.0	85.0	58.0	98.0	ND
12/16/2016	580	360	20.0	ND	100.0	1.1	86.0	59.0	98.0	ND
1/11/2017	600	340	21.0	ND	110.0	1.0	89.0	61.0	99.0	ND
3/7/2017	590	350	21.0	ND	98.0	1.1	86.0	59.0	120.0	ND
4/11/2017	620	320	-	-	-	-	88.0	61.0	83.0	ND
5/2/2017	-	-	-	-	-	-	-	-	-	ND
5/4/2017	600	340	-	-	-	-	86.0	58.0	82.0	ND
6/5/2017	-	-	-	-	-	-	-	-	-	ND
6/7/2017	590	330	20.0	ND	95.0	1.1	89.0	60.0	83.0	ND
6/15/2017	580	340	20.0	ND	98.0	1.2	85.0	57.0	77.0	ND
8/8/2017	580	310	19.0	ND	96.0	1.0	84.0	58.0	74.0	ND
9/5/2017	590	330	-	-	-	-	90.0	61.0	76.0	ND
10/3/2017	600	290	21.0	ND	98.0	1.2	90.0	62.0	81.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-3
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
11/5/2017	600	350	22.0	ND	98.0	1.3	90.0	62.0	88.0	ND
12/5/2017	590	320	20.0	ND	97.0	1.3	85.0	57.0	83.0	ND
1/2/2018	580	340	21.0	ND	98.0	1.4	94.0	65.0	84.0	ND
2/6/2018	600	340	22.0	ND	100.0	1.3	89.0	60.0	81.0	ND
3/6/2018	600	330	21.0	ND	98.0	1.3	90.0	66.0	83.0	ND
4/10/2018	550	300	13.0	ND	95.0	ND	78.0	58.0	77.0	ND
5/1/2018	580	340	20.0	ND	95.0	1.2	90.0	62.0	84.0	ND
6/5/2018	590	340	22.0	ND	100.0	1.2	92.0	65.0	92.0	ND
7/3/2018	600	350	22.0	ND	110.0	1.2	91.0	64.0	91.0	ND
8/6/2018	580	340	21.0	ND	99.0	1.1	90.0	63.0	86.0	ND
9/7/2018	590	340	19.0	ND	98.0	ND	94.0	66.0	94.0	ND
9/11/2018	590	340	20.0	ND	99.0	ND	91.0	63.0	93.0	ND
10/2/2018	600	340	20.0	ND	98.0	1.3	92.0	65.0	82.0	ND
11/6/2018	600	360	21.0	ND	100.0	1.3	93.0	65.0	82.0	ND
12/4/2018	590	330	22.0	ND	100.0	1.1	87.0	61.0	82.0	ND
1/3/2019	590	330	20.0	ND	96.0	1.3	88.0	62.0	82.0	ND
2/5/2019	-	-	-	-	-	-	-	-	-	ND
2/12/2019	590	330	20.0	ND	100.0	1.3	91.0	63.0	81.0	ND
3/5/2019	590	340	21.0	ND	99.0	1.2	93.0	65.0	81.0	ND
4/2/2019	600	340	21.0	ND	99.0	1.3	91.0	63.0	85.0	ND
5/7/2019	590	320	21.0	ND	100.0	1.2	92.0	64.0	89.0	ND
6/4/2019	580	320	21.0	ND	99.0	1.3	91.0	63.0	92.0	ND
7/2/2019	580	340	21.0	ND	100.0	1.3	90.0	63.0	83.0	ND
8/6/2019	580	330	21.0	ND	98.0	1.3	94.0	62.0	81.0	ND
9/6/2019	-	-	-	-	-	-	-	-	-	ND
9/10/2019	530	300	12.0	ND	97.0	ND	78.0	58.0	62.0	ND
North Well										
6/16/1989	730	390	40.0	7.0	98.0	2.0	98.0	45.0	201.0	ND
10/25/1991	-	-	-	-	-	-	-	-	-	ND
11/22/1991	-	-	-	-	-	-	-	-	-	ND
5/8/1992	-	-	-	-	-	-	-	-	-	ND
8/28/1992	-	-	-	-	-	-	-	-	-	ND
1/22/1993	680	405	39.0	8.0	99.0	2.0	100.0	51.0	183.0	ND
10/22/1993	-	-	-	-	-	-	-	-	-	ND
7/8/1994	810	520	-	-	87.0	-	130.0	53.0	-	ND
9/21/1994	-	-	-	-	-	-	-	-	-	ND
12/14/1994	-	-	-	-	-	-	-	-	-	ND
3/8/1995	-	-	-	-	-	-	-	-	-	ND
6/28/1995	-	-	-	-	-	-	-	-	-	ND
9/20/1995	-	-	-	-	-	-	-	-	-	ND
12/13/1995	-	-	-	-	-	-	-	-	-	ND
3/6/1996	-	-	-	-	-	-	-	-	-	ND
6/26/1996	-	-	-	-	-	-	-	-	-	ND
9/18/1996	-	-	-	-	-	-	-	-	-	ND
12/11/1996	-	-	-	-	-	-	-	-	-	ND
6/25/1997	-	-	-	-	-	-	-	-	-	ND
7/8/1998	760	460	49.0	9.0	100.0	2.0	110.0	51.0	220.0	ND
10/1/1998	-	-	-	-	-	-	-	-	-	ND
12/9/1998	-	-	-	-	-	-	-	-	-	ND
2/3/1999	-	-	-	-	-	-	-	-	-	ND
3/3/1999	-	-	-	-	-	-	-	-	-	ND
6/23/1999	-	-	-	-	-	-	-	-	-	ND
9/22/1999	-	-	-	-	-	-	-	-	-	ND
12/8/1999	-	-	-	-	-	-	-	-	-	ND
1/5/2000	780	440	47.0	9.0	100.0	ND	99.0	48.0	210.0	ND
5/3/2000	-	-	-	-	-	-	-	-	-	ND
7/19/2000	-	-	-	-	-	-	-	-	-	ND
10/24/2001	-	-	-	-	-	-	-	-	-	ND
3/6/2002	-	-	-	-	-	-	-	-	-	ND
7/11/2002	-	420	-	-	-	-	-	-	180.0	-
10/3/2003	-	440	53.0	-	-	-	-	-	-	-
4/21/2004	-	-	-	-	-	-	-	-	-	ND
1/27/2005	-	440	59.0	10.0	-	-	-	-	230.0	-
3/30/2005	-	-	-	-	-	-	-	-	-	ND
1/26/2006	820	450	60.0	11.0	96.0	2.0	120.0	52.0	-	0.2
5/10/2006	-	-	-	-	-	-	-	-	-	ND
7/19/2006	-	-	-	-	-	-	-	-	-	ND
8/16/2006	-	-	-	-	-	-	-	-	-	ND
9/20/2006	-	-	-	-	-	-	-	-	-	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-3

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/18/2006	-	-	-	-	-	-	-	-	-	ND
11/15/2006	-	-	-	-	-	-	-	-	-	ND
1/17/2007	-	-	-	-	-	-	-	-	-	ND
2/21/2007	-	-	-	-	-	-	-	-	-	ND
3/21/2007	-	-	-	-	-	-	-	-	-	ND
4/18/2007	-	-	-	-	-	-	-	-	-	ND
5/16/2007	-	-	-	-	-	-	-	-	-	ND
7/23/2007	-	-	-	-	-	-	-	-	-	-
7/26/2007	-	-	-	-	-	-	-	-	-	-
8/15/2007	830	520	59.0	11.0	89.0	1.2	110.0	54.0	230.0	ND
9/19/2007	-	-	-	-	-	-	-	-	-	ND
12/4/2007	-	-	-	-	-	-	-	-	-	0.3
1/24/2008	-	-	-	-	-	-	-	-	-	0.4
3/26/2008	-	-	-	-	-	-	-	-	-	0.6
4/23/2008	-	-	-	-	-	-	-	-	-	0.5
5/19/2008	-	-	-	-	-	-	-	-	-	0.5
6/16/2008	-	-	-	-	-	-	-	-	-	0.5
7/21/2008	-	-	-	-	-	-	-	-	-	ND
9/15/2008	-	-	-	-	-	-	-	-	-	0.5
1/19/2009	-	-	-	-	-	-	-	-	-	0.2
2/23/2009	-	-	-	-	-	-	-	-	-	ND
3/16/2009	-	-	-	-	-	-	-	-	-	ND
4/20/2009	-	-	-	-	-	-	-	-	-	ND
5/18/2009	-	-	-	-	-	-	-	-	-	ND
6/2/2009	830	470	54.0	11.0	92.0	1.6	100.0	54.0	230.0	ND
6/8/2009	830	410	57.0	10.0	89.0	1.6	110.0	54.0	230.0	ND
6/15/2009	-	-	-	-	-	-	-	-	-	ND
7/7/2009	870	490	51.0	9.8	87.0	1.5	110.0	56.0	220.0	-
7/20/2009	830	460	54.0	10.0	90.0	1.7	110.0	52.0	220.0	ND
8/3/2009	820	480	49.0	9.4	82.0	1.4	120.0	49.0	220.0	ND
8/25/2009	-	-	-	-	-	-	-	-	-	0.3
9/8/2009	800	460	55.0	11.0	97.0	1.7	120.0	52.0	220.0	ND
9/21/2009	-	-	-	-	-	-	-	-	-	0.2
10/5/2009	780	470	55.0	11.0	97.0	1.8	110.0	53.0	220.0	ND
10/19/2009	-	-	-	-	-	-	-	-	-	ND
11/2/2009	790	470	55.0	11.0	91.0	1.7	110.0	53.0	220.0	ND
11/16/2009	-	-	-	-	-	-	-	-	-	ND
12/7/2009	810	480	56.0	11.0	94.0	1.8	110.0	52.0	220.0	ND
12/21/2009	-	-	-	-	-	-	-	-	-	ND
1/4/2010	810	470	57.0	11.0	91.0	1.7	110.0	52.0	220.0	ND
1/18/2010	-	-	-	-	-	-	-	-	-	ND
2/1/2010	860	460	59.0	13.0	87.0	1.7	110.0	54.0	240.0	0.3
2/17/2010	-	-	-	-	-	-	-	-	-	0.2
3/1/2010	810	460	56.0	11.0	88.0	1.7	110.0	55.0	220.0	ND
3/15/2010	-	-	-	-	-	-	-	-	-	ND
4/7/2010	820	450	56.0	11.0	92.0	1.5	110.0	52.0	220.0	ND
4/19/2010	-	-	-	-	-	-	-	-	-	ND
5/3/2010	810	450	57.0	11.0	92.0	1.5	110.0	52.0	220.0	ND
5/17/2010	-	-	-	-	-	-	-	-	-	0.2
6/1/2010	820	520	52.0	11.0	90.0	1.9	100.0	50.0	220.0	ND
6/21/2010	-	-	-	-	-	-	-	-	-	ND
7/19/2010	-	-	-	-	-	-	-	-	-	ND
8/2/2010	830	470	52.0	10.0	88.0	1.7	100.0	47.0	220.0	ND
8/16/2010	-	-	-	-	-	-	-	-	-	ND
11/17/2010	830	510	51.0	20.0	78.0	3.6	94.0	160.0	120.0	ND
2/1/2011	860	480	59.0	12.0	95.0	1.7	110.0	54.0	220.0	ND
4/4/2011	800	460	53.0	11.0	93.0	1.6	110.0	52.0	210.0	ND
4/18/2011	-	-	-	-	-	-	-	-	-	ND
6/21/2011	-	-	-	-	-	-	-	-	-	ND
7/18/2011	-	-	-	-	-	-	-	-	-	ND
8/16/2011	-	-	-	-	-	-	-	-	-	ND
9/19/2011	-	-	-	-	-	-	-	-	-	ND
10/3/2011	770	470	55.0	11.0	97.0	1.9	110.0	54.0	210.0	ND
10/17/2011	-	-	-	-	-	-	-	-	-	ND
11/2/2011	820	440	55.0	11.0	92.0	1.8	110.0	54.0	200.0	ND
11/15/2011	-	-	-	-	-	-	-	-	-	0.2
12/6/2011	820	510	52.0	10.0	95.0	1.6	120.0	55.0	200.0	0.2
12/19/2011	-	-	-	-	-	-	-	-	-	0.2
12/28/2011	820	440	53.0	11.0	93.0	1.8	110.0	54.0	200.0	ND
1/4/2012	810	480	53.0	10.0	94.0	1.7	110.0	57.0	200.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
1/16/2012	-	-	-	-	-	-	-	-	-	ND
2/1/2012	830	510	57.0	11.0	93.0	2.1	120.0	58.0	220.0	ND
2/6/2012	-	-	-	-	-	-	-	-	-	ND
2/15/2012	810	450	52.0	10.0	88.0	1.7	120.0	55.0	210.0	ND
3/1/2012	760	460	62.0	13.0	87.0	1.8	120.0	57.0	230.0	0.2
3/19/2012	-	-	-	-	-	-	-	-	-	ND
4/16/2012	-	-	-	-	-	-	-	-	-	0.2
4/17/2012	-	-	-	-	-	-	-	-	-	0.3
5/2/2012	800	460	52.0	11.0	96.0	1.8	120.0	61.0	210.0	ND
5/14/2012	-	-	-	-	-	-	-	-	-	ND
6/4/2012	820	460	50.0	10.0	92.0	1.8	88.0	110.0	200.0	0.3
6/19/2012	-	-	-	-	-	-	-	-	-	ND
7/2/2012	830	510	54.0	11.0	93.0	1.7	120.0	55.0	210.0	0.2
7/17/2012	-	-	-	-	-	-	-	-	-	ND
7/25/2012	-	-	-	-	-	-	-	-	-	ND
8/1/2012	830	470	56.0	11.0	98.0	1.7	110.0	54.0	210.0	ND
8/13/2012	-	-	-	-	-	-	-	-	-	ND
9/10/2012	830	440	52.0	10.0	96.0	1.9	110.0	54.0	210.0	ND
9/17/2012	-	-	-	-	-	-	-	-	-	ND
10/1/2012	850	480	52.0	10.0	94.0	1.6	110.0	53.0	210.0	ND
10/15/2012	-	-	-	-	-	-	-	-	-	ND
11/5/2012	830	450	57.0	12.0	94.0	1.7	120.0	56.0	220.0	ND
11/19/2012	-	-	-	-	-	-	-	-	-	ND
11/27/2012	-	460	-	-	-	-	-	-	-	-
12/4/2012	870	480	61.0	12.0	94.0	1.5	120.0	61.0	230.0	0.2
12/17/2012	-	-	-	-	-	-	-	-	-	0.2
1/7/2013	860	510	63.0	13.0	98.0	1.7	110.0	58.0	220.0	ND
1/21/2013	-	-	-	-	-	-	-	-	-	ND
2/5/2013	860	490	60.0	12.0	92.0	2.1	120.0	61.0	230.0	ND
2/19/2013	-	-	-	-	-	-	-	-	-	ND
3/4/2013	850	520	63.0	12.0	96.0	1.6	120.0	61.0	230.0	ND
3/18/2013	-	-	-	-	-	-	-	-	-	ND
4/16/2013	-	-	-	-	-	-	-	-	-	ND
5/6/2013	870	470	61.0	13.0	90.0	1.6	120.0	60.0	230.0	ND
5/20/2013	-	-	-	-	-	-	-	-	-	ND
6/4/2013	990	470	63.0	12.0	98.0	1.8	120.0	61.0	230.0	ND
6/17/2013	-	-	-	-	-	-	-	-	-	ND
7/1/2013	870	470	64.0	13.0	98.0	1.7	110.0	58.0	230.0	ND
7/15/2013	-	-	-	-	-	-	-	-	-	ND
8/1/2013	880	510	61.0	12.0	98.0	1.6	120.0	62.0	230.0	0.2
8/19/2013	-	-	-	-	-	-	-	-	-	ND
9/4/2013	850	480	61.0	12.0	94.0	1.4	120.0	58.0	230.0	ND
9/16/2013	-	-	-	-	-	-	-	-	-	ND
10/1/2013	860	470	60.0	12.0	94.0	1.6	110.0	59.0	220.0	ND
10/14/2013	-	-	-	-	-	-	-	-	-	ND
11/4/2013	860	480	58.0	11.0	95.0	1.7	130.0	61.0	230.0	ND
11/18/2013	-	-	-	-	-	-	-	-	-	0.2
12/2/2013	880	490	65.0	13.0	99.0	1.8	120.0	60.0	230.0	0.3
12/16/2013	-	-	-	-	-	-	-	-	-	ND
1/7/2014	860	450	62.0	12.0	98.0	1.7	110.0	55.0	220.0	ND
1/21/2014	-	-	-	-	-	-	-	-	-	ND
2/10/2014	800	470	65.0	13.0	100.0	1.7	120.0	62.0	230.0	0.2
2/18/2014	-	-	-	-	-	-	-	-	-	0.3
3/17/2014	-	-	-	-	-	-	-	-	-	0.2
4/1/2014	820	480	59.0	11.0	99.0	1.6	120.0	64.0	230.0	ND
4/14/2014	-	-	-	-	-	-	-	-	-	ND
6/9/2014	-	-	-	-	-	-	-	-	-	ND
6/16/2014	880	490	65.0	13.0	100.0	1.7	120.0	60.0	240.0	0.3
7/7/2014	860	500	64.0	13.0	98.0	1.6	120.0	59.0	230.0	0.3
7/14/2014	-	-	-	-	-	-	-	-	-	ND
8/4/2014	890	-	64.0	13.0	100.0	1.7	120.0	61.0	230.0	0.3
8/18/2014	-	-	-	-	-	-	-	-	-	0.4
11/3/2014	-	-	-	-	-	-	-	-	-	ND
11/10/2014	-	-	-	-	-	-	-	-	-	ND
3/3/2015	960	520	67.0	13.0	100.0	1.9	120.0	63.0	230.0	ND
3/10/2015	-	-	-	-	-	-	-	-	-	ND
4/14/2015	-	-	-	-	-	-	-	-	-	ND
7/13/2015	-	-	-	-	-	-	-	-	-	ND
7/20/2015	-	-	-	-	-	-	-	-	-	ND
8/10/2015	880	540	63.0	13.0	94.0	1.6	130.0	64.0	240.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-3

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/13/2015	880	440	-	-	-	-	120.0	62.0	230.0	ND
11/10/2015	890	520	69.0	14.0	100.0	1.7	130.0	68.0	230.0	ND
12/8/2015	880	500	64.0	13.0	95.0	1.6	120.0	60.0	240.0	ND
1/21/2016	900	490	66.0	13.0	95.0	1.7	120.0	62.0	230.0	0.2
4/12/2016	930	520	65.0	13.0	99.0	1.5	130.0	64.0	230.0	ND
5/10/2016	870	530	65.0	13.0	100.0	1.5	130.0	66.0	230.0	0.2
8/8/2016	940	510	67.0	13.0	98.0	1.6	120.0	63.0	230.0	0.2
South Well										
9/7/1990	690	405	62.0	17.0	68.0	2.0	83.0	56.0	229.0	0.9
10/4/1991	-	-	-	-	-	-	-	-	-	0.5
11/1/1991	-	-	-	-	-	-	-	-	-	0.7
11/26/1991	-	-	-	-	-	-	-	-	-	0.5
5/15/1992	-	-	-	-	-	-	-	-	-	ND
10/1/1993	-	-	-	-	-	-	-	-	-	0.5
9/28/1994	-	-	-	-	-	-	-	-	-	0.2
12/21/1994	-	-	-	-	-	-	-	-	-	0.7
3/15/1995	-	-	-	-	-	-	-	-	-	0.5
6/7/1995	-	-	-	-	-	-	-	-	-	0.5
9/27/1995	-	-	-	-	-	-	-	-	-	0.5
12/20/1995	-	-	-	-	-	-	-	-	-	0.7
3/13/1996	-	-	-	-	-	-	-	-	-	0.5
6/15/1996	-	-	-	-	-	-	-	-	-	0.7
9/25/1996	-	-	-	-	-	-	-	-	-	0.7
12/18/1996	-	-	-	-	-	-	-	-	-	0.7
4/9/1997	-	-	-	-	-	-	-	-	-	0.5
6/4/1997	-	-	-	-	-	-	-	-	-	0.5
3/10/1998	-	-	-	-	-	-	-	-	-	0.5
3/11/1998	-	-	-	-	-	-	-	-	-	ND
4/8/1998	820	500	73.0	18.0	67.0	2.0	92.0	73.0	250.0	0.7
6/3/1998	-	-	-	-	-	-	-	-	-	0.7
10/1/1998	-	-	-	-	-	-	-	-	-	0.7
12/16/1998	-	-	-	-	-	-	-	-	-	0.5
6/9/1999	-	-	-	-	-	-	-	-	-	0.5
9/22/1999	-	-	-	-	-	-	-	-	-	ND
12/15/1999	-	-	-	-	-	-	-	-	-	ND
2/9/2000	810	460	55.0	14.0	84.0	1.0	99.0	63.0	210.0	ND
5/3/2000	-	-	-	-	-	-	-	-	-	ND
8/4/2000	780	440	47.0	9.0	100.0	ND	99.0	48.0	210.0	ND
8/23/2000	-	-	-	-	-	-	-	-	-	ND
10/24/2001	-	-	-	-	-	-	-	-	-	ND
3/20/2002	-	-	-	-	-	-	-	-	-	0.9
7/11/2002	-	460	-	-	-	-	-	-	180.0	-
10/3/2003	-	460	59.0	-	-	-	-	-	207.0	-
4/21/2004	-	-	-	-	-	-	-	-	-	ND
1/27/2005	-	610	110.0	28.0	-	-	-	-	300.0	-
3/30/2005	-	-	-	-	-	-	-	-	-	1.1
1/26/2006	800	440	42.0	9.1	110.0	1.2	120.0	65.0	-	0.3
4/12/2006	-	-	-	-	-	-	-	-	-	1.4
5/10/2006	-	-	-	-	-	-	-	-	-	0.4
6/14/2006	-	-	-	-	-	-	-	-	-	0.3
7/12/2006	-	-	-	-	-	-	-	-	-	ND
8/9/2006	-	-	-	-	-	-	-	-	-	0.3
9/13/2006	-	-	-	-	-	-	-	-	-	0.3
10/11/2006	-	-	-	-	-	-	-	-	-	0.3
11/8/2006	-	-	-	-	-	-	-	-	-	0.3
12/13/2006	-	-	-	-	-	-	-	-	-	0.3
1/10/2007	-	-	-	-	-	-	-	-	-	0.3
2/13/2007	-	-	-	-	-	-	-	-	-	1.2
3/14/2007	-	-	-	-	-	-	-	-	-	0.3
4/11/2007	-	-	-	-	-	-	-	-	-	ND
5/9/2007	-	-	-	-	-	-	-	-	-	ND
6/13/2007	-	-	-	-	-	-	-	-	-	0.3
7/11/2007	-	-	-	-	-	-	-	-	-	1.1
8/15/2007	800	480	40.0	8.5	100.0	ND	110.0	61.0	200.0	0.2
9/12/2007	-	-	-	-	-	-	-	-	-	1.3
11/14/2007	-	-	-	-	-	-	-	-	-	0.3
12/4/2007	-	-	-	-	-	-	-	-	-	0.3
1/24/2008	-	-	-	-	-	-	-	-	-	1.0
3/26/2008	-	-	-	-	-	-	-	-	-	0.9

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-3

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Western Municipal Water District
Murrieta Division

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/23/2008	-	-	-	-	-	-	-	-	-	0.9
6/9/2008	-	-	-	-	-	-	-	-	-	0.9
7/14/2008	-	-	-	-	-	-	-	-	-	1.2
9/8/2008	-	-	-	-	-	-	-	-	-	1.1
1/19/2009	-	-	-	-	-	-	-	-	-	1.5
11/13/2009	1,300	820	120.0	34.0	110.0	1.8	200.0	140.0	320.0	-
11/17/2009	-	-	-	-	-	-	-	-	-	1.3
11/9/2011	-	-	-	-	-	-	-	-	-	0.4
1/26/2012	-	-	-	-	-	-	-	-	-	0.3

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
No. 101										
6/1/1988	810	495	76.0	15.0	79.0	8.0	116.0	16.0	314.0	-
8/5/1988	-	-	-	-	-	-	-	-	-	ND
5/23/1990	630	365	30.0	6.0	91.0	2.0	101.0	35.0	107.0	0.7
8/4/1993	860	465	76.0	14.0	78.0	2.0	120.0	22.0	275.0	ND
8/9/1996	820	480	69.0	14.0	83.0	2.0	110.0	15.0	310.0	ND
10/16/1997	-	-	-	-	-	-	-	-	-	ND
8/11/1999	840	510	70.0	14.0	85.0	2.0	110.0	17.0	300.0	ND
6/25/2002	-	-	-	-	-	-	-	-	-	ND
8/14/2002	870	500	66.0	14.0	85.0	2.5	120.0	15.0	250.0	ND
6/11/2003	-	-	-	-	-	-	-	-	-	ND
6/15/2004	-	-	-	-	-	-	-	-	-	ND
6/14/2005	-	-	-	-	-	-	-	-	-	ND
8/9/2005	880	440	75.0	15.0	87.0	2.5	140.0	22.0	300.0	ND
6/7/2006	-	-	-	-	-	-	-	-	-	ND
6/1/2007	-	-	-	-	-	-	-	-	-	ND
6/3/2008	-	-	-	-	-	-	-	-	-	ND
8/11/2008	1,000	550	91.0	18.0	110.0	2.9	150.0	36.0	300.0	ND
9/9/2008	-	620	-	-	-	-	-	-	-	-
1/8/2009	-	840	-	-	-	-	-	-	-	-
6/25/2009	-	810	-	-	-	-	-	-	-	ND
3/24/2010	-	620	-	-	-	-	-	-	-	-
6/2/2010	-	670	-	-	-	-	-	-	-	ND
9/1/2011	-	620	-	-	-	-	-	-	-	-
12/9/2011	-	610	-	-	-	-	-	-	-	-
3/7/2012	-	650	-	-	-	-	-	-	-	-
6/12/2012	-	650	-	-	-	-	-	-	-	ND
9/13/2012	-	650	-	-	-	-	-	-	-	-
12/7/2012	-	690	-	-	-	-	-	-	-	-
3/6/2013	-	640	-	-	-	-	-	-	-	-
6/7/2013	-	640	-	-	-	-	-	-	-	ND
9/11/2013	1,100	700	95.0	19.0	110.0	2.8	180.0	43.0	310.0	ND
12/12/2013	-	690	-	-	-	-	-	-	-	-
3/14/2014	-	660	-	-	-	-	-	-	-	-
6/10/2014	1,300	710	93.0	18.0	120.0	3.0	200.0	49.0	320.0	-
6/19/2014	-	-	-	-	-	-	-	-	-	ND
9/17/2014	-	680	-	-	-	-	-	-	-	-
No. 102										
1/4/1989	695	370	9.0	2.0	134.0	1.0	101.0	25.0	195.0	ND
1/15/1992	930	615	38.0	4.0	160.0	3.0	160.0	55.0	250.0	ND
5/17/1995	850	475	21.0	1.0	144.0	1.0	120.0	130.0	98.0	ND
6/20/1995	1,190	700	26.0	2.0	207.0	2.0	150.0	220.0	131.0	ND
6/9/1997	-	-	-	-	-	-	-	-	-	ND
2/13/2019	950	550	37.0	1.5	160.0	1.2	140.0	150.0	110.0	ND
8/15/2019	940	560	48.0	5.8	140.0	2.3	140.0	150.0	120.0	ND
1/21/2019	-	-	-	-	-	-	-	-	-	ND
No. 105										
7/6/1989	500	280	30.0	6.0	66.0	2.0	71.0	22.0	134.0	3.2
3/17/1993	480	310	17.0	2.0	80.0	2.0	67.0	22.0	110.0	3.2
No. 106										
6/29/1988	920	485	38.0	5.0	143.0	3.0	182.0	66.0	70.0	3.6
5/13/1992	880	515	35.0	4.0	142.0	2.0	180.0	72.0	110.0	3.8
5/16/1995	870	495	32.0	3.0	138.0	2.0	160.0	57.0	116.0	3.2
7/7/1997	-	-	-	-	-	-	-	-	-	1.8
7/20/1998	-	-	-	-	-	-	-	-	-	2.0
7/20/1999	-	-	-	-	-	-	-	-	-	2.0
7/6/2000	-	-	-	-	-	-	-	-	-	1.8
5/1/2001	490	300	7.0	ND	96.0	ND	70.0	23.0	100.0	1.8
7/10/2001	-	-	-	-	-	-	-	-	-	2.7
7/3/2002	-	-	-	-	-	-	-	-	-	1.8
7/7/2003	-	-	-	-	-	-	-	-	-	1.5
5/11/2004	530	310	9.0	ND	93.0	1.0	80.0	25.0	88.0	1.8
7/13/2004	-	-	-	-	-	-	-	-	-	1.8
7/7/2005	-	-	-	-	-	-	-	-	-	1.5
7/19/2006	-	-	-	-	-	-	-	-	-	1.4
5/2/2007	550	290	8.8	ND	91.0	ND	84.0	26.0	85.0	0.8
7/3/2007	-	-	-	-	-	-	-	-	-	1.4

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/7/2008	-	370	-	-	-	-	-	-	-	2.7
1/13/2009	-	440	-	-	-	-	-	-	-	-
4/16/2009	-	310	-	-	-	-	-	-	-	-
7/1/2009	-	340	-	-	-	-	-	-	-	1.5
3/18/2010	-	440	-	-	-	-	-	-	-	-
5/6/2010	720	410	23.0	1.6	120.0	1.5	130.0	57.0	100.0	2.7
6/2/2010	-	390	-	-	-	-	-	-	-	-
7/13/2010	-	-	-	-	-	-	-	-	-	0.5
9/1/2010	-	340	-	-	-	-	-	-	-	-
12/9/2010	-	410	-	-	-	-	-	-	-	-
4/15/2011	-	400	-	-	-	-	-	-	-	-
7/6/2011	-	300	-	-	-	-	-	-	-	1.4
10/4/2011	-	320	-	-	-	-	-	-	-	-
1/31/2012	-	430	-	-	-	-	-	-	-	-
4/9/2012	-	430	-	-	-	-	-	-	-	-
10/2/2012	-	380	-	-	-	-	-	-	-	-
1/17/2013	-	440	-	-	-	-	-	-	-	-
4/4/2013	-	360	-	-	-	-	-	-	-	-
5/1/2013	730	420	22.0	1.4	120.0	1.4	120.0	56.0	100.0	2.2
7/18/2013	-	400	-	-	-	-	-	-	-	2.5
10/1/2013	-	380	-	-	-	-	-	-	-	-
1/7/2014	-	360	-	-	-	-	-	-	-	-
4/7/2014	-	400	-	-	-	-	-	-	-	-
7/2/2014	-	320	-	-	-	-	-	-	-	1.3
10/1/2014	-	310	-	-	-	-	-	-	-	-
1/21/2015	-	640	-	-	-	-	-	-	-	-
4/22/2015	-	410	-	-	-	-	-	-	-	-
7/28/2015	-	390	-	-	-	-	-	-	-	2.3
10/12/2015	-	420	-	-	-	-	-	-	-	-
7/21/2016	-	440	-	-	-	-	-	-	-	2.4
7/25/2016	760	410	25.0	ND	120.0	1.6	120.0	61.0	100.0	2.4
10/11/2016	-	430	-	-	-	-	-	-	-	-
1/4/2017	-	400	-	-	-	-	-	-	-	-
4/3/2017	-	430	-	-	-	-	-	-	-	-
11/29/2017	-	-	-	-	-	-	-	-	-	2.5
5/24/2018	-	460	-	-	-	-	-	-	-	-
7/2/2018	-	460	-	-	-	-	-	-	-	2.7
4/2/2019	-	460	-	-	-	-	-	-	-	-
5/7/2019	830	470	32.0	2.2	130.0	1.8	140.0	80.0	96.0	2.6
7/1/2019	-	450	-	-	-	-	-	-	-	2.5
10/26/2018	-	440	-	-	-	-	-	-	-	-
1/22/2019	-	450	-	-	-	-	-	-	-	-
No. 107										
4/11/1988	490	365	19.0	4.0	73.0	2.0	69.0	22.0	116.0	3.4
5/29/1991	950	535	63.0	15.0	104.0	3.0	130.0	120.0	171.0	2.5
No. 108										
5/25/1988	780	455	51.0	11.0	96.0	2.0	120.0	68.0	153.0	3.2
5/29/1991	930	500	59.0	14.0	104.0	3.0	130.0	110.0	153.0	2.3
5/13/1994	640	395	23.0	5.0	100.0	2.0	120.0	51.0	104.0	1.6
5/16/1995	-	-	-	-	-	-	-	-	-	1.1
5/13/1997	540	300	7.0	ND	110.0	ND	110.0	15.0	85.0	0.9
5/5/1999	-	-	-	-	-	-	-	-	-	1.8
5/16/2000	630	350	7.0	ND	110.0	ND	130.0	12.0	65.0	0.7
5/2/2001	-	-	-	-	-	-	-	-	-	0.5
11/19/2002	-	-	-	-	-	-	-	-	-	0.5
4/14/2005	-	-	-	-	-	-	-	-	-	0.5
4/18/2006	-	-	-	-	-	-	-	-	-	0.2
5/12/2006	750	360	8.2	ND	140.0	ND	190.0	7.9	50.0	0.2
2/13/2008	-	-	-	-	-	-	-	-	-	0.3
8/6/2008	-	400	-	-	-	-	-	-	-	-
2/5/2009	-	340	-	-	-	-	-	-	-	0.5
5/8/2009	730	380	7.2	ND	130.0	ND	170.0	9.4	60.0	ND
8/5/2009	-	370	-	-	-	-	-	-	-	-
2/3/2010	-	-	-	-	-	-	-	-	-	0.7
5/6/2010	-	380	-	-	-	-	-	-	-	-
8/13/2010	-	350	-	-	-	-	-	-	-	-
11/3/2010	-	380	-	-	-	-	-	-	-	-
2/2/2011	-	350	-	-	-	-	-	-	-	0.5

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/5/2011	-	380	-	-	-	-	-	-	-	-
8/2/2011	-	400	-	-	-	-	-	-	-	-
11/1/2011	-	350	-	-	-	-	-	-	-	-
2/8/2012	-	350	-	-	-	-	-	-	-	ND
5/2/2012	700	380	7.2	ND	130.0	1.2	180.0	10.0	63.0	0.5
11/6/2012	-	350	-	-	-	-	-	-	-	-
2/7/2013	-	380	-	-	-	-	-	-	-	0.5
5/1/2013	-	350	-	-	-	-	-	-	-	-
8/13/2013	-	400	-	-	-	-	-	-	-	-
10/23/2013	-	390	-	-	-	-	-	-	-	-
10/31/2013	-	440	-	-	-	-	-	-	-	-
11/12/2013	-	340	-	-	-	-	-	-	-	-
2/4/2014	-	360	-	-	-	-	-	-	-	0.5
5/1/2014	-	480	-	-	-	-	-	-	-	-
8/5/2014	-	380	-	-	-	-	-	-	-	-
11/5/2014	-	400	-	-	-	-	-	-	-	-
2/6/2015	-	460	-	-	-	-	-	-	-	0.5
5/14/2015	760	410	7.7	ND	140.0	1.0	180.0	10.0	71.0	0.4
8/5/2015	-	390	-	-	-	-	-	-	-	-
11/5/2015	-	360	-	-	-	-	-	-	-	-
2/5/2016	-	400	-	-	-	-	-	-	-	0.5
5/12/2016	-	390	-	-	-	-	-	-	-	-
8/2/2016	-	420	-	-	-	-	-	-	-	-
11/8/2016	-	410	-	-	-	-	-	-	-	-
2/3/2017	-	410	-	-	-	-	-	-	-	0.4
5/3/2017	-	420	-	-	-	-	-	-	-	-
8/9/2017	-	400	-	-	-	-	-	-	-	-
11/2/2017	-	400	-	-	-	-	-	-	-	-
2/8/2018	-	400	-	-	-	-	-	-	-	0.5
5/18/2018	770	410	7.9	ND	140.0	1.2	190.0	11.0	61.0	0.5
8/16/2018	-	420	-	-	-	-	-	-	-	-
5/7/2019	-	410	-	-	-	-	-	-	-	-
2/19/2019	-	420	-	-	-	-	-	-	-	0.5
11/15/2018	-	410	-	-	-	-	-	-	-	-
8/20/2019	-	430	-	-	-	-	-	-	-	-
No. 109										
6/1/1988	1,400	920	136.0	35.0	120.0	4.0	100.0	300.0	296.0	-
8/5/1988	-	-	-	-	-	-	-	-	-	2.3
6/12/1991	1,330	800	110.0	26.0	120.0	5.0	120.0	270.0	275.0	2.0
6/22/1994	1,370	1,010	138.0	32.0	124.0	5.0	140.0	320.0	287.0	1.6
6/6/1995	-	-	-	-	-	-	-	-	-	1.8
6/13/1997	1,440	1,010	130.0	31.0	140.0	4.0	140.0	330.0	280.0	2.3
7/16/1997	-	-	-	-	-	-	-	-	-	2.2
4/14/1999	-	-	-	-	-	-	-	-	-	2.7
4/11/2000	-	-	-	-	-	-	-	-	-	2.9
6/21/2000	1,330	870	120.0	28.0	130.0	4.0	120.0	280.0	270.0	0.7
4/10/2001	-	-	-	-	-	-	-	-	-	2.9
6/11/2003	1,400	970	140.0	32.0	130.0	4.0	130.0	340.0	290.0	2.7
6/19/2003	1,400	970	150.0	32.0	120.0	4.2	130.0	340.0	290.0	2.7
1/7/2004	-	-	-	-	-	-	-	-	-	2.9
1/11/2005	-	-	-	-	-	-	-	-	-	2.9
1/4/2006	-	-	-	-	-	-	-	-	-	2.7
7/12/2006	1,300	930	130.0	30.0	130.0	4.8	130.0	280.0	280.0	2.7
1/10/2007	-	-	-	-	-	-	-	-	-	2.9
1/4/2008	-	-	-	-	-	-	-	-	-	2.9
7/7/2008	-	810	-	-	-	-	-	-	-	-
1/13/2009	-	860	-	-	-	-	-	-	-	3.6
4/2/2009	-	810	-	-	-	-	-	-	-	-
7/6/2009	-	770	-	-	-	-	-	-	-	-
1/5/2010	-	-	-	-	-	-	-	-	-	3.2
4/7/2010	-	930	-	-	-	-	-	-	-	-
7/1/2010	-	1,000	-	-	-	-	-	-	-	-
10/6/2010	-	830	-	-	-	-	-	-	-	-
1/12/2011	-	920	-	-	-	-	-	-	-	3.2
1/25/2012	-	880	-	-	-	-	-	-	-	2.7
4/3/2012	-	910	-	-	-	-	-	-	-	-
10/2/2012	-	880	-	-	-	-	-	-	-	-
1/17/2013	-	950	-	-	-	-	-	-	-	2.7
4/3/2013	-	830	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/2/2013	-	910	-	-	-	-	-	-	-	-
10/3/2013	-	770	-	-	-	-	-	-	-	-
1/9/2014	-	710	-	-	-	-	-	-	-	3.2
4/9/2014	-	800	-	-	-	-	-	-	-	-
7/9/2014	-	770	-	-	-	-	-	-	-	-
10/1/2014	-	750	-	-	-	-	-	-	-	-
1/8/2015	-	900	-	-	-	-	-	-	-	2.9
4/8/2015	-	740	-	-	-	-	-	-	-	-
7/2/2015	-	740	-	-	-	-	-	-	-	-
7/7/2015	1,100	670	110.0	23.0	110.0	3.6	110.0	180.0	270.0	3.2
10/6/2015	-	770	-	-	-	-	-	-	-	-
1/12/2016	-	910	-	-	-	-	-	-	-	2.8
4/5/2016	-	780	-	-	-	-	-	-	-	-
7/13/2016	-	800	-	-	-	-	-	-	-	-
10/4/2016	-	750	-	-	-	-	-	-	-	-
10/11/2016	1,400	890	130.0	31.0	130.0	4.3	130.0	240.0	310.0	2.7
1/4/2017	-	710	-	-	-	-	-	-	-	3.8
4/11/2017	-	830	-	-	-	-	-	-	-	-
7/5/2017	-	710	-	-	-	-	-	-	-	-
10/4/2017	-	760	-	-	-	-	-	-	-	-
1/5/2018	-	960	-	-	-	-	-	-	-	2.6
4/11/2018	-	730	-	-	-	-	-	-	-	-
7/18/2018	1,100	700	98.0	18.0	100.0	3.5	120.0	170.0	230.0	4.1
10/11/2018	-	710	-	-	-	-	-	-	-	-
1/15/2019	-	890	-	-	-	-	-	-	-	3.0
4/3/2019	-	710	-	-	-	-	-	-	-	-
7/11/2019	-	680	-	-	-	-	-	-	-	-
No. 110										
3/31/1988	1,100	630	70.0	23.0	132.0	6.0	115.0	163.0	268.0	0.7
3/11/1993	1,010	610	60.0	21.0	124.0	5.0	110.0	200.0	201.0	0.7
4/27/1995	-	-	-	-	-	-	-	-	-	0.2
7/20/1999	-	-	-	-	-	-	-	-	-	ND
7/6/2000	-	-	-	-	-	-	-	-	-	0.5
7/10/2001	-	-	-	-	-	-	-	-	-	0.5
3/11/2002	850	500	58.0	20.0	81.0	5.0	74.0	190.0	160.0	ND
7/3/2002	-	-	-	-	-	-	-	-	-	ND
9/16/2003	-	-	-	-	-	-	-	-	-	0.5
9/1/2004	-	-	-	-	-	-	-	-	-	0.5
3/2/2005	810	510	56.0	21.0	79.0	4.9	76.0	170.0	150.0	ND
9/7/2005	-	-	-	-	-	-	-	-	-	0.4
9/6/2007	-	-	-	-	-	-	-	-	-	0.5
3/4/2008	980	560	59.0	21.0	95.0	4.6	110.0	160.0	190.0	0.6
1/20/2009	-	610	-	-	-	-	-	-	-	-
4/2/2009	-	550	-	-	-	-	-	-	-	-
7/9/2009	-	560	-	-	-	-	-	-	-	-
1/6/2010	-	560	-	-	-	-	-	-	-	-
4/7/2010	-	630	-	-	-	-	-	-	-	-
7/1/2010	-	730	-	-	-	-	-	-	-	-
9/1/2010	-	-	-	-	-	-	-	-	-	ND
10/7/2010	-	600	-	-	-	-	-	-	-	-
1/12/2011	-	520	-	-	-	-	-	-	-	-
4/5/2011	-	560	-	-	-	-	-	-	-	-
7/6/2011	-	530	-	-	-	-	-	-	-	-
9/2/2011	-	-	-	-	-	-	-	-	-	0.9
10/13/2011	-	470	-	-	-	-	-	-	-	-
2/16/2012	-	440	-	-	-	-	-	-	-	-
4/4/2012	-	400	-	-	-	-	-	-	-	-
9/5/2012	-	-	-	-	-	-	-	-	-	0.3
10/9/2012	-	380	-	-	-	-	-	-	-	-
1/9/2013	-	420	-	-	-	-	-	-	-	-
4/8/2013	-	420	-	-	-	-	-	-	-	-
7/9/2013	-	450	-	-	-	-	-	-	-	-
10/14/2015	970	610	70.0	26.0	89.0	4.6	91.0	210.0	160.0	ND
1/20/2016	1,300	810	100.0	36.0	120.0	6.5	180.0	200.0	280.0	0.5
4/14/2016	1,200	710	74.0	26.0	140.0	5.0	130.0	210.0	230.0	0.4
7/27/2016	1,100	690	64.0	24.0	120.0	4.8	99.0	230.0	180.0	0.3
3/23/2017	1,000	620	75.0	25.0	97.0	5.0	96.0	210.0	160.0	0.3
4/12/2017	960	610	73.0	25.0	98.0	5.1	98.0	220.0	140.0	0.2
7/13/2017	590	340	37.0	12.0	65.0	3.3	56.0	97.0	120.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
No. 113										
3/28/1988	700	400	41.0	12.0	87.0	2.0	11.0	20.0	192.0	4.1
3/21/1991	570	290	21.0	5.0	79.0	2.0	88.0	17.0	119.0	2.5
3/3/1994	700	410	46.0	13.0	86.0	2.0	120.0	25.0	189.0	4.3
4/27/1995	-	-	-	-	-	-	-	-	-	5.4
3/20/1997	880	500	53.0	15.0	96.0	2.0	140.0	33.0	200.0	5.0
7/20/1998	-	-	-	-	-	-	-	-	-	5.2
9/16/1998	-	-	-	-	-	-	-	-	-	5.0
2/25/1999	-	-	-	-	-	-	-	-	-	4.3
4/14/1999	-	-	-	-	-	-	-	-	-	3.8
6/3/1999	-	-	-	-	-	-	-	-	-	4.8
9/14/1999	-	-	-	-	-	-	-	-	-	5.0
10/21/1999	-	-	-	-	-	-	-	-	-	5.7
11/2/1999	-	-	-	-	-	-	-	-	-	5.0
12/14/1999	-	-	-	-	-	-	-	-	-	5.2
1/11/2000	-	-	-	-	-	-	-	-	-	4.1
3/7/2000	810	470	75.0	16.0	59.0	2.0	70.0	94.0	200.0	2.5
4/11/2000	-	-	-	-	-	-	-	-	-	5.2
5/3/2000	-	-	-	-	-	-	-	-	-	5.4
6/21/2000	-	-	-	-	-	-	-	-	-	5.2
9/13/2000	-	-	-	-	-	-	-	-	-	5.2
10/6/2000	-	-	-	-	-	-	-	-	-	4.8
2/14/2001	-	-	-	-	-	-	-	-	-	3.6
5/30/2001	-	-	-	-	-	-	-	-	-	5.2
6/12/2001	-	-	-	-	-	-	-	-	-	5.0
8/1/2001	-	-	-	-	-	-	-	-	-	5.0
11/13/2001	-	-	-	-	-	-	-	-	-	5.0
5/1/2002	-	-	-	-	-	-	-	-	-	4.3
8/6/2002	-	-	-	-	-	-	-	-	-	4.5
11/5/2002	-	-	-	-	-	-	-	-	-	4.8
2/7/2003	-	-	-	-	-	-	-	-	-	5.0
3/5/2003	1,000	610	65.0	19.0	110.0	2.5	160.0	41.0	260.0	5.9
8/5/2003	-	-	-	-	-	-	-	-	-	4.8
11/13/2003	-	-	-	-	-	-	-	-	-	5.4
2/10/2004	-	-	-	-	-	-	-	-	-	5.4
5/4/2004	-	-	-	-	-	-	-	-	-	5.2
8/10/2004	-	-	-	-	-	-	-	-	-	5.4
11/17/2004	-	-	-	-	-	-	-	-	-	5.7
2/9/2005	-	-	-	-	-	-	-	-	-	5.7
5/12/2005	-	-	-	-	-	-	-	-	-	5.2
11/2/2005	-	-	-	-	-	-	-	-	-	5.7
2/14/2006	-	-	-	-	-	-	-	-	-	5.4
3/8/2006	880	540	54.0	15.0	100.0	2.3	140.0	31.0	210.0	5.4
5/11/2006	-	-	-	-	-	-	-	-	-	5.4
8/3/2006	-	-	-	-	-	-	-	-	-	4.8
11/8/2006	-	-	-	-	-	-	-	-	-	5.2
2/7/2007	-	-	-	-	-	-	-	-	-	5.4
5/1/2007	-	-	-	-	-	-	-	-	-	5.2
8/7/2007	-	-	-	-	-	-	-	-	-	5.2
2/12/2008	-	-	-	-	-	-	-	-	-	5.0
5/6/2008	-	540	-	-	-	-	-	-	-	4.8
8/11/2008	-	530	-	-	-	-	-	-	-	4.8
11/6/2008	-	570	-	-	-	-	-	-	-	5.4
2/5/2009	-	530	-	-	-	-	-	-	-	4.8
3/3/2009	930	520	56.0	15.0	97.0	2.1	150.0	41.0	210.0	5.0
5/11/2009	-	-	-	-	-	-	-	-	-	4.3
8/4/2009	-	520	-	-	-	-	-	-	-	4.5
2/2/2010	-	510	-	-	-	-	-	-	-	5.0
5/7/2010	-	600	-	-	-	-	-	-	-	5.0
8/10/2010	-	540	-	-	-	-	-	-	-	5.0
11/3/2010	-	520	-	-	-	-	-	-	-	4.8
2/15/2011	-	550	-	-	-	-	-	-	-	4.5
5/4/2011	-	550	-	-	-	-	-	-	-	4.5
8/3/2011	-	540	-	-	-	-	-	-	-	4.5
11/2/2011	-	540	-	-	-	-	-	-	-	4.8
2/2/2012	-	580	-	-	-	-	-	-	-	4.8
5/3/2012	-	570	-	-	-	-	-	-	-	4.5
8/9/2012	-	-	-	-	-	-	-	-	-	4.5
11/2/2012	-	600	-	-	-	-	-	-	-	4.8

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
2/12/2013	-	550	-	-	-	-	-	-	-	5.0
5/14/2013	-	570	-	-	-	-	-	-	-	4.5
8/14/2013	-	540	-	-	-	-	-	-	-	4.5
11/6/2013	-	520	-	-	-	-	-	-	-	4.8
2/7/2014	-	480	-	-	-	-	-	-	-	4.5
4/21/2015	990	550	61.0	17.0	110.0	2.5	150.0	47.0	200.0	4.8
5/19/2015	-	580	-	-	-	-	-	-	-	5.0
8/4/2015	-	550	-	-	-	-	-	-	-	4.8
11/10/2015	-	560	-	-	-	-	-	-	-	4.8
2/17/2016	-	530	-	-	-	-	-	-	-	4.7
5/15/2016	-	540	-	-	-	-	-	-	-	4.5
8/2/2016	-	550	-	-	-	-	-	-	-	4.4
11/2/2016	-	560	-	-	-	-	-	-	-	4.9
2/14/2017	-	530	-	-	-	-	-	-	-	4.1
5/10/2017	-	560	-	-	-	-	-	-	-	5.0
8/16/2017	-	540	-	-	-	-	-	-	-	5.2
11/9/2017	-	550	-	-	-	-	-	-	-	4.7
2/15/2018	-	520	-	-	-	-	-	-	-	5.0
3/15/2018	990	560	65.0	18.0	110.0	2.6	160.0	49.0	180.0	5.1
5/22/2018	-	560	-	-	-	-	-	-	-	5.1
8/28/2018	-	560	-	-	-	-	-	-	-	5.2
2/12/2019	-	550	-	-	-	-	-	-	-	5.2
8/20/2019	-	550	-	-	-	-	-	-	-	5.3
11/7/2018	-	540	-	-	-	-	-	-	-	5.5
5/2/2019	-	560	-	-	-	-	-	-	-	5.5
No. 118										
8/8/1990	715	480	14.0	1.0	162.0	1.0	120.0	79.0	101.0	0.2
9/26/1990	-	-	-	-	-	-	-	-	-	0.2
9/10/1993	860	525	19.0	1.0	178.0	1.0	130.0	94.0	198.0	ND
6/20/1995	-	-	-	-	-	-	-	-	-	ND
9/16/1996	970	560	33.0	2.0	180.0	2.0	120.0	120.0	230.0	ND
7/23/1997	-	-	-	-	-	-	-	-	-	0.2
9/16/1998	-	-	-	-	-	-	-	-	-	0.5
11/2/1999	1,040	580	46.0	4.0	170.0	2.0	130.0	100.0	240.0	ND
9/20/2000	-	-	-	-	-	-	-	-	-	ND
8/18/2002	-	-	-	-	-	-	-	-	-	ND
11/8/2002	1,100	590	46.0	4.5	160.0	1.3	140.0	94.0	240.0	ND
9/23/2003	-	-	-	-	-	-	-	-	-	ND
12/30/2004	-	-	-	-	-	-	-	-	-	ND
1/25/2005	-	-	-	-	-	-	-	-	-	ND
9/7/2005	-	-	-	-	-	-	-	-	-	ND
11/3/2005	980	590	55.0	5.1	150.0	1.7	140.0	110.0	240.0	ND
9/5/2007	-	-	-	-	-	-	-	-	-	0.2
9/8/2008	-	670	-	-	-	-	-	-	-	ND
11/6/2008	1,100	640	71.0	150.0	150.0	1.9	150.0	140.0	250.0	ND
12/5/2008	-	660	-	-	-	-	-	-	-	-
3/3/2009	-	620	-	-	-	-	-	-	-	-
6/4/2009	-	610	-	-	-	-	-	-	-	-
3/3/2010	-	640	-	-	-	-	-	-	-	-
6/2/2010	-	630	-	-	-	-	-	-	-	-
9/2/2010	-	640	-	-	-	-	-	-	-	0.5
12/8/2010	-	640	-	-	-	-	-	-	-	-
3/2/2011	-	650	-	-	-	-	-	-	-	-
6/8/2011	-	640	-	-	-	-	-	-	-	-
9/2/2011	-	620	-	-	-	-	-	-	-	0.5
12/6/2011	-	610	-	-	-	-	-	-	-	-
6/12/2012	-	640	-	-	-	-	-	-	-	-
11/14/2012	1,100	680	70.0	7.2	150.0	2.0	140.0	130.0	250.0	0.2
12/5/2012	-	610	-	-	-	-	-	-	-	-
3/6/2013	-	610	-	-	-	-	-	-	-	-
9/17/2013	-	600	-	-	-	-	-	-	-	ND
12/10/2013	-	640	-	-	-	-	-	-	-	-
3/12/2014	-	600	-	-	-	-	-	-	-	-
6/5/2014	-	630	-	-	-	-	-	-	-	-
9/3/2014	-	620	-	-	-	-	-	-	-	ND
No. 119										
7/16/1996	450	280	44.0	9.0	35.0	ND	39.0	18.0	180.0	3.4
8/14/1997	-	-	-	-	-	-	-	-	-	2.7

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
12/24/1997	-	320	-	-	-	-	-	-	-	3.1
3/4/1998	-	380	-	-	-	-	-	-	-	3.3
6/4/1998	-	-	-	-	-	-	-	-	-	3.8
6/12/1998	-	400	-	-	-	-	-	-	-	-
9/16/1998	-	-	-	-	-	-	-	-	-	3.7
1/8/1999	-	430	-	-	-	-	-	-	-	-
4/13/1999	-	-	-	-	-	-	-	-	-	6.3
6/2/1999	-	560	-	-	-	-	-	-	-	4.8
7/27/1999	940	640	103.0	21.0	58.0	1.0	70.0	150.0	264.0	6.8
9/14/1999	-	-	-	-	-	-	-	-	-	5.0
10/26/1999	-	-	-	-	-	-	-	-	-	5.4
11/2/1999	-	-	-	-	-	-	-	-	-	5.0
12/14/1999	-	560	-	-	-	-	-	-	-	5.0
4/4/2000	-	-	-	-	-	-	-	-	-	4.5
12/14/2000	-	-	-	-	-	-	-	-	-	4.6
3/29/2001	-	-	-	-	-	-	-	-	-	4.5
6/20/2001	-	-	-	-	-	-	-	-	-	4.2
9/14/2001	-	-	-	-	-	-	-	-	-	4.2
9/28/2001	-	-	-	-	-	-	-	-	-	4.1
11/16/2001	-	-	-	-	-	-	-	-	-	3.6
5/23/2002	-	480	-	-	-	-	-	-	-	4.1
7/24/2002	770	490	81.0	15.0	49.0	1.1	51.0	90.0	240.0	4.3
11/8/2002	-	-	-	-	-	-	-	-	-	3.4
2/19/2003	-	-	-	-	-	-	-	-	-	3.8
2/10/2004	-	-	-	-	-	-	-	-	-	3.4
2/28/2005	-	-	-	-	-	-	-	-	-	2.3
7/6/2005	820	600	95.0	20.0	63.0	1.4	64.0	140.0	260.0	2.9
2/7/2006	-	-	-	-	-	-	-	-	-	3.4
2/7/2007	-	-	-	-	-	-	-	-	-	3.4
2/12/2008	-	-	-	-	-	-	-	-	-	3.4
5/14/2008	-	520	-	-	-	-	-	-	-	2.9
7/8/2008	810	520	88.0	17.0	57.0	1.4	66.0	120.0	250.0	3.2
8/11/2008	-	480	-	-	-	-	-	-	-	2.9
11/17/2008	-	520	-	-	-	-	-	-	-	3.6
2/5/2009	-	460	-	-	-	-	-	-	-	2.9
5/11/2009	-	560	-	-	-	-	-	-	-	2.7
8/4/2009	-	540	-	-	-	-	-	-	-	3.2
1/12/2010	-	580	-	-	-	-	-	-	-	3.4
4/9/2010	-	560	-	-	-	-	-	-	-	2.9
7/1/2010	-	620	-	-	-	-	-	-	-	3.2
10/7/2010	-	610	-	-	-	-	-	-	-	3.2
1/12/2011	-	480	-	-	-	-	-	-	-	2.9
4/12/2011	-	560	-	-	-	-	-	-	-	2.7
7/7/2011	840	560	85.0	18.0	60.0	1.9	84.0	120.0	250.0	3.6
10/13/2011	-	610	-	-	-	-	-	-	-	3.4
1/10/2012	-	520	-	-	-	-	-	-	-	3.2
4/3/2012	-	550	-	-	-	-	-	-	-	-
10/4/2012	-	550	-	-	-	-	-	-	-	3.4
1/16/2013	-	530	-	-	-	-	-	-	-	3.8
4/12/2013	-	540	-	-	-	-	-	-	-	4.1
7/3/2013	-	540	-	-	-	-	-	-	-	3.6
10/3/2013	-	500	-	-	-	-	-	-	-	3.8
1/28/2014	-	600	-	-	-	-	-	-	-	4.8
4/16/2014	-	540	-	-	-	-	-	-	-	4.8
7/10/2014	860	560	90.0	18.0	60.0	1.2	73.0	110.0	260.0	4.1
10/2/2014	-	600	-	-	-	-	-	-	-	4.1
1/20/2015	-	540	-	-	-	-	-	-	-	4.3
4/14/2015	-	710	-	-	-	-	-	-	-	3.8
7/7/2015	-	600	-	-	-	-	-	-	-	3.8
10/8/2015	-	550	-	-	-	-	-	-	-	4.5
1/12/2016	-	610	-	-	-	-	-	-	-	4.9
4/21/2016	-	620	-	-	-	-	-	-	-	5.1
7/13/2016	-	610	-	-	-	-	-	-	-	4.2
10/5/2016	-	590	-	-	-	-	-	-	-	4.2
1/26/2017	-	590	-	-	-	-	-	-	-	4.3
4/11/2017	-	620	-	-	-	-	-	-	-	4.9
7/11/2017	970	650	110.0	21.0	64.0	1.5	82.0	130.0	230.0	5.3
10/19/2017	-	670	-	-	-	-	-	-	-	5.5
1/17/2018	-	690	-	-	-	-	-	-	-	5.4
4/13/2018	-	730	-	-	-	-	-	-	-	5.6

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/11/2018	-	770	-	-	-	-	-	-	-	6.0
10/5/2018	-	780	-	-	-	-	-	-	-	6.1
1/8/2019	-	760	-	-	-	-	-	-	-	5.8
4/29/2019	-	760	-	-	-	-	-	-	-	5.7
7/24/2019	-	830	-	-	-	-	-	-	-	6.5
No. 120										
6/20/1990	570	330	6.0	1.0	116.0	1.0	82.0	31.0	113.0	2.5
6/10/1993	590	340	6.0	ND	122.0	1.0	85.0	35.0	104.0	2.7
7/19/1996	630	360	6.0	ND	120.0	1.0	88.0	42.0	120.0	3.2
6/16/1997	-	-	-	-	-	-	-	-	-	2.3
8/14/1997	-	-	-	-	-	-	-	-	-	2.0
6/2/1999	620	360	6.0	ND	122.0	ND	84.0	45.0	120.0	2.3
6/6/2000	-	-	-	-	-	-	-	-	-	2.5
6/13/2001	-	-	-	-	-	-	-	-	-	2.7
6/1/2002	670	370	8.1	ND	130.0	1.0	86.0	46.0	130.0	2.5
6/11/2003	-	-	-	-	-	-	-	-	-	2.7
6/22/2004	-	-	-	-	-	-	-	-	-	3.4
6/15/2005	720	410	11.0	ND	140.0	1.3	90.0	62.0	140.0	2.7
6/7/2006	-	-	-	-	-	-	-	-	-	2.5
6/1/2007	-	-	-	-	-	-	-	-	-	2.3
6/5/2008	690	400	11.0	ND	140.0	104.0	89.0	66.0	140.0	2.3
9/15/2008	-	350	-	-	-	-	-	-	-	-
8/21/2009	-	500	-	-	-	-	-	-	-	2.5
2/2/2010	-	440	-	-	-	-	-	-	-	-
5/5/2010	-	440	-	-	-	-	-	-	-	-
8/9/2010	-	430	-	-	-	-	-	-	-	2.5
11/3/2010	-	400	-	-	-	-	-	-	-	-
2/2/2011	-	440	-	-	-	-	-	-	-	-
5/4/2011	-	450	-	-	-	-	-	-	-	-
8/2/2011	-	420	-	-	-	-	-	-	-	2.3
11/3/2011	-	380	-	-	-	-	-	-	-	-
2/7/2012	-	430	-	-	-	-	-	-	-	-
5/3/2012	-	410	-	-	-	-	-	-	-	-
8/9/2012	-	400	-	-	-	-	-	-	-	2.3
11/1/2012	-	440	-	-	-	-	-	-	-	-
2/7/2013	-	810	-	-	-	-	-	-	-	-
5/2/2013	-	410	-	-	-	-	-	-	-	-
8/19/2013	-	460	-	-	-	-	-	-	-	2.7
11/7/2013	-	450	-	-	-	-	-	-	-	-
2/4/2014	-	430	-	-	-	-	-	-	-	-
5/6/2014	-	420	-	-	-	-	-	-	-	-
6/3/2014	820	600	22.0	1.6	150.0	1.7	98.0	100.0	150.0	3.6
8/8/2014	-	410	-	-	-	-	-	-	-	2.9
11/5/2014	-	460	-	-	-	-	-	-	-	-
2/4/2015	-	350	-	-	-	-	-	-	-	-
5/7/2015	-	480	-	-	-	-	-	-	-	-
8/6/2015	-	450	-	-	-	-	-	-	-	2.7
2/10/2016	-	520	-	-	-	-	-	-	-	-
5/10/2016	-	450	-	-	-	-	-	-	-	-
8/3/2016	-	540	-	-	-	-	-	-	-	2.8
11/8/2016	-	460	-	-	-	-	-	-	-	-
11/10/2016	-	440	-	-	-	-	-	-	-	-
2/2/2017	-	420	-	-	-	-	-	-	-	-
5/2/2017	-	430	-	-	-	-	-	-	-	-
6/7/2017	750	400	18.0	1.2	130.0	1.6	92.0	80.0	110.0	2.6
8/4/2017	-	440	-	-	-	-	-	-	-	2.7
11/8/2017	-	450	-	-	-	-	-	-	-	-
2/27/2018	-	520	-	-	-	-	-	-	-	-
5/22/2018	-	470	-	-	-	-	-	-	-	-
8/15/2018	-	470	-	-	-	-	-	-	-	2.7
8/14/2019	-	510	-	-	-	-	-	-	-	3.2
7/23/2019	-	530	-	-	-	-	-	-	-	-
No. 121										
10/27/1989	900	475	63.0	14.0	99.0	2.0	109.0	28.0	290.0	ND
5/19/1992	1,000	560	72.0	17.0	120.0	3.0	170.0	56.0	270.0	ND
7/18/1997	-	-	-	-	-	-	-	-	-	ND
7/24/1997	-	640	-	-	-	-	-	-	-	ND
8/20/1997	-	-	-	-	-	-	-	-	-	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
9/3/1997	-	-	-	-	-	-	-	-	-	ND
6/19/2002	-	-	-	-	-	-	-	-	-	ND
No. 122										
6/23/1997	-	-	-	-	-	-	-	-	-	1.4
7/25/1997	660	460	64.0	13.0	44.0	1.0	61.0	65.0	190.0	1.8
10/10/1997	-	-	-	-	-	-	-	-	-	2.0
12/23/1997	-	400	-	-	-	-	-	-	-	1.8
3/25/1998	-	450	-	-	-	-	-	-	-	2.2
6/3/1998	-	-	-	-	-	-	-	-	-	2.4
6/5/1998	-	460	-	-	-	-	-	-	-	-
9/17/1998	-	-	-	-	-	-	-	-	-	2.2
1/8/1999	-	450	-	-	-	-	-	-	-	-
4/13/1999	-	-	-	-	-	-	-	-	-	2.0
6/3/1999	-	470	-	-	-	-	-	-	-	2.1
9/21/1999	-	-	-	-	-	-	-	-	-	2.1
3/7/2000	-	-	-	-	-	-	-	-	-	3.6
4/4/2000	-	-	-	-	-	-	-	-	-	2.0
6/28/2000	780	470	79.0	16.0	62.0	1.0	73.0	100.0	210.0	2.5
12/13/2000	-	-	-	-	-	-	-	-	-	2.5
3/27/2001	-	-	-	-	-	-	-	-	-	2.5
4/18/2001	-	-	-	-	-	-	-	-	-	2.3
6/20/2001	-	-	-	-	-	-	-	-	-	2.4
9/13/2001	-	-	-	-	-	-	-	-	-	2.7
12/13/2001	-	550	-	-	-	-	-	-	-	-
5/14/2002	-	570	-	-	-	-	-	-	-	2.0
3/5/2003	-	-	-	-	-	-	-	-	-	2.3
3/16/2004	-	-	-	-	-	-	-	-	-	2.7
3/17/2005	-	-	-	-	-	-	-	-	-	2.0
3/21/2006	-	-	-	-	-	-	-	-	-	2.1
3/6/2007	-	-	-	-	-	-	-	-	-	2.2
3/3/2008	-	-	-	-	-	-	-	-	-	1.9
3/7/2008	-	620	-	-	-	-	-	-	-	-
10/8/2008	-	620	-	-	-	-	-	-	-	-
1/20/2009	-	680	-	-	-	-	-	-	-	-
3/10/2009	-	-	-	-	-	-	-	-	-	2.0
4/16/2009	-	660	-	-	-	-	-	-	-	-
7/14/2009	-	670	-	-	-	-	-	-	-	-
3/15/2010	-	640	-	-	-	-	-	-	-	2.3
3/10/2011	-	-	-	-	-	-	-	-	-	2.2
5/25/2011	-	670	-	-	-	-	-	-	-	-
8/4/2011	-	680	-	-	-	-	-	-	-	-
1/10/2012	-	680	-	-	-	-	-	-	-	-
3/6/2012	-	-	-	-	-	-	-	-	-	2.1
4/3/2012	-	730	-	-	-	-	-	-	-	-
8/7/2012	1,100	710	110.0	20.0	87.0	1.9	84.0	190.0	260.0	1.8
10/4/2012	-	680	-	-	-	-	-	-	-	-
1/17/2013	-	720	-	-	-	-	-	-	-	-
3/7/2013	-	-	-	-	-	-	-	-	-	1.9
4/17/2013	-	700	-	-	-	-	-	-	-	-
7/3/2013	-	740	-	-	-	-	-	-	-	-
10/3/2013	-	700	-	-	-	-	-	-	-	-
1/28/2014	-	730	-	-	-	-	-	-	-	-
3/13/2014	-	-	-	-	-	-	-	-	-	2.1
4/16/2014	-	680	-	-	-	-	-	-	-	-
7/10/2014	-	620	-	-	-	-	-	-	-	-
10/2/2014	-	730	-	-	-	-	-	-	-	-
1/13/2015	-	710	-	-	-	-	-	-	-	-
3/10/2015	-	-	-	-	-	-	-	-	-	2.0
4/14/2015	-	770	-	-	-	-	-	-	-	-
7/7/2015	-	690	-	-	-	-	-	-	-	-
8/7/2015	1,000	710	110.0	20.0	85.0	1.9	92.0	200.0	260.0	2.0
10/8/2015	-	720	-	-	-	-	-	-	-	-
1/12/2016	-	710	-	-	-	-	-	-	-	-
4/5/2016	-	700	-	-	-	-	-	-	-	-
4/21/2016	-	-	-	-	-	-	-	-	-	1.9
7/13/2016	-	750	-	-	-	-	-	-	-	-
10/5/2016	-	690	-	-	-	-	-	-	-	-
5/14/2017	-	700	-	-	-	-	-	-	-	2.2
7/11/2017	-	690	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/17/2017	-	710	-	-	-	-	-	-	-	-
1/17/2018	-	720	-	-	-	-	-	-	-	-
3/15/2018	-	-	-	-	-	-	-	-	-	2.0
4/11/2018	-	710	-	-	-	-	-	-	-	-
7/11/2018	-	720	-	-	-	-	-	-	-	-
8/15/2018	1,100	740	110.0	20.0	90.0	2.0	94.0	200.0	250.0	1.9
10/5/2018	-	720	-	-	-	-	-	-	-	-
1/8/2019	-	640	-	-	-	-	-	-	-	-
3/12/2019	-	-	-	-	-	-	-	-	-	2.2
4/9/2019	-	700	-	-	-	-	-	-	-	-
No. 123										
6/6/1990	1,100	690	69.0	27.0	132.0	6.0	130.0	170.0	281.0	0.9
6/10/1993	1,120	690	74.0	25.0	136.0	6.0	120.0	190.0	250.0	1.1
2/5/1997	930	550	55.0	18.0	110.0	5.0	83.0	130.0	250.0	0.3
4/27/1999	-	-	-	-	-	-	-	-	-	0.7
6/2/1999	-	-	-	-	-	-	-	-	-	0.7
7/20/1999	-	-	-	-	-	-	-	-	-	0.5
8/11/1999	-	-	-	-	-	-	-	-	-	0.5
9/14/1999	-	-	-	-	-	-	-	-	-	0.5
10/21/1999	-	-	-	-	-	-	-	-	-	0.5
11/2/1999	-	-	-	-	-	-	-	-	-	0.5
2/9/2000	1,150	610	59.0	20.0	100.0	5.0	83.0	150.0	240.0	0.7
2/9/2001	-	-	-	-	-	-	-	-	-	0.7
3/10/2003	880	550	59.0	20.0	87.0	4.5	80.0	180.0	170.0	ND
2/3/2004	-	-	-	-	-	-	-	-	-	0.5
2/14/2005	-	-	-	-	-	-	-	-	-	0.5
2/14/2006	-	-	-	-	-	-	-	-	-	0.8
3/14/2006	890	530	65.0	22.0	88.0	5.0	91.0	180.0	180.0	0.5
4/24/2007	-	-	-	-	-	-	-	-	-	0.3
5/1/2007	-	-	-	-	-	-	-	-	-	0.6
6/5/2007	-	-	-	-	-	-	-	-	-	0.5
7/5/2007	-	-	-	-	-	-	-	-	-	0.6
8/7/2007	-	-	-	-	-	-	-	-	-	0.5
9/5/2007	-	-	-	-	-	-	-	-	-	0.5
9/6/2007	-	-	-	-	-	-	-	-	-	0.5
10/3/2007	-	-	-	-	-	-	-	-	-	0.5
12/13/2007	-	-	-	-	-	-	-	-	-	0.4
1/10/2008	-	-	-	-	-	-	-	-	-	0.3
2/13/2008	-	-	-	-	-	-	-	-	-	0.2
3/3/2008	-	-	-	-	-	-	-	-	-	0.3
3/7/2008	-	540	-	-	-	-	-	-	-	-
4/8/2008	-	-	-	-	-	-	-	-	-	0.5
5/12/2008	-	-	-	-	-	-	-	-	-	0.5
6/23/2008	-	-	-	-	-	-	-	-	-	0.6
7/8/2008	-	-	-	-	-	-	-	-	-	0.7
8/12/2008	-	-	-	-	-	-	-	-	-	0.6
9/15/2008	-	-	-	-	-	-	-	-	-	0.6
11/6/2008	-	-	-	-	-	-	-	-	-	0.6
12/5/2008	-	-	-	-	-	-	-	-	-	0.5
1/7/2009	-	640	-	-	-	-	-	-	-	ND
2/4/2009	-	-	-	-	-	-	-	-	-	0.4
3/9/2009	980	610	-	-	-	-	-	-	-	ND
4/2/2009	-	600	-	-	-	-	-	-	-	ND
5/7/2009	-	-	-	-	-	-	-	-	-	ND
6/1/2009	-	-	-	-	-	-	-	-	-	ND
7/9/2009	-	590	-	-	-	-	-	-	-	ND
8/5/2009	-	-	-	-	-	-	-	-	-	ND
1/6/2010	-	590	-	-	-	-	-	-	-	0.3
2/2/2010	-	-	-	-	-	-	-	-	-	0.2
3/3/2010	-	-	-	-	-	-	-	-	-	0.3
4/8/2010	-	600	-	-	-	-	-	-	-	0.3
5/6/2010	-	-	-	-	-	-	-	-	-	0.3
6/2/2010	-	-	-	-	-	-	-	-	-	ND
7/1/2010	-	750	-	-	-	-	-	-	-	ND
8/10/2010	-	-	-	-	-	-	-	-	-	0.5
9/1/2010	-	-	-	-	-	-	-	-	-	0.5
10/7/2010	-	630	-	-	-	-	-	-	-	ND
11/1/2010	-	-	-	-	-	-	-	-	-	ND
12/2/2010	-	-	-	-	-	-	-	-	-	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
1/12/2011	-	570	-	-	-	-	-	-	-	0.5
2/15/2011	-	-	-	-	-	-	-	-	-	0.5
3/9/2011	-	-	-	-	-	-	-	-	-	0.5
4/5/2011	-	580	-	-	-	-	-	-	-	0.5
5/5/2011	-	-	-	-	-	-	-	-	-	0.5
6/7/2011	-	-	-	-	-	-	-	-	-	0.5
7/6/2011	-	600	-	-	-	-	-	-	-	0.5
8/3/2011	-	-	-	-	-	-	-	-	-	0.5
9/2/2011	-	-	-	-	-	-	-	-	-	0.5
10/13/2011	-	550	-	-	-	-	-	-	-	0.5
11/10/2011	-	-	-	-	-	-	-	-	-	ND
12/7/2011	-	-	-	-	-	-	-	-	-	ND
1/6/2012	-	540	-	-	-	-	-	-	-	ND
9/5/2012	-	-	-	-	-	-	-	-	-	0.3
10/10/2012	-	360	-	-	-	-	-	-	-	0.3
11/1/2012	-	-	-	-	-	-	-	-	-	0.4
11/28/2012	710	450	46.0	16.0	69.0	4.3	69.0	110.0	150.0	0.4
12/5/2012	-	-	-	-	-	-	-	-	-	0.4
1/9/2013	-	440	-	-	-	-	-	-	-	0.3
2/12/2013	-	-	-	-	-	-	-	-	-	0.3
3/6/2013	-	-	-	-	-	-	-	-	-	0.4
4/8/2013	-	430	-	-	-	-	-	-	-	0.4
5/7/2013	-	-	-	-	-	-	-	-	-	0.4
6/5/2013	-	-	-	-	-	-	-	-	-	0.4
7/9/2013	-	470	-	-	-	-	-	-	-	0.5
8/15/2013	-	-	-	-	-	-	-	-	-	0.4
9/5/2013	-	-	-	-	-	-	-	-	-	0.4
10/8/2013	-	490	-	-	-	-	-	-	-	0.4
11/6/2013	-	-	-	-	-	-	-	-	-	0.4
12/11/2013	-	-	-	-	-	-	-	-	-	0.4
1/14/2014	-	530	-	-	-	-	-	-	-	0.3
2/6/2014	-	-	-	-	-	-	-	-	-	0.5
3/5/2014	-	-	-	-	-	-	-	-	-	0.3
4/9/2014	-	550	-	-	-	-	-	-	-	0.4
5/8/2014	-	-	-	-	-	-	-	-	-	0.4
6/3/2014	-	-	-	-	-	-	-	-	-	0.5
7/3/2014	-	540	-	-	-	-	-	-	-	0.5
8/7/2014	-	-	-	-	-	-	-	-	-	0.5
9/3/2014	-	-	-	-	-	-	-	-	-	0.3
10/2/2014	-	550	-	-	-	-	-	-	-	0.3
11/6/2014	-	-	-	-	-	-	-	-	-	0.4
12/4/2014	-	-	-	-	-	-	-	-	-	0.5
1/21/2015	-	730	-	-	-	-	-	-	-	0.4
2/5/2015	-	-	-	-	-	-	-	-	-	0.5
3/5/2015	920	570	61.0	21.0	89.0	5.1	82.0	160.0	160.0	0.5
4/15/2015	-	550	-	-	-	-	-	-	-	0.5
5/6/2015	-	-	-	-	-	-	-	-	-	0.5
6/2/2015	-	-	-	-	-	-	-	-	-	0.5
7/14/2015	-	660	-	-	-	-	-	-	-	0.5
8/4/2015	-	-	-	-	-	-	-	-	-	0.6
9/9/2015	-	-	-	-	-	-	-	-	-	0.6
10/14/2015	-	540	-	-	-	-	-	-	-	0.6
11/4/2015	-	-	-	-	-	-	-	-	-	0.6
12/2/2015	-	-	-	-	-	-	-	-	-	0.5
No. 124										
6/20/1990	660	380	38.0	4.0	92.0	3.0	97.0	48.0	153.0	2.9
7/22/1993	690	430	42.0	5.0	89.0	3.0	90.0	57.0	159.0	3.8
7/18/1995	-	-	-	-	-	-	-	-	-	2.5
10/26/1999	700	420	45.0	4.0	94.0	3.0	97.0	61.0	160.0	3.6
7/6/2000	-	-	-	-	-	-	-	-	-	3.8
7/10/2001	-	-	-	-	-	-	-	-	-	3.6
7/3/2002	-	-	-	-	-	-	-	-	-	2.3
10/2/2002	600	330	24.0	2.4	92.0	1.9	75.0	38.0	150.0	2.3
1/8/2003	-	-	-	-	-	-	-	-	-	2.3
7/1/2003	-	-	-	-	-	-	-	-	-	1.9
7/7/2004	-	-	-	-	-	-	-	-	-	2.1
7/6/2005	-	-	-	-	-	-	-	-	-	1.9
10/5/2005	580	360	19.0	2.4	96.0	1.6	74.0	35.0	140.0	1.8
9/26/2006	-	-	-	-	-	-	-	-	-	3.8

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
9/5/2007	-	-	-	-	-	-	-	-	-	1.9
10/28/2008	780	490	52.0	6.5	84.0	3.1	91.0	84.0	150.0	0.4
1/13/2009	-	390	-	-	-	-	-	-	-	-
4/7/2009	-	330	-	-	-	-	-	-	-	-
7/9/2009	-	320	-	-	-	-	-	-	-	-
1/6/2010	-	390	-	-	-	-	-	-	-	-
4/8/2010	-	360	-	-	-	-	-	-	-	-
7/1/2010	-	390	-	-	-	-	-	-	-	-
10/6/2010	-	320	-	-	-	-	-	-	-	2.3
1/4/2011	-	390	-	-	-	-	-	-	-	-
4/5/2011	-	390	-	-	-	-	-	-	-	-
7/6/2011	-	350	-	-	-	-	-	-	-	-
10/12/2011	610	390	23.0	2.5	95.0	2.2	80.0	44.0	150.0	2.3
1/10/2012	-	330	-	-	-	-	-	-	-	-
4/4/2012	-	410	-	-	-	-	-	-	-	-
10/9/2012	-	360	-	-	-	-	-	-	-	2.1
3/20/2013	-	480	-	-	-	-	-	-	-	-
4/8/2013	-	410	-	-	-	-	-	-	-	-
7/19/2013	-	360	-	-	-	-	-	-	-	-
10/8/2013	-	360	-	-	-	-	-	-	-	2.5
1/14/2014	-	350	-	-	-	-	-	-	-	-
4/9/2014	-	400	-	-	-	-	-	-	-	-
7/24/2014	-	460	-	-	-	-	-	-	-	-
10/2/2014	600	370	22.0	2.3	100.0	1.7	78.0	45.0	150.0	2.2
1/7/2015	-	390	-	-	-	-	-	-	-	-
4/23/2015	-	490	-	-	-	-	-	-	-	-
7/16/2015	-	360	-	-	-	-	-	-	-	-
10/9/2015	-	310	-	-	-	-	-	-	-	2.2
4/13/2016	-	410	-	-	-	-	-	-	-	-
7/13/2016	-	340	-	-	-	-	-	-	-	-
10/6/2016	-	320	-	-	-	-	-	-	-	1.9
5/14/2017	-	440	-	-	-	-	-	-	-	-
7/11/2017	-	340	-	-	-	-	-	-	-	-
10/17/2017	600	360	20.0	1.9	100.0	1.5	75.0	42.0	110.0	1.9
2/9/2018	-	410	-	-	-	-	-	-	-	-
4/11/2018	-	380	-	-	-	-	-	-	-	-
7/18/2018	-	350	-	-	-	-	-	-	-	-
10/11/2018	-	350	-	-	-	-	-	-	-	2.3
No. 125										
6/20/1990	740	425	17.0	5.0	132.0	3.0	99.0	54.0	186.0	0.9
6/10/1993	770	450	18.0	5.0	140.0	3.0	150.0	60.0	131.0	0.7
6/20/1995	-	-	-	-	-	-	-	-	-	0.5
6/9/1997	-	-	-	-	-	-	-	-	-	0.5
9/17/1998	-	-	-	-	-	-	-	-	-	0.7
6/3/1999	720	440	10.0	3.0	135.0	2.0	89.0	76.0	170.0	ND
11/2/1999	-	-	-	-	-	-	-	-	-	0.7
11/15/2000	-	-	-	-	-	-	-	-	-	0.5
7/24/2001	-	-	-	-	-	-	-	-	-	0.9
6/19/2002	700	400	8.8	2.3	130.0	1.8	87.0	54.0	170.0	ND
7/3/2002	-	-	-	-	-	-	-	-	-	0.5
1/13/2003	-	-	-	-	-	-	-	-	-	0.4
7/1/2003	-	-	-	-	-	-	-	-	-	ND
6/9/2004	-	-	-	-	-	-	-	-	-	ND
6/14/2005	650	350	8.3	2.1	130.0	1.6	82.0	52.0	180.0	0.4
6/13/2006	-	-	-	-	-	-	-	-	-	0.6
6/5/2007	-	-	-	-	-	-	-	-	-	0.4
6/10/2008	770	460	17.0	4.6	150.0	2.4	93.0	64.0	190.0	0.6
9/15/2008	-	370	-	-	-	-	-	-	-	-
12/5/2008	-	450	-	-	-	-	-	-	-	-
3/4/2009	-	440	-	-	-	-	-	-	-	-
6/1/2009	-	560	-	-	-	-	-	-	-	ND
7/27/2010	-	480	-	-	-	-	-	-	-	0.8
10/6/2010	-	430	-	-	-	-	-	-	-	-
1/14/2011	-	420	-	-	-	-	-	-	-	-
4/5/2011	-	390	-	-	-	-	-	-	-	-
No. 126										
5/4/1988	480	290	4.0	ND	106.0	ND	53.0	14.0	64.0	ND
7/6/1989	500	270	2.0	1.0	108.0	ND	55.0	11.0	98.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/18/1995	540	315	1.0	ND	122.0	ND	72.0	11.0	122.0	ND
7/7/1997	-	-	-	-	-	-	-	-	-	ND
7/16/1997	-	-	-	-	-	-	-	-	-	0.2
7/23/1997	-	-	-	-	-	-	-	-	-	0.2
8/20/1997	-	-	-	-	-	-	-	-	-	0.4
9/3/1997	-	-	-	-	-	-	-	-	-	0.2
9/17/1997	-	-	-	-	-	-	-	-	-	0.2
7/20/1998	520	330	2.0	ND	120.0	ND	56.0	11.0	130.0	ND
9/16/1998	-	300	-	-	-	-	-	-	-	0.4
4/14/1999	-	-	-	-	-	-	-	-	-	0.5
4/11/2000	-	-	-	-	-	-	-	-	-	ND
4/11/2001	-	-	-	-	-	-	-	-	-	0.5
7/12/2001	530	300	2.0	ND	100.0	ND	53.0	12.0	140.0	ND
6/20/2002	-	-	-	-	-	-	-	-	-	ND
8/6/2002	-	-	-	-	-	-	-	-	-	ND
1/8/2003	-	-	-	-	-	-	-	-	-	0.3
11/4/2003	-	-	-	-	-	-	-	-	-	ND
7/22/2004	520	310	1.5	ND	110.0	ND	59.0	10.0	120.0	0.3
11/3/2004	-	-	-	-	-	-	-	-	-	ND
11/2/2005	-	-	-	-	-	-	-	-	-	ND
11/8/2006	-	-	-	-	-	-	-	-	-	ND
7/3/2007	530	330	1.4	ND	110.0	ND	62.0	10.0	140.0	ND
11/14/2007	-	-	-	-	-	-	-	-	-	0.4
8/7/2008	-	280	-	-	-	-	-	-	-	-
2/4/2009	-	280	-	-	-	-	-	-	-	-
5/6/2009	-	280	-	-	-	-	-	-	-	-
8/4/2009	-	270	-	-	-	-	-	-	-	-
2/3/2010	-	290	-	-	-	-	-	-	-	-
5/6/2010	-	390	-	-	-	-	-	-	-	-
7/13/2010	530	300	1.6	ND	110.0	ND	58.0	11.0	130.0	ND
8/24/2010	-	330	-	-	-	-	-	-	-	-
11/3/2010	-	300	-	-	-	-	-	-	-	0.3
2/4/2011	-	280	-	-	-	-	-	-	-	-
5/3/2011	-	300	-	-	-	-	-	-	-	-
8/2/2011	-	280	-	-	-	-	-	-	-	-
11/1/2011	-	270	-	-	-	-	-	-	-	ND
2/6/2012	-	350	-	-	-	-	-	-	-	-
5/2/2012	-	330	-	-	-	-	-	-	-	-
8/6/2012	-	290	-	-	-	-	-	-	-	-
11/5/2012	-	320	-	-	-	-	-	-	-	0.4
2/5/2013	-	290	-	-	-	-	-	-	-	-
5/1/2013	-	280	-	-	-	-	-	-	-	-
8/1/2013	640	310	2.4	ND	120.0	ND	81.0	13.0	140.0	0.5
11/4/2013	-	280	-	-	-	-	-	-	-	ND
2/4/2014	-	270	-	-	-	-	-	-	-	-
8/4/2014	-	270	-	-	-	-	-	-	-	-
11/12/2014	-	280	-	-	-	-	-	-	-	0.6
2/4/2015	-	260	-	-	-	-	-	-	-	-
5/5/2015	-	270	-	-	-	-	-	-	-	-
8/4/2015	-	250	-	-	-	-	-	-	-	-
11/3/2015	-	250	-	-	-	-	-	-	-	0.2
2/11/2016	-	340	-	-	-	-	-	-	-	-
5/3/2016	-	270	-	-	-	-	-	-	-	-
7/6/2016	570	290	1.6	ND	110.0	ND	60.0	10.0	130.0	0.3
8/2/2016	-	290	-	-	-	-	-	-	-	-
11/3/2016	-	310	-	-	-	-	-	-	-	0.6
2/2/2017	-	310	-	-	-	-	-	-	-	-
5/2/2017	-	300	-	-	-	-	-	-	-	-
8/7/2017	-	310	-	-	-	-	-	-	-	-
11/1/2017	-	300	-	-	-	-	-	-	-	0.3
2/2/2018	-	310	-	-	-	-	-	-	-	-
5/3/2018	-	300	-	-	-	-	-	-	-	-
8/9/2018	-	300	-	-	-	-	-	-	-	-
7/1/2019	510	310	1.9	ND	120.0	ND	73.0	13.0	120.0	ND
11/9/2018	-	290	-	-	-	-	-	-	-	0.4
2/7/2019	-	280	-	-	-	-	-	-	-	-
5/6/2019	-	310	-	-	-	-	-	-	-	-
8/8/2019	-	280	-	-	-	-	-	-	-	-

No. 128

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/6/1989	400	230	27.0	3.0	54.0	2.0	59.0	7.0	101.0	5.7
7/8/1992	390	230	21.0	2.0	59.0	2.0	55.0	ND	110.0	5.4
7/20/1995	380	275	16.0	2.0	66.0	1.0	65.0	10.0	101.0	4.3
7/7/1997	-	-	-	-	-	-	-	-	-	3.4
7/20/1998	370	260	12.0	ND	71.0	1.0	48.0	11.0	110.0	3.2
6/2/1999	-	-	-	-	-	-	-	-	-	2.9
6/8/2001	-	-	-	-	-	-	-	-	-	3.2
7/10/2001	400	230	10.0	ND	68.0	ND	44.0	12.0	100.0	2.7
6/20/2002	-	-	-	-	-	-	-	-	-	2.7
1/8/2003	-	-	-	-	-	-	-	-	-	2.7
1/14/2004	-	-	-	-	-	-	-	-	-	2.3
7/14/2004	390	240	8.3	1.0	67.0	1.0	48.0	11.0	92.0	2.9
1/11/2005	-	-	-	-	-	-	-	-	-	1.4
1/10/2006	-	-	-	-	-	-	-	-	-	1.8
No. 129										
11/29/1989	430	260	16.0	3.0	66.0	2.0	71.0	16.0	92.0	2.0
8/8/1990	440	280	20.0	5.0	64.0	2.0	72.0	14.0	119.0	2.3
4/1/1992	-	-	-	-	-	-	-	-	-	2.7
9/10/1993	470	275	24.0	6.0	60.0	2.0	74.0	16.0	110.0	2.9
8/9/1996	460	270	19.0	3.0	67.0	2.0	70.0	15.0	100.0	2.5
2/4/1997	-	-	-	-	-	-	-	-	-	12.0
12/20/2000	550	330	44.0	13.0	47.0	2.0	81.0	14.0	130.0	4.5
3/22/2001	-	-	-	-	-	-	-	-	-	4.5
4/17/2001	-	-	-	-	-	-	-	-	-	4.5
5/2/2001	-	-	-	-	-	-	-	-	-	4.1
6/8/2001	-	-	-	-	-	-	-	-	-	4.5
10/16/2001	-	-	-	-	-	-	-	-	-	4.3
11/13/2001	-	-	-	-	-	-	-	-	-	4.1
2/26/2002	-	-	-	-	-	-	-	-	-	3.6
5/23/2002	-	-	-	-	-	-	-	-	-	3.2
9/18/2002	-	-	-	-	-	-	-	-	-	3.4
No. 130										
2/17/1988	650	365	16.0	1.0	132.0	1.0	69.0	64.0	ND	0.9
2/14/1991	640	365	4.0	ND	132.0	1.0	68.0	56.0	122.0	-
4/24/1991	-	-	-	-	-	-	-	-	-	0.7
2/9/1994	650	410	3.0	ND	148.0	1.0	81.0	72.0	146.0	0.9
5/16/1995	-	-	-	-	-	-	-	-	-	0.9
2/5/1997	780	450	4.0	ND	170.0	ND	78.0	82.0	150.0	1.1
5/14/1997	-	-	-	-	-	-	-	-	-	0.9
4/14/1999	-	-	-	-	-	-	-	-	-	1.1
2/10/2000	750	440	4.0	ND	170.0	ND	76.0	77.0	170.0	1.1
4/12/2000	-	-	-	-	-	-	-	-	-	1.1
5/25/2000	-	-	-	-	-	-	-	-	-	1.4
5/24/2001	-	-	-	-	-	-	-	-	-	1.4
5/24/2002	-	-	-	-	-	-	-	-	-	1.1
2/19/2003	820	460	4.1	ND	170.0	ND	87.0	96.0	180.0	1.1
5/4/2004	-	-	-	-	-	-	-	-	-	1.2
5/12/2005	-	-	-	-	-	-	-	-	-	1.1
2/14/2006	800	450	4.1	ND	170.0	ND	83.0	91.0	200.0	1.2
5/12/2006	-	-	-	-	-	-	-	-	-	1.0
5/1/2007	-	-	-	-	-	-	-	-	-	1.0
5/7/2008	-	440	-	-	-	-	-	-	-	0.9
8/12/2008	-	470	-	-	-	-	-	-	-	-
11/9/2008	-	560	-	-	-	-	-	-	-	-
2/11/2009	840	440	4.6	ND	170.0	ND	91.0	110.0	150.0	1.1
5/11/2009	-	480	-	-	-	-	-	-	-	0.8
8/31/2009	-	470	-	-	-	-	-	-	-	-
2/4/2010	-	480	-	-	-	-	-	-	-	-
5/6/2010	-	410	-	-	-	-	-	-	-	1.0
8/11/2010	-	460	-	-	-	-	-	-	-	-
11/1/2010	-	480	-	-	-	-	-	-	-	-
12/2/2010	-	400	-	-	-	-	-	-	-	-
7/15/2011	-	480	-	-	-	-	-	-	-	-
8/4/2011	-	-	-	-	-	-	-	-	-	1.1
10/13/2011	-	490	-	-	-	-	-	-	-	-
1/10/2012	-	460	-	-	-	-	-	-	-	-
2/9/2012	810	480	4.4	ND	160.0	1.2	80.0	100.0	180.0	0.9
8/8/2012	-	-	-	-	-	-	-	-	-	1.0

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/9/2012	-	480	-	-	-	-	-	-	-	-
1/3/2013	-	500	-	-	-	-	-	-	-	-
4/8/2013	-	490	-	-	-	-	-	-	-	-
7/9/2013	-	460	-	-	-	-	-	-	-	-
8/15/2013	-	-	-	-	-	-	-	-	-	1.0
10/8/2013	-	470	-	-	-	-	-	-	-	-
1/14/2014	-	470	-	-	-	-	-	-	-	-
4/9/2014	-	500	-	-	-	-	-	-	-	-
7/8/2014	-	480	-	-	-	-	-	-	-	-
8/7/2014	-	-	-	-	-	-	-	-	-	1.1
10/2/2014	-	520	-	-	-	-	-	-	-	-
2/20/2015	880	480	5.1	ND	170.0	ND	81.0	110.0	180.0	0.9
4/15/2015	-	470	-	-	-	-	-	-	-	-
7/14/2015	-	510	-	-	-	-	-	-	-	-
8/4/2015	-	-	-	-	-	-	-	-	-	1.0
10/13/2015	-	470	-	-	-	-	-	-	-	-
1/13/2016	-	470	-	-	-	-	-	-	-	-
4/13/2016	-	550	-	-	-	-	-	-	-	-
7/19/2016	-	490	-	-	-	-	-	-	-	-
8/3/2016	-	-	-	-	-	-	-	-	-	0.9
10/11/2016	-	490	-	-	-	-	-	-	-	-
1/17/2017	-	500	-	-	-	-	-	-	-	-
4/6/2017	-	490	-	-	-	-	-	-	-	-
7/6/2017	-	480	-	-	-	-	-	-	-	-
8/15/2017	-	-	-	-	-	-	-	-	-	1.0
10/11/2017	-	490	-	-	-	-	-	-	-	-
1/12/2018	-	540	-	-	-	-	-	-	-	-
2/7/2018	840	480	6.0	ND	170.0	1.1	90.0	120.0	150.0	1.0
4/13/2018	-	490	-	-	-	-	-	-	-	-
7/11/2018	-	510	-	-	-	-	-	-	-	-
8/9/2018	-	-	-	-	-	-	-	-	-	1.0
10/11/2018	-	510	-	-	-	-	-	-	-	-
1/3/2019	-	480	-	-	-	-	-	-	-	-
8/14/2019	-	-	-	-	-	-	-	-	-	0.9
5/14/2019	-	490	-	-	-	-	-	-	-	-
7/3/2019	-	500	-	-	-	-	-	-	-	-
No. 131										
3/10/1988	530	270	4.0	ND	108.0	1.0	57.0	52.0	31.0	0.2
3/21/1991	630	335	7.0	ND	120.0	1.0	74.0	65.0	98.0	0.7
3/3/1994	660	345	9.0	ND	124.0	2.0	86.0	73.0	119.0	0.5
3/30/1995	-	-	-	-	-	-	-	-	-	0.5
3/20/1997	660	370	6.0	ND	125.0	1.0	81.0	73.0	100.0	0.5
7/7/1997	-	-	-	-	-	-	-	-	-	ND
7/27/1998	-	-	-	-	-	-	-	-	-	0.5
6/3/1999	-	-	-	-	-	-	-	-	-	ND
3/7/2000	720	380	9.0	ND	140.0	2.0	81.0	80.0	130.0	0.7
6/21/2000	-	-	-	-	-	-	-	-	-	0.5
6/27/2001	-	-	-	-	-	-	-	-	-	0.5
6/5/2002	-	-	-	-	-	-	-	-	-	ND
3/13/2003	700	390	8.0	ND	130.0	1.4	88.0	88.0	130.0	0.7
6/11/2003	-	-	-	-	-	-	-	-	-	ND
6/9/2004	-	-	-	-	-	-	-	-	-	ND
6/15/2005	-	-	-	-	-	-	-	-	-	0.5
3/7/2006	710	420	9.1	ND	140.0	1.5	93.0	93.0	130.0	0.7
6/7/2006	-	-	-	-	-	-	-	-	-	0.4
6/26/2007	-	-	-	-	-	-	-	-	-	0.5
6/4/2008	-	390	-	-	-	-	-	-	-	0.3
9/15/2008	-	330	-	-	-	-	-	-	-	-
12/3/2008	-	430	-	-	-	-	-	-	-	-
3/4/2009	640	380	6.0	ND	130.0	1.2	71.0	77.0	130.0	ND
6/2/2009	-	360	-	-	-	-	-	-	-	ND
3/3/2010	-	380	-	-	-	-	-	-	-	-
6/2/2010	-	360	-	-	-	-	-	-	-	0.5
9/1/2010	-	360	-	-	-	-	-	-	-	-
3/2/2011	-	430	-	-	-	-	-	-	-	-
6/7/2011	-	360	-	-	-	-	-	-	-	0.5
9/2/2011	-	330	-	-	-	-	-	-	-	-
12/7/2011	-	420	-	-	-	-	-	-	-	-
3/2/2012	-	410	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/5/2012	-	350	-	-	-	-	-	-	-	0.3
9/5/2012	-	370	-	-	-	-	-	-	-	-
12/4/2012	-	370	-	-	-	-	-	-	-	-
3/6/2013	-	350	-	-	-	-	-	-	-	-
6/5/2013	-	360	-	-	-	-	-	-	-	0.4
9/4/2013	-	370	-	-	-	-	-	-	-	-
12/4/2013	-	370	-	-	-	-	-	-	-	-
3/11/2014	-	440	-	-	-	-	-	-	-	-
6/3/2014	-	460	-	-	-	-	-	-	-	0.8
9/3/2014	-	380	-	-	-	-	-	-	-	-
6/3/2015	-	370	-	-	-	-	-	-	-	0.5
9/9/2015	-	380	-	-	-	-	-	-	-	-
11/4/2015	660	360	6.8	ND	130.0	1.0	72.0	78.0	140.0	0.5
12/2/2015	-	300	-	-	-	-	-	-	-	-
3/3/2016	-	330	-	-	-	-	-	-	-	-
6/7/2016	-	370	-	-	-	-	-	-	-	0.5
9/7/2016	-	370	-	-	-	-	-	-	-	-
12/10/2016	-	410	-	-	-	-	-	-	-	-
3/8/2017	-	410	-	-	-	-	-	-	-	-
6/8/2017	-	380	-	-	-	-	-	-	-	0.5
9/13/2017	-	390	-	-	-	-	-	-	-	-
12/12/2017	-	420	-	-	-	-	-	-	-	-
3/7/2018	680	400	7.8	ND	130.0	1.4	77.0	89.0	120.0	0.5
6/12/2018	-	390	-	-	-	-	-	-	-	0.5
9/11/2018	-	390	-	-	-	-	-	-	-	-
12/4/2018	-	430	-	-	-	-	-	-	-	-
9/10/2019	-	390	-	-	-	-	-	-	-	-
6/5/2019	-	370	-	-	-	-	-	-	-	0.3
3/13/2019	-	410	-	-	-	-	-	-	-	-
No. 132										
4/18/1988	1,000	620	94.0	13.0	103.0	6.0	109.0	153.0	235.0	0.5
5/8/1991	920	590	64.0	19.0	110.0	5.0	100.0	160.0	201.0	ND
5/13/1994	730	460	50.0	15.0	78.0	5.0	73.0	110.0	195.0	0.2
5/16/1995	-	-	-	-	-	-	-	-	-	ND
7/18/1995	860	520	59.0	17.0	100.0	4.0	90.0	130.0	223.0	0.2
7/20/1998	900	590	69.0	20.0	110.0	5.0	89.0	150.0	230.0	0.5
1/6/1999	-	-	-	-	-	-	-	-	-	0.5
2/3/1999	-	-	-	-	-	-	-	-	-	0.5
4/14/1999	-	-	-	-	-	-	-	-	-	0.7
6/3/1999	-	-	-	-	-	-	-	-	-	0.7
7/27/1999	-	-	-	-	-	-	-	-	-	1.1
8/11/1999	-	-	-	-	-	-	-	-	-	0.9
9/15/1999	-	-	-	-	-	-	-	-	-	0.9
10/21/1999	-	-	-	-	-	-	-	-	-	0.9
11/2/1999	-	-	-	-	-	-	-	-	-	0.7
12/15/1999	-	-	-	-	-	-	-	-	-	0.7
5/3/2000	-	-	-	-	-	-	-	-	-	0.5
5/16/2001	800	500	57.0	17.0	74.0	5.0	63.0	180.0	150.0	0.7
5/1/2002	-	-	-	-	-	-	-	-	-	0.5
5/3/2005	-	-	-	-	-	-	-	-	-	ND
5/12/2006	-	-	-	-	-	-	-	-	-	0.7
5/1/2007	-	-	-	-	-	-	-	-	-	1.1
5/3/2007	820	500	53.0	16.0	64.0	4.4	72.0	150.0	160.0	0.7
5/6/2008	-	670	-	-	-	-	-	-	-	0.8
8/12/2008	-	690	-	-	-	-	-	-	-	-
11/6/2008	-	650	-	-	-	-	-	-	-	-
2/5/2009	-	570	-	-	-	-	-	-	-	-
5/11/2009	-	590	-	-	-	-	-	-	-	ND
8/5/2009	-	600	-	-	-	-	-	-	-	-
2/3/2010	-	580	-	-	-	-	-	-	-	-
5/6/2010	960	600	67.0	22.0	88.0	5.6	96.0	220.0	170.0	0.3
8/10/2010	-	570	-	-	-	-	-	-	-	-
11/1/2010	-	610	-	-	-	-	-	-	-	-
2/15/2011	-	580	-	-	-	-	-	-	-	-
5/4/2011	-	590	-	-	-	-	-	-	-	0.5
8/3/2011	-	580	-	-	-	-	-	-	-	-
11/2/2011	-	510	-	-	-	-	-	-	-	-
2/8/2012	-	450	-	-	-	-	-	-	-	-
5/2/2012	-	420	-	-	-	-	-	-	-	0.7

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8/8/2012	-	360	-	-	-	-	-	-	-	-
11/1/2012	-	370	-	-	-	-	-	-	-	-
1/29/2014	-	520	-	-	-	-	-	-	-	-
2/6/2014	-	460	-	-	-	-	-	-	-	-
5/15/2014	-	510	-	-	-	-	-	-	-	0.3
8/6/2014	-	500	-	-	-	-	-	-	-	-
11/6/2014	-	540	-	-	-	-	-	-	-	-
2/5/2015	-	530	-	-	-	-	-	-	-	-
5/7/2015	-	520	-	-	-	-	-	-	-	0.3
8/7/2015	-	570	-	-	-	-	-	-	-	-
11/10/2015	-	620	-	-	-	-	-	-	-	-
2/10/2016	-	660	-	-	-	-	-	-	-	-
5/11/2016	1,300	760	94.0	33.0	100.0	6.1	140.0	200.0	220.0	0.4
8/3/2016	-	820	-	-	-	-	-	-	-	-
11/2/2016	-	680	-	-	-	-	-	-	-	-
2/2/2017	-	640	-	-	-	-	-	-	-	-
5/3/2017	-	620	-	-	-	-	-	-	-	0.3
8/10/2017	-	610	-	-	-	-	-	-	-	-
11/8/2017	-	510	-	-	-	-	-	-	-	-
2/5/2018	-	390	-	-	-	-	-	-	-	-
5/15/2018	-	390	-	-	-	-	-	-	-	0.4
8/9/2018	-	390	-	-	-	-	-	-	-	-
11/8/2018	-	480	-	-	-	-	-	-	-	-
2/19/2019	-	470	-	-	-	-	-	-	-	-
5/14/2019	-	510	-	-	-	-	-	-	-	-
5/1/2019	810	-	60.0	21.0	75.0	4.5	84.0	160.0	140.0	0.2
8/9/2019	-	550	-	-	-	-	-	-	-	-
No. 133										
3/28/1990	970	605	50.0	20.0	112.0	5.0	120.0	131.0	235.0	0.7
3/11/1993	970	580	48.0	19.0	120.0	4.0	110.0	140.0	204.0	0.7
6/6/1995	-	-	-	-	-	-	-	-	-	0.5
7/18/1995	850	680	26.0	10.0	142.0	2.0	120.0	100.0	174.0	0.5
6/23/1997	-	-	-	-	-	-	-	-	-	0.7
7/20/1998	790	500	24.0	9.0	140.0	2.0	96.0	93.0	170.0	0.5
8/2/2000	-	-	-	-	-	-	-	-	-	0.7
3/28/2001	800	460	22.0	10.0	130.0	2.0	98.0	100.0	170.0	ND
8/2/2001	-	-	-	-	-	-	-	-	-	ND
9/18/2002	-	-	-	-	-	-	-	-	-	0.5
9/16/2003	-	-	-	-	-	-	-	-	-	0.5
3/12/2004	810	500	25.0	10.0	130.0	2.4	95.0	99.0	180.0	0.5
3/7/2007	820	500	26.0	9.7	140.0	2.4	94.0	98.0	160.0	0.5
3/3/2008	-	-	-	-	-	-	-	-	-	0.5
3/7/2008	-	480	-	-	-	-	-	-	-	-
7/8/2008	-	470	-	-	-	-	-	-	-	-
1/7/2009	-	540	-	-	-	-	-	-	-	-
3/4/2009	-	-	-	-	-	-	-	-	-	0.6
4/2/2009	-	460	-	-	-	-	-	-	-	-
7/9/2009	-	450	-	-	-	-	-	-	-	-
1/6/2010	-	490	-	-	-	-	-	-	-	-
3/3/2010	860	460	37.0	16.0	110.0	3.1	110.0	110.0	200.0	0.7
4/8/2010	-	490	-	-	-	-	-	-	-	-
7/8/2010	-	470	-	-	-	-	-	-	-	-
10/6/2010	-	460	-	-	-	-	-	-	-	-
1/12/2011	-	490	-	-	-	-	-	-	-	-
3/9/2011	-	-	-	-	-	-	-	-	-	0.7
4/5/2011	-	460	-	-	-	-	-	-	-	-
7/6/2011	-	440	-	-	-	-	-	-	-	-
10/13/2011	-	470	-	-	-	-	-	-	-	-
10/9/2012	-	490	-	-	-	-	-	-	-	-
12/12/2012	-	-	-	-	-	-	-	-	-	0.6
1/15/2013	-	470	-	-	-	-	-	-	-	-
3/7/2013	840	510	36.0	15.0	110.0	3.0	100.0	100.0	200.0	0.7
4/8/2013	-	470	-	-	-	-	-	-	-	-
7/9/2013	-	470	-	-	-	-	-	-	-	-
10/8/2013	-	500	-	-	-	-	-	-	-	-
1/14/2014	-	490	-	-	-	-	-	-	-	-
3/11/2014	-	-	-	-	-	-	-	-	-	0.8
4/9/2014	-	530	-	-	-	-	-	-	-	-
7/8/2014	-	540	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/2/2014	-	500	-	-	-	-	-	-	-	-
1/15/2015	-	460	-	-	-	-	-	-	-	-
3/4/2015	-	-	-	-	-	-	-	-	-	0.6
4/15/2015	-	490	-	-	-	-	-	-	-	-
7/15/2015	-	500	-	-	-	-	-	-	-	-
10/13/2015	-	400	-	-	-	-	-	-	-	-
1/20/2016	-	430	-	-	-	-	-	-	-	-
3/3/2016	-	-	-	-	-	-	-	-	-	0.5
3/15/2016	930	510	36.0	14.0	120.0	2.8	99.0	110.0	190.0	0.8
4/13/2016	-	550	-	-	-	-	-	-	-	-
7/19/2016	-	480	-	-	-	-	-	-	-	-
10/11/2016	-	510	-	-	-	-	-	-	-	-
1/17/2017	-	520	-	-	-	-	-	-	-	-
3/8/2017	-	-	-	-	-	-	-	-	-	0.7
4/6/2017	-	480	-	-	-	-	-	-	-	-
7/11/2017	-	490	-	-	-	-	-	-	-	-
1/26/2018	-	520	-	-	-	-	-	-	-	-
3/7/2018	-	-	-	-	-	-	-	-	-	0.6
4/11/2018	-	510	-	-	-	-	-	-	-	-
7/11/2018	-	480	-	-	-	-	-	-	-	-
10/11/2018	-	480	-	-	-	-	-	-	-	-
1/3/2019	-	460	-	-	-	-	-	-	-	-
4/3/2019	-	520	-	-	-	-	-	-	-	-
8/14/2019	-	480	-	-	-	-	-	-	-	-
7/3/2019	-	480	-	-	-	-	-	-	-	-
3/26/2019	860	510	39.0	18.0	110.0	3.3	100.0	120.0	170.0	0.5
No. 135										
5/24/1989	2,450	1,390	122.0	65.0	300.0	2.0	410.0	225.0	464.0	7.5
6/6/1990	1,540	945	73.0	36.0	215.0	1.0	250.0	150.0	323.0	2.9
12/11/1990	4,400	2,670	270.0	109.0	480.0	4.0	1,030.0	380.0	314.0	ND
8/6/1992	1,800	810	63.0	33.0	170.0	1.0	200.0	160.0	281.0	-
1/16/1997	-	-	-	-	-	-	-	-	-	3.7
2/4/1997	-	-	-	-	-	-	-	-	-	3.5
2/12/1997	-	-	-	-	-	-	-	-	-	4.0
2/20/1997	-	-	-	-	-	-	-	-	-	3.4
2/25/1997	-	-	-	-	-	-	-	-	-	3.4
3/4/1997	-	-	-	-	-	-	-	-	-	3.7
3/18/1997	-	-	-	-	-	-	-	-	-	3.3
3/25/1997	-	-	-	-	-	-	-	-	-	3.5
4/8/1997	-	-	-	-	-	-	-	-	-	3.4
4/15/1997	-	-	-	-	-	-	-	-	-	3.4
4/22/1997	-	-	-	-	-	-	-	-	-	3.5
5/6/1997	1,930	1,050	97.0	48.0	220.0	2.0	340.0	190.0	360.0	3.3
5/14/1997	-	-	-	-	-	-	-	-	-	3.4
5/21/1997	-	-	-	-	-	-	-	-	-	3.3
6/4/1997	-	-	-	-	-	-	-	-	-	3.3
6/11/1997	-	-	-	-	-	-	-	-	-	3.3
6/18/1997	-	-	-	-	-	-	-	-	-	3.3
6/25/1997	-	-	-	-	-	-	-	-	-	3.3
7/2/1997	-	-	-	-	-	-	-	-	-	3.3
9/17/1997	1,960	1,260	-	-	-	-	430.0	220.0	-	2.9
No. 138										
10/30/1990	460	240	19.0	2.0	74.0	2.0	71.0	13.0	113.0	4.1
10/6/1993	420	240	11.0	ND	70.0	1.0	56.0	10.0	92.0	3.2
10/11/1996	430	270	9.0	ND	78.0	1.0	55.0	8.9	100.0	3.4
4/14/1999	-	-	-	-	-	-	-	-	-	1.1
6/3/1999	-	-	-	-	-	-	-	-	-	0.7
10/26/1999	430	240	10.0	ND	76.0	1.0	60.0	11.0	100.0	4.3
3/13/2000	-	-	-	-	-	-	-	-	-	1.1
3/22/2001	-	-	-	-	-	-	-	-	-	3.8
3/13/2002	-	-	-	-	-	-	-	-	-	4.8
6/20/2002	-	-	-	-	-	-	-	-	-	3.6
10/2/2002	440	220	10.0	ND	75.0	1.2	58.0	7.8	96.0	3.8
6/12/2003	-	-	-	-	-	-	-	-	-	3.6
12/30/2004	-	-	-	-	-	-	-	-	-	1.1
1/27/2005	-	-	-	-	-	-	-	-	-	2.7
10/18/2005	430	280	11.0	ND	72.0	1.3	65.0	8.3	110.0	4.1
1/6/2006	-	-	-	-	-	-	-	-	-	3.8

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
1/10/2007	-	-	-	-	-	-	-	-	-	3.6
1/8/2008	-	-	-	-	-	-	-	-	-	3.6
10/8/2008	430	220	12.0	59.0	82.0	1.1	59.0	11.0	32.0	4.1
1/8/2009	-	-	-	-	-	-	-	-	-	4.1
1/12/2009	-	280	-	-	-	-	-	-	-	-
4/8/2009	-	250	-	-	-	-	-	-	-	-
7/6/2009	-	240	-	-	-	-	-	-	-	-
1/6/2010	-	250	-	-	-	-	-	-	-	3.6
4/8/2010	-	270	-	-	-	-	-	-	-	-
7/14/2010	-	260	-	-	-	-	-	-	-	-
10/5/2010	-	230	-	-	-	-	-	-	-	-
1/12/2011	-	190	-	-	-	-	-	-	-	3.8
4/6/2011	-	290	-	-	-	-	-	-	-	-
7/7/2011	-	250	-	-	-	-	-	-	-	-
10/4/2011	440	240	10.0	1.0	78.0	1.9	62.0	10.0	110.0	3.8
1/17/2012	-	260	-	-	-	-	-	-	-	3.6
4/3/2012	-	280	-	-	-	-	-	-	-	-
10/2/2012	-	290	-	-	-	-	-	-	-	-
1/3/2013	-	240	-	-	-	-	-	-	-	3.2
4/3/2013	-	230	-	-	-	-	-	-	-	-
7/2/2013	-	220	-	-	-	-	-	-	-	-
10/10/2013	-	230	-	-	-	-	-	-	-	-
1/7/2014	-	220	-	-	-	-	-	-	-	3.6
4/22/2014	-	220	-	-	-	-	-	-	-	-
7/9/2014	-	260	-	-	-	-	-	-	-	-
10/2/2014	430	260	10.0	ND	81.0	1.2	67.0	11.0	110.0	3.6
1/14/2015	-	210	-	-	-	-	-	-	-	3.8
4/9/2015	-	260	-	-	-	-	-	-	-	-
7/2/2015	-	240	-	-	-	-	-	-	-	-
10/8/2015	-	250	-	-	-	-	-	-	-	-
1/12/2016	-	260	-	-	-	-	-	-	-	2.9
4/5/2016	-	290	-	-	-	-	-	-	-	-
7/12/2016	-	280	-	-	-	-	-	-	-	-
10/4/2016	-	260	-	-	-	-	-	-	-	-
1/4/2017	-	220	-	-	-	-	-	-	-	3.8
4/11/2017	-	260	-	-	-	-	-	-	-	-
7/6/2017	-	250	-	-	-	-	-	-	-	-
10/11/2017	470	260	11.0	ND	82.0	1.3	68.0	11.0	86.0	3.3
1/5/2018	-	270	-	-	-	-	-	-	-	3.5
4/11/2018	-	270	-	-	-	-	-	-	-	-
7/19/2018	-	260	-	-	-	-	-	-	-	-
1/15/2019	-	270	-	-	-	-	-	-	-	4.1
4/3/2019	-	270	-	-	-	-	-	-	-	-
7/11/2019	-	260	-	-	-	-	-	-	-	-
10/5/2018	-	270	-	-	-	-	-	-	-	-
No. 139										
12/29/1987	460	295	24.0	7.0	65.0	1.0	60.0	11.0	104.0	1.6
11/23/1992	450	275	32.0	9.0	46.0	2.0	60.0	13.0	134.0	4.5
12/19/1995	500	298	36.0	12.0	50.0	2.0	72.0	12.0	156.0	0.6
3/25/1997	-	-	-	-	-	-	-	-	-	2.3
3/13/2000	-	-	-	-	-	-	-	-	-	2.0
3/28/2001	-	-	-	-	-	-	-	-	-	1.8
3/11/2002	530	280	29.0	10.0	57.0	2.0	73.0	13.0	140.0	2.0
3/9/2004	-	-	-	-	-	-	-	-	-	1.8
3/9/2005	520	310	21.0	7.7	72.0	1.3	78.0	13.0	150.0	1.4
3/9/2006	-	-	-	-	-	-	-	-	-	2.2
3/7/2007	-	-	-	-	-	-	-	-	-	1.6
4/15/2008	550	340	40.0	14.0	43.0	1.9	80.0	10.0	150.0	3.2
7/17/2008	-	330	-	-	-	-	-	-	-	-
10/8/2008	-	320	-	-	-	-	-	-	-	-
1/13/2009	-	390	-	-	-	-	-	-	-	-
4/8/2009	-	310	-	-	-	-	-	-	-	1.3
7/6/2009	-	290	-	-	-	-	-	-	-	-
5/17/2010	-	320	-	-	-	-	-	-	-	-
8/9/2010	-	340	-	-	-	-	-	-	-	-
10/21/2010	-	-	-	-	-	-	-	-	-	2.0
11/3/2010	-	290	-	-	-	-	-	-	-	-
2/9/2011	-	340	-	-	-	-	-	-	-	-
4/21/2011	570	340	39.0	15.0	45.0	2.3	97.0	16.0	140.0	2.7

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/4/2011	-	340	-	-	-	-	-	-	-	-
7/7/2011	-	350	-	-	-	-	-	-	-	-
8/4/2011	-	320	-	-	-	-	-	-	-	-
10/5/2011	-	-	-	-	-	-	-	-	-	1.4
11/2/2011	-	310	-	-	-	-	-	-	-	-
2/9/2012	-	330	-	-	-	-	-	-	-	-
5/2/2012	-	320	-	-	-	-	-	-	-	-
8/9/2012	-	310	-	-	-	-	-	-	-	-
10/2/2012	-	-	-	-	-	-	-	-	-	1.2
11/2/2012	-	360	-	-	-	-	-	-	-	-
2/7/2013	-	320	-	-	-	-	-	-	-	-
5/2/2013	-	300	-	-	-	-	-	-	-	-
8/13/2013	-	330	-	-	-	-	-	-	-	-
10/10/2013	-	-	-	-	-	-	-	-	-	1.1
11/7/2013	-	340	-	-	-	-	-	-	-	-
2/5/2014	-	310	-	-	-	-	-	-	-	-
4/9/2014	560	370	32.0	13.0	64.0	1.8	92.0	13.0	150.0	1.2
5/20/2014	-	300	-	-	-	-	-	-	-	-
8/7/2014	-	370	-	-	-	-	-	-	-	-
10/1/2014	-	-	-	-	-	-	-	-	-	0.8
11/6/2014	-	310	-	-	-	-	-	-	-	-
2/5/2015	-	320	-	-	-	-	-	-	-	-
5/14/2015	-	320	-	-	-	-	-	-	-	-
8/7/2015	-	320	-	-	-	-	-	-	-	-
10/8/2015	-	-	-	-	-	-	-	-	-	1.4
11/17/2015	-	360	-	-	-	-	-	-	-	-
2/5/2016	-	350	-	-	-	-	-	-	-	-
5/13/2016	-	330	-	-	-	-	-	-	-	-
8/3/2016	-	330	-	-	-	-	-	-	-	-
11/10/2016	-	330	-	-	-	-	-	-	-	-
2/3/2017	-	330	-	-	-	-	-	-	-	1.6
4/11/2017	580	340	34.0	14.0	59.0	2.0	94.0	14.0	120.0	1.3
5/10/2017	-	360	-	-	-	-	-	-	-	-
8/15/2017	-	300	-	-	-	-	-	-	-	-
10/12/2017	-	-	-	-	-	-	-	-	-	1.1
11/2/2017	-	300	-	-	-	-	-	-	-	-
2/15/2018	-	330	-	-	-	-	-	-	-	-
5/8/2018	-	330	-	-	-	-	-	-	-	-
8/10/2018	-	330	-	-	-	-	-	-	-	-
11/8/2018	-	300	-	-	-	-	-	-	-	-
5/7/2019	-	310	-	-	-	-	-	-	-	-
2/19/2019	-	330	-	-	-	-	-	-	-	-
10/5/2018	-	-	-	-	-	-	-	-	-	1.7
8/14/2019	-	310	-	-	-	-	-	-	-	-
No. 140										
2/18/1988	560	325	33.0	10.0	65.0	2.0	77.0	14.0	153.0	2.9
1/15/1992	450	235	11.0	2.0	88.0	1.0	68.0	18.0	107.0	0.5
2/28/1995	560	325	36.0	11.0	58.0	2.0	94.0	14.0	140.0	2.7
3/25/1997	-	-	-	-	-	-	-	-	-	1.8
2/27/1998	650	360	31.0	11.0	76.0	2.0	95.0	16.0	130.0	1.1
9/17/1998	-	-	-	-	-	-	-	-	-	1.8
2/1/2001	650	370	31.0	12.0	72.0	2.0	110.0	21.0	150.0	0.9
5/16/2001	-	-	-	-	-	-	-	-	-	2.5
5/24/2002	-	-	-	-	-	-	-	-	-	1.6
4/5/2005	680	390	37.0	16.0	69.0	2.3	140.0	18.0	150.0	0.9
4/6/2006	-	-	-	-	-	-	-	-	-	1.0
4/24/2007	-	-	-	-	-	-	-	-	-	0.7
4/8/2008	630	350	26.0	9.5	79.0	1.9	110.0	21.0	140.0	0.6
7/7/2008	-	360	-	-	-	-	-	-	-	-
1/7/2009	-	400	-	-	-	-	-	-	-	-
4/15/2009	-	380	-	-	-	-	-	-	-	1.0
7/6/2009	-	360	-	-	-	-	-	-	-	-
1/6/2010	-	350	-	-	-	-	-	-	-	-
4/8/2010	-	350	-	-	-	-	-	-	-	0.5
7/14/2010	-	360	-	-	-	-	-	-	-	-
10/5/2010	-	350	-	-	-	-	-	-	-	-
1/12/2011	-	280	-	-	-	-	-	-	-	-
4/5/2011	640	360	26.0	9.4	82.0	1.9	100.0	19.0	130.0	0.6
10/5/2011	-	360	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
1/17/2012	-	380	-	-	-	-	-	-	-	-
4/3/2012	-	390	-	-	-	-	-	-	-	-
10/2/2012	-	370	-	-	-	-	-	-	-	-
1/21/2014	-	380	-	-	-	-	-	-	-	-
3/12/2014	-	-	-	-	-	-	-	-	-	0.6
4/3/2014	660	330	32.0	12.0	84.0	2.1	120.0	23.0	140.0	0.7
7/8/2014	-	380	-	-	-	-	-	-	-	-
10/1/2014	-	370	-	-	-	-	-	-	-	-
1/20/2015	-	340	-	-	-	-	-	-	-	-
4/9/2015	-	350	-	-	-	-	-	-	-	0.5
7/2/2015	-	360	-	-	-	-	-	-	-	-
10/8/2015	-	330	-	-	-	-	-	-	-	-
1/12/2016	-	330	-	-	-	-	-	-	-	-
4/21/2016	-	330	-	-	-	-	-	-	-	0.4
7/12/2016	-	400	-	-	-	-	-	-	-	-
8/4/2016	-	-	-	-	-	-	-	-	-	0.5
10/4/2016	-	350	-	-	-	-	-	-	-	-
4/11/2017	620	340	23.0	7.9	89.0	1.6	110.0	22.0	110.0	0.3
7/14/2017	-	310	-	-	-	-	-	-	-	-
10/4/2017	-	350	-	-	-	-	-	-	-	-
1/18/2018	-	320	-	-	-	-	-	-	-	-
4/9/2018	-	310	-	-	-	-	-	-	-	ND
7/19/2018	-	330	-	-	-	-	-	-	-	-
4/4/2019	-	310	-	-	-	-	-	-	-	ND
10/16/2018	-	320	-	-	-	-	-	-	-	-
1/10/2019	-	330	-	-	-	-	-	-	-	-
No. 141										
1/6/1988	780	440	64.0	11.0	82.0	3.0	65.0	91.0	217.0	2.9
1/30/1992	820	500	63.0	13.0	95.0	3.0	79.0	110.0	238.0	4.3
3/30/1995	840	490	58.0	11.0	100.0	3.0	70.0	97.0	241.0	3.2
3/25/1997	-	-	-	-	-	-	-	-	-	3.4
3/26/1998	760	480	62.0	12.0	90.0	3.0	69.0	86.0	230.0	3.6
1/4/1999	-	-	-	-	-	-	-	-	-	3.2
2/12/1999	-	-	-	-	-	-	-	-	-	4.3
10/21/1999	-	-	-	-	-	-	-	-	-	3.8
11/3/1999	-	-	-	-	-	-	-	-	-	3.2
12/14/1999	-	-	-	-	-	-	-	-	-	3.2
6/20/2000	-	-	-	-	-	-	-	-	-	3.4
1/4/2001	700	450	52.0	6.0	84.0	3.0	75.0	70.0	190.0	3.4
9/28/2001	-	-	-	-	-	-	-	-	-	4.1
11/8/2002	-	-	-	-	-	-	-	-	-	3.4
9/16/2003	-	-	-	-	-	-	-	-	-	4.3
1/13/2004	760	490	65.0	11.0	84.0	3.1	70.0	90.0	220.0	4.8
1/6/2005	-	-	-	-	-	-	-	-	-	4.1
1/6/2006	-	-	-	-	-	-	-	-	-	3.6
6/4/2008	-	410	-	-	-	-	-	-	-	2.5
12/5/2008	-	480	-	-	-	-	-	-	-	-
3/4/2009	-	440	-	-	-	-	-	-	-	-
6/2/2009	-	390	-	-	-	-	-	-	-	2.3
1/5/2010	760	450	62.0	8.1	84.0	3.5	77.0	68.0	200.0	3.6
3/3/2010	-	480	-	-	-	-	-	-	-	-
6/2/2010	-	400	-	-	-	-	-	-	-	2.9
9/1/2010	-	370	-	-	-	-	-	-	-	-
1/12/2011	-	460	-	-	-	-	-	-	-	-
4/5/2011	-	420	-	-	-	-	-	-	-	-
6/7/2011	-	-	-	-	-	-	-	-	-	2.7
7/6/2011	-	360	-	-	-	-	-	-	-	-
10/11/2011	-	420	-	-	-	-	-	-	-	-
1/10/2012	-	400	-	-	-	-	-	-	-	-
4/3/2012	-	510	-	-	-	-	-	-	-	-
6/5/2012	-	-	-	-	-	-	-	-	-	2.7
10/9/2012	-	400	-	-	-	-	-	-	-	-
1/3/2013	830	490	70.0	10.0	89.0	3.6	80.0	81.0	220.0	3.8
4/17/2013	-	460	-	-	-	-	-	-	-	-
6/6/2013	-	-	-	-	-	-	-	-	-	2.9
7/9/2013	-	450	-	-	-	-	-	-	-	-
10/8/2013	-	390	-	-	-	-	-	-	-	-
1/28/2014	-	520	-	-	-	-	-	-	-	-
4/9/2014	-	420	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/3/2014	-	-	-	-	-	-	-	-	-	3.6
7/9/2014	-	400	-	-	-	-	-	-	-	-
10/2/2014	-	410	-	-	-	-	-	-	-	-
1/21/2015	-	600	-	-	-	-	-	-	-	-
4/8/2015	-	400	-	-	-	-	-	-	-	-
6/3/2015	-	-	-	-	-	-	-	-	-	2.9
7/7/2015	-	420	-	-	-	-	-	-	-	-
10/22/2015	-	500	-	-	-	-	-	-	-	-
1/13/2016	810	480	66.0	8.1	87.0	3.4	81.0	89.0	210.0	4.1
4/13/2016	-	490	-	-	-	-	-	-	-	-
6/7/2016	-	-	-	-	-	-	-	-	-	-
7/13/2016	-	400	-	-	-	-	-	-	-	-
10/6/2016	-	390	-	-	-	-	-	-	-	-
1/17/2017	-	550	-	-	-	-	-	-	-	-
4/6/2017	-	410	-	-	-	-	-	-	-	-
6/8/2017	-	-	-	-	-	-	-	-	-	3.1
7/5/2017	-	390	-	-	-	-	-	-	-	-
10/4/2017	-	430	-	-	-	-	-	-	-	-
1/5/2018	-	470	-	-	-	-	-	-	-	-
4/11/2018	-	460	-	-	-	-	-	-	-	-
6/12/2018	-	-	-	-	-	-	-	-	-	3.1
7/18/2018	-	490	-	-	-	-	-	-	-	-
5/15/2019	800	480	66.0	9.0	91.0	3.3	81.0	92.0	180.0	4.8
6/18/2019	-	-	-	-	-	-	-	-	-	3.4
10/9/2018	-	440	-	-	-	-	-	-	-	-
4/26/2019	-	530	-	-	-	-	-	-	-	-
7/10/2019	-	360	-	-	-	-	-	-	-	-
No. 143										
1/15/1988	670	345	8.0	2.0	134.0	1.0	91.0	57.0	95.0	2.5
10/17/1990	660	345	25.0	4.0	112.0	2.0	89.0	62.0	140.0	2.7
3/3/1994	690	370	24.0	3.0	114.0	2.0	93.0	68.0	131.0	2.5
3/30/1995	-	-	-	-	-	-	-	-	-	2.5
3/25/1997	600	330	15.0	2.0	110.0	1.0	87.0	44.0	89.0	2.0
7/18/1997	-	-	-	-	-	-	-	-	-	2.0
7/23/1997	-	-	-	-	-	-	-	-	-	2.0
8/20/1997	-	-	-	-	-	-	-	-	-	2.3
9/3/1997	-	-	-	-	-	-	-	-	-	2.2
9/17/1997	-	-	-	-	-	-	-	-	-	2.0
9/17/1998	-	-	-	-	-	-	-	-	-	2.3
10/21/1999	-	-	-	-	-	-	-	-	-	2.9
3/7/2000	730	400	21.0	3.0	120.0	2.0	84.0	68.0	140.0	2.7
10/13/2000	-	-	-	-	-	-	-	-	-	1.8
10/10/2001	-	-	-	-	-	-	-	-	-	1.8
11/19/2002	-	-	-	-	-	-	-	-	-	2.3
1/13/2003	-	-	-	-	-	-	-	-	-	2.1
3/10/2003	650	370	14.0	1.9	110.0	1.0	92.0	52.0	130.0	2.3
1/7/2004	-	-	-	-	-	-	-	-	-	2.7
1/18/2005	-	-	-	-	-	-	-	-	-	2.3
1/6/2006	-	-	-	-	-	-	-	-	-	2.0
6/8/2006	560	270	9.5	1.3	100.0	1.0	86.0	ND	100.0	1.6
1/10/2007	-	-	-	-	-	-	-	-	-	1.7
1/4/2008	-	-	-	-	-	-	-	-	-	1.6
1/8/2009	-	-	-	-	-	-	-	-	-	2.0
2/4/2009	-	300	-	-	-	-	-	-	-	-
5/11/2009	-	290	-	-	-	-	-	-	-	-
8/5/2009	-	300	-	-	-	-	-	-	-	-
1/5/2010	-	-	-	-	-	-	-	-	-	1.5
2/4/2010	-	320	-	-	-	-	-	-	-	-
5/6/2010	-	330	-	-	-	-	-	-	-	-
8/13/2010	-	280	-	-	-	-	-	-	-	-
11/1/2010	-	350	-	-	-	-	-	-	-	-
1/13/2011	-	-	-	-	-	-	-	-	-	2.1
2/9/2011	-	320	-	-	-	-	-	-	-	-
5/4/2011	-	300	-	-	-	-	-	-	-	-
8/3/2011	-	320	-	-	-	-	-	-	-	-
11/2/2011	-	370	-	-	-	-	-	-	-	-
1/6/2012	-	-	-	-	-	-	-	-	-	1.6
2/9/2012	-	300	-	-	-	-	-	-	-	-
5/10/2012	-	300	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/5/2012	540	320	7.3	1.1	100.0	1.0	73.0	21.0	100.0	1.3
8/7/2012	-	310	-	-	-	-	-	-	-	-
11/1/2012	-	290	-	-	-	-	-	-	-	-
1/3/2013	-	-	-	-	-	-	-	-	-	1.9
2/10/2013	-	360	-	-	-	-	-	-	-	-
5/2/2013	-	290	-	-	-	-	-	-	-	-
8/19/2013	-	330	-	-	-	-	-	-	-	-
11/7/2013	-	290	-	-	-	-	-	-	-	-
1/9/2014	-	-	-	-	-	-	-	-	-	1.4
2/5/2014	-	280	-	-	-	-	-	-	-	-
5/6/2014	-	270	-	-	-	-	-	-	-	-
8/8/2014	-	260	-	-	-	-	-	-	-	-
11/6/2014	-	320	-	-	-	-	-	-	-	-
1/8/2015	-	-	-	-	-	-	-	-	-	2.5
2/4/2015	-	240	-	-	-	-	-	-	-	-
5/7/2015	-	300	-	-	-	-	-	-	-	-
6/2/2015	590	300	6.4	ND	100.0	ND	79.0	25.0	120.0	1.4
8/7/2015	-	270	-	-	-	-	-	-	-	-
11/10/2015	-	330	-	-	-	-	-	-	-	-
1/12/2016	-	-	-	-	-	-	-	-	-	2.3
2/9/2016	-	350	-	-	-	-	-	-	-	-
5/10/2016	-	290	-	-	-	-	-	-	-	-
11/8/2016	-	310	-	-	-	-	-	-	-	-
7/26/2017	-	370	-	-	-	-	-	-	-	-
8/4/2017	-	390	-	-	-	-	-	-	-	-
10/19/2017	-	-	-	-	-	-	-	-	-	1.5
11/8/2017	-	300	-	-	-	-	-	-	-	-
1/18/2018	-	-	-	-	-	-	-	-	-	2.4
2/6/2018	-	340	-	-	-	-	-	-	-	-
5/8/2018	-	320	-	-	-	-	-	-	-	-
6/7/2018	560	300	6.6	ND	110.0	ND	83.0	30.0	100.0	1.2
8/16/2018	-	340	-	-	-	-	-	-	-	-
11/8/2018	-	290	-	-	-	-	-	-	-	-
2/19/2019	-	300	-	-	-	-	-	-	-	-
8/20/2019	-	320	-	-	-	-	-	-	-	-
1/15/2019	-	-	-	-	-	-	-	-	-	2.0
5/1/2019	-	300	-	-	-	-	-	-	-	-
No. 144										
9/14/1988	610	335	8.0	ND	114.0	1.0	95.0	33.0	92.0	ND
12/19/1995	730	420	34.0	1.0	124.0	1.0	120.0	33.0	186.0	ND
12/20/2000	690	400	28.0	1.0	120.0	ND	120.0	35.0	170.0	ND
5/22/2001	-	-	-	-	-	-	-	-	-	ND
8/20/2002	-	-	-	-	-	-	-	-	-	ND
8/27/2003	-	-	-	-	-	-	-	-	-	ND
12/16/2003	630	420	33.0	1.8	110.0	1.0	110.0	28.0	170.0	ND
8/12/2004	-	-	-	-	-	-	-	-	-	ND
10/11/2005	-	-	-	-	-	-	-	-	-	0.5
12/7/2006	670	370	21.0	1.0	98.0	1.2	110.0	27.0	150.0	ND
8/7/2007	-	-	-	-	-	-	-	-	-	ND
8/11/2008	-	320	-	-	-	-	-	-	-	ND
2/9/2009	-	340	-	-	-	-	-	-	-	-
5/8/2009	-	360	-	-	-	-	-	-	-	-
8/5/2009	-	370	-	-	-	-	-	-	-	ND
2/4/2010	-	380	-	-	-	-	-	-	-	-
5/6/2010	-	410	-	-	-	-	-	-	-	-
8/10/2010	-	370	-	-	-	-	-	-	-	ND
11/10/2010	-	400	-	-	-	-	-	-	-	-
2/2/2011	-	340	-	-	-	-	-	-	-	-
5/4/2011	-	350	-	-	-	-	-	-	-	-
8/9/2011	-	340	-	-	-	-	-	-	-	ND
11/2/2011	-	320	-	-	-	-	-	-	-	-
2/8/2012	-	320	-	-	-	-	-	-	-	-
5/3/2012	-	340	-	-	-	-	-	-	-	-
8/9/2012	-	330	-	-	-	-	-	-	-	ND
11/2/2012	-	370	-	-	-	-	-	-	-	-
12/4/2012	660	350	23.0	1.2	110.0	ND	100.0	26.0	150.0	ND
2/6/2013	-	350	-	-	-	-	-	-	-	-
5/3/2013	-	360	-	-	-	-	-	-	-	-
8/14/2013	-	340	-	-	-	-	-	-	-	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
11/7/2013	-	350	-	-	-	-	-	-	-	-
2/5/2014	-	340	-	-	-	-	-	-	-	-
5/14/2014	-	340	-	-	-	-	-	-	-	-
8/7/2014	-	340	-	-	-	-	-	-	-	ND
11/5/2014	-	370	-	-	-	-	-	-	-	-
2/18/2015	-	380	-	-	-	-	-	-	-	-
5/14/2015	-	310	-	-	-	-	-	-	-	-
8/19/2015	-	380	-	-	-	-	-	-	-	ND
11/18/2015	-	330	-	-	-	-	-	-	-	-
12/9/2015	620	340	20.0	1.1	110.0	ND	110.0	30.0	130.0	ND
2/10/2016	-	460	-	-	-	-	-	-	-	-
5/5/2016	-	350	-	-	-	-	-	-	-	-
8/2/2016	-	350	-	-	-	-	-	-	-	ND
11/8/2016	-	350	-	-	-	-	-	-	-	-
2/2/2017	-	360	-	-	-	-	-	-	-	-
5/3/2017	-	340	-	-	-	-	-	-	-	-
8/9/2017	-	340	-	-	-	-	-	-	-	ND
11/2/2017	-	360	-	-	-	-	-	-	-	-
9/12/2018	-	380	-	-	-	-	-	-	-	ND
2/19/2019	-	360	-	-	-	-	-	-	-	-
5/2/2019	-	350	-	-	-	-	-	-	-	-
12/17/2018	650	560	30.0	2.0	100.0	1.2	120.0	30.0	130.0	ND
8/26/2019	-	360	-	-	-	-	-	-	-	0.0
11/14/2018	-	300	-	-	-	-	-	-	-	-
No. 145										
10/4/1990	800	490	43.0	8.0	110.0	2.0	110.0	78.0	171.0	ND
10/6/1993	650	375	23.0	3.0	106.0	1.0	85.0	58.0	146.0	ND
11/27/1996	650	340	26.0	2.0	110.0	1.0	87.0	48.0	150.0	ND
2/4/1997	670	370	24.0	2.0	110.0	1.0	87.0	55.0	160.0	ND
1/28/1998	-	-	-	-	-	-	-	-	-	ND
1/4/1999	-	-	-	-	-	-	-	-	-	ND
10/26/1999	690	400	29.0	3.0	110.0	1.0	96.0	61.0	170.0	ND
1/6/2000	-	-	-	-	-	-	-	-	-	ND
1/25/2001	-	-	-	-	-	-	-	-	-	ND
1/18/2002	-	-	-	-	-	-	-	-	-	ND
10/9/2002	690	390	26.0	2.3	110.0	1.2	94.0	52.0	160.0	ND
1/15/2003	-	-	-	-	-	-	-	-	-	ND
1/7/2004	-	-	-	-	-	-	-	-	-	ND
1/13/2005	-	-	-	-	-	-	-	-	-	ND
10/11/2005	680	430	33.0	2.7	120.0	1.4	100.0	54.0	180.0	ND
10/18/2005	700	440	34.0	2.8	120.0	1.5	100.0	59.0	180.0	ND
4/13/2006	-	-	-	-	-	-	-	-	-	ND
1/19/2007	-	-	-	-	-	-	-	-	-	ND
1/4/2008	-	-	-	-	-	-	-	-	-	ND
8/11/2008	-	360	-	-	-	-	-	-	-	-
10/8/2008	720	400	37.0	3.2	100.0	1.3	95.0	56.0	150.0	ND
1/6/2009	-	-	-	-	-	-	-	-	-	ND
2/3/2009	-	390	-	-	-	-	-	-	-	-
5/8/2009	-	410	-	-	-	-	-	-	-	-
8/5/2009	-	400	-	-	-	-	-	-	-	-
1/7/2010	-	-	-	-	-	-	-	-	-	ND
2/4/2010	-	400	-	-	-	-	-	-	-	-
5/7/2010	-	470	-	-	-	-	-	-	-	-
8/10/2010	-	390	-	-	-	-	-	-	-	-
11/10/2010	-	410	-	-	-	-	-	-	-	-
1/12/2011	-	-	-	-	-	-	-	-	-	ND
2/9/2011	-	390	-	-	-	-	-	-	-	-
5/5/2011	-	380	-	-	-	-	-	-	-	-
8/4/2011	-	360	-	-	-	-	-	-	-	-
10/5/2011	670	380	28.0	2.6	110.0	1.6	100.0	49.0	160.0	ND
11/10/2011	-	400	-	-	-	-	-	-	-	-
1/12/2012	-	-	-	-	-	-	-	-	-	ND
2/8/2012	-	510	-	-	-	-	-	-	-	-
5/17/2012	-	440	-	-	-	-	-	-	-	-
8/9/2012	-	410	-	-	-	-	-	-	-	-
11/6/2012	-	600	-	-	-	-	-	-	-	-
1/16/2013	-	-	-	-	-	-	-	-	-	ND
2/7/2013	-	400	-	-	-	-	-	-	-	-
5/3/2013	-	390	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8/14/2013	-	370	-	-	-	-	-	-	-	-
11/7/2013	-	390	-	-	-	-	-	-	-	-
1/28/2014	-	-	-	-	-	-	-	-	-	ND
2/11/2014	-	350	-	-	-	-	-	-	-	-
5/21/2014	-	440	-	-	-	-	-	-	-	-
8/19/2014	-	370	-	-	-	-	-	-	-	-
10/9/2014	690	400	42.0	0.0	110.0	1.4	100.0	55.0	180.0	ND
11/14/2014	-	440	-	-	-	-	-	-	-	-
1/27/2015	-	-	-	-	-	-	-	-	-	ND
2/18/2015	-	420	-	-	-	-	-	-	-	-
5/19/2015	-	460	-	-	-	-	-	-	-	-
8/6/2015	-	390	-	-	-	-	-	-	-	-
11/18/2015	-	390	-	-	-	-	-	-	-	-
4/19/2016	-	430	-	-	-	-	-	-	-	-
5/13/2016	-	400	-	-	-	-	-	-	-	-
8/3/2016	-	410	-	-	-	-	-	-	-	-
11/9/2016	-	400	-	-	-	-	-	-	-	ND
1/25/2017	-	-	-	-	-	-	-	-	-	ND
2/9/2017	-	430	-	-	-	-	-	-	-	-
5/3/2017	-	420	-	-	-	-	-	-	-	-
5/22/2018	-	410	-	-	-	-	-	-	-	-
5/23/2018	720	410	36.0	5.7	100.0	1.5	100.0	54.0	170.0	ND
11/6/2018	-	390	-	-	-	-	-	-	-	-
1/22/2019	-	-	-	-	-	-	-	-	-	ND
2/19/2019	-	380	-	-	-	-	-	-	-	-
5/2/2019	-	400	-	-	-	-	-	-	-	-
8/21/2019	-	400	-	-	-	-	-	-	-	-
No. 146										
12/10/1996	900	500	57.0	23.0	98.0	ND	100.0	64.0	280.0	3.4
3/2/2000	-	-	-	-	-	-	-	-	-	0.9
No. 149										
6/15/1993	-	-	-	-	-	-	-	-	-	1.1
10/10/2001	-	-	-	-	-	-	-	-	-	0.9
3/11/2002	1,040	610	61.0	23.0	120.0	4.0	100.0	170.0	250.0	0.9
12/11/2002	-	-	-	-	-	-	-	-	-	0.7
1/23/2003	-	-	-	-	-	-	-	-	-	0.9
3/12/2003	1,000	600	59.0	22.0	120.0	3.7	100.0	170.0	230.0	0.7
1/13/2004	-	-	-	-	-	-	-	-	-	0.9
1/11/2006	-	-	-	-	-	-	-	-	-	0.6
3/9/2006	940	580	56.0	21.0	110.0	3.8	87.0	160.0	220.0	0.6
1/24/2007	-	-	-	-	-	-	-	-	-	0.5
3/11/2008	-	550	-	-	-	-	-	-	-	-
7/8/2008	-	590	-	-	-	-	-	-	-	-
1/8/2009	-	590	-	-	-	-	-	-	-	0.6
3/4/2009	900	590	52.0	20.0	100.0	3.6	93.0	170.0	210.0	0.6
4/2/2009	-	570	-	-	-	-	-	-	-	-
7/13/2009	-	560	-	-	-	-	-	-	-	-
1/7/2010	-	570	-	-	-	-	-	-	-	0.6
4/8/2010	-	570	-	-	-	-	-	-	-	-
5/12/2011	-	570	-	-	-	-	-	-	-	0.5
8/3/2011	-	600	-	-	-	-	-	-	-	-
11/9/2011	-	620	-	-	-	-	-	-	-	-
2/9/2012	-	580	-	-	-	-	-	-	-	-
3/2/2012	970	600	59.0	20.0	99.0	4.4	95.0	180.0	190.0	0.5
5/3/2012	-	600	-	-	-	-	-	-	-	0.5
8/8/2012	-	610	-	-	-	-	-	-	-	-
11/1/2012	-	620	-	-	-	-	-	-	-	-
2/10/2013	-	600	-	-	-	-	-	-	-	-
5/14/2013	-	610	-	-	-	-	-	-	-	0.4
8/15/2013	-	580	-	-	-	-	-	-	-	-
11/6/2013	-	560	-	-	-	-	-	-	-	-
2/6/2014	-	580	-	-	-	-	-	-	-	-
5/8/2014	-	620	-	-	-	-	-	-	-	1.1
8/7/2014	-	560	-	-	-	-	-	-	-	-
11/6/2014	-	550	-	-	-	-	-	-	-	-
2/5/2015	-	570	-	-	-	-	-	-	-	-
3/11/2015	910	580	55.0	22.0	110.0	3.8	90.0	160.0	190.0	0.5
5/15/2015	-	630	-	-	-	-	-	-	-	0.5

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8/4/2015	-	560	-	-	-	-	-	-	-	-
11/17/2015	-	590	-	-	-	-	-	-	-	-
2/5/2016	-	570	-	-	-	-	-	-	-	-
11/22/2016	-	550	-	-	-	-	-	-	-	0.5
2/9/2017	-	580	-	-	-	-	-	-	-	-
6/15/2017	-	540	-	-	-	-	-	-	-	0.4
8/16/2017	-	560	-	-	-	-	-	-	-	-
11/9/2017	-	570	-	-	-	-	-	-	-	-
2/9/2018	-	570	-	-	-	-	-	-	-	-
3/15/2018	960	590	59.0	22.0	110.0	4.1	96.0	170.0	160.0	0.4
5/4/2018	-	590	-	-	-	-	-	-	-	0.5
8/16/2018	-	620	-	-	-	-	-	-	-	-
11/8/2018	-	590	-	-	-	-	-	-	-	-
2/19/2019	-	580	-	-	-	-	-	-	-	-
5/2/2019	-	610	-	-	-	-	-	-	-	0.4
8/14/2019	-	600	-	-	-	-	-	-	-	-
No. 149A										
8/26/1988	950	540	71.0	211.0	96.0	1.0	115.0	47.0	302.0	4.1
10/31/1991	800	480	36.0	13.0	122.0	3.0	93.0	110.0	195.0	-
No. 150										
9/29/1988	1,950	1,235	134.0	29.0	225.0	2.0	290.0	220.0	390.0	3.4
12/21/1991	1,000	590	74.0	17.0	108.0	4.0	130.0	110.0	207.0	-
No. 151										
7/25/1991	860	485	53.0	16.0	103.0	4.0	90.0	130.0	183.0	-
7/28/1991	730	400	39.0	12.0	100.0	3.0	91.0	58.0	177.0	-
7/29/1991	600	340	9.0	2.0	122.0	5.0	63.0	34.0	204.0	-
10/17/1991	510	295	3.0	ND	118.0	1.0	45.0	10.0	137.0	-
8/10/1994	550	340	3.0	ND	110.0	1.0	59.0	22.0	119.0	ND
6/16/1997	-	-	-	-	-	-	-	-	-	ND
8/14/1997	540	300	2.0	ND	110.0	ND	44.0	10.0	160.0	ND
9/16/1998	-	-	-	-	-	-	-	-	-	ND
1/6/2000	510	300	1.0	ND	110.0	ND	33.0	4.6	180.0	ND
1/6/2005	-	-	-	-	-	-	-	-	-	ND
5/12/2009	530	380	1.4	1.0	110.0	ND	36.0	7.7	140.0	ND
5/5/2010	-	-	-	-	-	-	-	-	-	ND
10/28/2010	-	290	-	-	-	-	-	-	-	-
12/1/2010	-	290	-	-	-	-	-	-	-	-
3/9/2011	-	310	-	-	-	-	-	-	-	-
5/3/2011	-	-	-	-	-	-	-	-	-	ND
6/2/2011	-	280	-	-	-	-	-	-	-	-
9/6/2011	-	310	-	-	-	-	-	-	-	-
12/6/2011	-	300	-	-	-	-	-	-	-	-
3/5/2012	-	290	-	-	-	-	-	-	-	-
5/2/2012	490	300	1.3	ND	110.0	ND	38.0	4.2	180.0	ND
6/5/2012	-	240	-	-	-	-	-	-	-	-
9/4/2012	-	300	-	-	-	-	-	-	-	-
12/3/2012	-	290	-	-	-	-	-	-	-	-
3/6/2013	-	260	-	-	-	-	-	-	-	-
5/1/2013	-	-	-	-	-	-	-	-	-	ND
6/5/2013	-	260	-	-	-	-	-	-	-	-
9/3/2013	-	280	-	-	-	-	-	-	-	-
1/29/2014	-	340	-	-	-	-	-	-	-	-
3/13/2014	-	280	-	-	-	-	-	-	-	-
5/1/2014	-	-	-	-	-	-	-	-	-	ND
6/2/2014	-	290	-	-	-	-	-	-	-	-
9/3/2014	-	280	-	-	-	-	-	-	-	-
12/1/2014	-	250	-	-	-	-	-	-	-	-
3/3/2015	-	340	-	-	-	-	-	-	-	-
5/5/2015	500	280	1.3	ND	110.0	ND	38.0	3.8	170.0	ND
6/1/2015	-	290	-	-	-	-	-	-	-	-
9/2/2015	-	290	-	-	-	-	-	-	-	-
12/1/2015	-	260	-	-	-	-	-	-	-	-
3/1/2016	-	290	-	-	-	-	-	-	-	-
6/21/2016	-	270	-	-	-	-	-	-	-	ND
11/22/2016	-	-	-	-	-	-	-	-	-	ND
12/5/2016	-	280	-	-	-	-	-	-	-	-
3/3/2017	-	270	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/2/2017	-	-	-	-	-	-	-	-	-	ND
6/7/2017	-	290	-	-	-	-	-	-	-	-
9/5/2017	-	270	-	-	-	-	-	-	-	-
12/4/2017	-	290	-	-	-	-	-	-	-	-
3/13/2018	-	280	-	-	-	-	-	-	-	-
5/3/2018	480	300	1.3	ND	110.0	ND	42.0	4.5	160.0	ND
6/4/2018	-	290	-	-	-	-	-	-	-	-
9/4/2018	-	290	-	-	-	-	-	-	-	-
3/5/2019	-	290	-	-	-	-	-	-	-	-
5/6/2019	-	-	-	-	-	-	-	-	-	ND
6/5/2019	-	300	-	-	-	-	-	-	-	-
12/3/2018	-	280	-	-	-	-	-	-	-	-
9/9/2019	-	300	-	-	-	-	-	-	-	-
No. 152										
1/11/2002	860	550	64.0	20.0	77.0	6.0	75.0	190.0	160.0	ND
1/8/2003	-	-	-	-	-	-	-	-	-	ND
1/7/2004	-	-	-	-	-	-	-	-	-	ND
1/24/2005	850	510	71.0	25.0	77.0	4.6	85.0	190.0	160.0	ND
1/4/2006	-	-	-	-	-	-	-	-	-	0.2
1/10/2007	-	-	-	-	-	-	-	-	-	ND
4/8/2008	-	510	-	-	-	-	-	-	-	-
1/2/2009	-	580	-	-	-	-	-	-	-	ND
4/6/2009	-	620	-	-	-	-	-	-	-	-
7/13/2009	-	610	-	-	-	-	-	-	-	-
1/6/2010	-	740	-	-	-	-	-	-	-	0.4
4/19/2010	-	670	-	-	-	-	-	-	-	-
7/8/2010	-	620	-	-	-	-	-	-	-	-
10/7/2010	-	580	-	-	-	-	-	-	-	-
1/11/2011	-	710	-	-	-	-	-	-	-	0.9
4/13/2011	-	490	-	-	-	-	-	-	-	-
7/12/2011	-	460	-	-	-	-	-	-	-	-
10/6/2011	-	420	-	-	-	-	-	-	-	-
1/11/2012	-	270	-	-	-	-	-	-	-	ND
4/12/2012	-	330	-	-	-	-	-	-	-	-
10/10/2012	-	420	-	-	-	-	-	-	-	-
11/28/2012	760	590	54.0	20.0	70.0	5.2	80.0	110.0	170.0	0.3
1/9/2013	-	530	-	-	-	-	-	-	-	0.4
4/11/2013	-	380	-	-	-	-	-	-	-	-
7/10/2013	-	530	-	-	-	-	-	-	-	-
10/16/2013	-	540	-	-	-	-	-	-	-	-
1/16/2014	850	540	65.0	24.0	77.0	4.7	74.0	180.0	140.0	ND
4/2/2014	-	510	-	-	-	-	-	-	-	-
7/3/2014	-	550	-	-	-	-	-	-	-	-
10/9/2014	-	520	-	-	-	-	-	-	-	-
1/13/2015	-	620	-	-	-	-	-	-	-	0.3
4/21/2015	-	620	-	-	-	-	-	-	-	-
7/15/2015	-	580	-	-	-	-	-	-	-	-
10/21/2015	-	650	-	-	-	-	-	-	-	-
1/14/2016	-	960	-	-	-	-	-	-	-	0.5
4/20/2016	-	570	-	-	-	-	-	-	-	-
7/19/2016	-	660	-	-	-	-	-	-	-	-
10/26/2016	-	620	-	-	-	-	-	-	-	-
1/18/2017	1,100	640	73.0	27.0	100.0	5.2	99.0	220.0	170.0	0.3
4/11/2017	-	480	-	-	-	-	-	-	-	-
7/6/2017	-	260	-	-	-	-	-	-	-	-
10/12/2017	-	350	-	-	-	-	-	-	-	-
1/17/2018	-	330	-	-	-	-	-	-	-	0.3
4/12/2018	-	370	-	-	-	-	-	-	-	-
7/12/2018	-	480	-	-	-	-	-	-	-	-
7/11/2019	-	370	-	-	-	-	-	-	-	-
1/10/2019	-	540	-	-	-	-	-	-	-	0.2
10/4/2018	-	500	-	-	-	-	-	-	-	-
4/5/2019	-	540	-	-	-	-	-	-	-	-
6/3/2019	-	410	-	-	-	-	-	-	-	-
No. 153										
12/29/1993	804	485	53.0	18.0	92.0	5.0	86.0	120.0	214.0	ND
4/13/1999	880	540	63.0	23.0	79.0	5.0	68.0	220.0	150.0	ND
4/11/2000	-	-	-	-	-	-	-	-	-	0.5

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/14/2001	-	-	-	-	-	-	-	-	-	ND
4/2/2002	820	500	63.0	22.0	75.0	4.2	80.0	190.0	140.0	ND
4/14/2005	700	410	44.0	17.0	65.0	3.0	76.0	110.0	140.0	0.7
4/4/2006	-	-	-	-	-	-	-	-	-	0.5
4/4/2007	-	-	-	-	-	-	-	-	-	ND
4/8/2008	920	560	62.0	23.0	79.0	4.3	100.0	170.0	170.0	0.4
1/2/2009	-	570	-	-	-	-	-	-	-	-
4/6/2009	-	610	-	-	-	-	-	-	-	ND
7/13/2009	-	590	-	-	-	-	-	-	-	-
1/6/2010	-	560	-	-	-	-	-	-	-	-
4/8/2010	-	610	-	-	-	-	-	-	-	0.2
7/8/2010	-	590	-	-	-	-	-	-	-	-
10/7/2010	-	540	-	-	-	-	-	-	-	-
1/11/2011	-	640	-	-	-	-	-	-	-	-
4/13/2011	850	520	45.0	17.0	93.0	3.8	92.0	130.0	170.0	0.5
7/12/2011	-	450	-	-	-	-	-	-	-	-
10/6/2011	-	380	-	-	-	-	-	-	-	-
1/11/2012	-	280	-	-	-	-	-	-	-	-
4/12/2012	-	300	-	-	-	-	-	-	-	ND
10/10/2012	-	390	-	-	-	-	-	-	-	-
1/9/2013	-	420	-	-	-	-	-	-	-	-
4/11/2013	-	390	-	-	-	-	-	-	-	ND
7/10/2013	-	470	-	-	-	-	-	-	-	-
10/16/2013	-	540	-	-	-	-	-	-	-	-
1/15/2014	-	550	-	-	-	-	-	-	-	-
4/2/2014	880	560	62.0	23.0	80.0	4.2	78.0	180.0	150.0	ND
7/3/2014	-	550	-	-	-	-	-	-	-	-
10/9/2014	-	520	-	-	-	-	-	-	-	-
1/13/2015	-	600	-	-	-	-	-	-	-	-
4/21/2015	-	580	-	-	-	-	-	-	-	0.3
7/15/2015	-	600	-	-	-	-	-	-	-	-
10/21/2015	-	680	-	-	-	-	-	-	-	-
1/14/2016	-	890	-	-	-	-	-	-	-	-
4/20/2016	-	720	-	-	-	-	-	-	-	0.6
7/19/2016	-	680	-	-	-	-	-	-	-	-
10/26/2016	-	620	-	-	-	-	-	-	-	-
4/11/2017	960	600	63.0	23.0	100.0	4.5	93.0	200.0	140.0	0.3
7/6/2017	-	410	-	-	-	-	-	-	-	-
10/12/2017	-	310	-	-	-	-	-	-	-	-
1/17/2018	-	320	-	-	-	-	-	-	-	-
4/12/2018	-	350	-	-	-	-	-	-	-	0.3
7/12/2018	-	570	-	-	-	-	-	-	-	-
7/11/2019	-	380	-	-	-	-	-	-	-	-
1/10/2019	-	510	-	-	-	-	-	-	-	-
10/4/2018	-	480	-	-	-	-	-	-	-	-
4/5/2019	-	520	-	-	-	-	-	-	-	ND
6/3/2019	-	410	-	-	-	-	-	-	-	-
No. 154										
1/28/1994	930	530	46.0	20.0	106.0	6.0	89.0	130.0	214.0	0.7
11/3/2015	-	760	-	-	-	-	-	-	-	ND
11/4/2015	1,000	600	75.0	26.0	-	5.6	95.0	-	160.0	0.2
2/4/2016	-	850	-	-	-	-	-	-	-	-
5/5/2016	-	670	-	-	-	-	-	-	-	-
8/4/2016	-	620	-	-	-	-	-	-	-	-
11/9/2016	-	600	-	-	-	-	-	-	-	ND
2/2/2017	-	620	-	-	-	-	-	-	-	-
5/4/2017	-	420	-	-	-	-	-	-	-	-
8/10/2017	-	250	-	-	-	-	-	-	-	-
11/9/2017	-	310	-	-	-	-	-	-	-	0.3
2/6/2018	-	310	-	-	-	-	-	-	-	-
5/4/2018	-	400	-	-	-	-	-	-	-	-
8/8/2018	-	500	-	-	-	-	-	-	-	-
8/26/2019	-	340	-	-	-	-	-	-	-	-
6/3/2019	-	410	-	-	-	-	-	-	-	-
11/27/2018	810	480	58.0	20.0	80.0	5.1	88.0	170.0	110.0	0.3
2/20/2019	-	530	-	-	-	-	-	-	-	-
5/8/2019	-	430	-	-	-	-	-	-	-	-
No. 155										

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
9/16/1993	680	355	22.0	2.0	108.0	1.0	90.0	64.0	104.0	ND
2/23/1995	760	445	30.0	3.0	126.0	1.0	120.0	82.0	140.0	0.9
6/6/1995	-	-	-	-	-	-	-	-	-	1.1
8/14/1997	-	-	-	-	-	-	-	-	-	0.9
2/25/1998	880	540	43.0	5.0	130.0	1.0	100.0	100.0	190.0	1.1
7/27/1998	-	-	-	-	-	-	-	-	-	0.7
2/9/2000	-	-	-	-	-	-	-	-	-	0.5
9/13/2000	690	410	23.0	2.0	120.0	ND	100.0	72.0	130.0	0.5
2/14/2001	-	-	-	-	-	-	-	-	-	1.1
2/21/2002	-	-	-	-	-	-	-	-	-	0.5
2/28/2003	-	-	-	-	-	-	-	-	-	ND
1/7/2004	600	360	10.0	ND	120.0	ND	100.0	60.0	100.0	ND
2/23/2004	-	-	-	-	-	-	-	-	-	1.4
2/16/2005	-	-	-	-	-	-	-	-	-	1.1
10/11/2005	-	-	-	-	-	-	-	-	-	0.5
2/7/2006	-	-	-	-	-	-	-	-	-	1.1
2/7/2007	-	-	-	-	-	-	-	-	-	0.6
No. 156										
8/11/2008	670	370	48.0	13.0	78.0	2.2	70.0	62.0	190.0	0.4
5/8/2009	-	400	-	-	-	-	-	-	-	-
8/5/2009	-	410	-	-	-	-	-	-	-	0.3
2/3/2010	-	370	-	-	-	-	-	-	-	-
5/7/2010	-	470	-	-	-	-	-	-	-	-
8/10/2010	-	390	-	-	-	-	-	-	-	ND
11/10/2010	-	410	-	-	-	-	-	-	-	-
2/9/2011	-	410	-	-	-	-	-	-	-	-
5/4/2011	-	400	-	-	-	-	-	-	-	-
8/4/2011	660	380	44.0	11.0	72.0	1.8	75.0	53.0	180.0	0.5
11/10/2011	-	390	-	-	-	-	-	-	-	-
2/8/2012	-	340	-	-	-	-	-	-	-	-
5/3/2012	-	360	-	-	-	-	-	-	-	-
8/9/2012	-	360	-	-	-	-	-	-	-	0.3
11/2/2012	-	420	-	-	-	-	-	-	-	-
2/6/2013	-	390	-	-	-	-	-	-	-	-
5/2/2013	-	370	-	-	-	-	-	-	-	-
8/14/2013	-	370	-	-	-	-	-	-	-	0.3
11/7/2013	-	390	-	-	-	-	-	-	-	-
2/5/2014	-	390	-	-	-	-	-	-	-	-
5/23/2014	-	400	-	-	-	-	-	-	-	-
8/7/2014	650	380	42.0	11.0	78.0	1.8	86.0	62.0	170.0	0.3
11/5/2014	-	400	-	-	-	-	-	-	-	-
2/10/2015	-	510	-	-	-	-	-	-	-	-
5/14/2015	-	380	-	-	-	-	-	-	-	-
8/6/2015	-	400	-	-	-	-	-	-	-	0.3
3/3/2016	-	380	-	-	-	-	-	-	-	-
5/5/2016	-	400	-	-	-	-	-	-	-	-
8/2/2016	-	400	-	-	-	-	-	-	-	0.2
11/8/2016	-	390	-	-	-	-	-	-	-	-
2/3/2017	-	420	-	-	-	-	-	-	-	-
5/4/2017	-	400	-	-	-	-	-	-	-	-
8/9/2017	680	400	41.0	10.0	75.0	1.7	84.0	61.0	140.0	0.2
11/2/2017	-	400	-	-	-	-	-	-	-	-
5/22/2018	-	400	-	-	-	-	-	-	-	-
8/14/2018	-	410	-	-	-	-	-	-	-	ND
11/6/2018	-	350	-	-	-	-	-	-	-	-
5/2/2019	-	390	-	-	-	-	-	-	-	-
8/21/2019	-	380	-	-	-	-	-	-	-	ND
2/22/2019	-	300	-	-	-	-	-	-	-	-
No. 157										
4/13/1999	930	600	59.0	21.0	110.0	7.0	95.0	150.0	240.0	ND
4/11/2000	-	-	-	-	-	-	-	-	-	0.5
6/14/2001	-	-	-	-	-	-	-	-	-	ND
4/2/2002	830	520	60.0	22.0	78.0	4.1	78.0	190.0	150.0	ND
4/14/2005	720	420	47.0	18.0	69.0	3.2	74.0	120.0	150.0	0.5
4/4/2007	-	-	-	-	-	-	-	-	-	ND
4/8/2008	1,100	640	68.0	24.0	110.0	4.3	130.0	170.0	230.0	0.6
7/8/2008	-	580	-	-	-	-	-	-	-	-
1/2/2009	-	560	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/6/2009	-	640	-	-	-	-	-	-	-	ND
7/13/2009	-	590	-	-	-	-	-	-	-	-
1/7/2010	-	660	-	-	-	-	-	-	-	-
4/8/2010	-	620	-	-	-	-	-	-	-	ND
7/8/2010	-	610	-	-	-	-	-	-	-	-
10/7/2010	-	540	-	-	-	-	-	-	-	-
1/11/2011	-	590	-	-	-	-	-	-	-	-
4/13/2011	830	520	49.0	17.0	84.0	3.4	89.0	120.0	180.0	ND
7/12/2011	-	460	-	-	-	-	-	-	-	-
10/6/2011	-	370	-	-	-	-	-	-	-	-
1/11/2012	-	260	-	-	-	-	-	-	-	-
4/12/2012	-	330	-	-	-	-	-	-	-	ND
10/10/2012	-	360	-	-	-	-	-	-	-	-
11/28/2012	930	530	68.0	25.0	82.0	5.1	110.0	110.0	230.0	0.2
1/9/2013	-	470	-	-	-	-	-	-	-	-
4/11/2013	-	370	-	-	-	-	-	-	-	0.2
7/10/2013	-	480	-	-	-	-	-	-	-	-
10/16/2013	-	510	-	-	-	-	-	-	-	-
1/16/2014	-	510	-	-	-	-	-	-	-	-
4/2/2014	960	560	66.0	24.0	79.0	4.1	81.0	190.0	160.0	0.3
7/3/2014	-	560	-	-	-	-	-	-	-	-
10/9/2014	-	520	-	-	-	-	-	-	-	-
1/13/2015	-	630	-	-	-	-	-	-	-	-
4/21/2015	-	590	-	-	-	-	-	-	-	0.2
7/15/2015	-	630	-	-	-	-	-	-	-	-
10/21/2015	-	670	-	-	-	-	-	-	-	-
1/14/2016	-	960	-	-	-	-	-	-	-	-
6/30/2016	-	650	-	-	-	-	-	-	-	0.6
7/19/2016	-	660	-	-	-	-	-	-	-	-
10/26/2016	-	590	-	-	-	-	-	-	-	-
4/11/2017	810	490	52.0	22.0	80.0	4.8	83.0	150.0	120.0	0.3
7/6/2017	-	260	-	-	-	-	-	-	-	-
10/12/2017	-	400	-	-	-	-	-	-	-	-
1/17/2018	-	320	-	-	-	-	-	-	-	-
8/8/2018	-	480	-	-	-	-	-	-	-	0.3
7/11/2019	-	340	-	-	-	-	-	-	-	-
1/10/2019	-	530	-	-	-	-	-	-	-	-
10/4/2018	-	490	-	-	-	-	-	-	-	-
4/5/2019	-	500	-	-	-	-	-	-	-	0.2
6/3/2019	-	370	-	-	-	-	-	-	-	-
No. 158										
6/21/1994	1,090	620	67.0	23.0	124.0	7.0	120.0	170.0	259.0	-
4/14/1999	1,050	660	63.0	24.0	120.0	7.0	110.0	160.0	270.0	ND
4/11/2000	-	-	-	-	-	-	-	-	-	0.5
6/14/2001	-	-	-	-	-	-	-	-	-	0.5
4/2/2002	900	550	61.0	22.0	92.0	5.7	93.0	190.0	180.0	ND
4/14/2005	800	450	51.0	19.0	79.0	4.6	83.0	150.0	160.0	0.5
4/4/2006	-	-	-	-	-	-	-	-	-	0.9
4/4/2007	-	-	-	-	-	-	-	-	-	1.0
4/8/2008	1,300	760	77.0	25.0	140.0	6.4	150.0	180.0	280.0	0.8
7/8/2008	-	750	-	-	-	-	-	-	-	-
1/2/2009	-	640	-	-	-	-	-	-	-	-
4/6/2009	-	650	-	-	-	-	-	-	-	ND
7/13/2009	-	670	-	-	-	-	-	-	-	-
1/6/2010	-	810	-	-	-	-	-	-	-	-
4/8/2010	-	800	-	-	-	-	-	-	-	0.3
7/8/2010	-	680	-	-	-	-	-	-	-	-
10/7/2010	-	750	-	-	-	-	-	-	-	-
1/11/2011	-	710	-	-	-	-	-	-	-	-
4/13/2011	870	530	43.0	16.0	100.0	4.8	97.0	130.0	180.0	0.5
7/12/2011	-	610	-	-	-	-	-	-	-	-
10/6/2011	-	570	-	-	-	-	-	-	-	-
2/9/2012	-	520	-	-	-	-	-	-	-	-
4/12/2012	-	-	-	-	-	-	-	-	-	ND
5/2/2012	-	460	-	-	-	-	-	-	-	-
8/8/2012	-	550	-	-	-	-	-	-	-	-
11/1/2012	-	740	-	-	-	-	-	-	-	-
2/12/2013	-	470	-	-	-	-	-	-	-	-
4/11/2013	-	-	-	-	-	-	-	-	-	0.3

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/14/2013	-	620	-	-	-	-	-	-	-	-
8/14/2013	-	710	-	-	-	-	-	-	-	-
11/6/2013	-	720	-	-	-	-	-	-	-	-
2/6/2014	-	710	-	-	-	-	-	-	-	-
4/2/2014	1,200	700	70.0	25.0	120.0	6.2	120.0	170.0	250.0	0.4
5/8/2014	-	660	-	-	-	-	-	-	-	-
8/6/2014	-	480	-	-	-	-	-	-	-	-
11/13/2014	-	700	-	-	-	-	-	-	-	-
2/5/2015	-	670	-	-	-	-	-	-	-	-
4/21/2015	-	-	-	-	-	-	-	-	-	0.3
5/6/2015	-	680	-	-	-	-	-	-	-	-
8/5/2015	-	660	-	-	-	-	-	-	-	-
11/3/2015	-	850	-	-	-	-	-	-	-	-
2/4/2016	-	840	-	-	-	-	-	-	-	-
4/20/2016	-	-	-	-	-	-	-	-	-	0.3
5/5/2016	-	820	-	-	-	-	-	-	-	-
8/4/2016	-	790	-	-	-	-	-	-	-	-
11/9/2016	-	830	-	-	-	-	-	-	-	-
2/2/2017	-	890	-	-	-	-	-	-	-	-
4/27/2017	770	460	44.0	15.0	95.0	4.3	90.0	100.0	140.0	0.3
5/14/2017	-	330	-	-	-	-	-	-	-	-
9/12/2017	-	670	-	-	-	-	-	-	-	-
11/9/2017	-	580	-	-	-	-	-	-	-	-
2/6/2018	-	410	-	-	-	-	-	-	-	-
4/12/2018	-	-	-	-	-	-	-	-	-	0.2
5/4/2018	-	720	-	-	-	-	-	-	-	-
8/8/2018	-	620	-	-	-	-	-	-	-	-
5/7/2019	-	670	-	-	-	-	-	-	-	-
7/1/2019	-	550	-	-	-	-	-	-	-	-
11/7/2018	-	740	-	-	-	-	-	-	-	-
7/24/2019	-	560	-	-	-	-	-	-	-	-
8/14/2019	-	520	-	-	-	-	-	-	-	-
3/26/2019	-	720	-	-	-	-	-	-	-	-
7/10/2019	-	540	-	-	-	-	-	-	-	-
4/5/2019	-	-	-	-	-	-	-	-	-	ND
6/3/2019	-	680	-	-	-	-	-	-	-	-
2/20/2019	-	640	-	-	-	-	-	-	-	-
5/8/2019	-	660	-	-	-	-	-	-	-	-
4/1/2019	-	600	-	-	-	-	-	-	-	-
4/23/2019	-	710	-	-	-	-	-	-	-	-
6/10/2019	-	630	-	-	-	-	-	-	-	-
6/19/2019	-	580	-	-	-	-	-	-	-	-
6/25/2019	-	550	-	-	-	-	-	-	-	-
7/16/2019	-	540	-	-	-	-	-	-	-	-
7/29/2019	-	530	-	-	-	-	-	-	-	-
No. 161										
2/25/2016	1,100	690	70.0	27.0	120.0	4.8	100.0	220.0	170.0	ND
5/4/2016	1,200	710	77.0	32.0	100.0	5.8	120.0	200.0	210.0	0.6
8/4/2016	930	580	59.0	26.0	91.0	6.2	96.0	200.0	150.0	0.3
11/9/2016	990	670	67.0	24.0	97.0	5.1	95.0	210.0	160.0	0.3
2/2/2017	-	610	-	-	-	-	-	-	-	0.2
2/3/2017	990	590	73.0	27.0	99.0	4.0	94.0	230.0	150.0	ND
5/4/2017	550	310	32.0	12.0	58.0	2.8	49.0	76.0	94.0	0.3
8/10/2017	640	370	41.0	14.0	62.0	3.7	53.0	81.0	140.0	0.4
11/9/2017	-	310	-	-	-	-	-	-	-	-
2/6/2018	-	320	-	-	-	-	-	-	-	0.4
5/4/2018	-	550	-	-	-	-	-	-	-	-
8/8/2018	-	470	-	-	-	-	-	-	-	-
2/12/2019	890	530	64.0	23.0	83.0	4.0	89.0	200.0	130.0	0.2
11/7/2018	-	470	-	-	-	-	-	-	-	-
8/26/2019	-	370	-	-	-	-	-	-	-	-
6/3/2019	-	320	-	-	-	-	-	-	-	-
5/8/2019	-	350	-	-	-	-	-	-	-	-
No. 164										
10/12/2017	-	370	-	-	-	-	-	-	-	-
1/4/2018	610	360	40.0	15.0	60.0	4.0	61.0	84.0	120.0	0.3
4/11/2018	-	340	-	-	-	-	-	-	-	-
7/12/2018	-	430	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/11/2018	-	490	-	-	-	-	-	-	-	-
1/3/2019	-	490	-	-	-	-	-	-	-	ND
8/14/2019	-	390	-	-	-	-	-	-	-	-
7/3/2019	-	410	-	-	-	-	-	-	-	-
4/4/2019	-	510	-	-	-	-	-	-	-	-
No. 201										
3/28/1991	530	315	19.0	6.0	83.0	2.0	83.0	16.0	110.0	0.5
3/11/1993	460	300	8.0	2.0	87.0	1.0	51.0	20.0	146.0	ND
No. 202										
12/11/1988	740	440	47.0	18.0	84.0	3.0	97.0	48.0	223.0	3.8
No. 203										
5/18/1988	960	580	50.0	39.0	110.0	4.0	96.0	115.0	275.0	-
6/29/1988	970	530	44.0	36.0	112.0	4.0	120.0	123.0	250.0	1.1
6/12/1991	800	415	21.0	17.0	108.0	3.0	91.0	90.0	174.0	0.5
6/22/1994	980	645	59.0	38.0	99.0	4.0	130.0	130.0	256.0	0.9
6/7/1995	-	-	-	-	-	-	-	-	-	1.1
6/23/1997	880	530	31.0	26.0	120.0	3.0	100.0	110.0	230.0	0.9
8/14/1997	-	-	-	-	-	-	-	-	-	0.7
11/2/1999	-	-	-	-	-	-	-	-	-	1.1
6/22/2000	820	580	94.0	18.0	58.0	ND	63.0	110.0	250.0	5.0
7/12/2000	880	570	43.0	33.0	120.0	3.0	100.0	130.0	240.0	1.6
8/8/2000	-	-	-	-	-	-	-	-	-	1.4
11/22/2000	-	-	-	-	-	-	-	-	-	1.1
11/20/2001	-	-	-	-	-	-	-	-	-	1.1
11/8/2002	-	-	-	-	-	-	-	-	-	0.9
1/8/2003	-	-	-	-	-	-	-	-	-	0.9
6/10/2003	850	460	31.0	23.0	100.0	2.2	92.0	100.0	220.0	1.1
11/4/2003	-	-	-	-	-	-	-	-	-	1.1
11/18/2004	-	-	-	-	-	-	-	-	-	1.6
6/8/2006	940	540	39.0	32.0	110.0	3.0	100.0	130.0	220.0	1.2
6/1/2007	-	-	-	-	-	-	-	-	-	1.2
6/4/2008	-	520	-	-	-	-	-	-	-	1.0
9/16/2008	-	450	-	-	-	-	-	-	-	-
12/2/2008	-	500	-	-	-	-	-	-	-	-
3/4/2009	-	470	-	-	-	-	-	-	-	-
6/1/2009	-	440	-	-	-	-	-	-	-	0.6
3/3/2010	-	460	-	-	-	-	-	-	-	-
6/2/2010	-	490	-	-	-	-	-	-	-	0.7
9/1/2010	-	440	-	-	-	-	-	-	-	-
12/8/2010	-	450	-	-	-	-	-	-	-	-
3/31/2011	-	490	-	-	-	-	-	-	-	-
6/2/2011	-	430	-	-	-	-	-	-	-	0.7
9/2/2011	-	420	-	-	-	-	-	-	-	-
12/7/2011	-	450	-	-	-	-	-	-	-	-
6/5/2012	740	430	19.0	15.0	110.0	2.3	72.0	94.0	180.0	0.7
9/5/2012	-	440	-	-	-	-	-	-	-	-
12/5/2012	-	410	-	-	-	-	-	-	-	-
3/6/2013	-	420	-	-	-	-	-	-	-	-
6/5/2013	-	400	-	-	-	-	-	-	-	0.6
9/5/2013	-	430	-	-	-	-	-	-	-	-
12/5/2013	-	440	-	-	-	-	-	-	-	-
3/11/2014	-	430	-	-	-	-	-	-	-	-
6/3/2014	-	480	-	-	-	-	-	-	-	1.0
9/4/2014	-	440	-	-	-	-	-	-	-	-
3/11/2015	-	410	-	-	-	-	-	-	-	-
6/2/2015	780	420	17.0	13.0	110.0	1.8	76.0	93.0	170.0	0.6
9/24/2015	-	480	-	-	-	-	-	-	-	-
12/2/2015	-	420	-	-	-	-	-	-	-	-
3/15/2016	-	530	-	-	-	-	-	-	-	-
6/7/2016	-	420	-	-	-	-	-	-	-	0.6
9/8/2016	-	420	-	-	-	-	-	-	-	-
12/6/2016	-	430	-	-	-	-	-	-	-	-
3/9/2017	-	430	-	-	-	-	-	-	-	-
6/14/2017	-	430	-	-	-	-	-	-	-	0.6
9/14/2017	-	420	-	-	-	-	-	-	-	-
12/14/2017	-	440	-	-	-	-	-	-	-	-
3/15/2018	-	460	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/3/2018	710	440	19.0	14.0	110.0	1.9	79.0	94.0	160.0	0.7
9/13/2018	740	440	28.0	23.0	94.0	2.1	79.0	110.0	160.0	0.8
3/15/2019	-	450	-	-	-	-	-	-	-	-
6/5/2019	-	410	-	-	-	-	-	-	-	0.3
9/5/2019	-	400	-	-	-	-	-	-	-	-
12/11/2018	-	530	-	-	-	-	-	-	-	-
No. 204										
5/22/1991	740	425	50.0	12.0	85.0	3.0	120.0	18.0	198.0	4.3
5/13/1994	690	375	37.0	7.0	85.0	3.0	130.0	19.0	125.0	4.3
No. 205										
3/28/1988	500	290	23.0	3.0	81.0	2.0	83.0	27.0	107.0	4.8
3/13/1991	490	275	22.0	3.0	75.0	2.0	62.0	23.0	113.0	4.8
3/3/1994	510	275	20.0	2.0	72.0	2.0	72.0	24.0	104.0	4.5
4/26/1995	-	-	-	-	-	-	-	-	-	5.0
3/25/1997	480	270	20.0	2.0	75.0	2.0	66.0	18.0	110.0	4.8
5/9/2001	410	270	21.0	3.0	67.0	1.0	60.0	17.0	120.0	5.2
11/13/2001	-	-	-	-	-	-	-	-	-	4.8
2/19/2002	-	-	-	-	-	-	-	-	-	4.5
5/14/2002	-	-	-	-	-	-	-	-	-	4.1
8/27/2002	-	-	-	-	-	-	-	-	-	4.5
11/20/2002	-	-	-	-	-	-	-	-	-	4.1
1/8/2003	-	-	-	-	-	-	-	-	-	4.5
3/31/2003	-	-	-	-	-	-	-	-	-	4.1
6/11/2003	-	-	-	-	-	-	-	-	-	4.1
9/16/2003	-	-	-	-	-	-	-	-	-	4.8
12/4/2003	-	-	-	-	-	-	-	-	-	4.5
3/9/2004	-	-	-	-	-	-	-	-	-	4.1
6/9/2004	-	-	-	-	-	-	-	-	-	4.1
9/1/2004	-	-	-	-	-	-	-	-	-	4.3
12/7/2004	-	-	-	-	-	-	-	-	-	4.5
3/8/2005	-	-	-	-	-	-	-	-	-	4.8
6/7/2005	-	-	-	-	-	-	-	-	-	3.8
9/13/2005	-	-	-	-	-	-	-	-	-	3.6
12/5/2005	-	-	-	-	-	-	-	-	-	3.4
3/9/2006	-	-	-	-	-	-	-	-	-	3.8
6/7/2006	-	-	-	-	-	-	-	-	-	3.8
4/15/2009	500	290	19.0	2.0	71.0	1.4	68.0	18.0	120.0	4.5
7/14/2009	-	270	-	-	-	-	-	-	-	4.5
1/6/2010	-	280	-	-	-	-	-	-	-	3.8
4/8/2010	-	-	-	-	-	-	-	-	-	3.2
4/20/2010	-	290	-	-	-	-	-	-	-	-
7/20/2010	-	260	-	-	-	-	-	-	-	3.6
10/5/2010	-	240	-	-	-	-	-	-	-	3.4
1/4/2011	-	210	-	-	-	-	-	-	-	4.3
4/12/2011	-	280	-	-	-	-	-	-	-	3.4
7/8/2011	-	260	-	-	-	-	-	-	-	3.2
10/4/2011	-	260	-	-	-	-	-	-	-	3.6
1/12/2012	-	250	-	-	-	-	-	-	-	3.6
4/3/2012	-	300	-	-	-	-	-	-	-	4.1
4/24/2012	470	260	16.0	1.4	73.0	1.6	70.0	18.0	98.0	3.6
10/2/2012	-	240	-	-	-	-	-	-	-	3.4
1/3/2013	-	270	-	-	-	-	-	-	-	3.4
4/3/2013	-	250	-	-	-	-	-	-	-	3.2
7/2/2013	-	270	-	-	-	-	-	-	-	4.1
10/2/2013	-	280	-	-	-	-	-	-	-	3.6
1/7/2014	-	280	-	-	-	-	-	-	-	3.2
4/15/2014	-	280	-	-	-	-	-	-	-	3.4
7/3/2014	-	280	-	-	-	-	-	-	-	3.2
10/9/2014	-	290	-	-	-	-	-	-	-	3.4
1/7/2015	-	340	-	-	-	-	-	-	-	4.1
4/22/2015	490	310	19.0	1.6	80.0	1.7	76.0	22.0	100.0	3.2
7/16/2015	-	330	-	-	-	-	-	-	-	-
10/22/2015	-	300	-	-	-	-	-	-	-	3.4
1/20/2016	-	220	-	-	-	-	-	-	-	3.2
4/5/2016	-	310	-	-	-	-	-	-	-	3.2
7/12/2016	-	290	-	-	-	-	-	-	-	3.0
10/19/2016	-	280	-	-	-	-	-	-	-	4.7
4/20/2017	-	280	-	-	-	-	-	-	-	3.9

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/13/2017	-	310	-	-	-	-	-	-	-	3.5
10/10/2017	-	250	-	-	-	-	-	-	-	3.6
1/5/2018	-	310	-	-	-	-	-	-	-	3.3
4/13/2018	530	310	25.0	2.2	79.0	1.8	81.0	25.0	95.0	3.7
No. 207										
9/1/1988	510	245	1.0	ND	108.0	ND	54.0	26.0	82.0	ND
9/14/1988	480	305	3.0	ND	106.0	ND	58.0	23.0	24.0	0.2
8/14/1991	480	245	1.0	ND	100.0	ND	52.0	28.0	55.0	ND
8/10/1994	440	285	2.0	ND	91.0	1.0	56.0	29.0	76.0	0.5
8/15/1997	510	280	2.0	ND	97.0	ND	52.0	25.0	98.0	ND
7/27/1998	-	-	-	-	-	-	-	-	-	0.5
12/27/2000	480	280	2.0	ND	100.0	ND	53.0	30.0	120.0	0.5
No. 208										
9/1/1988	680	415	44.0	15.0	77.0	3.0	119.0	14.0	186.0	4.1
9/14/1988	690	440	44.0	14.0	77.0	3.0	129.0	14.0	183.0	3.6
8/14/1991	600	340	23.0	7.0	89.0	2.0	85.0	18.0	162.0	0.9
8/10/1994	560	370	22.0	6.0	89.0	2.0	93.0	20.0	156.0	1.1
6/6/1995	-	-	-	-	-	-	-	-	-	0.9
8/12/1996	-	-	-	-	-	-	-	-	-	0.5
7/27/1999	-	-	-	-	-	-	-	-	-	3.4
8/18/1999	-	-	-	-	-	-	-	-	-	4.5
No. 209										
5/22/1991	790	435	40.0	14.0	105.0	2.0	150.0	35.0	162.0	1.8
5/13/1994	760	525	64.0	22.0	48.0	3.0	150.0	15.0	153.0	5.7
6/20/1995	-	-	-	-	-	-	-	-	-	1.1
5/15/1997	690	390	10.0	3.0	130.0	ND	110.0	56.0	130.0	0.3
No. 210										
4/15/1959	1,366	-	101.0	23.0	150.0	10.0	149.0	200.0	275.0	0.7
1/18/1963	400	926	99.0	30.0	17.5	4.5	145.0	255.0	329.0	0.9
11/30/1967	1,415	890	136.0	5.0	152.0	10.0	146.0	230.0	305.0	0.7
7/26/1968	1,250	825	96.0	22.0	144.0	8.0	130.0	190.0	290.0	1.1
9/6/1968	1,310	840	82.0	26.0	132.0	5.0	142.0	222.0	276.0	2.7
7/19/1973	1,200	579	84.0	21.4	149.0	6.8	121.9	237.0	301.1	4.5
8/8/1975	1,140	695	84.0	14.0	150.0	6.0	101.0	190.0	287.0	3.4
6/22/1976	1,240	675	76.0	26.0	142.0	7.0	101.0	205.0	278.0	8.1
10/13/1976	1,120	640	92.0	22.0	100.0	6.0	110.0	170.0	262.0	1.1
6/16/1977	1,130	610	84.0	18.0	114.0	6.0	110.0	170.0	259.0	2.5
5/20/1980	580	340	30.0	8.0	75.0	4.0	51.0	67.0	152.0	2.0
4/3/1986	800	540	65.0	17.0	86.0	4.5	75.0	112.0	235.0	0.8
7/15/1986	830	560	72.0	19.0	86.0	4.0	87.0	118.0	250.0	0.9
3/28/1988	1,030	575	76.0	22.0	93.0	5.0	99.0	143.0	247.0	0.9
9/25/1991	1,040	600	74.0	20.0	120.0	5.0	120.0	160.0	238.0	1.1
9/19/1994	645	460	52.0	14.0	79.0	4.0	70.0	100.0	198.0	0.5
9/16/1996	-	-	-	-	-	-	-	-	-	0.7
9/16/1998	-	-	-	-	-	-	-	-	-	0.7
12/15/1998	-	-	-	-	-	-	-	-	-	0.5
1/4/1999	-	-	-	-	-	-	-	-	-	0.5
2/3/1999	-	-	-	-	-	-	-	-	-	0.5
4/8/1999	-	-	-	-	-	-	-	-	-	0.7
6/2/1999	-	-	-	-	-	-	-	-	-	0.7
9/7/1999	-	-	-	-	-	-	-	-	-	0.9
10/21/1999	-	-	-	-	-	-	-	-	-	1.1
12/15/1999	-	-	-	-	-	-	-	-	-	1.1
5/3/2000	-	-	-	-	-	-	-	-	-	1.1
9/13/2000	830	560	64.0	17.0	100.0	4.0	74.0	190.0	180.0	0.9
5/8/2001	-	-	-	-	-	-	-	-	-	0.9
5/13/2002	-	-	-	-	-	-	-	-	-	0.7
1/8/2003	-	-	-	-	-	-	-	-	-	0.5
8/20/2003	-	-	-	-	-	-	-	-	-	0.5
9/16/2003	830	560	65.0	18.0	78.0	4.5	76.0	180.0	160.0	0.5
8/10/2004	-	-	-	-	-	-	-	-	-	0.7
8/2/2005	-	-	-	-	-	-	-	-	-	1.2
8/15/2006	-	-	-	-	-	-	-	-	-	1.5
8/14/2007	-	-	-	-	-	-	-	-	-	2.7
8/12/2008	-	590	-	-	-	-	-	-	-	1.7
3/5/2009	-	520	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/2/2009	-	570	-	-	-	-	-	-	-	-
8/5/2009	-	-	-	-	-	-	-	-	-	1.1
3/3/2010	-	600	-	-	-	-	-	-	-	-
6/2/2010	-	600	-	-	-	-	-	-	-	-
8/11/2010	-	-	-	-	-	-	-	-	-	0.8
9/8/2010	-	600	-	-	-	-	-	-	-	-
12/8/2010	-	590	-	-	-	-	-	-	-	-
3/9/2011	-	620	-	-	-	-	-	-	-	-
6/8/2011	-	600	-	-	-	-	-	-	-	-
11/10/2011	-	600	-	-	-	-	-	-	-	0.9
2/9/2012	-	560	-	-	-	-	-	-	-	-
5/2/2012	-	540	-	-	-	-	-	-	-	-
8/9/2012	-	490	-	-	-	-	-	-	-	-
9/5/2012	840	530	60.0	19.0	84.0	5.6	86.0	150.0	180.0	2.7
11/1/2012	-	500	-	-	-	-	-	-	-	0.6
2/12/2013	-	460	-	-	-	-	-	-	-	-
5/3/2013	-	420	-	-	-	-	-	-	-	-
8/15/2013	-	420	-	-	-	-	-	-	-	-
11/14/2013	-	440	-	-	-	-	-	-	-	0.5
2/5/2014	-	430	-	-	-	-	-	-	-	-
5/15/2014	-	480	-	-	-	-	-	-	-	-
8/6/2014	-	440	-	-	-	-	-	-	-	-
11/6/2014	-	520	-	-	-	-	-	-	-	0.5
2/5/2015	-	520	-	-	-	-	-	-	-	-
5/7/2015	-	530	-	-	-	-	-	-	-	-
8/7/2015	-	510	-	-	-	-	-	-	-	-
9/9/2015	840	510	60.0	19.0	79.0	5.0	81.0	160.0	160.0	0.5
No. 211										
4/8/1997	720	400	67.0	14.0	54.0	1.0	59.0	65.0	220.0	2.9
12/23/1997	-	410	-	-	-	-	-	-	-	3.1
3/25/1998	-	620	-	-	-	-	-	-	-	3.6
6/3/1998	-	-	-	-	-	-	-	-	-	3.4
6/5/1998	-	480	-	-	-	-	-	-	-	-
9/17/1998	-	-	-	-	-	-	-	-	-	3.3
12/17/1998	-	430	-	-	-	-	56.0	66.0	-	3.6
6/3/1999	-	430	-	-	-	-	-	-	-	3.4
12/14/1999	-	310	-	-	-	-	-	-	-	2.3
4/4/2000	700	430	71.0	14.0	52.0	1.0	57.0	66.0	220.0	3.8
6/22/2000	-	400	-	-	-	-	-	-	-	3.4
12/13/2000	-	-	-	-	-	-	-	-	-	4.5
3/27/2001	-	-	-	-	-	-	-	-	-	4.5
6/20/2001	-	-	-	-	-	-	-	-	-	2.7
9/13/2001	-	-	-	-	-	-	-	-	-	4.7
11/13/2001	-	450	-	-	-	-	-	-	-	-
5/14/2002	-	370	-	-	-	-	-	-	-	2.7
7/15/2003	630	370	61.0	11.0	46.0	1.2	46.0	51.0	220.0	2.5
12/9/2008	-	480	-	-	-	-	-	-	-	5.0
3/9/2009	-	560	-	-	-	-	-	-	-	3.8
6/2/2009	-	480	-	-	-	-	-	-	-	3.2
1/12/2010	-	360	-	-	-	-	-	-	-	1.4
4/15/2010	-	500	-	-	-	-	-	-	-	3.6
7/21/2010	-	510	-	-	-	-	-	-	-	3.4
10/7/2010	-	540	-	-	-	-	-	-	-	3.2
1/18/2011	-	550	-	-	-	-	-	-	-	3.4
4/6/2011	-	560	-	-	-	-	-	-	-	3.6
7/7/2011	-	520	-	-	-	-	-	-	-	2.9
9/1/2011	840	460	86.0	16.0	56.0	1.2	66.0	100.0	260.0	2.9
10/12/2011	-	420	-	-	-	-	-	-	-	3.2
1/10/2012	-	520	-	-	-	-	-	-	-	3.2
4/18/2012	-	510	-	-	-	-	-	-	-	3.2
10/2/2012	-	520	-	-	-	-	-	-	-	2.9
1/10/2013	-	520	-	-	-	-	-	-	-	2.9
4/17/2013	-	510	-	-	-	-	-	-	-	2.7
7/3/2013	-	540	-	-	-	-	-	-	-	3.2
10/3/2013	-	550	-	-	-	-	-	-	-	3.2
1/28/2014	-	560	-	-	-	-	-	-	-	3.4
4/16/2014	-	430	-	-	-	-	-	-	-	2.5
7/10/2014	-	590	-	-	-	-	-	-	-	3.2
9/4/2014	840	590	92.0	17.0	60.0	1.3	67.0	100.0	260.0	2.9

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/2/2014	-	630	-	-	-	-	-	-	-	2.9
11/13/2014	880	610	93.0	18.0	63.0	1.3	71.0	120.0	260.0	2.9
1/13/2015	-	370	-	-	-	-	-	-	-	2.7
4/14/2015	-	650	-	-	-	-	-	-	-	2.7
7/7/2015	-	550	-	-	-	-	-	-	-	2.7
10/8/2015	-	720	-	-	-	-	-	-	-	2.7
1/12/2016	-	400	-	-	-	-	-	-	-	2.4
4/21/2016	-	550	-	-	-	-	-	-	-	2.8
7/13/2016	-	600	-	-	-	-	-	-	-	2.6
10/5/2016	-	560	-	-	-	-	-	-	-	2.5
1/26/2017	-	460	-	-	-	-	-	-	-	2.4
4/19/2017	-	600	-	-	-	-	-	-	-	2.9
7/11/2017	-	580	-	-	-	-	-	-	-	3.0
9/28/2017	920	580	100.0	19.0	67.0	1.5	81.0	130.0	230.0	2.9
10/10/2017	-	580	-	-	-	-	-	-	-	2.7
1/17/2018	-	460	-	-	-	-	-	-	-	2.4
4/11/2018	-	600	-	-	-	-	-	-	-	3.0
7/11/2018	-	610	-	-	-	-	-	-	-	3.0
4/2/2019	-	610	-	-	-	-	-	-	-	2.8
10/5/2018	-	600	-	-	-	-	-	-	-	2.8
1/8/2019	-	600	-	-	-	-	-	-	-	2.9
7/10/2019	-	600	-	-	-	-	-	-	-	2.5
No. 212										
3/28/1988	640	330	42.0	2.0	74.0	3.0	81.0	33.0	146.0	3.2
9/25/1991	600	320	41.0	2.0	82.0	4.0	86.0	35.0	146.0	3.2
No. 215										
8/15/1990	650	380	40.0	13.0	71.0	3.0	100.0	14.0	162.0	2.5
9/26/1990	-	-	-	-	-	-	-	-	-	2.9
6/22/1994	630	400	41.0	13.0	67.0	2.0	110.0	16.0	159.0	2.5
6/16/1997	630	370	29.0	9.0	81.0	2.0	110.0	16.0	160.0	1.4
8/15/1997	-	-	-	-	-	-	-	-	-	1.6
8/11/2004	630	380	35.0	12.0	76.0	2.6	100.0	14.0	150.0	ND
9/9/2004	-	-	-	-	-	-	-	-	-	2.0
6/26/2006	-	-	-	-	-	-	-	-	-	1.5
6/5/2007	-	-	-	-	-	-	-	-	-	0.5
8/14/2007	590	320	22.0	7.3	85.0	2.2	88.0	16.0	150.0	0.5
12/2/2008	-	370	-	-	-	-	-	-	-	-
3/9/2009	-	380	-	-	-	-	-	-	-	-
6/4/2009	-	300	-	-	-	-	-	-	-	-
3/4/2010	-	340	-	-	-	-	-	-	-	-
6/18/2010	-	340	-	-	-	-	-	-	-	-
8/18/2010	580	330	20.0	6.5	79.0	1.9	82.0	16.0	150.0	0.6
9/3/2010	-	330	-	-	-	-	-	-	-	0.5
12/17/2010	-	350	-	-	-	-	-	-	-	-
3/15/2011	-	250	-	-	-	-	-	-	-	-
6/7/2011	-	320	-	-	-	-	-	-	-	-
12/6/2011	-	320	-	-	-	-	-	-	-	-
No. 216										
6/1/1988	480	280	25.0	4.0	65.0	2.0	71.0	11.0	134.0	-
6/29/1988	480	275	29.0	5.0	59.0	3.0	81.0	7.0	110.0	5.9
6/12/1991	500	285	30.0	5.0	59.0	2.0	76.0	9.0	113.0	5.2
5/27/1992	470	285	33.0	6.0	53.0	2.0	72.0	10.0	119.0	4.5
4/25/2001	490	300	28.0	4.0	55.0	2.0	74.0	13.0	120.0	2.7
9/21/2004	540	320	31.0	5.6	53.0	2.1	74.0	10.0	130.0	3.2
10/26/2004	-	-	-	-	-	-	-	-	-	3.4
11/2/2004	-	-	-	-	-	-	-	-	-	3.4
11/10/2004	-	-	-	-	-	-	-	-	-	3.6
10/18/2005	-	-	-	-	-	-	-	-	-	4.3
10/12/2006	-	-	-	-	-	-	-	-	-	4.3
9/7/2007	510	300	28.0	4.7	57.0	3.5	82.0	12.0	110.0	4.1
10/3/2007	-	-	-	-	-	-	-	-	-	3.8
4/23/2009	-	-	-	-	-	-	-	-	-	3.2
3/18/2010	-	370	-	-	-	-	-	-	-	-
4/8/2010	-	-	-	-	-	-	-	-	-	2.7
6/10/2010	-	380	-	-	-	-	-	-	-	-
9/1/2010	570	340	41.0	6.9	58.0	2.3	86.0	16.0	130.0	3.6
12/8/2010	-	360	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
12/14/2010	-	390	-	-	-	-	-	-	-	-
6/8/2011	-	390	-	-	-	-	-	-	-	-
8/10/2011	-	-	-	-	-	-	-	-	-	3.4
12/8/2011	-	400	-	-	-	-	-	-	-	-
6/8/2012	-	420	-	-	-	-	-	-	-	-
No. 217										
3/28/1988	580	285	8.0	1.0	108.0	1.0	81.0	20.0	113.0	3.4
8/10/1988	570	280	8.0	1.0	105.0	1.0	82.0	20.0	55.0	2.9
8/14/1991	570	305	17.0	2.0	99.0	2.0	74.0	28.0	134.0	3.6
8/10/1994	610	365	20.0	3.0	97.0	2.0	82.0	38.0	134.0	3.6
8/15/1997	660	370	20.0	3.0	107.0	1.0	80.0	41.0	130.0	2.9
5/9/2000	-	-	-	-	-	-	-	-	-	3.4
10/12/2000	650	380	19.0	2.0	110.0	1.0	81.0	49.0	150.0	3.6
5/14/2001	-	-	-	-	-	-	-	-	-	3.8
5/14/2002	-	-	-	-	-	-	-	-	-	2.7
10/15/2003	690	400	25.0	3.3	110.0	1.6	84.0	58.0	150.0	3.6
5/6/2004	-	-	-	-	-	-	-	-	-	3.8
5/11/2006	-	-	-	-	-	-	-	-	-	3.4
5/15/2007	-	-	-	-	-	-	-	-	-	3.6
5/6/2008	-	400	-	-	-	-	-	-	-	3.2
8/12/2008	-	430	-	-	-	-	-	-	-	-
5/11/2009	-	400	-	-	-	-	-	-	-	2.9
8/5/2009	-	400	-	-	-	-	-	-	-	-
2/2/2010	-	390	-	-	-	-	-	-	-	-
5/6/2010	-	480	-	-	-	-	-	-	-	3.8
8/9/2010	-	470	-	-	-	-	-	-	-	-
11/16/2010	-	420	-	-	-	-	-	-	-	-
2/2/2011	-	410	-	-	-	-	-	-	-	-
5/4/2011	-	440	-	-	-	-	-	-	-	3.4
8/2/2011	-	440	-	-	-	-	-	-	-	-
11/3/2011	-	400	-	-	-	-	-	-	-	-
2/7/2012	-	420	-	-	-	-	-	-	-	-
5/2/2012	-	440	-	-	-	-	-	-	-	3.6
8/7/2012	-	450	-	-	-	-	-	-	-	-
10/2/2012	790	440	31.0	4.0	120.0	1.7	89.0	79.0	170.0	3.6
11/1/2012	-	440	-	-	-	-	-	-	-	-
2/6/2013	-	440	-	-	-	-	-	-	-	-
5/2/2013	-	440	-	-	-	-	-	-	-	3.8
8/19/2013	-	470	-	-	-	-	-	-	-	-
11/5/2013	-	450	-	-	-	-	-	-	-	-
2/5/2014	-	420	-	-	-	-	-	-	-	-
8/8/2014	-	470	-	-	-	-	-	-	-	-
11/5/2014	-	460	-	-	-	-	-	-	-	-
12/18/2014	-	-	-	-	-	-	-	-	-	4.3
2/4/2015	-	380	-	-	-	-	-	-	-	-
5/7/2015	-	450	-	-	-	-	-	-	-	3.4
8/6/2015	-	470	-	-	-	-	-	-	-	-
10/6/2015	820	480	35.0	4.7	120.0	1.7	88.0	82.0	170.0	3.6
11/17/2015	-	470	-	-	-	-	-	-	-	-
2/10/2016	-	490	-	-	-	-	-	-	-	-
5/10/2016	-	460	-	-	-	-	-	-	-	3.9
8/3/2016	-	450	-	-	-	-	-	-	-	-
11/8/2016	-	460	-	-	-	-	-	-	-	-
2/2/2017	-	440	-	-	-	-	-	-	-	-
5/2/2017	-	460	-	-	-	-	-	-	-	4.0
8/4/2017	-	410	-	-	-	-	-	-	-	-
11/8/2017	-	470	-	-	-	-	-	-	-	-
4/11/2018	-	480	-	-	-	-	-	-	-	-
5/9/2018	-	470	-	-	-	-	-	-	-	3.8
8/15/2018	-	470	-	-	-	-	-	-	-	-
11/8/2018	-	440	-	-	-	-	-	-	-	-
5/7/2019	-	460	-	-	-	-	-	-	-	3.6
8/20/2019	-	470	-	-	-	-	-	-	-	-
10/16/2018	740	430	26.0	3.4	120.0	1.5	90.0	78.0	140.0	3.6
2/22/2019	-	490	-	-	-	-	-	-	-	-
No. 231										
8/15/1990	1,280	805	126.0	18.0	120.0	5.0	100.0	310.0	244.0	2.0
9/26/1990	-	-	-	-	-	-	-	-	-	1.4

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
3/4/1992	1,700	1,270	180.0	51.0	160.0	6.0	140.0	510.0	332.0	1.1
6/20/1995	1,640	1,300	171.0	44.0	124.0	6.0	75.0	520.0	287.0	1.2
2/27/1998	-	-	-	-	-	-	-	-	-	0.7
5/16/2000	-	-	-	-	-	-	-	-	-	1.1
5/24/2001	1,490	1,080	140.0	35.0	120.0	5.0	120.0	340.0	330.0	0.7
5/13/2002	-	-	-	-	-	-	-	-	-	0.5
7/12/2005	-	-	-	-	-	-	-	-	-	0.5
7/20/2006	-	-	-	-	-	-	-	-	-	0.8
5/2/2007	1,400	830	120.0	27.0	110.0	4.0	130.0	250.0	300.0	0.5
3/7/2008	-	900	-	-	-	-	-	-	-	0.5
No. 232										
8/15/1990	960	590	71.0	19.0	110.0	5.0	98.0	130.0	235.0	6.8
9/26/1990	-	-	-	-	-	-	-	-	-	7.9
9/25/1991	980	565	74.0	19.0	106.0	5.0	98.0	120.0	244.0	8.4
9/19/1994	805	495	54.0	14.0	92.0	4.0	80.0	110.0	207.0	3.4
9/13/1996	-	-	-	-	-	-	-	-	-	5.0
11/4/1997	1,000	660	76.0	20.0	110.0	4.0	97.0	130.0	230.0	6.6
7/27/1998	-	-	-	-	-	-	-	-	-	8.6
12/10/1998	-	-	-	-	-	-	-	-	-	5.0
1/6/1999	-	-	-	-	-	-	-	-	-	6.8
1/29/1999	-	-	-	-	-	-	-	-	-	2.3
2/3/1999	-	-	-	-	-	-	-	-	-	5.9
2/24/1999	-	-	-	-	-	-	-	-	-	8.4
4/8/1999	-	-	-	-	-	-	-	-	-	7.5
4/21/1999	-	-	-	-	-	-	-	-	-	7.7
6/23/1999	-	-	-	-	-	-	-	-	-	7.5
7/8/1999	-	-	-	-	-	-	-	-	-	8.1
8/25/1999	-	-	-	-	-	-	-	-	-	7.5
9/21/1999	-	-	-	-	-	-	-	-	-	7.0
10/6/1999	-	-	-	-	-	-	-	-	-	6.8
11/17/1999	-	-	-	-	-	-	-	-	-	7.2
12/14/1999	-	-	-	-	-	-	-	-	-	7.2
1/18/2000	-	-	-	-	-	-	-	-	-	7.0
2/29/2000	-	-	-	-	-	-	-	-	-	2.3
3/21/2000	-	-	-	-	-	-	-	-	-	5.7
4/11/2000	-	-	-	-	-	-	-	-	-	6.6
5/25/2000	-	-	-	-	-	-	-	-	-	5.9
6/21/2000	-	-	-	-	-	-	-	-	-	5.9
7/11/2000	-	-	-	-	-	-	-	-	-	5.7
9/13/2000	920	590	65.0	17.0	105.0	4.0	91.0	150.0	210.0	4.8
10/6/2000	-	-	-	-	-	-	-	-	-	4.1
11/8/2000	-	-	-	-	-	-	-	-	-	3.8
12/13/2000	-	-	-	-	-	-	-	-	-	4.5
1/4/2001	-	-	-	-	-	-	-	-	-	4.3
2/28/2001	-	-	-	-	-	-	-	-	-	2.3
4/10/2001	-	-	-	-	-	-	-	-	-	4.5
10/10/2001	-	-	-	-	-	-	-	-	-	5.9
5/14/2002	-	-	-	-	-	-	-	-	-	5.0
8/6/2002	-	-	-	-	-	-	-	-	-	5.9
1/8/2003	-	-	-	-	-	-	-	-	-	6.0
3/31/2003	-	-	-	-	-	-	-	-	-	2.5
6/10/2003	-	-	-	-	-	-	-	-	-	7.0
7/8/2003	-	-	-	-	-	-	-	-	-	6.8
8/20/2003	-	-	-	-	-	-	-	-	-	6.3
9/16/2003	1,100	680	67.0	18.0	110.0	4.3	100.0	150.0	240.0	7.5
10/14/2003	-	-	-	-	-	-	-	-	-	7.0
1/14/2004	-	-	-	-	-	-	-	-	-	5.2
2/10/2004	-	-	-	-	-	-	-	-	-	4.8
4/14/2004	-	-	-	-	-	-	-	-	-	5.7
5/6/2004	-	-	-	-	-	-	-	-	-	5.9
6/22/2004	-	-	-	-	-	-	-	-	-	5.7
7/14/2004	-	-	-	-	-	-	-	-	-	5.7
8/10/2004	-	-	-	-	-	-	-	-	-	7.0
9/8/2004	-	-	-	-	-	-	-	-	-	5.9
10/26/2004	-	-	-	-	-	-	-	-	-	3.4
11/18/2004	-	-	-	-	-	-	-	-	-	5.9
12/7/2004	-	-	-	-	-	-	-	-	-	3.6
1/10/2005	-	-	-	-	-	-	-	-	-	4.5
2/14/2005	-	-	-	-	-	-	-	-	-	3.2

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
3/11/2005	-	-	-	-	-	-	-	-	-	2.5
4/13/2005	-	-	-	-	-	-	-	-	-	5.7
6/8/2005	-	-	-	-	-	-	-	-	-	5.4
7/12/2005	-	-	-	-	-	-	-	-	-	5.0
8/2/2005	-	-	-	-	-	-	-	-	-	4.1
9/20/2005	-	-	-	-	-	-	-	-	-	4.3
10/18/2005	-	-	-	-	-	-	-	-	-	4.1
11/8/2005	-	-	-	-	-	-	-	-	-	4.1
12/6/2005	-	-	-	-	-	-	-	-	-	4.3
1/4/2006	-	-	-	-	-	-	-	-	-	3.4
2/14/2006	-	-	-	-	-	-	-	-	-	4.1
3/13/2006	-	-	-	-	-	-	-	-	-	1.9
4/18/2006	-	-	-	-	-	-	-	-	-	2.7
5/12/2006	-	-	-	-	-	-	-	-	-	3.4
6/22/2006	-	-	-	-	-	-	-	-	-	2.5
7/19/2006	-	-	-	-	-	-	-	-	-	2.9
8/15/2006	-	-	-	-	-	-	-	-	-	3.2
11/2/2006	-	-	-	-	-	-	-	-	-	3.4
1/10/2007	-	-	-	-	-	-	-	-	-	2.9
2/7/2007	-	-	-	-	-	-	-	-	-	3.4
3/14/2007	-	-	-	-	-	-	-	-	-	3.4
4/17/2007	-	-	-	-	-	-	-	-	-	3.2
5/1/2007	-	-	-	-	-	-	-	-	-	2.9
6/1/2007	-	-	-	-	-	-	-	-	-	2.5
7/5/2007	-	-	-	-	-	-	-	-	-	2.7
8/14/2007	-	-	-	-	-	-	-	-	-	3.2
10/3/2007	-	-	-	-	-	-	-	-	-	2.9
12/5/2007	-	-	-	-	-	-	-	-	-	2.7
1/8/2008	-	-	-	-	-	-	-	-	-	2.5
2/13/2008	-	-	-	-	-	-	-	-	-	1.6
3/4/2008	-	-	-	-	-	-	-	-	-	2.2
3/7/2008	-	610	-	-	-	-	-	-	-	-
4/8/2008	-	-	-	-	-	-	-	-	-	2.9
5/7/2008	-	-	-	-	-	-	-	-	-	2.7
7/10/2008	-	580	-	-	-	-	-	-	-	-
7/28/2008	-	-	-	-	-	-	-	-	-	2.7
8/12/2008	-	-	-	-	-	-	-	-	-	2.9
12/3/2008	-	-	-	-	-	-	-	-	-	3.2
1/13/2009	-	660	-	-	-	-	-	-	-	3.2
2/5/2009	-	-	-	-	-	-	-	-	-	2.9
3/4/2009	-	-	-	-	-	-	-	-	-	2.7
4/2/2009	-	580	-	-	-	-	-	-	-	2.9
5/11/2009	-	-	-	-	-	-	-	-	-	2.5
6/2/2009	-	-	-	-	-	-	-	-	-	2.5
7/13/2009	-	580	-	-	-	-	-	-	-	2.7
8/5/2009	-	-	-	-	-	-	-	-	-	2.7
1/6/2010	-	590	-	-	-	-	-	-	-	2.7
2/3/2010	-	-	-	-	-	-	-	-	-	2.3
3/10/2010	-	-	-	-	-	-	-	-	-	1.9
4/8/2010	-	570	-	-	-	-	-	-	-	2.7
5/7/2010	-	-	-	-	-	-	-	-	-	2.9
6/3/2010	-	-	-	-	-	-	-	-	-	2.9
7/8/2010	-	570	-	-	-	-	-	-	-	2.9
8/10/2010	-	-	-	-	-	-	-	-	-	3.2
9/2/2010	-	-	-	-	-	-	-	-	-	0.8
10/6/2010	-	590	-	-	-	-	-	-	-	3.4
11/16/2010	-	-	-	-	-	-	-	-	-	2.9
12/1/2010	-	-	-	-	-	-	-	-	-	3.2
1/4/2011	-	490	-	-	-	-	-	-	-	1.8
3/9/2011	-	-	-	-	-	-	-	-	-	1.9
4/5/2011	-	560	-	-	-	-	-	-	-	2.9
5/3/2011	-	-	-	-	-	-	-	-	-	2.5
6/8/2011	-	-	-	-	-	-	-	-	-	2.5
7/6/2011	-	590	-	-	-	-	-	-	-	2.3
8/3/2011	-	-	-	-	-	-	-	-	-	2.3
9/2/2011	-	-	-	-	-	-	-	-	-	2.3
10/14/2011	-	610	-	-	-	-	-	-	-	2.5
11/2/2011	-	-	-	-	-	-	-	-	-	2.5
12/7/2011	-	-	-	-	-	-	-	-	-	2.5
1/11/2012	-	590	-	-	-	-	-	-	-	2.2

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
2/2/2012	-	-	-	-	-	-	-	-	-	2.1
3/7/2012	-	-	-	-	-	-	-	-	-	2.2
4/4/2012	-	580	-	-	-	-	-	-	-	1.9
5/2/2012	-	-	-	-	-	-	-	-	-	2.1
6/5/2012	-	-	-	-	-	-	-	-	-	2.2
8/8/2012	-	-	-	-	-	-	-	-	-	2.3
9/5/2012	950	610	69.0	19.0	100.0	4.5	99.0	200.0	190.0	2.5
10/17/2012	-	620	-	-	-	-	-	-	-	2.3
11/1/2012	-	-	-	-	-	-	-	-	-	2.5
12/4/2012	-	-	-	-	-	-	-	-	-	2.3
1/9/2013	-	610	-	-	-	-	-	-	-	2.2
2/12/2013	-	-	-	-	-	-	-	-	-	2.5
3/12/2013	-	-	-	-	-	-	-	-	-	2.3
4/11/2013	-	600	-	-	-	-	-	-	-	2.7
5/2/2013	-	-	-	-	-	-	-	-	-	2.9
6/5/2013	-	-	-	-	-	-	-	-	-	2.5
7/10/2013	-	580	-	-	-	-	-	-	-	2.7
8/14/2013	-	-	-	-	-	-	-	-	-	2.7
9/5/2013	-	-	-	-	-	-	-	-	-	2.9
10/15/2013	-	630	-	-	-	-	-	-	-	3.2
11/6/2013	-	-	-	-	-	-	-	-	-	3.2
12/5/2013	-	-	-	-	-	-	-	-	-	3.2
1/15/2014	-	620	-	-	-	-	-	-	-	3.6
2/5/2014	-	-	-	-	-	-	-	-	-	3.4
3/12/2014	-	-	-	-	-	-	-	-	-	2.5
4/3/2014	-	560	-	-	-	-	-	-	-	2.5
5/27/2014	-	-	-	-	-	-	-	-	-	2.0
6/4/2014	-	-	-	-	-	-	-	-	-	3.2
7/16/2014	-	610	-	-	-	-	-	-	-	3.2
8/6/2014	-	-	-	-	-	-	-	-	-	3.6
9/3/2014	-	-	-	-	-	-	-	-	-	3.6
10/8/2014	-	610	-	-	-	-	-	-	-	3.4
11/6/2014	-	-	-	-	-	-	-	-	-	3.8
12/9/2014	-	-	-	-	-	-	-	-	-	3.4
1/7/2015	-	690	-	-	-	-	-	-	-	2.9
2/5/2015	-	-	-	-	-	-	-	-	-	3.8
3/5/2015	-	-	-	-	-	-	-	-	-	2.0
4/16/2015	-	600	-	-	-	-	-	-	-	3.6
6/4/2015	-	-	-	-	-	-	-	-	-	2.0
7/14/2015	-	580	-	-	-	-	-	-	-	4.1
8/4/2015	-	-	-	-	-	-	-	-	-	4.3
9/10/2015	900	530	64.0	17.0	97.0	3.8	89.0	150.0	200.0	2.5
10/22/2015	-	590	-	-	-	-	-	-	-	4.3
11/10/2015	-	-	-	-	-	-	-	-	-	4.3
12/3/2015	-	-	-	-	-	-	-	-	-	4.3
1/20/2016	-	480	-	-	-	-	-	-	-	3.7
2/3/2016	-	-	-	-	-	-	-	-	-	3.5
3/2/2016	-	-	-	-	-	-	-	-	-	3.8
4/22/2016	-	590	-	-	-	-	-	-	-	4.1
5/4/2016	-	-	-	-	-	-	-	-	-	3.9
6/7/2016	-	-	-	-	-	-	-	-	-	4.2
7/20/2016	-	490	-	-	-	-	-	-	-	3.9
8/4/2016	-	-	-	-	-	-	-	-	-	4.1
9/8/2016	-	-	-	-	-	-	-	-	-	3.8
10/18/2016	-	600	-	-	-	-	-	-	-	3.8
11/2/2016	-	-	-	-	-	-	-	-	-	3.9
12/6/2016	-	-	-	-	-	-	-	-	-	3.8
1/17/2017	-	560	-	-	-	-	-	-	-	3.6
2/2/2017	-	-	-	-	-	-	-	-	-	3.6
3/9/2017	-	-	-	-	-	-	-	-	-	3.4
4/6/2017	-	540	-	-	-	-	-	-	-	3.5
5/3/2017	-	-	-	-	-	-	-	-	-	3.6
6/8/2017	-	-	-	-	-	-	-	-	-	3.4
7/11/2017	-	540	-	-	-	-	-	-	-	3.6
8/4/2017	-	-	-	-	-	-	-	-	-	3.3
9/13/2017	-	-	-	-	-	-	-	-	-	3.3
10/11/2017	-	550	-	-	-	-	-	-	-	2.8
11/8/2017	-	-	-	-	-	-	-	-	-	2.7
12/6/2017	-	-	-	-	-	-	-	-	-	3.2
1/5/2018	-	560	-	-	-	-	-	-	-	2.5

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
2/15/2018	-	-	-	-	-	-	-	-	-	1.9
3/15/2018	-	-	-	-	-	-	-	-	-	1.5
4/11/2018	-	580	-	-	-	-	-	-	-	2.8
5/4/2018	-	-	-	-	-	-	-	-	-	3.0
6/12/2018	-	-	-	-	-	-	-	-	-	2.8
7/12/2018	-	460	-	-	-	-	-	-	-	3.1
8/15/2018	-	-	-	-	-	-	-	-	-	3.3
9/11/2018	910	570	65.0	17.0	93.0	3.7	100.0	140.0	180.0	3.7
10/11/2018	-	580	-	-	-	-	-	-	-	3.6
1/3/2019	-	570	-	-	-	-	-	-	-	3.5
5/7/2019	-	-	-	-	-	-	-	-	-	3.6
2/19/2019	-	-	-	-	-	-	-	-	-	2.6
11/15/2018	-	-	-	-	-	-	-	-	-	3.9
3/12/2019	-	-	-	-	-	-	-	-	-	2.1
7/3/2019	-	560	-	-	-	-	-	-	-	4.1
8/9/2019	-	-	-	-	-	-	-	-	-	4.1
4/4/2019	-	600	-	-	-	-	-	-	-	1.8
6/18/2019	-	-	-	-	-	-	-	-	-	3.6
9/5/2019	-	-	-	-	-	-	-	-	-	4.5
12/11/2018	-	-	-	-	-	-	-	-	-	3.0
No. 233										
6/15/1988	900	535	71.0	21.0	100.0	5.0	96.0	136.0	247.0	0.9
3/27/1991	1,020	580	66.0	19.0	114.0	5.0	95.0	140.0	247.0	2.7
3/3/1994	740	425	50.0	14.0	75.0	4.0	71.0	100.0	186.0	0.5
4/27/1995	-	-	-	-	-	-	-	-	-	1.4
3/27/1997	880	510	57.0	15.0	100.0	4.0	81.0	120.0	220.0	0.9
1/4/1999	-	-	-	-	-	-	-	-	-	1.1
2/3/1999	-	-	-	-	-	-	-	-	-	0.9
4/8/1999	-	-	-	-	-	-	-	-	-	0.9
6/3/1999	-	-	-	-	-	-	-	-	-	0.9
7/20/1999	-	-	-	-	-	-	-	-	-	1.1
8/11/1999	-	-	-	-	-	-	-	-	-	0.9
9/7/1999	-	-	-	-	-	-	-	-	-	0.9
10/21/1999	-	-	-	-	-	-	-	-	-	1.1
11/3/1999	-	-	-	-	-	-	-	-	-	0.9
4/11/2000	970	570	64.0	18.0	110.0	4.0	85.0	150.0	230.0	0.9
10/6/2000	-	-	-	-	-	-	-	-	-	0.7
10/10/2001	-	-	-	-	-	-	-	-	-	0.9
8/6/2002	-	-	-	-	-	-	-	-	-	0.9
1/13/2003	-	-	-	-	-	-	-	-	-	1.0
7/7/2003	-	-	-	-	-	-	-	-	-	0.6
7/13/2004	-	-	-	-	-	-	-	-	-	0.7
7/12/2005	-	-	-	-	-	-	-	-	-	0.6
4/4/2006	960	600	75.0	20.0	87.0	4.5	93.0	180.0	180.0	1.7
8/4/2006	-	-	-	-	-	-	-	-	-	2.5
8/14/2007	-	-	-	-	-	-	-	-	-	1.8
8/13/2008	-	530	-	-	-	-	-	-	-	1.4
2/5/2009	-	570	-	-	-	-	-	-	-	-
4/2/2009	960	580	70.0	20.0	88.0	4.7	100.0	160.0	200.0	1.5
5/11/2009	-	610	-	-	-	-	-	-	-	-
8/4/2009	-	570	-	-	-	-	-	-	-	1.1
2/2/2010	-	560	-	-	-	-	-	-	-	-
5/6/2010	-	660	-	-	-	-	-	-	-	-
8/10/2010	-	580	-	-	-	-	-	-	-	1.2
7/2/2011	-	630	-	-	-	-	-	-	-	-
8/3/2011	-	-	-	-	-	-	-	-	-	1.0
10/14/2011	-	620	-	-	-	-	-	-	-	-
1/10/2012	-	580	-	-	-	-	-	-	-	-
4/12/2012	930	570	67.0	20.0	93.0	5.5	91.0	190.0	180.0	1.1
8/8/2012	-	-	-	-	-	-	-	-	-	1.2
10/17/2012	-	540	-	-	-	-	-	-	-	-
1/9/2013	-	520	-	-	-	-	-	-	-	-
4/11/2013	-	500	-	-	-	-	-	-	-	-
7/10/2013	-	440	-	-	-	-	-	-	-	-
8/15/2013	-	-	-	-	-	-	-	-	-	0.9
10/15/2013	-	490	-	-	-	-	-	-	-	-
1/15/2014	-	480	-	-	-	-	-	-	-	-
4/17/2014	-	550	-	-	-	-	-	-	-	-
7/16/2014	-	450	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8/6/2014	-	-	-	-	-	-	-	-	-	0.6
10/8/2014	-	480	-	-	-	-	-	-	-	-
1/14/2015	-	490	-	-	-	-	-	-	-	-
4/16/2015	800	510	57.0	18.0	82.0	5.0	78.0	130.0	160.0	0.5
7/14/2015	-	510	-	-	-	-	-	-	-	-
8/6/2015	-	-	-	-	-	-	-	-	-	0.5
10/22/2015	-	560	-	-	-	-	-	-	-	-
1/4/2016	-	510	-	-	-	-	-	-	-	-
4/5/2016	-	570	-	-	-	-	-	-	-	-
7/20/2016	-	580	-	-	-	-	-	-	-	-
10/18/2016	-	640	-	-	-	-	-	-	-	-
1/17/2017	-	760	-	-	-	-	-	-	-	-
4/6/2017	-	720	-	-	-	-	-	-	-	-
7/11/2017	-	680	-	-	-	-	-	-	-	-
8/10/2017	-	-	-	-	-	-	-	-	-	0.6
10/11/2017	-	670	-	-	-	-	-	-	-	-
1/18/2018	-	680	-	-	-	-	-	-	-	-
2/7/2018	-	440	-	-	-	-	-	-	-	-
4/13/2018	920	600	69.0	22.0	93.0	5.6	92.0	190.0	150.0	0.6
7/12/2018	-	610	-	-	-	-	-	-	-	-
8/15/2018	-	-	-	-	-	-	-	-	-	0.4
10/11/2018	-	580	-	-	-	-	-	-	-	-
4/2/2019	-	450	-	-	-	-	-	-	-	-
7/11/2019	-	480	-	-	-	-	-	-	-	-
1/8/2019	-	520	-	-	-	-	-	-	-	-
8/9/2019	-	-	-	-	-	-	-	-	-	0.6
No. 234										
3/31/1988	840	480	54.0	15.0	100.0	4.0	61.0	109.0	241.0	4.1
3/27/1991	1,020	605	69.0	19.0	114.0	5.0	77.0	138.0	256.0	8.4
6/20/1995	-	-	-	-	-	-	-	-	-	2.5
9/26/1996	-	-	-	-	-	-	-	-	-	2.0
2/4/1997	-	-	-	-	-	-	-	-	-	2.7
4/25/1997	840	500	56.0	15.0	95.0	4.0	77.0	120.0	230.0	1.8
1/19/1999	-	-	-	-	-	-	-	-	-	2.7
2/12/1999	-	-	-	-	-	-	-	-	-	3.6
4/21/1999	-	-	-	-	-	-	-	-	-	3.4
6/3/1999	-	-	-	-	-	-	-	-	-	3.6
7/27/1999	-	-	-	-	-	-	-	-	-	4.1
8/19/1999	-	-	-	-	-	-	-	-	-	3.8
9/21/1999	-	-	-	-	-	-	-	-	-	3.6
10/26/1999	-	-	-	-	-	-	-	-	-	2.9
4/13/2000	900	550	64.0	18.0	10.0	4.0	70.0	150.0	220.0	2.9
7/6/2000	-	-	-	-	-	-	-	-	-	2.7
7/12/2001	-	-	-	-	-	-	-	-	-	1.6
8/2/2001	-	-	-	-	-	-	-	-	-	ND
11/20/2002	-	-	-	-	-	-	-	-	-	0.7
12/11/2002	850	520	62.0	17.0	80.0	3.7	74.0	170.0	170.0	0.9
11/4/2003	-	-	-	-	-	-	-	-	-	2.3
11/5/2004	-	-	-	-	-	-	-	-	-	2.3
11/3/2005	-	-	-	-	-	-	-	-	-	2.7
12/6/2005	890	620	70.0	19.0	89.0	4.1	85.0	180.0	200.0	2.7
11/8/2006	-	-	-	-	-	-	-	-	-	3.2
11/16/2007	-	-	-	-	-	-	-	-	-	3.6
8/12/2008	-	-	-	-	-	-	-	-	-	-
11/6/2008	-	570	-	-	-	-	-	-	-	4.5
12/3/2008	960	660	83.0	21.0	89.0	4.9	87.0	160.0	230.0	4.5
2/5/2009	-	590	-	-	-	-	-	-	-	-
5/7/2009	-	620	-	-	-	-	-	-	-	-
8/4/2009	-	590	-	-	-	-	-	-	-	-
2/3/2010	-	610	-	-	-	-	-	-	-	-
5/6/2010	-	680	-	-	-	-	-	-	-	-
8/10/2010	-	610	-	-	-	-	-	-	-	-
8/11/2010	-	610	-	-	-	-	-	-	-	-
11/1/2010	-	610	-	-	-	-	-	-	-	4.8
2/9/2011	-	620	-	-	-	-	-	-	-	-
5/3/2011	-	620	-	-	-	-	-	-	-	-
8/3/2011	-	570	-	-	-	-	-	-	-	-
11/2/2011	-	560	-	-	-	-	-	-	-	4.5
12/6/2011	990	660	71.0	20.0	99.0	4.2	91.0	160.0	240.0	4.8

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/3/2012	-	620	-	-	-	-	-	-	-	-
8/8/2012	-	620	-	-	-	-	-	-	-	-
11/1/2012	-	620	-	-	-	-	-	-	-	5.0
2/7/2013	-	580	-	-	-	-	-	-	-	-
5/2/2013	-	610	-	-	-	-	-	-	-	-
8/15/2013	-	620	-	-	-	-	-	-	-	-
11/7/2013	-	620	-	-	-	-	-	-	-	4.8
2/5/2014	-	640	-	-	-	-	-	-	-	-
5/15/2014	-	630	-	-	-	-	-	-	-	-
8/13/2014	-	610	-	-	-	-	-	-	-	-
11/6/2014	-	620	-	-	-	-	-	-	-	5.7
11/19/2014	-	-	-	-	-	-	-	-	-	5.2
12/9/2014	780	630	73.0	21.0	110.0	4.5	97.0	160.0	230.0	5.9
2/6/2015	-	670	-	-	-	-	-	-	-	5.7
5/7/2015	-	620	-	-	-	-	-	-	-	5.2
8/6/2015	-	590	-	-	-	-	-	-	-	5.2
11/17/2015	-	620	-	-	-	-	-	-	-	5.0
3/29/2017	-	590	-	-	-	-	-	-	-	6.5
5/3/2017	-	590	-	-	-	-	-	-	-	6.3
8/10/2017	-	590	-	-	-	-	-	-	-	6.5
11/9/2017	-	590	-	-	-	-	-	-	-	6.3
12/13/2017	970	620	70.0	20.0	100.0	4.5	85.0	120.0	210.0	6.6
No. 235										
6/24/1988	460	310	40.0	10.0	41.0	2.0	58.0	10.0	140.0	3.4
6/20/1990	420	230	22.0	4.0	56.0	2.0	50.0	6.0	128.0	4.1
6/10/1993	370	235	15.0	2.0	65.0	2.0	51.0	9.0	113.0	3.8
7/16/1996	410	230	16.0	2.0	60.0	1.0	48.0	8.9	110.0	4.5
6/9/1997	-	-	-	-	-	-	-	-	-	3.8
6/3/1999	390	240	13.0	1.0	63.0	1.0	46.0	6.7	98.0	3.8
11/3/1999	-	-	-	-	-	-	-	-	-	3.6
11/9/2000	-	-	-	-	-	-	-	-	-	3.4
11/20/2001	-	-	-	-	-	-	-	-	-	2.9
6/11/2002	380	210	10.0	ND	62.0	1.2	48.0	7.2	100.0	3.6
11/5/2002	-	-	-	-	-	-	-	-	-	3.8
11/18/2003	-	-	-	-	-	-	-	-	-	2.5
6/22/2005	380	230	9.4	ND	68.0	1.1	49.0	7.3	96.0	3.6
11/8/2005	-	-	-	-	-	-	-	-	-	3.8
11/18/2005	-	-	-	-	-	-	-	-	-	4.1
11/14/2006	-	-	-	-	-	-	-	-	-	3.6
6/11/2008	400	210	11.0	1.0	72.0	1.4	48.0	8.4	100.0	3.4
7/7/2008	-	200	-	-	-	-	-	-	-	-
1/13/2009	-	260	-	-	-	-	-	-	-	-
4/7/2009	-	210	-	-	-	-	-	-	-	-
7/13/2009	-	200	-	-	-	-	-	-	-	-
1/6/2010	-	230	-	-	-	-	-	-	-	-
4/8/2010	-	220	-	-	-	-	-	-	-	-
7/14/2010	-	220	-	-	-	-	-	-	-	-
10/5/2010	-	180	-	-	-	-	-	-	-	-
11/16/2010	-	-	-	-	-	-	-	-	-	3.4
1/12/2011	-	170	-	-	-	-	-	-	-	-
8/17/2011	380	230	13.0	1.2	65.0	1.7	48.0	8.4	100.0	3.6
11/2/2011	-	200	-	-	-	-	-	-	-	3.4
2/9/2012	-	200	-	-	-	-	-	-	-	-
5/3/2012	-	220	-	-	-	-	-	-	-	-
8/9/2012	-	200	-	-	-	-	-	-	-	-
11/2/2012	-	220	-	-	-	-	-	-	-	3.2
2/10/2013	-	230	-	-	-	-	-	-	-	-
5/2/2013	-	200	-	-	-	-	-	-	-	-
9/10/2013	-	220	-	-	-	-	-	-	-	-
11/7/2013	-	250	-	-	-	-	-	-	-	3.2
2/5/2014	-	200	-	-	-	-	-	-	-	-
5/20/2014	-	180	-	-	-	-	-	-	-	-
8/7/2014	370	190	9.4	ND	68.0	1.2	51.0	8.9	110.0	3.4
11/5/2014	-	230	-	-	-	-	-	-	-	3.4
2/4/2015	-	110	-	-	-	-	-	-	-	-
5/14/2015	-	230	-	-	-	-	-	-	-	-
8/7/2015	-	190	-	-	-	-	-	-	-	-
11/17/2015	-	240	-	-	-	-	-	-	-	2.9
2/10/2016	-	240	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4
Santa Margarita River Watershed
Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
5/11/2016	-	210	-	-	-	-	-	-	-	-
8/2/2016	-	230	-	-	-	-	-	-	-	-
11/2/2016	-	210	-	-	-	-	-	-	-	3.1
2/3/2017	-	230	-	-	-	-	-	-	-	-
5/2/2017	-	220	-	-	-	-	-	-	-	-
8/4/2017	380	220	10.0	ND	67.0	1.3	48.0	8.6	78.0	3.1
11/8/2017	-	220	-	-	-	-	-	-	-	3.0
5/9/2018	-	220	-	-	-	-	-	-	-	-
8/10/2018	-	230	-	-	-	-	-	-	-	-
5/7/2019	-	220	-	-	-	-	-	-	-	-
11/15/2018	-	220	-	-	-	-	-	-	-	3.6
8/14/2019	-	230	-	-	-	-	-	-	-	-
2/22/2019	-	230	-	-	-	-	-	-	-	-
No. 236										
9/1/2017	1,000	670	74.0	24.0	100.0	6.1	110.0	230.0	160.0	0.4
11/8/2017	1,000	640	69.0	24.0	99.0	6.1	96.0	200.0	150.0	0.4
2/7/2018	870	520	55.0	19.0	99.0	5.0	88.0	170.0	150.0	0.5
5/3/2018	710	440	48.0	16.0	87.0	5.3	69.0	120.0	150.0	0.6
8/14/2018	730	460	47.0	15.0	83.0	4.5	74.0	120.0	160.0	0.4
11/6/2018	730	420	42.0	14.0	80.0	4.6	74.0	110.0	140.0	0.8
2/19/2019	770	450	47.0	16.0	87.0	4.2	76.0	130.0	140.0	0.5
No. 237										
11/22/2017	590	350	18.0	5.8	92.0	2.0	82.0	23.0	140.0	ND
2/7/2018	550	310	17.0	5.3	92.0	1.9	81.0	21.0	130.0	0.4
5/3/2018	510	310	15.0	4.7	87.0	1.8	75.0	18.0	140.0	0.2
6/29/2018	-	320	15.0	4.9	-	-	-	-	140.0	-
8/9/2018	520	300	14.0	4.2	89.0	1.6	70.0	19.0	150.0	ND
11/6/2018	520	270	12.0	3.5	89.0	1.5	71.0	18.0	130.0	ND
2/19/2019	540	300	14.0	4.5	95.0	1.9	71.0	19.0	130.0	ND
No. 238										
4/25/2018	470	270	22.0	3.3	66.0	1.9	73.0	14.0	100.0	0.9
6/29/2018	-	330	31.0	5.2	-	-	-	-	120.0	-
7/17/2018	530	310	32.0	4.6	69.0	2.2	87.0	15.0	120.0	2.8
10/3/2018	520	300	28.0	4.5	65.0	2.0	85.0	15.0	100.0	2.7
1/9/2019	510	300	26.0	3.9	70.0	2.0	79.0	14.0	110.0	1.9
No. 240										
9/25/2018	-	-	-	-	-	-	-	-	-	3.5
4/2/2019	520	300	9.7	ND	96.0	1.1	87.0	32.0	78.0	1.9
1/9/2019	590	340	13.0	1.1	100.0	1.3	98.0	39.0	79.0	2.8
10/17/2018	640	350	17.0	1.3	110.0	1.5	110.0	48.0	71.0	3.1
7/22/2019	490	270	8.6	ND	92.0	1.1	80.0	30.0	78.0	2.5
No. 301										
7/29/1992	500	290	20.0	6.0	80.0	1.0	45.0	56.0	143.0	ND
2/27/1997	580	350	45.0	16.0	48.0	2.0	49.0	54.0	200.0	0.9
8/15/1997	-	-	-	-	-	-	-	-	-	1.4
12/27/2000	570	360	49.0	15.0	53.0	2.0	55.0	57.0	180.0	1.6
2/22/2002	-	-	-	-	-	-	-	-	-	ND
5/14/2002	550	340	-	-	-	-	57.0	50.0	-	0.7
12/11/2002	580	350	-	-	-	-	-	-	-	0.6
No. 302										
4/11/1988	690	360	36.0	6.0	100.0	1.0	77.0	65.0	192.0	ND
5/15/1991	760	425	58.0	9.0	87.0	2.0	83.0	72.0	220.0	ND
5/14/1992	-	270	12.0	2.0	90.0	ND	48.0	48.0	-	-
5/5/1994	870	530	69.0	16.0	84.0	2.0	110.0	88.0	238.0	ND
5/16/1995	-	-	-	-	-	-	-	-	-	ND
7/16/1996	530	320	-	-	-	-	60.0	54.0	-	0.5
5/13/1997	560	500	73.0	14.0	94.0	2.0	110.0	86.0	240.0	ND
7/27/1999	-	-	-	-	-	-	-	-	-	ND
5/17/2000	520	320	11.0	1.0	99.0	ND	51.0	50.0	130.0	ND
6/13/2000	520	310	-	-	-	-	-	-	-	ND
7/11/2000	-	-	-	-	-	-	-	-	-	ND
12/20/2001	790	500	-	-	-	-	110.0	140.0	-	ND
12/11/2002	870	510	-	-	-	-	-	-	-	ND
6/19/2003	620	370	22.0	3.8	95.0	ND	77.0	63.0	140.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
3/17/2004	830	510	-	-	-	-	110.0	85.0	-	ND
6/22/2004	-	-	-	-	-	-	-	-	-	ND
9/21/2004	900	550	-	-	-	-	110.0	82.0	-	ND
No. 309										
8/15/1990	690	370	19.0	3.0	119.0	2.0	140.0	25.0	73.0	1.1
4/11/1991	-	-	-	-	-	-	-	-	-	ND
9/25/1991	730	365	19.0	2.0	122.0	2.0	150.0	27.0	82.0	1.1
8/11/1994	730	430	20.0	2.0	120.0	2.0	160.0	30.0	73.0	1.1
2/16/1995	-	-	-	-	-	-	-	-	-	4.1
7/16/1997	-	-	-	-	-	-	-	-	-	1.1
7/23/1997	-	-	-	-	-	-	-	-	-	1.2
8/20/1997	-	-	-	-	-	-	-	-	-	1.1
9/3/1997	-	-	-	-	-	-	-	-	-	1.1
9/18/1997	-	-	-	-	-	-	-	-	-	1.1
10/3/1997	790	520	21.0	2.0	130.0	2.0	170.0	33.0	85.0	1.4
8/6/1998	-	-	-	-	-	-	-	-	-	1.4
9/16/1998	-	460	-	-	-	-	-	-	-	1.4
7/20/1999	-	-	-	-	-	-	-	-	-	1.4
5/10/2000	-	450	20.0	2.0	130.0	ND	-	-	85.0	-
7/6/2000	-	-	-	-	-	-	-	-	-	1.4
8/2/2000	740	450	21.0	2.0	140.0	1.0	180.0	38.0	87.0	1.6
7/19/2001	-	-	-	-	-	-	-	-	-	1.6
11/19/2002	-	-	-	-	-	-	-	-	-	1.1
1/13/2003	-	-	-	-	-	-	-	-	-	1.1
8/20/2003	880	490	21.0	2.1	140.0	1.5	190.0	33.0	83.0	1.1
1/7/2004	-	-	-	-	-	-	-	-	-	1.4
11/11/2005	-	-	-	-	-	-	-	-	-	1.4
1/4/2006	-	-	-	-	-	-	-	-	-	1.2
12/7/2006	870	470	21.0	1.9	140.0	2.0	190.0	36.0	84.0	1.2
1/10/2007	-	-	-	-	-	-	-	-	-	1.2
1/8/2008	-	-	-	-	-	-	-	-	-	1.2
8/12/2008	-	470	-	-	-	-	-	-	-	-
1/6/2009	-	-	-	-	-	-	-	-	-	1.5
2/3/2009	-	450	-	-	-	-	-	-	-	-
4/1/2009	-	-	25.0	2.9	-	-	-	-	-	-
5/11/2009	-	460	-	-	-	-	-	-	-	-
8/4/2009	-	450	-	-	-	-	-	-	-	-
1/7/2010	-	-	-	-	-	-	-	-	-	1.3
2/2/2010	-	480	-	-	-	-	-	-	-	-
5/6/2010	-	500	-	-	-	-	-	-	-	-
8/9/2010	-	490	-	-	-	-	-	-	-	-
11/10/2010	-	460	-	-	-	-	-	-	-	-
1/4/2011	-	-	-	-	-	-	-	-	-	1.3
2/2/2011	-	480	-	-	-	-	-	-	-	-
5/4/2011	-	470	-	-	-	-	-	-	-	-
8/4/2011	-	480	-	-	-	-	-	-	-	-
11/2/2011	-	460	-	-	-	-	-	-	-	-
1/17/2012	-	-	-	-	-	-	-	-	-	1.2
2/8/2012	-	480	-	-	-	-	-	-	-	-
5/3/2012	-	490	-	-	-	-	-	-	-	-
8/9/2012	-	440	-	-	-	-	-	-	-	-
11/2/2012	-	500	-	-	-	-	-	-	-	-
12/4/2012	950	500	24.0	2.5	150.0	1.7	190.0	45.0	92.0	1.3
1/10/2013	-	-	-	-	-	-	-	-	-	1.2
2/5/2013	-	490	-	-	-	-	-	-	-	-
5/2/2013	-	470	-	-	-	-	-	-	-	-
8/14/2013	-	460	-	-	-	-	-	-	-	-
11/5/2013	-	460	-	-	-	-	-	-	-	-
1/21/2014	-	-	-	-	-	-	-	-	-	1.3
2/5/2014	-	480	-	-	-	-	-	-	-	-
5/23/2014	-	560	-	-	-	-	-	-	-	-
6/26/2014	-	530	-	-	-	-	240.0	-	-	-
8/7/2014	-	480	-	-	-	-	-	-	-	-
11/5/2014	-	520	-	-	-	-	-	-	-	-
1/8/2015	-	-	-	-	-	-	-	-	-	1.5
2/6/2015	-	590	-	-	-	-	-	-	-	-
5/14/2015	-	490	-	-	-	-	-	-	-	-
8/6/2015	-	510	-	-	-	-	-	-	-	-
11/18/2015	-	490	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-4

Santa Margarita River Watershed

Water Quality Data

Wells Sampled by Rancho Califronia Water District

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
12/9/2015	910	480	25.0	2.6	150.0	1.5	200.0	51.0	94.0	1.4
1/12/2016	-	-	-	-	-	-	-	-	-	1.5
2/10/2016	-	540	-	-	-	-	-	-	-	-
5/5/2016	-	520	-	-	-	-	-	-	-	-
8/2/2016	-	510	-	-	-	-	-	-	-	-
11/8/2016	-	520	-	-	-	-	-	-	-	-
1/17/2017	-	-	-	-	-	-	-	-	-	1.3
2/3/2017	-	500	-	-	-	-	-	-	-	-
5/3/2017	-	510	-	-	-	-	-	-	-	-
8/9/2017	-	510	-	-	-	-	-	-	-	-
11/2/2017	-	500	-	-	-	-	-	-	-	-
1/12/2018	-	-	-	-	-	-	-	-	-	1.3
2/28/2018	-	500	-	-	-	-	-	-	-	-
5/9/2018	-	520	-	-	-	-	-	-	-	-
8/14/2018	-	530	-	-	-	-	-	-	-	-
11/6/2018	-	510	-	-	-	-	-	-	-	-
5/7/2019	-	520	-	-	-	-	-	-	-	-
2/20/2019	-	500	-	-	-	-	-	-	-	-
1/9/2019	-	-	-	-	-	-	-	-	-	1.5
12/14/2018	920	500	26.0	3.0	150.0	2.0	200.0	56.0	79.0	1.4
8/27/2019	-	520	-	-	-	-	-	-	-	-

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-5
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Indian Reservations
Cahuilla

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7S/2E14M01										
12/14/1983	1,220	708	130.0	40.0	45.0	11.0	53.0	390.0	98.0	0.0
7S/2E-23H01										
5/18/2006	428	288	39.6	5.7	33.7	3.1	31.0	14.0	-	8.3
7S/2E-23Q01										
5/18/2006	245	160	15.6	2.6	26.6	2.5	29.5	5.4	-	1.1
7S/2E-26B03										
7/11/2007	296	197	23.7	3.0	31.0	2.9	33.9	7.6	76.0	1.8
7S/2E-33N1										
8/2/1989	355	206	16.0	2.1	53.0	3.5	48.0	15.0	78.0	0.7
7S/2E-36J01										
2/3/1984	-	252	43.0	4.4	36.0	4.8	32.0	5.4	-	3.4
7S-3E-14P03										
8/10/2005	1,080	741	113.0	42.4	70.0	9.7	66.8	296.0	-	0.2
7S-3E-20J05										
8/23/2007	753	466	49.4	7.1	89.2	3.2	87.9	83.6	110.0	6.9
7S/3E-21L01										
5/27/1953	750	-	66.0	20.0	70.0	-	67.0	76.0	-	-
8/2/1989	1,050	675	90.0	19.0	100.0	3.5	84.0	190.0	216.0	3.1
8/1/1990	1,020	610	87.0	18.0	100.0	3.4	85.0	180.0	217.0	3.0
7/17/1991	995	636	93.0	18.0	100.0	3.7	95.0	180.0	206.0	2.5
8/23/2007	1,040	677	96.1	20.2	90.9	3.7	96.2	169.0	190.0	3.4
7S/3E-31L02										
2/3/1984	-	184	23.0	4.8	24.0	2.9	24.0	ND	-	2.0
7S/3E-31N01										
7/27/1984	684	412	69.0	12.0	37.0	-	75.0	12.0	-	-
7S/3E-34E01										
7/7/1976	-	-	25.0	4.6	21.0	4.2	26.0	7.3	-	4.0
9/22/1977	-	-	25.0	4.9	23.0	4.4	25.0	6.9	-	-
7/19/1978	-	-	26.0	5.1	22.0	4.5	24.0	6.5	-	3.7
6/28/1979	-	190	26.0	5.0	22.0	4.3	24.0	6.0	-	-
7/2/1980	-	-	26.0	4.9	23.0	4.7	28.0	6.9	-	3.7
7/8/1981	309	-	27.0	5.0	23.0	4.7	26.0	7.7	81.0	4.1
6/29/1982	311	-	27.0	5.3	27.0	4.9	27.0	10.0	88.0	4.0
8/10/1983	306	-	27.0	5.0	23.0	4.8	29.0	7.7	90.0	3.8
8/21/1984	319	-	30.0	5.3	24.0	4.3	29.0	7.2	92.0	3.7
8/1/1985	321	-	28.0	5.2	24.0	4.6	29.0	7.0	86.0	3.5
8/14/1987	332	207	29.0	5.6	25.0	4.8	28.0	8.0	96.0	3.5
7/20/1989	338	204	30.0	5.6	26.0	5.0	29.0	7.0	98.0	3.3
7/16/1991	335	209	31.0	5.9	26.0	4.7	32.0	6.3	99.0	3.5
7/31/1991	337	109	31.0	5.5	25.0	4.5	31.0	6.3	99.0	3.5
8S/2E-4P01										
1/21/1986	1,870	-	190.0	54.0	64.0	7.9	480.0	13.0	136.0	4.0
5/18/2006	794	441	59.8	19.3	44.1	4.4	101.0	10.4	-	5.5
8S/3E-2A01										
2/5/1986	591	-	54.0	11.0	43.0	3.2	93.0	21.0	103.0	3.4
8S/3E-2D01										
7/8/1981	293	-	17.0	2.2	39.0	1.7	30.0	8.8	68.0	2.5
7/24/1985	279	-	11.0	1.2	42.0	1.5	28.0	8.0	71.0	2.1

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-5
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Indian Reservations
Cahuilla

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8S/3E-2E01										
12/7/1950	-	-	30.0	10.0	53.0	-	50.0	14.0	-	-
11/15/1951	-	-	38.0	8.0	43.0	-	50.0	6.0	-	-
5/27/1976	-	-	39.0	9.4	32.0	2.2	49.0	12.0	-	4.9
9/22/1977	-	280	39.0	9.6	33.0	2.6	42.0	8.4	-	-
7/19/1978	-	-	42.0	10.0	36.0	2.4	57.0	13.0	-	5.7
6/28/1979	-	284	40.0	9.0	32.0	2.8	42.0	9.0	-	-
7/2/1980	-	-	34.0	6.5	22.0	2.4	27.0	7.4	-	-
7/8/1981	296	-	33.0	4.8	19.0	1.9	36.0	1.0	61.0	2.0
6/29/1982	494	-	43.0	9.7	41.0	3.0	54.0	14.0	127.0	5.7
7/26/1983	427	-	40.0	9.6	32.0	3.0	42.0	9.7	131.0	4.8
8/21/1984	428	-	42.0	9.3	32.0	2.9	39.0	9.6	129.0	4.7
8/13/1987	428	276	39.0	9.4	32.0	3.2	37.0	9.6	129.0	4.6
8/10/2005	424	283	42.4	10.2	33.6	3.4	39.9	9.1	-	4.9
8S/3E-2K01										
9/22/1977	-	-	43.0	10.0	48.0	3.2	65.0	18.0	-	-
7/19/1978	-	-	42.0	9.8	48.0	3.4	68.0	17.0	-	3.7
6/28/1979	-	342	46.0	10.0	46.0	3.1	69.0	19.0	-	-
7/2/1980	-	-	64.0	12.0	92.0	2.7	140.0	48.0	-	4.1
6/29/1982	454	-	41.0	10.0	38.0	3.7	46.0	13.0	129.0	3.6
8/10/1983	435	-	39.0	9.5	32.0	3.6	43.0	13.0	133.0	3.6
8/21/1984	561	-	50.0	11.0	48.0	3.1	68.0	27.0	139.0	4.0
8/1/1985	472	-	41.0	9.7	34.0	3.4	48.0	15.0	125.0	3.7
8/13/1987	451	282	40.0	9.9	31.0	3.4	41.0	16.0	133.0	3.6
7/20/1989	531	323	46.0	11.0	41.0	3.4	60.0	22.0	136.0	3.6
8/1/1990	508	310	46.0	11.0	38.0	3.3	60.0	19.0	134.0	3.8
7/16/1991	522	306	50.0	10.0	39.0	3.3	61.0	21.0	139.0	3.7

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-5
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Indian Reservations
Pechanga

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8S/2W-28M03										
8/26/1999	562	319	38.0	13.0	52.0	0.8	68.0	15.0	-	2.6
8/12/2003	534	344	40.7	14.7	53.5	0.9	58.9	14.1	-	4.2
8/19/2004	708	440	61.4	22.5	51.0	0.9	87.6	52.0	-	6.2
8/2/2005	746	459	69.7	26.9	44.3	1.0	87.8	61.8	-	5.1
8/2/2006	678	413	55.9	21.0	42.6	0.9	74.9	43.1	153.0	8.3
9/4/2007	663	392	53.7	19.5	51.1	0.9	70.1	32.1	158.0	8.3
8S/2W-28M05										
9/1/2009	457	253	10.7	0.5	77.7	0.5	65.6	17.4	91.0	0.1
7/26/2010	-	261	11.0	0.9	83.3	0.5	78.3	17.1	-	0.0
8/31/2011	482	272	10.7	1.0	86.0	0.5	77.8	16.9	88.0	0.0
8/13/2013	475	281	12.3	1.1	81.9	0.5	77.6	15.8	87.9	ND
9/17/2014	475	256	10.9	1.0	83.9	0.5	74.2	15.1	85.9	0.0
7/29/2015	459	255	10.0	1.0	79.8	0.4	72.9	15.8	85.0	ND
8/10/2016	487	271	13.3	1.3	91.6	0.4	76.5	15.4	105.0	ND
7/19/2017	465	262	11.2	0.9	85.4	0.5	73.2	15.4	96.5	ND
7/31/2018	467	260	11.5	1.0	83.2	0.4	73.1	14.9	100.0	ND
7/30/2019	470	261	11.3	0.9	86.1	0.5	76.0	15.7	100.0	ND
8S/2W-28Q02										
10/5/1989	629	378	48.0	19.0	49.0	0.7	76.0	14.0	169.0	4.2
7/26/1990	613	383	48.0	18.0	47.0	0.6	75.0	12.0	171.0	3.9
7/18/1991	618	379	49.0	18.0	49.0	0.7	83.0	14.0	172.0	3.0
7/28/1993	620	400	51.0	20.0	47.0	0.7	63.0	15.0	174.0	9.6
8/17/1994	641	396	51.0	21.0	50.0	0.8	60.0	17.0	179.0	11.0
8/31/1995	653	396	53.0	21.0	48.0	0.7	60.0	19.0	184.0	12.0
8/28/1996	-	-	-	-	-	-	-	-	-	11.0
8/12/1997	614	411	47.0	19.0	47.0	0.7	63.0	15.0	176.0	8.9
8/19/1998	625	402	47.0	20.0	47.0	0.7	60.0	14.0	-	9.9
8/21/2002	598	394	47.0	19.0	46.0	0.7	64.0	15.0	-	8.5
8/12/2003	604	405	48.8	19.8	47.8	0.7	69.1	14.0	-	7.1
8/18/2004	615	386	51.6	20.2	45.6	0.9	78.8	16.5	-	4.0
8/2/2005	822	514	76.8	30.2	54.0	0.8	93.7	30.9	-	14.7
8S/2W-28R01										
8/3/1989	495	286	41.0	4.0	60.0	0.9	37.0	13.0	177.0	1.1
7/26/1990	525	296	48.0	4.8	54.0	1.0	45.0	14.0	191.0	1.5
7/17/1991	462	261	31.0	3.2	66.0	0.8	44.0	12.0	155.0	0.8
7/27/1993	445	269	44.0	4.4	43.0	0.5	28.0	14.0	170.0	1.9
8/15/1994	421	232	32.0	3.3	55.0	0.9	28.0	11.0	156.0	1.5
8/30/1995	375	200	21.0	2.2	55.0	0.6	31.0	11.0	129.0	0.7
8/27/1996	-	-	-	-	-	-	-	-	-	1.5
8/13/1997	398	241	20.0	2.1	59.0	0.6	37.0	11.0	130.0	0.6
8/20/1998	481	282	36.0	3.9	60.0	0.9	38.0	14.0	167.0	1.1
8/25/1999	446	252	28.0	3.1	59.0	0.7	41.0	12.0	-	0.8
8/22/2000	456	265	29.0	3.3	61.0	0.7	39.0	14.0	-	0.8
8/21/2001	522	320	51.0	5.9	48.0	1.0	42.0	16.0	-	1.7
8/21/2002	457	284	33.0	3.7	61.0	0.9	41.0	13.0	-	1.1
8/12/2003	518	330	55.0	6.5	50.4	1.1	39.7	14.3	-	1.9
8/18/2004	516	317	56.8	6.2	47.9	1.4	42.6	14.2	-	1.6
8/3/2005	541	333	60.5	6.5	45.3	1.2	40.2	14.1	-	2.2
9/10/2008	480	278	37.2	4.7	62.4	1.1	41.2	11.4	160.0	-
8/4/2009	543	329	50.0	5.5	55.5	1.1	38.7	18.4	194.0	1.8
7/26/2010	564	335	58.3	6.6	49.9	1.1	41.9	18.7	203.0	2.2
8/22/2011	548	357	55.0	6.8	52.9	1.1	41.3	18.8	187.0	2.4
8/21/2012	507	287	44.7	5.2	60.5	1.0	39.2	17.4	178.0	1.9
7/24/2013	498	302	43.9	4.9	60.6	0.9	39.8	17.6	178.0	1.7
9/17/2014	592	339	59.3	7.2	54.7	1.2	43.4	20.8	206.0	2.3
7/29/2015	589	364	64.5	7.8	55.9	1.2	44.9	20.6	212.0	2.4
8/10/2016	587	356	62.6	7.5	54.0	1.1	44.9	19.8	257.7	0.6
7/19/2017	546	324	54.1	6.3	53.9	1.1	47.8	15.9	230.0	1.3
7/31/2018	525	309	45.9	5.3	58.9	1.0	47.5	15.7	208.0	0.2
7/30/2019	408	232	17.6	2.1	68.3	0.7	53.2	8.8	133.0	0.0
8S/2W-29A01										
8/2/1989	346	207	31.0	11.0	24.0	0.4	18.0	7.0	131.0	2.0
7/24/1990	354	193	32.0	11.0	25.0	0.4	24.0	6.7	133.0	2.0

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-5
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Indian Reservations
Pechanga

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/18/1991	361	194	32.0	10.0	26.0	0.4	25.0	6.0	134.0	1.8
8/15/1994	363	216	33.0	12.0	25.0	0.5	24.0	7.7	132.0	2.6
8/31/1995	363	208	32.0	11.0	23.0	0.4	21.0	8.1	137.0	2.6
8/28/1996	-	-	-	-	-	-	-	-	-	2.9
8/12/1997	368	238	32.0	12.0	24.0	0.4	22.0	7.4	138.0	3.1
8/19/1998	411	246	36.0	11.0	31.0	0.5	25.0	8.2	153.0	2.9
8/25/1999	375	222	33.0	12.0	23.0	0.4	20.0	6.7	-	3.8
8/22/2000	374	237	33.0	12.0	24.0	0.4	18.0	7.3	-	3.5
8/21/2001	374	236	34.0	12.0	24.0	0.5	20.0	7.3	-	3.6
8/2/2005	382	243	38.7	11.6	27.1	0.5	27.6	7.7	-	2.8
8S/2W-29A02										
8/2/2006	392	242	36.2	10.9	26.6	0.4	29.4	7.9	139.0	2.6
8/4/2009	394	245	29.8	11.3	32.2	0.6	34.5	7.4	133.0	0.8
7/26/2010	-	268	37.5	11.9	32.5	0.6	38.5	12.9	-	2.4
8/22/2011	434	299	35.9	12.0	35.7	0.6	41.9	12.7	132.0	2.1
8/21/2012	465	298	42.0	13.2	38.1	0.6	42.4	15.8	148.0	2.7
7/24/2013	464	297	39.7	13.6	37.0	0.6	45.6	16.3	147.0	2.6
9/17/2014	481	284	38.7	13.2	36.4	0.6	46.0	16.3	145.0	2.5
7/29/2015	485	298	41.3	14.4	38.5	0.6	47.9	18.6	146.0	2.7
8/10/2016	522	317	47.4	14.4	42.0	0.4	52.0	22.9	179.8	0.9
7/19/2017	505	311	44.6	13.9	38.2	0.7	49.7	20.9	175.0	3.4
7/31/2018	521	333	46.4	14.9	39.0	0.5	51.3	22.9	178.0	0.8
7/30/2019	526	324	46.6	15.4	40.2	0.7	54.2	23.6	179.0	3.6
8S/2W-29B02										
3/1/1990	456	257	5.5	0.1	89.0	0.8	66.0	22.0	100.0	-
3/6/1990	456	256	5.9	0.1	90.0	0.7	66.0	20.0	99.0	ND
8S/2W-29B03										
3/6/1990	478	275	14.0	1.9	84.0	0.8	65.0	16.0	123.0	ND
8S/2W-29B05										
3/2/1990	397	229	29.0	9.5	43.0	1.2	35.0	4.9	141.0	1.8
8S/2W-29B06										
3/2/1990	406	259	34.0	11.0	38.0	0.8	38.0	10.0	143.0	-
3/6/1990	427	240	32.0	11.0	40.0	1.0	40.0	8.1	148.0	1.2
8S/2W-29B07										
3/7/1990	396	230	8.6	2.5	71.0	0.9	51.0	11.0	102.0	ND
8/16/1990	371	199	8.4	1.8	69.0	0.8	50.0	14.0	106.0	ND
8S/2W-29B08										
3/7/1990	464	272	31.0	9.4	52.0	1.2	58.0	12.0	134.0	0.5
8/16/1990	458	261	34.0	9.1	48.0	1.1	59.0	17.0	135.0	0.4
8S/2W-29B09										
3/7/1990	343	210	21.0	9.2	39.0	1.0	24.0	6.7	131.0	1.3
8/17/1990	317	197	26.0	10.0	26.0	1.1	22.0	3.4	130.0	1.6
8S/2W-29B10										
8/19/1998	367	223	12.0	0.6	75.0	0.6	50.0	10.0	121.0	ND
8/26/1999	393	219	12.0	0.7	68.0	0.6	46.0	11.0	-	ND
8/22/2000	393	228	12.0	0.8	69.0	0.6	43.0	11.0	-	ND
8/21/2001	398	231	11.0	0.6	72.0	0.6	49.0	15.0	-	0.0
8/12/2003	387	239	11.3	0.6	75.1	0.6	47.2	18.4	-	2.4
8/18/2004	390	232	11.2	0.6	72.6	0.6	48.0	20.8	-	ND
8/2/2005	404	242	12.5	0.7	69.9	0.7	47.2	23.2	-	ND
8/3/2006	381	222	12.3	0.8	62.8	0.5	40.3	17.3	110.0	ND
9/4/2007	430	237	12.1	0.7	78.3	0.7	47.2	27.5	107.0	ND
9/15/2008	420	242	11.2	0.7	77.3	0.6	45.3	29.6	106.0	0.0
8/4/2009	381	217	12.1	0.8	66.0	0.6	39.9	23.7	108.0	0.0
7/26/2010	394	220	11.4	0.7	71.6	0.6	42.2	26.0	107.0	0.0
8/22/2011	421	265	11.5	0.7	75.5	0.6	45.5	31.0	99.0	0.0
8/21/2012	432	245	12.8	0.7	82.4	0.6	47.1	34.9	106.0	ND
7/24/2013	451	264	13.6	0.8	83.6	0.6	49.2	43.1	107.0	ND
9/17/2014	490	274	14.8	0.9	84.8	0.7	51.1	52.0	105.0	0.0

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-5

Santa Margarita River Watershed

Water Quality Data

Wells Sampled on Indian Reservations

Pechanga

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
7/29/2015	498	289	16.2	1.0	91.7	0.8	52.9	56.5	107.0	ND
8/10/2016	535	315	18.2	1.0	92.5	0.6	55.3	65.8	121.0	ND
7/19/2017	544	324	20.3	1.1	93.4	0.8	56.2	69.1	123.0	ND
7/31/2018	553	330	22.5	1.2	92.8	0.7	56.7	72.0	124.0	0.0
7/30/2019	577	337	24.3	1.4	96.2	0.8	59.1	79.9	129.0	0.1
8S/2W-29B11										
8/2/2006	483	285	30.1	7.8	51.5	0.9	57.1	11.8	138.0	1.4
8/4/2009	497	281	33.0	8.5	51.0	1.0	52.6	16.6	140.0	2.3
7/26/2010	-	287	34.7	9.1	53.4	1.1	56.8	15.3	-	2.3
8/22/2011	482	308	32.7	9.5	53.0	1.0	54.2	16.0	131.0	2.5
8/21/2012	492	300	35.9	10.0	55.9	1.0	54.3	17.9	142.0	2.7
7/24/2013	505	300	36.2	10.1	57.2	1.1	54.5	20.4	144.0	2.8
9/17/2014	542	315	37.1	10.4	55.3	1.1	56.2	23.9	145.0	3.1
7/29/2015	530	315	39.9	11.3	56.4	1.2	56.5	24.8	146.0	2.8
8/10/2016	530	313	40.4	10.9	58.0	1.0	57.5	24.6	173.5	0.7
7/19/2017	536	314	39.9	10.6	55.1	1.2	58.5	24.5	174.0	2.9
7/31/2018	540	335	39.7	11.1	55.5	1.1	59.9	24.5	174.0	0.6
7/30/2019	542	323	40.7	11.4	56.4	1.2	62.4	25.6	171.0	2.6
8S/2W-29F3										
8/3/2006	378	251	21.9	7.7	38.9	1.9	47.2	10.4	104.0	0.5
8S/2W-29J02										
8/26/1999	565	329	39.0	15.0	47.0	1.6	66.0	14.0	-	2.7
8/22/2000	562	337	39.0	15.0	47.0	1.5	65.0	14.0	-	2.7
8/21/2001	574	351	40.0	15.0	50.0	1.6	70.0	15.0	-	2.6
8/21/2002	554	345	41.0	16.0	50.0	1.8	68.0	14.0	-	2.9
8/12/2003	592	372	45.4	16.6	54.2	1.7	78.2	15.4	-	2.4
8/19/2004	598	362	48.8	16.9	-	1.9	80.0	17.0	-	3.1
8S/2W-29J03										
8/2/2006	532	337	40.3	13.2	43.1	1.3	44.8	17.5	152.0	8.5
8S/2W-34B04										
10/5/1989	617	371	51.0	8.2	67.0	1.0	58.0	30.0	192.0	0.5
7/26/1990	605	341	50.0	8.0	65.0	1.0	61.0	31.0	194.0	0.5
7/18/1991	564	339	46.0	7.4	67.0	1.0	53.0	27.0	185.0	0.9
7/27/1993	267	170	18.0	2.8	34.0	0.5	14.0	9.7	96.0	1.1
8S/2W-35D01										
8/3/1989	660	358	43.0	5.5	87.0	1.2	78.0	35.0	169.0	0.4
7/26/1990	669	384	41.0	4.9	92.0	1.5	82.0	36.0	176.0	0.4
7/17/1991	641	371	40.0	4.4	98.0	1.7	81.0	36.0	175.0	0.4
7/27/1993	638	374	49.0	5.9	79.0	1.8	71.0	27.0	199.0	0.3
8/16/1994	601	334	30.0	3.2	95.0	1.5	71.0	29.0	163.0	0.2
8/30/1995	587	322	33.0	4.0	81.0	1.5	68.0	25.0	178.0	0.1
8/27/1996	596	352	28.0	3.3	92.0	1.4	72.0	29.0	167.0	0.1

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
Well 2201										
10/1/1960	1,060	639	66.5	24.0	116.0	4.5	160.0	110.0	264.0	-
6/1/1962	1,190	718	60.0	33.2	123.0	3.8	190.0	124.0	232.0	0.3
7/1/1964	1,217	734	79.2	27.8	144.0	1.6	180.0	150.0	248.9	-
5/1/1965	1,485	896	75.2	30.3	158.0	2.4	180.0	120.0	253.8	ND
1/1/1966	-	808	76.8	33.2	157.0	3.4	170.0	180.0	292.8	0.1
6/1/1966	-	684	75.2	26.8	112.0	2.4	128.0	148.0	263.5	0.9
1/1/1967	-	856	81.6	26.3	138.0	3.5	162.0	140.0	310.0	0.7
8/1/1967	-	880	99.2	38.1	156.0	3.6	160.0	230.0	322.1	1.2
2/1/1968	-	768	65.6	25.4	156.0	3.4	160.0	164.0	236.7	ND
4/1/1969	-	852	66.0	32.0	162.0	3.2	166.0	210.0	249.0	ND
11/1/1969	-	844	87.0	31.0	140.0	3.6	164.0	180.0	262.0	ND
7/1/1970	-	672	99.0	32.0	139.0	3.0	158.0	205.0	259.0	0.6
12/1/1970	1,180	712	83.0	28.0	138.0	3.0	166.0	170.0	266.0	ND
9/1/1971	1,062	640	83.0	27.0	128.0	2.8	136.0	175.0	278.0	0.1
5/1/1972	1,130	681	56.0	24.0	140.0	2.8	136.0	165.0	220.0	ND
10/1/1972	1,165	703	64.0	27.0	159.0	3.6	132.0	180.0	293.0	0.4
10/1/1973	1,140	688	72.0	27.0	131.0	3.8	144.0	190.0	200.0	0.3
2/1/1976	1,140	688	70.4	28.3	143.0	3.1	132.0	182.0	273.3	1.8
9/1/1976	1,100	663	67.0	25.0	152.0	2.5	152.0	131.0	327.0	2.8
3/1/1977	1,080	651	67.0	28.0	173.0	3.1	128.0	160.0	254.0	4.4
10/1/1978	1,150	694	70.0	25.0	120.0	3.5	139.0	145.0	253.8	ND
6/1/1979	1,100	663	72.0	27.3	125.0	3.0	134.0	142.0	258.6	ND
10/1/1980	1,200	693	78.8	23.7	136.0	3.3	172.0	136.0	273.3	0.2
4/1/1981	1,160	737	82.4	22.4	126.0	3.6	140.0	134.0	268.4	ND
11/1/1981	1,300	863	97.6	31.5	169.0	2.2	204.0	209.0	248.9	0.8
5/1/1982	1,100	663	80.8	26.6	140.0	1.5	181.0	138.0	268.4	ND
3/1/1983	1,000	603	84.0	20.5	144.0	3.2	152.0	143.0	273.3	ND
5/1/1984	1,150	694	80.0	27.6	126.0	3.1	133.0	150.0	283.0	0.2
6/1/1985	1,100	680	89.0	26.0	140.0	3.0	150.0	64.0	440.0	ND
9/1/1985	1,242	724	78.0	28.0	122.0	6.0	154.0	149.1	244.4	ND
5/1/1986	1,387	750	85.2	29.1	130.7	4.3	166.0	130.8	242.6	ND
6/1/1989	1,302	734	78.1	23.0	85.9	-	136.0	145.0	212.0	ND
1/1/1991	1,271	-	81.0	36.1	152.0	-	166.0	-	-	ND
6/1/1991	1,290	752	99.0	32.4	133.0	-	167.0	136.0	237.0	ND
3/1/1992	1,210	792	91.0	29.8	146.0	-	159.0	135.0	279.0	ND
6/1/1993	1,290	764	68.3	27.5	149.0	-	168.0	130.0	265.0	ND
3/1/1994	1,210	783	100.0	37.1	100.0	-	145.0	167.0	-	0.5
8/1/1994	1,160	741	87.5	35.5	96.1	-	141.0	187.0	-	1.0
6/29/1995	1,330	806	97.7	37.4	142.0	-	207.0	166.0	-	ND
1/1/1996	1,300	764	91.0	33.0	140.0	-	177.0	142.0	363.0	-
6/1/1996	1,300	751	93.0	30.0	130.0	-	164.0	156.0	252.0	-
6/1/1997	1,215	758	88.0	29.0	130.0	ND	151.0	148.0	292.0	ND
12/29/1997	1,200	690	81.0	29.0	140.0	3.0	155.0	150.0	250.0	ND
4/16/1998	1,200	790	83.0	31.0	101.0	3.0	165.0	156.0	240.0	ND
6/10/1998	1,230	714	85.0	30.0	136.0	3.0	163.0	158.0	293.0	ND
2/1/1999	1,250	731	84.0	29.0	127.0	3.0	160.0	140.0	281.0	ND
4/28/1999	1,220	769	88.0	30.0	127.0	3.0	168.0	160.0	317.0	ND
5/21/2001	1,300	794	98.0	36.0	130.0	3.0	173.0	179.0	317.0	ND
Well 2202										
9/10/2001	1,410	819	101.0	38.0	138.0	3.0	173.0	175.0	296.0	ND
10/29/2001	1,370	814	104.0	38.0	131.0	3.0	199.0	198.0	317.0	ND
2/21/2002	1,380	834	99.0	36.0	128.0	3.0	172.0	183.0	318.0	ND
4/18/2002	1,370	808	104.0	39.0	124.0	3.2	180.0	184.0	258.0	ND
7/18/2002	1,450	829	101.0	37.0	137.0	3.3	187.0	193.0	260.0	ND
10/1/2002	1,400	793	98.0	35.0	143.0	3.4	179.0	195.0	248.0	ND
1/1/2003	1,300	806	94.0	33.0	144.0	2.0	163.0	180.0	235.0	ND
4/2/2003	1,290	759	94.0	33.0	137.0	3.1	182.0	198.0	230.0	ND
4/4/2003	1,290	759	94.0	32.0	137.0	3.1	182.0	198.0	230.0	ND
10/1/2003	1,340	761	90.0	31.0	146.0	4.0	162.0	188.0	210.0	ND
1/4/2004	1,320	743	94.0	32.0	124.0	5.0	182.0	212.0	203.0	ND
4/4/2004	1,350	731	90.0	32.0	127.0	5.0	184.0	197.0	235.0	ND
7/1/2004	1,100	773	91.0	32.0	98.0	5.0	167.0	197.0	215.0	ND
10/1/2004	1,290	826	93.0	32.0	106.0	5.0	187.0	185.0	-	ND
2/1/2005	1,260	735	101.0	35.0	127.0	3.7	175.0	188.0	215.0	ND
4/1/2005	1,300	760	98.0	33.0	122.0	2.8	160.0	184.0	200.0	ND
7/1/2005	1,450	1,260	97.0	33.0	119.0	2.9	154.0	-	200.0	ND
11/1/2005	1,240	795	99.0	32.0	122.0	2.9	159.0	169.0	202.0	ND
6/1/2006	1,300	796	95.0	34.0	140.0	2.9	180.0	170.0	250.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/1/2007	1,080	764	91.0	31.0	130.0	2.9	190.0	190.0	250.0	ND
4/1/2008	1,260	694	80.0	29.0	140.0	2.7	180.0	150.0	286.0	ND
Well 2301										
5/1/1956	1,090	685	61.5	24.3	142.0	-	142.0	110.0	293.0	0.0
12/1/1956	1,060	666	67.0	27.0	96.0	-	124.0	85.0	274.0	-
12/1/1957	-	780	66.3	23.9	159.0	-	138.0	155.0	308.0	2.4
5/1/1959	1,100	691	75.2	25.3	112.0	-	136.0	152.0	297.7	-
1/1/1960	1,120	704	72.7	27.3	116.5	-	112.0	144.0	291.0	-
10/1/1960	1,045	657	63.2	21.4	99.0	3.6	140.0	112.0	242.0	-
5/1/1961	1,280	770	76.0	36.5	136.0	3.0	124.0	195.0	299.6	-
5/1/1962	1,133	712	68.8	30.3	136.0	2.0	128.0	175.0	275.7	-
1/1/1963	1,111	698	72.0	35.1	127.0	2.8	128.0	199.0	268.4	-
6/1/1963	1,108	696	78.4	25.4	118.0	2.9	148.0	130.0	258.6	-
7/1/1964	1,165	732	74.4	27.8	128.0	1.2	139.0	160.0	268.4	-
5/1/1965	1,130	710	80.0	26.4	145.0	2.1	148.0	120.0	268.4	0.0
1/1/1966	-	736	88.0	18.1	142.0	2.8	124.0	155.0	263.5	0.4
6/1/1966	-	736	75.2	29.3	138.0	2.7	145.0	175.0	295.2	1.1
1/1/1967	-	744	76.8	25.9	118.0	3.0	136.0	125.0	287.9	0.5
8/1/1967	-	680	70.4	28.3	128.0	2.3	140.0	100.0	292.8	1.9
2/1/1968	-	660	48.0	19.5	130.0	2.8	124.0	119.0	234.0	1.4
4/1/1969	-	708	70.0	28.0	126.0	2.5	128.0	170.0	278.0	-
11/1/1969	-	684	73.0	28.0	126.0	2.8	138.0	165.0	273.0	-
5/1/1970	-	716	74.0	25.0	122.0	0.1	134.0	170.0	210.0	1.0
12/1/1970	1,090	385	78.0	25.0	126.0	2.6	142.0	170.0	250.0	0.7
9/1/1971	1,025	644	75.0	38.0	120.0	2.7	124.0	190.0	229.0	0.2
5/1/1972	1,050	660	75.0	21.0	124.0	2.3	124.0	155.0	244.0	0.5
10/1/1973	1,140	716	74.0	22.0	128.0	2.8	136.0	160.0	220.0	0.5
6/1/1974	1,060	680	74.0	13.0	131.0	2.9	158.0	138.0	220.0	0.0
2/1/1976	1,050	660	73.6	25.4	136.0	2.9	119.0	170.0	248.9	2.0
9/1/1976	1,100	691	58.0	32.0	146.0	2.6	140.0	148.0	321.8	2.6
3/1/1977	1,080	679	69.0	29.0	110.0	3.0	128.0	155.0	259.0	4.3
1/1/1978	1,100	691	70.0	23.0	147.0	3.0	140.0	135.0	259.0	4.4
10/1/1978	1,150	723	74.0	22.0	120.0	2.9	134.0	149.0	248.9	ND
4/1/1979	1,000	628	70.4	22.4	118.0	2.6	122.0	138.0	239.1	ND
10/1/1980	1,150	745	74.0	22.5	128.0	3.0	152.0	138.0	239.1	0.2
5/1/1981	1,020	580	67.2	17.3	116.0	3.1	132.0	111.0	205.0	ND
3/1/1983	900	599	65.6	19.5	129.0	2.8	136.0	129.0	234.2	ND
12/1/1983	1,000	628	72.4	22.4	127.0	2.6	140.0	150.0	249.0	ND
5/1/1984	1,100	691	78.8	25.9	120.0	2.8	130.0	150.0	254.0	0.2
6/1/1985	1,100	691	59.0	26.0	130.0	3.0	140.0	70.0	440.0	0.8
9/1/1985	1,203	705	66.0	26.0	110.0	6.0	150.0	144.0	226.6	ND
6/1/1989	1,139	662	71.5	21.7	80.8	-	117.0	128.0	209.0	ND
1/1/1990	1,150	632	90.6	32.4	102.0	-	160.0	170.0	214.0	ND
1/1/1991	1,112	-	73.7	32.0	128.0	-	136.0	136.0	-	ND
6/1/1991	1,090	662	87.4	29.7	117.0	-	140.0	121.0	204.0	ND
3/1/1992	1,080	644	74.2	25.8	133.0	-	127.0	118.0	282.0	0.3
3/1/1993	1,210	674	72.8	24.5	117.0	-	127.0	124.0	261.0	ND
6/1/1993	1,090	670	63.9	25.7	119.0	-	117.0	128.0	237.0	ND
3/1/1994	1,120	683	73.9	27.0	121.0	-	141.0	130.0	-	ND
8/1/1994	1,160	707	78.9	28.2	129.0	-	139.0	153.0	-	ND
6/29/1995	1,160	742	88.2	28.8	131.0	-	165.0	147.0	-	ND
1/1/1996	1,300	690	79.0	29.0	140.0	-	147.0	131.0	292.0	-
6/1/1996	1,020	674	82.0	29.0	120.0	-	134.0	129.0	204.0	-
2/1/1997	1,100	650	74.0	27.0	150.0	-	126.0	172.0	245.0	ND
3/1/1997	1,073	630	77.0	28.0	130.0	-	142.0	134.0	254.0	ND
2/1/1999	1,180	647	75.0	27.0	125.0	3.0	150.0	130.0	272.0	ND
4/28/1999	1,240	722	81.0	30.0	124.0	3.0	157.0	150.0	293.0	ND
8/18/1999	1,180	735	79.0	29.0	120.0	3.0	190.0	183.0	281.0	ND
12/8/1999	1,190	699	83.0	30.0	118.0	3.0	100.0	158.0	278.0	ND
2/3/2000	1,110	723	81.0	30.0	116.0	3.0	90.0	163.0	293.0	ND
5/10/2000	1,070	714	81.0	29.0	115.0	3.0	170.0	152.0	273.0	ND
8/17/2000	1,200	735	80.0	29.0	117.0	3.0	150.0	118.0	275.0	ND
2/21/2001	1,230	730	84.0	31.0	132.0	-	158.0	158.0	293.0	ND
4/18/2001	1,190	636	81.0	30.0	123.0	3.0	146.0	148.0	287.0	ND
9/5/2001	1,300	751	88.0	32.0	132.0	3.0	155.0	160.0	293.0	ND
10/25/2001	1,380	757	88.0	33.0	133.0	3.0	152.0	159.0	311.0	ND
2/6/2002	1,220	724	86.0	31.0	124.0	2.6	146.0	156.0	293.0	ND
4/10/2002	1,210	726	89.0	32.0	124.0	2.8	151.0	162.0	240.0	-
7/18/2002	1,280	735	85.0	31.0	129.0	3.1	155.0	165.0	236.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6

Santa Margarita River Watershed

Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
10/1/2002	1,300	701	87.0	31.0	141.0	2.9	157.0	170.0	257.0	ND
1/1/2003	1,260	760	88.0	32.0	139.0	3.5	146.0	162.0	239.0	ND
2/3/2003	-	-	68.0	32.0	139.0	3.5	-	-	-	-
4/3/2003	1,200	708	87.0	32.0	127.0	2.8	158.0	175.0	245.0	ND
10/1/2003	1,210	696	82.0	30.0	144.0	3.0	167.0	177.0	232.0	ND
1/4/2004	1,170	678	87.0	31.0	121.0	4.0	151.0	175.0	227.0	ND
4/4/2004	1,270	697	82.0	31.0	120.0	4.0	155.0	171.0	250.0	ND
7/1/2004	1,030	702	87.0	31.0	98.0	5.0	138.0	151.0	245.0	ND
10/1/2004	1,230	879	89.0	31.0	102.0	5.0	158.0	176.0	-	ND
2/1/2005	1,170	704	88.0	31.0	134.0	3.1	157.0	171.0	235.0	ND
4/1/2005	1,220	755	88.0	30.0	121.0	2.7	132.0	167.0	213.0	ND
7/1/2005	1,190	725	83.0	29.0	117.0	2.8	153.0	-	206.0	ND
4/1/2007	1,200	708	89.0	32.0	120.0	2.6	150.0	170.0	270.0	ND
4/10/2008	1,210	718	90.0	32.0	100.0	2.5	150.0	170.0	274.0	ND
4/16/2009	1,200	720	90.0	32.0	110.0	2.6	130.0	160.0	250.0	ND
4/14/2010	1,200	740	92.0	33.0	120.0	2.6	150.0	180.0	260.0	ND
4/22/2011	1,200	770	90.0	32.0	110.0	2.6	160.0	190.0	260.0	ND
4/20/2012	1,200	790	96.0	34.0	120.0	2.9	160.0	190.0	250.0	ND
5/2/2013	1,200	790	93.0	34.0	120.0	2.8	160.0	190.0	240.0	ND
6/11/2014	1,300	810	100.0	35.0	120.0	2.7	160.0	200.0	250.0	ND
3/13/2015	1,200	820	98.0	36.0	120.0	2.9	160.0	210.0	250.0	ND
4/28/2016	1,260	828	90.3	32.3	109.0	2.7	164.0	210.0	240.0	ND
3/30/2017	1,300	780	100.0	37.0	130.0	3.0	170.0	200.0	250.0	ND
Well 23001										
3/22/2018	1,200	770	92.0	31.0	120.0	2.2	160.0	200.0	220.0	ND
3/15/2019	1,300	790	98.0	34.0	130.0	2.8	170.0	220.0	240.0	ND
Well 23063										
1/1/1990	1,030	540	96.0	26.6	94.8	-	141.0	130.0	200.0	0.2
6/1/1991	1,150	702	98.7	32.0	109.0	-	149.0	125.0	288.0	0.3
6/1/1993	1,130	705	72.0	28.4	107.0	-	140.0	139.0	262.0	0.2
3/1/1994	1,020	658	69.6	27.8	104.0	-	135.0	140.0	ND	0.2
6/29/1995	1,140	636	92.5	30.7	115.0	-	149.0	151.0	ND	3.2
6/27/1996	1,103	680	91.0	31.0	100.0	-	148.0	251.0	233.0	-
6/1/1997	1,082	708	85.0	29.0	110.0	ND	135.0	145.0	244.0	ND
12/12/1997	1,000	640	81.0	28.0	100.0	2.0	119.0	128.0	250.0	ND
3/22/1998	1,100	620	85.0	31.0	110.0	2.0	161.0	144.0	220.0	ND
6/4/1998	1,100	680	83.0	30.0	109.0	3.0	137.0	140.0	275.0	0.2
9/24/1998	1,160	662	81.0	28.0	90.0	3.0	144.0	90.0	256.0	ND
4/18/2001	1,100	612	83.0	29.0	106.0	3.0	131.0	146.0	238.0	0.8
9/19/2001	1,150	679	89.0	31.0	103.0	2.0	142.0	156.0	241.0	0.7
11/8/2001	1,130	658	87.0	30.0	104.0	2.0	148.0	169.0	262.0	0.8
2/14/2002	1,120	674	85.0	30.0	112.0	3.2	140.0	160.0	257.0	0.7
4/17/2002	1,120	682	89.0	32.0	106.0	2.7	142.0	167.0	205.0	0.6
7/22/2002	1,150	676	83.0	30.0	111.0	2.7	145.0	64.0	205.0	0.5
10/1/2002	1,220	711	87.0	31.0	110.0	2.7	149.0	175.0	203.0	ND
1/1/2003	1,210	713	91.0	33.0	106.0	2.7	138.0	165.0	197.0	0.5
5/5/2003	1,230	728	93.0	33.0	112.0	2.9	155.0	183.0	181.0	0.5
10/1/2003	1,190	741	93.0	33.0	123.0	3.0	188.0	212.0	179.0	ND
4/1/2004	1,270	701	87.0	32.0	103.0	4.0	163.0	186.0	220.0	ND
7/1/2004	1,270	701	220.0	32.0	103.0	4.0	163.0	186.0	220.0	ND
4/25/2012	1,200	790	100.0	37.0	120.0	2.8	160.0	220.0	220.0	ND
3/19/2015	1,200	780	93.0	34.0	100.0	2.6	150.0	220.0	210.0	0.5
2/14/2018	1,300	800	96.0	36.0	120.0	2.9	170.0	220.0	210.0	ND
Well 23073										
6/1/1989	1,156	688	74.6	24.4	67.9	-	130.0	138.0	197.0	2.0
1/1/1990	1,120	630	86.4	32.3	101.0	-	156.0	166.0	210.0	ND
4/1/1990	1,160	720	98.8	34.8	107.0	-	152.0	146.0	218.0	0.3
1/1/1991	1,202	-	84.1	40.5	117.0	-	162.0	153.0	-	ND
6/1/1991	1,180	736	102.0	37.1	106.0	-	163.0	138.0	197.0	ND
3/1/1994	1,020	658	69.6	27.8	104.0	-	135.0	140.0	-	0.2
8/1/1994	1,110	684	81.4	32.2	178.0	-	144.0	157.0	-	ND
6/29/1995	1,170	679	95.3	35.2	113.0	-	145.0	116.0	-	3.1
6/1/1996	1,100	682	86.0	32.0	95.0	-	155.0	261.0	210.0	ND
2/1/1997	1,180	640	79.0	32.0	110.0	-	142.0	162.0	190.0	ND
6/1/1997	1,117	709	85.0	33.0	110.0	ND	150.0	164.0	223.0	ND
12/12/1997	1,100	700	82.0	33.0	110.0	3.0	141.0	157.0	220.0	ND
3/15/1998	1,100	710	83.0	33.0	100.0	3.0	182.0	158.0	150.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/4/1998	1,200	720	85.0	34.0	119.0	4.0	159.0	154.0	281.0	ND
2/1/1999	1,020	613	70.0	30.0	85.0	4.0	130.0	85.0	179.0	1.8
5/11/2000	1,020	709	81.0	33.0	94.0	4.0	146.0	149.0	220.0	ND
8/17/2000	1,160	728	83.0	33.0	89.0	4.0	161.0	178.0	232.0	ND
2/22/2001	1,200	736	85.0	35.0	116.0	4.0	164.0	180.0	244.0	0.2
4/18/2001	1,200	606	85.0	34.0	112.0	4.0	154.0	177.0	232.0	ND
9/19/2001	1,250	761	90.0	37.0	115.0	4.0	166.0	188.0	232.0	ND
11/8/2001	1,290	737	91.0	37.0	118.0	3.0	181.0	207.0	256.0	ND
2/14/2002	1,260	781	89.0	36.0	123.0	4.6	170.0	189.0	255.0	0.3
4/17/2002	1,250	755	90.0	37.0	116.0	4.1	175.0	195.0	200.0	0.2
5/20/2002	1,290	750	92.0	38.0	110.0	4.0	157.0	194.0	180.0	0.1
7/22/2002	1,260	753	90.0	37.0	114.0	4.0	171.0	196.0	200.0	ND
1/1/2003	1,350	816	96.0	40.0	131.0	4.6	160.0	201.0	193.0	ND
4/4/2003	1,210	738	95.0	27.0	118.0	3.9	175.0	210.0	192.0	ND
10/1/2003	1,290	752	91.0	37.0	134.0	5.0	167.0	193.0	199.0	ND
1/4/2004	1,230	717	93.0	38.0	111.0	6.0	159.0	194.0	173.0	ND
4/4/2004	1,280	722	82.0	36.0	112.0	6.0	168.0	213.0	180.0	0.5
7/1/2004	1,080	739	88.0	37.0	92.0	7.0	156.0	198.0	190.0	ND
11/1/2004	1,230	563	91.0	38.0	124.0	4.8	172.0	215.0	175.0	ND
1/1/2005	1,240	687	96.0	39.0	124.0	4.0	172.0	215.0	190.0	ND
4/1/2007	1,240	770	98.0	40.0	100.0	3.8	160.0	220.0	240.0	ND
4/10/2008	1,370	908	100.0	42.0	110.0	3.7	180.0	240.0	234.0	ND
4/16/2009	1,300	800	97.0	39.0	120.0	3.7	140.0	200.0	220.0	2.0
8/11/2010	1,300	780	97.0	39.0	110.0	3.6	180.0	220.0	220.0	ND
4/22/2011	1,300	810	90.0	37.0	110.0	3.6	170.0	230.0	220.0	ND
4/20/2012	1,200	810	94.0	38.0	120.0	3.8	160.0	220.0	240.0	0.5
4/18/2013	1,200	780	88.0	37.0	100.0	3.9	160.0	200.0	210.0	ND
3/18/2015	1,400	890	100.0	42.0	130.0	3.7	170.0	240.0	240.0	ND
4/27/2016	1,350	912	95.0	40.7	120.0	3.8	180.0	267.0	212.0	0.1
3/17/2017	1,400	870	100.0	43.0	120.0	3.8	190.0	260.0	240.0	ND
3/29/2018	1,400	890	98.0	40.0	120.0	3.8	180.0	250.0	210.0	0.7
3/21/2019	1,400	870	98.0	42.0	120.0	3.9	190.0	260.0	220.0	ND
Well 23093										
6/1/1989	1,166	758	80.5	28.1	67.4	-	132.0	157.0	198.0	2.1
1/1/1990	1,230	748	97.4	39.7	106.0	-	178.0	179.0	226.0	ND
4/1/1990	1,190	733	99.6	37.5	112.0	-	159.0	156.0	207.0	0.6
6/1/1991	1,130	680	97.6	37.6	100.0	-	139.0	142.0	166.0	0.6
2/1/1994	1,180	731	83.3	35.5	104.0	-	142.0	159.0	ND	2.5
8/1/1994	1,150	725	84.3	35.2	102.0	-	147.0	164.0	ND	0.2
6/29/1995	932	636	75.4	29.1	86.6	-	102.0	140.0	ND	3.2
6/27/1996	1,117	710	92.0	36.0	93.0	-	180.0	297.0	206.0	-
2/1/1997	1,100	686	89.0	38.0	110.0	-	157.0	166.0	220.0	ND
3/1/1997	1,116	673	87.0	36.0	110.0	-	147.0	113.0	213.0	ND
6/1/1997	1,131	779	90.0	37.0	99.0	ND	151.0	177.0	199.0	ND
9/17/1998	1,160	727	83.0	36.0	90.0	3.0	160.0	181.0	232.0	ND
10/25/1999	1,200	325	88.0	39.0	117.0	4.0	130.0	180.0	268.0	ND
2/3/2000	1,100	739	84.0	37.0	100.0	4.0	130.0	180.0	281.0	ND
5/10/2000	1,030	717	80.0	35.0	96.0	4.0	168.0	183.0	229.0	0.5
2/13/2001	1,360	798	97.0	44.0	111.0	4.0	184.0	212.0	244.0	ND
4/18/2001	1,310	728	94.0	42.0	114.0	4.0	168.0	208.0	232.0	ND
9/19/2001	1,330	791	96.0	42.0	115.0	4.0	173.0	209.0	224.0	0.2
3/13/2002	1,320	778	102.0	44.0	123.0	4.4	196.0	229.0	242.0	0.2
4/17/2002	1,300	808	101.0	44.0	117.0	4.0	183.0	220.0	200.0	0.2
7/17/2002	1,390	778	96.0	42.0	114.0	3.7	180.0	214.0	209.0	ND
10/1/2002	1,360	763	97.0	41.0	126.0	4.0	180.0	207.0	214.0	ND
1/1/2003	1,290	749	96.0	40.0	116.0	3.7	172.0	200.0	200.0	ND
4/1/2003	1,210	783	99.0	42.0	129.0	3.9	176.0	229.0	191.0	0.3
10/1/2003	1,320	775	97.0	41.0	126.0	5.0	168.0	231.0	174.0	ND
1/4/2004	1,270	763	101.0	42.0	106.0	6.0	162.0	220.0	180.0	ND
4/4/2004	1,320	781	96.0	43.0	105.0	6.0	179.0	250.0	195.0	ND
7/1/2004	1,370	784	100.0	43.0	89.0	6.0	169.0	219.0	203.0	ND
10/1/2004	1,300	857	99.0	42.0	88.0	6.0	188.0	245.0	210.0	ND
1/1/2005	1,270	760	99.0	42.0	115.0	4.3	170.0	234.0	185.0	0.6
7/1/2005	1,120	724	89.0	36.0	91.0	3.5	133.0	ND	203.0	ND
11/1/2005	1,230	815	101.0	40.0	113.0	4.1	153.0	213.0	174.0	ND
4/1/2006	1,350	832	110.0	44.0	120.0	3.8	180.0	250.0	220.0	ND
4/1/2007	1,298	806	100.0	45.0	110.0	3.7	180.0	247.0	230.0	ND
4/10/2008	1,270	816	92.0	40.0	100.0	3.4	150.0	220.0	202.0	1.1
4/16/2009	1,300	840	100.0	43.0	120.0	3.8	150.0	220.0	230.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/28/2010	1,200	700	83.0	36.0	99.0	3.4	140.0	200.0	190.0	0.6
7/27/2011	1,200	810	88.0	39.0	98.0	3.4	160.0	230.0	190.0	1.0
4/25/2012	1,200	830	95.0	42.0	100.0	4.0	170.0	240.0	190.0	ND
5/8/2013	1,300	800	88.0	37.0	120.0	3.6	170.0	220.0	190.0	ND
6/24/2014	1,300	820	95.0	41.0	120.0	3.5	170.0	240.0	190.0	ND
3/16/2015	1,300	810	86.0	38.0	120.0	3.9	170.0	240.0	200.0	ND
4/26/2016	1,400	916	99.0	43.5	122.0	4.2	192.0	275.0	223.0	0.0
3/17/2017	1,300	810	85.0	36.0	120.0	3.6	180.0	240.0	210.0	ND
3/29/2018	1,400	910	93.0	43.0	120.0	4.5	180.0	240.0	230.0	ND
3/21/2019	1,200	750	85.0	35.0	120.0	3.4	160.0	230.0	180.0	0.4
Well 26018										
4/1/2010	1,400	840	100.0	42.0	110.0	3.6	170.0	230.0	240.0	ND
4/20/2011	1,400	880	100.0	41.0	100.0	3.4	180.0	250.0	220.0	ND
4/25/2012	1,300	910	100.0	44.0	120.0	3.8	180.0	-	230.0	ND
4/18/2013	1,300	880	98.0	42.0	120.0	4.2	180.0	240.0	220.0	ND
5/9/2016	1,370	868	104.0	44.2	122.0	3.9	189.0	216.0	262.0	ND
3/30/2017	1,400	850	110.0	45.0	140.0	4.4	190.0	210.0	280.0	ND
3/27/2018	1,400	910	97.0	42.0	130.0	4.3	200.0	230.0	260.0	ND
Well 2602										
4/15/2009	1,300	830	100.0	45.0	110.0	4.5	170.0	240.0	220.0	ND
4/13/2010	1,300	800	100.0	43.0	100.0	3.6	160.0	240.0	200.0	ND
4/13/2011	1,300	870	96.0	42.0	98.0	3.7	160.0	240.0	200.0	ND
4/25/2012	1,300	860	100.0	44.0	110.0	3.6	170.0	260.0	200.0	ND
4/18/2013	1,300	840	96.0	41.0	100.0	4.0	180.0	240.0	220.0	ND
4/23/2014	1,300	830	94.0	41.0	110.0	3.9	170.0	220.0	200.0	ND
3/18/2015	1,300	850	100.0	42.0	120.0	3.9	160.0	240.0	220.0	ND
4/21/2016	1,300	834	101.0	42.2	122.0	4.1	170.0	238.0	215.0	0.4
3/17/2017	1,300	800	100.0	43.0	110.0	3.6	170.0	240.0	210.0	ND
3/21/2018	1,300	860	100.0	43.0	120.0	4.0	180.0	250.0	220.0	ND
1/31/2019	1,300	840	100.0	44.0	120.0	3.9	170.0	250.0	210.0	ND
Well 2603										
4/1/1989	1,270	788	104.0	36.5	126.0	-	173.0	161.0	215.0	0.6
6/1/1989	1,281	765	76.5	25.1	82.4	-	149.0	153.0	209.0	2.3
6/1/1991	1,400	836	111.0	41.1	130.0	-	195.0	155.0	215.0	0.0
2/1/1994	1,260	738	83.3	32.0	131.0	-	169.0	155.0	-	ND
8/1/1994	1,260	738	84.3	33.7	129.0	-	166.0	149.0	-	ND
6/29/1995	1,290	897	93.6	35.2	129.0	-	202.0	164.0	-	0.2
2/1/1997	1,200	720	84.0	36.0	130.0	-	150.0	152.0	240.0	ND
3/1/1997	1,143	708	83.0	35.0	130.0	-	152.0	137.0	240.0	ND
6/1/1997	1,227	831	94.0	34.0	120.0	ND	185.0	147.0	247.0	ND
12/19/1997	1,200	700	84.0	36.0	120.0	3.0	150.0	173.0	240.0	ND
3/15/1998	1,200	780	85.0	36.0	110.0	3.0	187.0	162.0	180.0	ND
6/15/1998	1,190	734	83.0	35.0	110.0	3.0	160.0	167.0	275.0	ND
2/1/1999	1,160	663	76.0	32.0	102.0	3.0	150.0	150.0	214.0	ND
8/30/1999	1,120	727	76.0	33.0	99.0	3.0	156.0	230.0	281.0	ND
10/25/1999	1,130	660	78.0	33.0	120.0	3.0	110.0	160.0	262.0	ND
2/9/2000	1,030	592	79.0	35.0	95.9	3.0	120.0	160.0	244.0	ND
5/11/2000	1,010	699	76.0	33.0	96.0	3.0	129.0	127.0	229.0	ND
8/24/2000	1,140	720	77.0	33.0	87.0	3.0	-	157.0	232.0	ND
12/2/2002	1,120	617	73.0	32.0	102.0	3.6	132.0	164.0	174.0	0.1
1/1/2003	1,150	689	76.0	34.0	113.0	3.6	135.0	165.0	185.0	ND
4/4/2003	1,190	717	82.0	37.0	122.0	4.0	164.0	182.0	209.0	ND
5/5/2003	1,190	-	-	-	-	-	156.0	182.0	-	-
10/1/2003	1,250	737	81.0	37.0	130.0	5.0	163.0	201.0	192.0	ND
1/4/2004	1,240	694	86.0	39.0	107.0	6.0	153.0	182.0	185.0	ND
4/4/2004	1,320	750	84.0	40.0	108.0	6.0	170.0	210.0	220.0	ND
7/1/2004	1,100	761	92.0	41.0	88.0	7.0	172.0	204.0	205.0	ND
10/1/2004	1,280	893	93.0	41.0	88.0	6.0	179.0	222.0	-	ND
2/1/2005	1,270	839	99.0	44.0	121.0	5.2	180.0	215.0	198.0	ND
4/1/2005	1,300	880	98.0	41.0	109.0	3.8	158.0	216.0	183.0	ND
7/1/2005	1,380	870	101.0	43.0	109.0	4.0	430.0	540.0	176.0	ND
11/1/2005	1,310	865	104.0	43.0	115.0	3.8	164.0	221.0	181.0	ND
4/1/2006	1,220	810	100.0	43.0	110.0	3.8	170.0	240.0	206.0	ND
4/1/2007	1,400	856	99.0	44.0	110.0	3.6	170.0	250.0	210.0	ND
4/1/2008	1,290	888	91.0	39.0	100.0	3.4	160.0	230.0	207.0	0.6
Well 26071										

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8/1/1956	1,060	882	78.0	30.0	112.0	-	150.0	82.0	326.0	-
1/1/1960	820	500	55.2	14.7	85.0	-	76.0	98.0	224.0	-
10/1/1960	1,300	793	74.5	20.5	126.0	4.3	182.0	116.0	320.0	-
5/1/1961	1,390	840	100.0	29.2	170.0	3.3	170.0	135.0	362.0	-
5/1/1962	1,220	744	70.4	39.0	142.0	2.4	184.0	86.0	312.3	-
1/1/1963	1,300	740	65.6	26.4	162.0	2.4	166.0	153.0	259.0	0.2
7/1/1963	1,100	671	64.0	25.4	118.0	2.7	148.0	97.0	280.6	ND
1/1/1964	1,020	622	70.4	33.2	117.0	2.7	172.0	98.0	302.6	0.7
7/1/1964	1,400	854	83.2	27.3	134.0	1.4	164.0	98.0	322.1	-
4/1/1965	1,490	909	97.6	23.4	152.0	4.7	196.0	110.0	346.5	0.2
1/1/1966	-	832	102.0	28.0	166.0	3.1	194.0	88.0	414.8	1.5
6/1/1966	-	768	86.4	26.3	150.0	3.1	184.0	110.0	331.8	1.6
1/1/1967	-	768	72.0	29.3	128.0	3.1	174.0	72.0	324.5	1.6
8/1/1967	-	608	57.6	24.4	116.0	2.4	132.0	70.0	251.3	2.3
2/1/1968	-	572	67.2	17.6	105.0	2.4	118.0	94.0	251.0	-
9/1/1968	-	636	74.0	19.0	112.0	3.0	144.0	96.0	268.0	0.1
4/1/1969	-	820	72.0	33.0	138.0	2.8	180.0	140.0	285.0	0.2
11/1/1969	-	604	66.0	24.0	116.0	2.8	140.0	110.0	259.0	0.4
5/1/1970	-	640	65.0	26.0	115.0	2.4	142.0	120.0	183.0	0.7
9/1/1971	1,075	656	77.0	24.0	120.0	2.8	144.0	125.0	273.0	0.3
5/1/1972	1,000	610	46.0	24.0	117.0	2.4	140.0	130.0	141.0	-
10/1/1972	1,110	677	88.0	26.0	105.0	3.6	144.0	126.0	283.0	0.8
10/1/1973	1,120	683	75.0	23.0	118.0	2.7	132.0	130.0	200.0	0.6
6/1/1974	1,210	712	72.0	19.0	150.0	3.1	208.0	112.0	195.0	0.0
1/1/1975	850	519	61.0	21.0	93.0	2.4	102.0	95.0	212.0	2.3
2/1/1976	1,200	732	91.2	20.5	126.0	3.2	176.0	130.0	244.0	2.6
9/1/1976	1,200	732	48.0	29.0	180.0	2.4	192.0	123.0	336.7	4.2
3/1/1977	1,400	854	94.0	33.0	158.0	2.8	216.0	140.0	342.0	2.8
1/1/1978	1,000	610	66.0	23.0	100.0	2.7	128.0	123.0	205.0	4.4
10/1/1978	1,300	793	82.0	31.0	134.0	2.7	160.0	157.0	258.6	ND
4/1/1979	1,200	732	84.8	28.3	144.0	3.1	164.0	116.0	312.3	ND
1/1/1980	1,450	885	93.0	30.0	163.0	3.0	196.0	200.0	273.0	ND
10/1/1980	1,050	591	70.4	21.7	104.0	3.7	140.0	125.0	219.6	2.0
5/1/1981	1,000	645	72.4	21.7	105.0	3.5	128.0	123.0	209.8	ND
5/1/1982	1,330	811	100.8	35.9	176.0	1.6	269.0	198.0	263.5	ND
3/1/1983	890	669	77.2	23.7	95.0	3.4	132.0	136.0	209.8	0.7
12/1/1983	1,000	610	70.4	23.7	123.0	2.6	136.0	150.0	224.0	0.5
5/1/1984	1,100	671	77.2	24.6	116.0	2.7	133.0	155.0	244.0	0.2
9/1/1984	1,300	650	6.6	29.0	120.0	2.6	200.0	170.0	250.0	2.7
11/1/1984	1,100	671	81.6	23.4	124.0	2.7	149.0	175.0	249.0	1.2
5/1/1986	1,592	994	104.7	39.7	167.3	4.4	232.0	167.0	301.8	ND
6/1/1989	1,137	826	79.1	28.5	85.5	-	157.0	158.0	246.0	2.9
1/1/1990	1,290	772	96.3	38.6	116.0	-	184.0	179.0	252.0	0.2
4/1/1990	1,320	817	109.0	42.1	128.0	-	177.0	167.0	249.0	1.2
1/1/1991	401	-	87.3	44.4	103.1	-	205.0	179.0	ND	0.2
3/1/1993	1,500	824	92.6	33.1	136.0	-	194.0	154.0	277.0	0.4
3/1/1994	1,370	827	103.0	36.4	135.0	-	163.0	145.0	ND	0.2
8/1/1994	1,270	762	91.1	35.5	129.0	-	162.0	172.0	ND	1.3
6/29/1995	1,260	771	100.0	35.8	127.0	-	197.0	178.0	ND	0.6
6/24/1996	1,300	751	96.0	36.0	120.0	-	162.0	174.0	247.0	0.2
2/1/1997	1,300	830	100.0	41.0	150.0	-	186.0	161.0	186.0	ND
6/1/1997	1,323	831	94.0	36.0	140.0	ND	158.0	149.0	271.0	2.0
12/3/1997	1,200	670	91.0	36.0	120.0	3.0	150.0	169.0	220.0	ND
12/19/1997	1,200	710	87.0	35.0	120.0	2.0	152.0	182.0	220.0	0.3
3/15/1998	1,200	810	89.0	36.0	120.0	3.0	201.0	168.0	240.0	ND
6/16/1998	1,390	830	91.0	36.0	140.0	2.0	185.0	150.0	366.0	ND
2/1/1999	1,130	663	75.0	31.0	106.0	3.0	150.0	150.0	238.0	1.1
5/5/1999	1,170	711	75.0	32.0	85.0	4.0	ND	180.0	268.0	ND
8/18/1999	1,040	692	74.0	30.0	94.0	2.0	100.0	400.0	207.0	ND
10/28/1999	1,210	757	86.0	35.0	120.0	3.0	154.0	100.0	295.0	0.7
8/24/2000	1,290	766	83.0	33.0	89.0	2.0	184.0	150.0	323.0	ND
2/21/2001	1,140	707	85.0	35.0	107.0	2.0	152.0	179.0	232.0	1.1
4/25/2001	1,190	718	88.0	37.0	112.0	3.0	153.0	193.0	218.0	1.1
9/20/2001	1,200	729	89.0	38.0	106.0	3.0	158.0	192.0	201.0	1.0
11/8/2001	1,210	693	90.0	38.0	106.0	3.0	169.0	209.0	214.0	1.2
2/11/2002	1,190	726	94.0	39.0	106.0	2.7	147.0	184.0	218.0	1.3
4/4/2002	1,190	724	91.0	38.0	107.0	2.9	153.0	204.0	173.0	1.5
7/11/2002	1,200	755	88.0	37.0	107.0	3.1	162.0	201.0	180.0	1.4
10/1/2002	1,250	722	91.0	38.0	99.0	2.6	150.0	197.0	177.0	1.4
1/1/2003	1,260	781	95.0	39.0	119.0	3.2	144.0	204.0	169.0	1.0

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/4/2003	1,310	776	93.0	38.0	125.0	3.0	178.0	217.0	185.0	0.9
4/1/2004	1,660	890	112.0	47.0	143.0	4.0	208.0	162.0	370.0	ND
7/1/2004	1,460	785	98.0	38.0	109.0	4.0	186.0	191.0	275.0	0.8
5/1/2006	1,380	870	100.0	41.0	110.0	2.3	180.0	240.0	210.0	0.7
4/1/2007	1,300	812	99.0	41.0	110.0	2.5	160.0	230.0	220.0	1.2
4/15/2009	1,300	830	100.0	43.0	110.0	2.9	170.0	260.0	190.0	1.1
4/22/2010	1,300	790	100.0	42.0	110.0	2.7	170.0	230.0	210.0	1.0
4/20/2011	1,400	860	97.0	42.0	110.0	3.2	180.0	250.0	210.0	0.5
4/20/2012	1,200	840	93.0	40.0	110.0	3.3	160.0	220.0	200.0	1.2
4/14/2013	1,300	830	88.0	40.0	100.0	3.6	160.0	220.0	230.0	2.7
4/28/2014	1,400	860	93.0	42.0	110.0	3.1	170.0	220.0	230.0	0.8
8/13/2015	1,300	910	100.0	46.0	120.0	3.3	180.0	260.0	220.0	0.7
4/21/2016	1,340	886	107.0	46.8	119.0	3.5	172.0	270.0	204.0	0.7
3/9/2017	1,400	920	100.0	46.0	120.0	3.3	180.0	260.0	230.0	0.5
3/15/2018	1,400	930	110.0	47.0	130.0	3.9	180.0	260.0	220.0	1.0
3/1/2019	1,300	850	98.0	45.0	130.0	3.6	170.0	240.0	230.0	1.6
Well 26072										
3/10/1999	1,280	765	91.0	34.0	127.0	2.0	190.0	160.0	272.0	ND
6/9/1999	1,080	706	76.0	31.0	88.0	2.2	163.0	118.0	220.0	ND
8/18/1999	1,080	690	76.0	32.0	93.0	3.0	160.0	191.0	244.0	ND
10/28/1999	1,070	660	76.0	32.0	100.0	3.0	131.0	120.0	232.0	0.9
5/10/2000	1,010	702	79.0	34.0	94.0	3.0	177.0	164.0	254.0	ND
8/21/2000	1,170	732	84.0	36.0	89.0	3.0	155.0	188.0	201.0	1.1
2/21/2001	1,230	753	89.0	39.0	113.0	2.0	170.0	198.0	220.0	0.6
4/25/2001	1,230	726	89.0	39.0	115.0	4.0	160.0	191.0	243.0	0.7
9/20/2001	1,210	735	89.0	39.0	107.0	4.0	153.0	185.0	217.0	1.2
11/7/2001	1,240	725	89.0	39.0	117.0	3.0	168.0	205.0	220.0	1.3
2/11/2002	1,250	765	97.0	43.0	109.0	3.4	155.0	198.0	234.0	1.1
4/4/2002	1,290	790	98.0	44.0	109.0	3.4	158.0	208.0	200.0	0.9
7/11/2002	1,320	809	96.0	43.0	117.0	3.7	182.0	217.0	200.0	ND
10/1/2002	1,380	787	99.0	43.0	113.0	3.7	170.0	216.0	203.0	0.6
1/1/2003	1,370	810	101.0	44.0	134.0	4.0	155.0	194.0	217.0	ND
4/4/2003	1,440	789	93.0	40.0	125.0	3.6	177.0	205.0	216.0	0.5
10/1/2003	1,370	820	91.0	40.0	130.0	4.0	175.0	235.0	180.0	1.0
1/1/2004	1,350	747	97.0	42.0	114.0	6.0	168.0	226.0	184.0	0.5
4/1/2004	1,400	766	92.0	42.0	112.0	6.0	162.0	228.0	198.0	0.5
7/1/2004	1,410	784	98.0	43.0	92.0	6.0	171.0	231.0	200.0	0.9
11/1/2004	1,290	831	100.0	43.0	134.0	4.2	176.0	224.0	203.0	ND
1/1/2005	1,310	804	102.0	44.0	125.0	3.7	184.0	241.0	200.0	0.6
4/1/2005	1,100	690	78.0	34.0	84.0	3.2	128.0	177.0	162.0	0.6
7/1/2005	1,160	716	84.0	35.0	96.0	3.0	136.0	ND	166.0	ND
11/1/2005	1,180	785	92.5	40.4	97.1	3.8	138.0	202.0	174.0	1.3
4/1/2006	1,280	786	98.0	43.0	110.0	3.3	160.0	220.0	233.0	1.6
4/1/2007	1,400	784	98.0	43.0	110.0	3.4	165.0	230.0	230.0	1.1
4/9/2008	1,230	840	88.0	40.0	98.0	3.4	160.0	250.0	169.0	1.6
11/24/2009	-	-	-	-	-	-	-	-	-	ND
4/13/2010	1,300	820	96.0	42.0	120.0	3.5	170.0	240.0	220.0	1.0
7/27/2011	1,200	800	89.0	39.0	110.0	3.2	150.0	200.0	220.0	1.1
4/19/2012	1,200	860	97.0	42.0	120.0	3.8	180.0	210.0	160.0	ND
4/18/2013	1,500	960	120.0	45.0	150.0	4.0	200.0	210.0	370.0	ND
3/16/2015	1,300	860	100.0	43.0	110.0	2.4	170.0	270.0	220.0	0.5
5/12/2016	1,400	870	100.0	50.0	120.0	3.2	180.0	240.0	260.0	ND
3/9/2017	1,400	980	110.0	47.0	120.0	3.3	180.0	260.0	250.0	ND
3/15/2018	1,300	890	98.0	45.0	120.0	3.8	170.0	270.0	210.0	0.6
1/30/2019	1,400	860	95.0	46.0	130.0	3.6	180.0	240.0	260.0	ND
Well 2673										
5/1/1956	920	651	59.0	22.0	100.0	-	104.0	94.0	213.0	-
5/1/1959	-	745	52.8	16.5	60.3	-	84.0	41.0	207.4	-
1/1/1960	-	840	51.2	17.6	95.0	-	98.0	92.0	210.0	-
10/1/1960	870	566	62.0	23.0	80.0	4.2	110.0	104.0	234.0	-
5/1/1961	1,180	710	72.0	34.0	114.0	3.3	104.0	150.0	227.0	-
5/1/1962	797	518	63.2	23.4	75.0	2.0	100.0	96.0	214.7	-
1/1/1963	1,195	730	64.0	24.9	157.0	3.1	162.0	183.0	220.0	ND
7/1/1963	574	610	57.6	19.5	85.0	2.7	102.0	100.0	244.0	0.3
1/1/1964	760	494	59.2	19.3	82.0	3.3	100.0	85.0	253.7	0.5
7/1/1964	980	637	64.0	21.5	94.0	1.4	100.0	95.0	241.6	-
4/1/1965	1,230	800	73.3	22.5	106.0	4.5	120.0	110.0	248.9	0.3
1/1/1966	-	448	-	-	86.0	2.5	82.0	75.0	190.3	2.2

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
6/1/1966	-	540	60.8	21.0	81.0	2.5	102.0	95.0	222.0	2.1
1/1/1967	-	544	60.8	19.5	88.0	2.9	106.0	69.0	229.4	1.6
8/1/1967	-	504	54.4	20.0	79.0	2.1	96.0	58.0	214.7	1.8
2/1/1968	-	456	60.8	17.6	86.0	2.7	94.0	78.0	222.0	ND
9/1/1968	-	600	67.0	18.0	90.0	3.0	110.0	96.0	232.0	ND
4/1/1969	-	428	46.0	18.0	73.0	-	76.0	90.0	183.0	0.7
11/1/1969	-	476	59.0	18.0	88.0	2.7	98.0	110.0	198.0	0.2
5/1/1970	-	416	54.0	18.0	79.0	2.6	92.0	90.0	151.0	0.7
12/1/1970	780	507	64.0	16.0	89.0	2.7	100.0	90.0	222.0	2.3
5/1/1972	990	644	77.0	24.0	86.0	2.8	116.0	135.0	207.0	ND
10/1/1972	965	627	77.0	27.0	94.0	2.9	104.0	145.0	239.0	1.2
10/1/1973	960	624	72.0	19.0	105.0	2.8	112.0	140.0	195.0	0.9
6/1/1974	950	548	68.0	19.0	101.0	3.1	138.0	102.0	207.0	0.4
1/1/1975	840	546	58.0	22.0	87.0	2.7	98.0	95.0	217.0	2.2
2/1/1976	820	533	68.8	20.5	76.0	3.0	106.0	88.0	214.7	2.2
9/1/1976	900	585	48.0	45.0	98.0	2.3	116.0	112.0	258.6	3.0
3/1/1977	900	585	70.0	23.0	76.0	2.8	123.0	113.0	195.0	2.6
1/1/1978	950	618	64.0	24.0	100.0	2.7	124.0	108.0	200.0	4.3
10/1/1978	1,050	683	74.0	20.0	80.0	3.0	113.0	128.0	205.0	ND
4/1/1979	950	618	65.6	19.5	98.0	3.1	109.0	118.0	190.3	ND
1/1/1980	1,000	650	67.0	23.0	99.0	3.1	128.0	111.0	187.0	ND
10/1/1980	900	546	67.2	20.5	86.0	3.4	108.0	86.0	205.0	2.3
5/1/1981	810	585	57.2	14.4	83.0	3.4	92.0	84.0	180.6	0.7
11/1/1981	800	451	57.2	16.3	85.0	2.0	92.0	110.0	185.4	0.5
5/1/1982	930	605	68.8	21.5	97.0	1.6	115.0	96.0	205.0	ND
3/1/1983	900	663	78.8	23.7	95.0	3.4	132.0	135.0	209.8	0.7
9/1/1984	1,000	530	51.0	23.0	80.0	2.9	110.0	110.0	200.0	1.0
11/1/1984	850	553	67.2	28.3	73.0	2.9	111.0	137.0	190.0	1.7
9/1/1985	1,007	593	66.0	26.0	64.0	5.8	124.0	139.0	180.6	1.4
5/1/1986	1,051	623	72.6	26.5	79.5	3.5	131.0	124.0	153.6	2.0
1/1/1989	1,080	572	91.2	34.2	80.2	-	151.0	178.0	174.0	0.3
6/1/1989	1,073	688	72.1	23.9	59.6	-	120.0	140.0	184.0	3.6
4/1/1990	1,130	718	111.0	42.1	91.0	-	148.0	167.0	175.0	2.1
6/1/1991	1,190	718	113.0	40.3	93.8	-	173.0	180.0	160.0	1.7
3/1/1993	1,370	708	86.9	32.8	93.3	-	147.0	93.3	200.0	1.1
3/1/1994	1,210	783	100.0	37.1	100.0	-	145.0	167.0	-	0.5
8/1/1994	1,160	741	87.5	35.5	96.1	-	141.0	184.0	-	1.0
6/1/1995	1,200	788	99.4	37.5	101.0	-	173.0	200.0	-	0.7
6/27/1996	1,129	739	91.0	37.0	90.0	-	188.0	312.0	206.0	-
2/1/1997	1,100	690	82.0	35.0	140.0	-	127.0	131.0	180.0	ND
3/1/1997	1,109	695	91.0	39.0	93.0	-	137.0	191.0	166.0	2.2
6/1/1997	1,096	749	89.0	36.0	90.0	ND	138.0	178.0	187.0	2.0
12/29/1997	1,100	690	84.0	36.0	83.0	4.0	140.0	181.0	160.0	ND
5/5/1999	1,050	648	78.0	32.0	111.0	3.0	171.0	-	207.0	ND
8/18/1999	1,040	696	78.0	33.0	84.0	4.0	120.0	390.0	146.0	ND
10/28/1999	1,070	663	78.0	34.0	90.0	4.0	132.0	120.0	195.0	6.0
2/9/2000	1,010	559	83.0	36.0	82.0	4.0	140.0	190.0	220.0	4.0
5/11/2000	972	688	80.0	34.0	79.0	4.0	144.0	167.0	190.0	4.0
2/21/2001	1,200	753	92.0	40.0	100.0	3.0	164.0	212.0	195.0	ND
4/25/2001	1,210	736	91.0	40.0	103.0	5.0	159.0	217.0	183.0	1.0
9/20/2001	1,200	741	93.0	41.0	98.0	4.0	153.0	202.0	183.0	1.7
11/7/2001	1,220	750	92.0	41.0	106.0	4.0	170.0	228.0	189.0	1.8
2/11/2002	1,230	769	99.0	43.0	101.0	4.2	173.0	218.0	195.0	1.8
4/10/2002	1,260	793	101.0	45.0	102.0	4.5	170.0	229.0	160.0	1.9
7/17/2002	1,350	784	98.0	43.0	103.0	4.3	183.0	239.0	159.0	1.1
10/1/2002	1,370	788	102.0	45.0	104.0	4.3	175.0	241.0	167.0	0.8
1/1/2003	1,330	825	108.0	45.0	121.0	5.4	180.0	231.0	168.0	0.5
4/4/2003	1,260	721	90.0	40.0	102.0	4.3	170.0	228.0	153.0	2.2
10/1/2003	1,340	791	94.0	41.0	121.0	6.0	180.0	268.0	144.0	0.7
1/4/2004	1,390	800	99.0	46.0	105.0	7.0	173.0	264.0	136.0	0.9
4/4/2004	1,270	739	86.0	42.0	98.0	6.0	160.0	252.0	160.0	1.2
7/1/2004	1,390	764	97.0	45.0	87.0	7.0	176.0	262.0	163.0	0.8
10/1/2004	1,290	943	95.0	44.0	84.0	7.0	178.0	267.0	-	0.8
1/1/2005	1,030	610	76.0	35.0	93.0	3.8	136.0	194.0	155.0	1.6
4/1/2005	1,060	630	77.0	34.0	82.0	3.2	125.0	174.0	139.0	0.6
7/1/2005	1,120	750	81.0	35.0	84.0	3.4	129.0	-	129.0	ND
11/1/2005	1,170	790	94.7	41.2	97.9	3.7	138.0	199.0	156.0	1.7
4/1/2006	1,140	704	91.0	39.0	98.0	4.5	150.0	220.0	180.0	1.7
4/1/2007	1,200	716	97.0	44.0	97.0	3.7	160.0	240.0	190.0	1.0
4/8/2008	1,270	900	98.0	45.0	97.0	3.8	180.0	260.0	170.0	3.2

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6

Santa Margarita River Watershed

Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/16/2009	1,200	780	94.0	42.0	100.0	3.7	130.0	230.0	180.0	5.0
4/13/2010	1,300	770	93.0	42.0	100.0	3.8	160.0	240.0	180.0	2.0
4/13/2011	1,200	780	83.0	38.0	93.0	3.5	150.0	220.0	170.0	0.9
4/19/2012	1,300	790	92.0	42.0	94.0	3.8	160.0	240.0	260.0	1.4
4/17/2013	1,200	780	85.0	40.0	94.0	4.3	160.0	230.0	190.0	0.5
4/23/2014	1,200	770	84.0	40.0	93.0	3.7	150.0	220.0	170.0	0.6
8/24/2015	1,300	860	90.0	43.0	97.0	3.6	170.0	240.0	200.0	0.5
5/5/2016	1,320	880	101.0	47.8	109.0	4.1	172.0	267.0	199.0	0.3
3/9/2017	1,300	870	100.0	46.0	110.0	4.1	170.0	260.0	210.0	ND
Well 26073										
3/14/2018	1,400	870	100.0	47.0	120.0	4.6	180.0	260.0	200.0	0.9
2/28/2019	1,300	830	100.0	46.0	120.0	4.2	180.0	260.0	200.0	0.3
Well 33924										
4/1/1989	1,240	728	100.0	32.9	129.0	-	158.0	148.0	245.0	0.3
6/1/1989	1,207	698	75.6	22.8	84.0	-	138.0	137.0	231.0	ND
1/1/1991	1,193	-	80.6	35.2	131.0	-	21.3	146.0	-	ND
6/1/1991	1,160	676	88.1	29.6	118.0	-	141.0	129.0	224.0	ND
3/1/1992	1,130	705	76.7	26.0	126.0	-	149.0	125.0	279.0	ND
6/1/1992	1,130	717	66.8	26.7	124.0	-	146.0	140.0	232.0	ND
3/1/1993	1,285	331	72.1	23.8	115.0	-	131.0	122.0	273.0	ND
2/1/1997	1,200	780	89.0	32.0	130.0	-	166.0	165.0	250.0	ND
3/1/1997	1,230	700	94.0	34.0	140.0	-	187.0	162.0	264.0	ND
6/1/1997	1,231	778	91.0	31.0	130.0	ND	171.0	165.0	264.0	ND
12/29/1997	1,200	710	82.0	30.0	130.0	2.0	156.0	162.0	230.0	ND
3/15/1998	1,200	710	82.0	30.0	110.0	2.0	191.0	146.0	240.0	ND
6/10/1998	1,170	658	79.0	28.0	123.0	2.0	157.0	151.0	293.0	ND
2/1/1999	1,170	698	75.0	27.0	123.0	3.0	160.0	130.0	259.0	ND
4/28/1999	1,210	667	76.0	27.0	118.0	3.0	148.0	140.0	268.0	ND
8/18/1999	1,140	714	79.0	27.0	116.0	3.0	180.0	165.0	268.0	ND
10/25/1999	1,150	721	80.0	28.0	131.0	3.0	110.0	150.0	281.0	ND
2/9/2000	1,050	619	82.0	28.0	108.0	3.0	100.0	140.0	293.0	ND
5/10/2000	1,060	716	80.0	29.0	112.0	3.0	173.0	141.0	268.0	ND
8/21/2000	1,210	722	82.0	29.0	105.0	3.0	162.0	156.0	268.0	ND
4/18/2001	1,210	705	85.0	30.0	130.0	3.0	163.0	157.0	281.0	ND
9/20/2001	1,190	672	81.0	30.0	125.0	3.0	152.0	149.0	275.0	ND
10/31/2001	1,200	680	81.0	29.0	143.0	3.0	162.0	159.0	281.0	ND
2/13/2002	1,160	675	80.0	29.0	129.0	3.5	143.0	152.0	268.0	ND
4/10/2002	1,180	682	84.0	31.0	124.0	2.9	151.0	155.0	230.0	ND
7/24/2002	1,210	706	80.0	29.0	127.0	2.9	156.0	156.0	221.0	ND
10/1/2002	1,210	669	83.0	30.0	122.0	2.9	151.0	162.0	206.0	1.8
1/1/2003	1,320	801	97.0	34.0	140.0	2.8	154.0	180.0	245.0	ND
4/4/2003	1,330	743	89.0	32.0	133.0	2.8	165.0	183.0	234.0	ND
10/1/2003	1,210	712	87.0	31.0	135.0	4.0	155.0	177.0	204.0	ND
4/1/2004	1,320	713	85.0	32.0	121.0	5.0	165.0	167.0	228.0	ND
7/1/2004	1,070	703	89.0	32.0	101.0	5.0	147.0	173.0	230.0	ND
10/1/2004	1,230	806	91.0	33.0	102.0	5.0	166.0	183.0	-	ND
2/1/2005	1,310	837	104.0	37.0	136.0	4.2	175.0	191.0	253.0	ND
7/1/2005	1,170	750	83.0	29.0	114.0	2.7	139.0	-	210.0	ND
11/1/2005	1,260	750	91.9	29.6	119.0	3.1	144.0	171.0	225.0	ND
4/1/2006	1,220	774	92.0	32.0	120.0	2.8	160.0	180.0	284.0	ND
4/1/2007	1,010	706	86.0	29.0	120.0	2.7	150.0	170.0	260.0	ND
4/1/2008	1,270	792	91.0	30.0	110.0	2.6	160.0	190.0	175.0	ND
4/15/2009	1,300	800	100.0	34.0	120.0	2.7	160.0	200.0	260.0	ND
4/15/2010	1,200	740	95.0	34.0	120.0	2.8	150.0	180.0	260.0	ND
4/27/2011	1,200	740	87.0	29.0	110.0	2.7	160.0	170.0	230.0	ND
4/30/2012	1,200	800	92.0	32.0	110.0	2.6	170.0	190.0	220.0	ND
5/16/2013	1,200	740	92.0	32.0	120.0	3.0	160.0	190.0	220.0	ND
6/12/2014	1,200	780	90.0	30.0	120.0	2.4	160.0	190.0	210.0	ND
3/13/2015	1,200	780	94.0	34.0	120.0	2.2	160.0	200.0	240.0	ND
7/28/2016	1,200	758	85.3	29.4	105.0	2.0	161.0	203.0	216.0	ND
3/30/2017	1,200	720	98.0	34.0	130.0	2.4	160.0	190.0	230.0	ND
Well 33926										
6/1/1991	1,160	684	83.4	28.3	125.0	-	145.0	124.0	223.0	ND
3/1/1992	1,060	674	75.9	24.1	127.0	-	139.0	111.0	269.0	ND
3/1/1993	1,182	584	67.8	21.1	110.0	-	135.0	101.0	274.0	ND
6/1/1993	1,020	623	60.5	22.4	116.0	-	125.0	107.0	225.0	ND
3/1/1994	1,120	665	80.0	25.0	122.0	-	129.0	117.0	-	0.4

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6
Santa Margarita River Watershed
Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
8/1/1994	1,150	699	78.7	26.4	125.0	-	141.0	118.0	-	ND
6/29/1995	1,060	673	75.9	23.1	118.0	-	158.0	114.0	-	ND
1/2/1996	1,200	619	71.0	24.0	120.0	-	139.0	107.0	262.0	-
7/10/1996	-	-	-	-	-	-	-	-	-	-
Well 330923										
6/9/1999	1,150	700	75.0	27.0	106.0	2.2	163.0	155.0	317.0	ND
8/18/1999	1,170	722	79.0	28.0	114.0	3.0	330.0	161.0	342.0	ND
10/25/1999	1,170	723	78.0	28.0	140.0	3.0	120.0	140.0	293.0	ND
2/3/2000	1,120	712	83.0	30.0	117.0	3.0	120.0	157.0	293.0	ND
2/22/2001	1,240	758	85.0	31.0	136.0	3.0	167.0	152.0	305.0	ND
4/25/2001	1,220	735	85.0	31.0	135.0	3.0	162.0	154.0	293.0	ND
9/26/2001	1,240	682	81.0	29.0	132.0	3.0	162.0	144.0	281.0	ND
10/25/2001	1,330	746	87.0	32.0	134.0	3.0	166.0	156.0	293.0	ND
2/13/2002	1,190	720	83.0	29.0	140.0	3.5	150.0	155.0	281.0	ND
4/18/2002	1,210	691	82.0	29.0	127.0	2.7	145.0	142.0	231.0	ND
7/11/2002	1,230	738	81.0	29.0	134.0	3.1	167.0	151.0	240.0	ND
10/1/2002	1,270	716	85.0	30.0	137.0	2.9	150.0	162.0	221.0	ND
1/1/2003	1,340	826	100.0	35.0	141.0	2.6	156.0	185.0	252.0	0.1
4/4/2003	1,350	733	85.0	30.0	129.0	2.6	162.0	171.0	235.0	ND
10/1/2003	887	800	84.0	30.0	141.0	3.0	160.0	173.0	224.0	ND
2/1/2004	1,250	698	83.0	29.0	120.0	4.0	154.0	172.0	233.0	ND
4/1/2004	1,240	706	78.0	28.0	121.0	4.0	163.0	170.0	220.0	ND
7/1/2004	1,040	729	84.0	30.0	99.0	5.0	158.0	169.0	240.0	ND
10/1/2004	1,180	857	86.0	30.0	97.0	5.0	159.0	172.0	235.0	ND
2/1/2005	1,160	685	87.0	31.0	125.0	3.7	159.0	168.0	210.0	ND
4/1/2005	1,230	760	91.0	30.0	122.0	2.6	149.0	148.0	213.0	ND
7/5/2005	1,170	755	83.0	29.0	115.0	2.6	135.0	-	210.0	ND
11/1/2005	1,230	735	92.8	29.5	123.0	3.0	141.0	165.0	332.0	ND
4/1/2006	1,190	720	89.0	31.0	120.0	2.7	160.0	170.0	233.0	ND
4/1/2007	1,010	718	87.0	30.0	120.0	2.6	160.0	170.0	250.0	ND
4/1/2008	1,250	754	91.0	32.0	110.0	2.5	160.0	180.0	184.0	ND
4/15/2009	1,200	760	92.0	33.0	120.0	2.7	160.0	180.0	250.0	ND
4/15/2010	1,200	760	98.0	34.0	120.0	2.6	160.0	180.0	240.0	ND
4/13/2011	1,300	760	88.0	30.0	110.0	2.6	160.0	180.0	240.0	ND
4/16/2012	1,200	760	98.0	34.0	120.0	2.9	170.0	190.0	230.0	ND
4/10/2013	1,300	780	95.0	33.0	130.0	3.3	160.0	190.0	240.0	ND
5/12/2016	1,260	752	92.4	32.1	126.0	2.8	176.0	182.0	244.0	ND
3/23/2017	1,300	790	96.0	34.0	120.0	2.9	170.0	190.0	250.0	ND
3/28/2018	1,300	800	95.0	33.0	120.0	3.0	170.0	200.0	240.0	ND
Well 330924										
3/22/2018	1,200	770	94.0	33.0	120.0	2.9	160.0	200.0	220.0	ND
3/15/2019	1,200	750	92.0	31.0	120.0	2.2	170.0	200.0	220.0	ND
Well 330925										
6/9/1999	1,070	668	69.0	23.0	106.0	1.7	163.0	144.0	305.0	ND
8/18/1999	1,090	657	72.0	25.0	115.0	2.0	180.0	153.0	317.0	ND
10/25/1999	1,150	716	79.0	27.0	140.0	2.0	120.0	140.0	305.0	ND
2/9/2000	956	522	67.0	23.0	117.0	2.0	90.0	120.0	268.0	ND
5/10/2000	1,040	686	77.0	27.0	116.0	2.0	181.0	141.0	307.0	ND
8/21/2000	1,180	722	80.0	28.0	105.0	2.0	155.0	143.0	232.0	ND
2/22/2001	1,100	706	73.0	25.0	125.0	2.0	149.0	164.0	268.0	ND
4/16/2001	1,170	701	81.0	29.0	128.0	2.0	154.0	149.0	282.0	ND
9/26/2001	1,180	671	80.0	28.0	126.0	2.0	149.0	142.0	271.0	ND
10/31/2001	1,180	678	81.0	28.0	132.0	2.0	161.0	156.0	281.0	ND
2/13/2002	1,170	685	80.0	28.0	134.0	2.8	143.0	144.0	279.0	ND
4/4/2002	1,200	711	87.0	31.0	127.0	2.3	150.0	204.0	235.0	ND
7/11/2002	1,180	730	83.0	29.0	130.0	2.5	158.0	151.0	230.0	ND
10/1/2002	1,180	649	78.0	27.0	115.0	2.1	135.0	138.0	217.0	ND
1/1/2003	1,210	740	87.0	30.0	129.0	2.2	145.0	154.0	225.0	ND
4/4/2003	1,200	681	79.0	27.0	128.0	2.5	150.0	152.0	215.0	ND
10/1/2003	1,160	647	80.0	27.0	136.0	3.0	152.0	155.0	216.0	ND
4/1/2004	1,140	604	66.0	24.0	117.0	3.0	147.0	133.0	215.0	ND
8/1/2004	1,180	657	68.0	24.0	99.0	4.0	140.0	114.0	245.0	ND
10/1/2004	1,170	712	85.0	29.0	97.0	5.0	160.0	172.0	-	ND
2/1/2005	1,070	661	84.0	29.0	125.0	3.3	154.0	148.0	185.0	ND
7/1/2005	1,050	655	72.0	23.0	118.0	2.0	127.0	-	202.0	ND
11/1/2005	1,080	665	75.9	23.2	121.0	2.0	135.0	125.0	227.0	ND
5/1/2006	1,110	650	71.0	24.0	120.0	1.9	140.0	130.0	217.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-6

Santa Margarita River Watershed

Water Quality Data

Wells Sampled on Camp Pendleton

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
4/1/2007	950	632	72.0	25.0	120.0	1.9	140.0	130.0	260.0	ND
4/3/2008	1,150	672	73.0	25.0	120.0	1.8	150.0	130.0	250.0	ND
4/14/2009	1,100	670	76.0	26.0	120.0	2.1	150.0	140.0	250.0	ND
4/22/2010	1,100	660	71.0	24.0	120.0	1.8	140.0	120.0	250.0	ND
4/20/2011	1,200	720	83.0	29.0	110.0	2.1	150.0	170.0	240.0	ND
4/30/2012	1,100	720	83.0	29.0	120.0	2.0	150.0	160.0	230.0	ND
4/17/2013	1,200	750	82.0	29.0	110.0	2.4	160.0	170.0	230.0	ND
4/24/2014	1,300	770	88.0	31.0	120.0	2.3	160.0	180.0	220.0	ND
3/24/2015	1,200	780	91.0	32.0	120.0	2.3	160.0	190.0	250.0	ND
4/26/2016	1,260	802	90.0	30.8	116.0	2.2	171.0	195.0	251.0	ND
3/23/2017	1,300	840	100.0	35.0	130.0	2.2	170.0	200.0	260.0	ND
3/26/2018	1,300	850	100.0	36.0	140.0	2.6	180.0	210.0	260.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-11

Santa Margarita River Watershed

Water Quality Data

Water Quality Samples of Domenigoni Valley

Site and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	Bicarbonate (as CaCO3) (mg/l)	Nitrate as N (mg/l)
Boer-2 (B2)										
8/9/2012	3,300	2,000	340.0	93.0	160.0	9.4	410.0	760.0	400.0	39.0
8/2/2018	560	290	25.0	9.5	57.0	3.2	100.0	46.0	55.0	0.1
1/30/2019	3,400	2,100	340.0	94.0	170.0	18.0	430.0	720.0	380.0	21.0
D-10										
8/2/2018	4,500	3,000	390.0	120.0	290.0	11.0	300.0	1,400.0	530.0	7.4
1/24/2019	4,400	3,300	440.0	130.0	370.0	9.9	310.0	1,100.0	540.0	11.0
D-4										
2/22/2012	2,700	1,800	370.0	120.0	170.0	7.2	130.0	1,100.0	650.0	44.0
8/9/2012	3,100	2,100	340.0	100.0	160.0	7.7	120.0	990.0	680.0	25.0
10/26/2017	2,200	1,600	280.0	78.0	160.0	7.5	120.0	630.0	610.0	3.8
3/27/2018	1,643	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/29/2018	2,600	1,700	260.0	78.0	140.0	8.5	110.0	760.0	520.0	6.0
8/2/2018	3,100	2,100	320.0	96.0	150.0	9.7	110.0	1,100.0	350.0	6.5
1/24/2019	2,200	1,800	290.0	79.0	130.0	7.6	93.0	600.0	560.0	5.5
12/17/2019	2,800	1,700	280.0	81.0	140.0	9.2	120.0	680.0	400.0	4.8
D-6										
2/22/2012	3,000	1,900	290.0	90.0	340.0	7.3	320.0	870.0	510.0	48.0
8/9/2012	3,500	2,300	270.0	76.0	310.0	7.7	320.0	820.0	530.0	43.0
10/26/2017	6,360	4,900	670.0	210.0	820.0	9.0	570.0	2,530.0	800.0	11.0
3/29/2018	3,436	ND	ND	ND	ND	ND	ND	ND	ND	ND
8/2/2018	5,200	4,000	460.0	170.0	500.0	12.0	530.0	1,500.0	650.0	11.0
1/24/2019	6,700	4,500	540.0	180.0	520.0	11.0	480.0	1,400.0	710.0	14.0
12/17/2019	8,100	4,500	490.0	190.0	510.0	14.0	440.0	1,600.0	360.0	12.0
D-8										
2/22/2012	1,700	1,100	160.0	40.0	170.0	4.7	210.0	360.0	290.0	71.0
8/9/2012	2,200	1,500	190.0	54.0	200.0	6.1	240.0	470.0	380.0	73.0
10/27/2017	2,879	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	2,157	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	3,220	2,200	329.0	94.0	280.0	7.0	410.0	760.0	394.0	18.3
8/1/2018	3,700	2,200	280.0	91.0	210.0	8.1	370.0	830.0	670.0	13.0
1/24/2019	3,300	2,400	310.0	87.0	270.0	8.1	370.0	600.0	410.0	22.0
DPB-Dom										
2/22/2012	2,600	1,500	270.0	59.0	300.0	8.1	140.0	100.0	1,600.0	50.0
8/9/2012	2,100	1,400	160.0	54.0	190.0	5.3	190.0	330.0	420.0	170.0
8/2/2018	1,300	840	89.0	33.0	120.0	4.3	100.0	300.0	210.0	13.0
1/24/2019	1,200	820	87.0	31.0	130.0	3.9	88.0	220.0	230.0	13.0
MO-1										
8/16/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/2/2015	1,200	810	85.9	30.2	140.0	4.9	100.0	250.0	250.0	8.6
10/25/2017	1,240	840	97.0	33.0	160.0	4.8	120.0	260.0	260.0	8.3
3/27/2018	1,781	ND	ND	ND	ND	ND	ND	ND	ND	ND
7/31/2018	1,900	2,800	130.0	47.0	150.0	6.5	150.0	360.0	460.0	4.8
1/23/2019	2,100	1,400	200.0	69.0	200.0	8.1	150.0	370.0	780.0	2.3
MO-2										
8/16/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/2/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/25/2017	980	640	62.0	22.0	150.0	ND	87.0	180.0	260.0	2.7
3/27/2018	1,272	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	1,000	640	56.0	21.0	130.0	3.1	79.0	180.0	270.0	2.2
7/31/2018	1,000	670	51.0	19.0	110.0	2.8	79.0	180.0	260.0	1.6
1/22/2019	970	630	58.0	21.0	120.0	3.2	89.0	170.0	280.0	1.5
MO-3										
8/16/2012	2,900	1,900	280.0	80.0	150.0	6.7	110.0	960.0	270.0	19.4
3/3/2015	2,400	1,700	274.0	77.7	150.0	6.8	120.0	780.0	480.0	6.5
10/26/2017	2,256	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	2,600	1,900	310.0	91.0	150.0	9.5	110.0	800.0	690.0	3.9
8/1/2018	3,000	1,800	280.0	84.0	140.0	8.5	120.0	770.0	740.0	3.3
MO-30C										
10/25/2017	2,630	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	2,949	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-11

Santa Margarita River Watershed

Water Quality Data

Water Quality Samples of Domenigoni Valley

Site and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	Bicarbonate (as CaCO3) (mg/l)	Nitrate as N (mg/l)
7/31/2018	2,800	1,700	280.0	78.0	130.0	23.0	89.0	310.0	1,400.0	ND
1/22/2019	2,700	1,700	340.0	86.0	140.0	26.0	96.0	280.0	1,300.0	ND
MO-32B										
8/16/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/2/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/25/2017	1,140	650	97.0	110.0	140.0	120.0	150.0	160.0	220.0	9.0
3/27/2018	1,327	ND	ND	ND	ND	ND	ND	ND	ND	ND
7/31/2018	1,200	780	70.0	31.0	110.0	13.0	150.0	150.0	230.0	8.6
1/22/2019	1,100	710	80.0	40.0	130.0	25.0	160.0	160.0	230.0	8.4
MO-5B										
10/25/2017	2,970	2,600	440.0	130.0	200.0	4.8	120.0	1,610.0	150.0	1.4
3/27/2018	3,590	ND	ND	ND	ND	ND	ND	ND	ND	ND
7/31/2018	3,900	2,800	340.0	120.0	160.0	5.1	93.0	1,800.0	140.0	1.0
1/22/2019	3,600	2,900	420.0	130.0	170.0	4.8	85.0	1,400.0	150.0	1.0
12/16/2019	3,900	2,600	430.0	130.0	170.0	0.8	110.0	1,400.0	150.0	0.8
MO-6										
8/17/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/2/2015	2,200	1,300	153.0	59.4	220.0	4.9	230.0	470.0	380.0	4.5
10/27/2017	1,536	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	1,630	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/29/2018	1,300	840	85.0	35.0	140.0	3.7	120.0	290.0	330.0	0.8
8/2/2018	1,200	750	75.0	30.0	130.0	3.4	100.0	230.0	260.0	0.7
1/22/2019	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/24/2019	1,000	740	76.0	30.0	120.0	3.4	96.0	190.0	290.0	0.6
12/17/2019	1,600	860	99.0	40.0	140.0	4.1	140.0	290.0	250.0	0.8
MW-1 (D-7)										
10/27/2017	4,329	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	5,188	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/29/2018	4,300	3,300	470.0	150.0	260.0	12.0	580.0	1,100.0	470.0	3.0
8/2/2018	5,000	3,100	430.0	140.0	260.0	11.0	550.0	1,100.0	460.0	23.0
1/24/2019	4,700	3,100	480.0	140.0	240.0	9.3	440.0	870.0	500.0	24.0
MW-2										
10/27/2017	4,434	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	7,564	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/29/2018	6,760	4,000	567.0	234.0	452.0	8.0	807.0	319.0	1,150.0	246.0
8/1/2018	5,000	2,800	320.0	140.0	300.0	8.5	560.0	210.0	890.0	110.0
1/24/2019	4,800	3,200	440.0	160.0	310.0	8.9	470.0	220.0	980.0	170.0
12/17/2019	8,500	4,000	530.0	200.0	380.0	11.0	630.0	280.0	1,200.0	240.0
Stiefel 1 (S1)										
8/9/2012	2,600	1,900	300.0	80.0	170.0	8.4	150.0	620.0	760.0	52.0
10/27/2017	2,600	1,600	260.0	74.0	150.0	8.7	97.0	490.0	680.0	5.1
3/27/2018	1,686	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/29/2018	2,600	1,600	270.0	77.0	150.0	9.0	120.0	580.0	760.0	4.3
8/2/2018	2,900	1,700	280.0	80.0	160.0	9.4	130.0	600.0	780.0	3.3
1/24/2019	2,100	1,600	270.0	73.0	140.0	7.6	110.0	480.0	770.0	3.2
12/17/2019	2,800	1,600	270.0	78.0	150.0	9.4	130.0	560.0	720.0	4.1
WTC New										
3/29/2018	2,090	1,270	199.0	58.0	165.0	6.0	202.0	320.0	395.0	4.9
8/2/2018	2,400	1,400	190.0	59.0	160.0	7.5	230.0	390.0	390.0	28.0
1/30/2019	2,100	1,300	180.0	55.0	150.0	7.2	210.0	340.0	420.0	25.0
12/17/2019	2,300	1,300	190.0	55.0	140.0	7.6	210.0	320.0	400.0	24.0
WCT-3										
8/9/2012	1,900	1,200	180.0	49.0	150.0	6.6	200.0	260.0	440.0	110.0
WM-B										
8/16/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/2/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/26/2017	3,223	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	4,097	ND	ND	ND	ND	ND	ND	ND	ND	ND
7/31/2018	3,600	2,700	360.0	130.0	150.0	16.0	110.0	1,200.0	790.0	0.2
1/23/2019	3,600	2,700	440.0	150.0	170.0	18.0	90.0	1,100.0	760.0	0.3
12/16/2019	790	2,600	410.0	150.0	160.0	19.0	120.0	1,100.0	600.0	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-11
Santa Margarita River Watershed
Water Quality Data

Water Quality Samples of Domenigoni Valley

Site and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	Bicarbonate (as CaCO3) (mg/l)	Nitrate as N (mg/l)
WM-D										
10/26/2017	2,780	2,000	390.0	110.0	170.0	9.4	110.0	520.0	1,130.0	0.4
3/27/2018	3,451	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	2,800	2,000	360.0	110.0	150.0	10.0	100.0	610.0	1,300.0	ND
WM-F										
10/26/2017	911	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	1,251	ND	ND	ND	ND	ND	ND	ND	ND	ND
7/31/2018	1,100	710	74.0	22.0	93.0	6.3	97.0	160.0	270.0	1.8
1/22/2019	1,240	752	95.0	28.0	117.0	6.0	110.0	160.0	415.0	1.1
12/16/2019	1,100	600	87.0	26.0	100.0	7.0	110.0	160.0	310.0	1.6
WM-G										
8/16/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/26/2017	1,110	700	71.0	21.0	150.0	4.7	140.0	200.0	120.0	12.0
3/27/2018	1,306	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	1,000	630	57.0	17.0	120.0	4.9	110.0	200.0	100.0	15.0
8/1/2018	1,100	660	56.0	17.0	110.0	4.7	120.0	210.0	110.0	11.0
1/23/2019	1,000	690	63.0	18.0	120.0	5.4	120.0	200.0	110.0	12.0
12/16/2019	970	580	51.0	15.0	110.0	4.8	110.0	200.0	120.0	12.0
WM-HA										
8/16/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/3/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/26/2017	3,802	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	5,009	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	4,100	2,800	390.0	170.0	230.0	7.6	580.0	630.0	670.0	74.0
8/1/2018	4,900	2,700	310.0	130.0	250.0	7.7	550.0	480.0	560.0	100.0
1/23/2019	4,400	2,700	420.0	170.0	250.0	7.1	550.0	600.0	680.0	81.0
12/17/2019	4,800	3,000	360.0	170.0	250.0	8.2	530.0	610.0	730.0	80.0
WM-K										
8/17/2012	9,400	5,800	670.0	290.0	760.0	17.0	1,100.0	2,600.0	700.0	20.0
3/3/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/27/2017	7,413	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	8,855	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/28/2018	7,500	6,100	640.0	300.0	710.0	18.0	920.0	2,500.0	800.0	16.0
8/1/2018	7,100	5,900	650.0	260.0	640.0	13.0	850.0	2,800.0	470.0	13.0
1/24/2019	8,400	5,700	690.0	270.0	670.0	18.0	560.0	1,800.0	790.0	12.0
12/17/2019	1,000	5,700	710.0	260.0	650.0	21.0	610.0	1,900.0	800.0	12.0
WM-L										
10/27/2017	2,867	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/27/2018	6,563	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-12

Santa Margarita River Watershed

Water Quality Data

Surface Streams Sampled by USGS on Cahuilla Creek

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
Cahuilla Creek										
2/28/2005	644	446	41.9	11.2	76.9	10.1	-	-	-	0.2
Cahuilla Creek Below Hwy 371										
2/28/2005	476	337	34.2	10.1	51.9	3.7	36.9	-	-	0.6
Unnamed Tributary to Cahuilla Creek										
2/14/2005	783	529	64.0	17.5	80.7	8.9	35.2	-	-	3.1

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-13

Santa Margarita River Watershed

Water Quality Data

Jurisdictional Wells Sampled in Anza Area
(As reported by Riverside County)

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
Hamilton School Dist. Well #1										
7/24/2012	-	-	-	-	-	-	-	-	-	ND
3/5/2013	-	-	-	-	-	-	-	-	-	0.5
2/25/2014	-	-	-	-	-	-	-	-	-	0.7
7/7/2015	-	-	-	-	-	-	-	-	-	ND
12/13/2016	-	-	-	-	-	-	-	-	-	0.3
Hamilton School Dist. Well #2										
7/24/2012	-	-	-	-	-	-	-	-	-	0.9
3/5/2013	-	-	-	-	-	-	-	-	-	0.5
2/25/2014	-	-	-	-	-	-	-	-	-	3.2
7/7/2015	-	-	-	-	-	-	-	-	-	1.7
12/1/2015	-	-	-	-	-	-	-	-	-	3.2
12/13/2016	-	-	-	-	-	-	-	-	-	0.7
Marchant, Cynthia Jean (Valley Auto Center) Well #1										
3/15/2012	-	-	-	-	-	-	-	-	-	9.7
6/20/2012	-	-	-	-	-	-	-	-	-	7.9
9/12/2012	-	-	-	-	-	-	-	-	-	9.7
12/13/2012	-	-	-	-	-	-	-	-	-	10.4
3/13/2013	-	-	-	-	-	-	-	-	-	9.0
6/13/2013	-	-	-	-	-	-	-	-	-	9.7
9/11/2013	-	-	-	-	-	-	-	-	-	12.2
12/11/2013	-	-	-	-	-	-	-	-	-	9.7
3/12/2014	-	-	-	-	-	-	-	-	-	11.1
5/7/2014	-	-	-	-	-	-	-	-	-	3.2
6/11/2014	-	-	-	-	-	-	-	-	-	9.7
9/10/2014	-	-	-	-	-	-	-	-	-	10.6
1/5/2015	-	-	-	-	-	-	-	-	-	3.4
3/4/2015	-	-	-	-	-	-	-	-	-	10.6
6/10/2015	-	-	-	-	-	-	-	-	-	10.4
9/8/2015	-	-	-	-	-	-	-	-	-	11.8
11/10/2015	-	-	-	-	-	-	-	-	-	4.5
12/9/2015	-	-	-	-	-	-	-	-	-	10.9
6/7/2016	-	-	-	-	-	-	-	-	-	11.0
7/12/2016	-	-	-	-	-	-	-	-	-	3.0
9/13/2016	-	-	-	-	-	-	-	-	-	10.0
12/13/2016	-	-	-	-	-	-	-	-	-	10.0
3/14/2017	-	-	-	-	-	-	-	-	-	11.0
8/9/2017	-	-	-	-	-	-	-	-	-	11.0
9/14/2017	-	-	-	-	-	-	-	-	-	9.9
Brenda (La Cocina) Well #1										
12/3/2012	-	-	-	-	-	-	-	-	-	3.8
12/17/2013	-	-	-	-	-	-	-	-	-	3.8
12/29/2014	-	-	-	-	-	-	-	-	-	3.6
12/16/2015	-	-	-	-	-	-	-	-	-	3.8
12/14/2016	-	-	-	-	-	-	-	-	-	3.7
Agostino, Kathleen D (Anza Valley Business Center) Well #1										
6/11/2016	-	-	-	-	-	-	-	-	-	15.0
Griffin, Robert and Bertrand (Country Corners) Well #1										
12/28/2011	-	-	-	-	-	-	-	-	-	4.1
8/16/2012	-	-	-	-	-	-	-	-	-	3.8
10/8/2013	-	-	-	-	-	-	-	-	-	4.5
11/18/2014	-	-	-	-	-	-	-	-	-	4.5
12/23/2015	-	-	-	-	-	-	-	-	-	4.8
1/18/2017	-	-	-	-	-	-	-	-	-	4.8

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-13
Santa Margarita River Watershed
Water Quality Data

Jurisdictional Wells Sampled in Anza Area
(As reported by Riverside County)

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
Kathawa, George and Bernadette (Jilberto's Restaurant) Well #1										
5/9/2012	-	-	-	-	-	-	-	-	-	4.8
8/8/2012	-	-	-	-	-	-	-	-	-	3.4
11/8/2012	-	-	-	-	-	-	-	-	-	5.0
2/13/2013	-	-	-	-	-	-	-	-	-	4.5
5/15/2013	-	-	-	-	-	-	-	-	-	4.8
7/17/2013	-	-	-	-	-	-	-	-	-	5.0
11/14/2013	-	-	-	-	-	-	-	-	-	4.8
2/13/2014	-	-	-	-	-	-	-	-	-	5.9
5/8/2014	-	-	-	-	-	-	-	-	-	4.3
8/14/2014	-	-	-	-	-	-	-	-	-	4.8
11/13/2014	-	-	-	-	-	-	-	-	-	5.2
2/18/2015	-	-	-	-	-	-	-	-	-	5.2
5/6/2015	-	-	-	-	-	-	-	-	-	5.0
7/1/2015	-	-	-	-	-	-	-	-	-	4.5
11/4/2015	-	-	-	-	-	-	-	-	-	5.2
2/3/2016	-	-	-	-	-	-	-	-	-	4.5
5/4/2016	-	-	-	-	-	-	-	-	-	4.5
8/3/2016	-	-	-	-	-	-	-	-	-	4.7
11/3/2016	-	-	-	-	-	-	-	-	-	4.6
2/1/2017	-	-	-	-	-	-	-	-	-	5.5
5/3/2017	-	-	-	-	-	-	-	-	-	4.7
8/1/2017	-	-	-	-	-	-	-	-	-	4.7
Anza Mutual Water Company Well #1										
4/23/2008	-	-	-	-	-	-	-	-	-	7.0
7/3/2008	640	390	27.0	15.0	71.0	4.5	80.0	72.0	130.0	ND
12/17/2009	-	-	-	-	-	-	-	-	-	7.5
2/17/2010	-	-	-	-	-	-	-	-	-	6.8
3/15/2010	-	-	-	-	-	-	-	-	-	7.9
8/19/2010	-	-	-	-	-	-	-	-	-	ND
11/18/2010	-	-	-	-	-	-	-	-	-	7.0
5/19/2011	-	-	-	-	-	-	-	-	-	7.9
9/15/2011	850	500	70.0	21.0	76.0	4.6	77.0	100.0	190.0	7.2
11/17/2011	-	-	-	-	-	-	-	-	-	7.0
2/9/2012	-	-	-	-	-	-	-	-	-	8.1
5/9/2012	-	-	-	-	-	-	-	-	-	7.2
8/8/2012	-	-	-	-	-	-	-	-	-	6.8
11/8/2012	-	-	-	-	-	-	-	-	-	7.5
2/13/2013	-	-	-	-	-	-	-	-	-	6.3
5/15/2013	-	-	-	-	-	-	-	-	-	7.5
7/11/2013	-	-	-	-	-	-	-	-	-	7.2
11/14/2013	-	-	-	-	-	-	-	-	-	7.0
2/13/2014	-	-	-	-	-	-	-	-	-	7.2
5/8/2014	-	-	-	-	-	-	-	-	-	8.1
8/14/2014	-	-	-	-	-	-	-	-	-	7.5
11/13/2014	-	-	-	-	-	-	-	-	-	7.2
3/18/2015	-	-	-	-	-	-	-	-	-	7.5
5/6/2015	-	-	-	-	-	-	-	-	-	7.2
7/1/2015	-	-	-	-	-	-	-	-	-	7.7
8/26/2015	-	-	-	-	-	-	-	-	-	7.9
11/4/2015	-	-	-	-	-	-	-	-	-	7.2
2/3/2016	-	-	-	-	-	-	-	-	-	7.3
5/4/2016	-	-	-	-	-	-	-	-	-	7.3
8/3/2016	-	-	-	-	-	-	-	-	-	8.0
11/1/2016	-	-	-	-	-	-	-	-	-	7.1
2/1/2017	-	-	-	-	-	-	-	-	-	8.1
5/3/2017	-	-	-	-	-	-	-	-	-	7.7
8/1/2017	-	-	-	-	-	-	-	-	-	8.1
Anza Mutual Water Company Well #2										
5/19/2011	-	-	-	-	-	-	-	-	-	7.9

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-13
Santa Margarita River Watershed
Water Quality Data

Jurisdictional Wells Sampled in Anza Area
(As reported by Riverside County)

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
9/15/2011	900	540	70.0	15.0	97.0	4.2	100.0	87.0	190.0	9.3
11/16/2011	730	440	66.0	13.0	61.0	3.8	63.0	86.0	170.0	8.1
11/17/2011	-	-	-	-	-	-	-	-	-	8.4
5/9/2012	-	-	-	-	-	-	-	-	-	8.4
8/8/2012	-	-	-	-	-	-	-	-	-	7.0
11/8/2012	-	-	-	-	-	-	-	-	-	8.4
2/13/2013	-	-	-	-	-	-	-	-	-	6.6
5/15/2013	-	-	-	-	-	-	-	-	-	7.9
7/11/2013	-	-	-	-	-	-	-	-	-	8.6
11/14/2013	-	-	-	-	-	-	-	-	-	7.0
2/13/2014	-	-	-	-	-	-	-	-	-	7.5
5/8/2014	-	-	-	-	-	-	-	-	-	9.5
6/12/2014	-	-	-	-	-	-	-	-	-	9.0
7/10/2014	-	-	-	-	-	-	-	-	-	9.0
8/14/2014	-	-	-	-	-	-	-	-	-	9.0
9/11/2014	-	-	-	-	-	-	-	-	-	9.3
10/9/2014	-	-	-	-	-	-	-	-	-	8.8
11/13/2014	-	-	-	-	-	-	-	-	-	7.9
12/10/2014	-	-	-	-	-	-	-	-	-	7.2
1/8/2015	-	-	-	-	-	-	-	-	-	6.8
3/18/2015	-	-	-	-	-	-	-	-	-	8.4
5/6/2015	-	-	-	-	-	-	-	-	-	8.6
7/1/2015	-	-	-	-	-	-	-	-	-	9.0
8/26/2015	740	490	71.0	15.0	61.0	3.5	59.0	92.0	200.0	9.3
11/4/2015	-	-	-	-	-	-	-	-	-	8.1
2/3/2016	-	-	-	-	-	-	-	-	-	7.4
5/4/2016	-	-	-	-	-	-	-	-	-	8.2
8/3/2016	-	-	-	-	-	-	-	-	-	8.8
11/1/2016	-	-	-	-	-	-	-	-	-	8.0
2/1/2017	-	-	-	-	-	-	-	-	-	8.2
5/3/2017	-	-	-	-	-	-	-	-	-	8.7
8/1/2017	-	-	-	-	-	-	-	-	-	9.4
R J Mission Plaza (Anza Petroleum) Well #1										
2/8/2012	-	-	-	-	-	-	-	-	-	6.6
5/9/2012	-	-	-	-	-	-	-	-	-	6.6
8/8/2012	-	-	-	-	-	-	-	-	-	6.1
11/8/2012	-	-	-	-	-	-	-	-	-	7.0
2/13/2013	-	-	-	-	-	-	-	-	-	6.1
5/15/2013	-	-	-	-	-	-	-	-	-	6.1
7/11/2013	-	-	-	-	-	-	-	-	-	6.8
11/14/2013	-	-	-	-	-	-	-	-	-	6.6
2/13/2014	-	-	-	-	-	-	-	-	-	6.3
5/8/2014	-	-	-	-	-	-	-	-	-	6.6
8/14/2014	-	-	-	-	-	-	-	-	-	6.3
11/13/2014	-	-	-	-	-	-	-	-	-	6.6
2/25/2015	-	-	-	-	-	-	-	-	-	6.3
5/6/2015	-	-	-	-	-	-	-	-	-	6.6
7/1/2015	-	-	-	-	-	-	-	-	-	6.6
11/4/2015	-	-	-	-	-	-	-	-	-	6.8
12/9/2015	-	-	-	-	-	-	-	-	-	6.8
5/4/2016	-	-	-	-	-	-	-	-	-	7.2
11/2/2016	-	-	-	-	-	-	-	-	-	6.9
11/14/2016	-	-	-	-	-	-	-	-	-	6.9
2/1/2017	-	-	-	-	-	-	-	-	-	7.4
5/3/2017	-	-	-	-	-	-	-	-	-	7.2
8/1/2017	-	-	-	-	-	-	-	-	-	7.2
La Plata Enterprises Inc Well #1										
3/15/2012	-	-	-	-	-	-	-	-	-	ND
1/18/2015	-	-	-	-	-	-	-	-	-	ND
1/12/2016	-	-	-	-	-	-	-	-	-	0.7
9/13/2016	-	-	-	-	-	-	-	-	-	1.5
Georges, John (Diner 371) Well #2										
2/13/2013	-	-	-	-	-	-	-	-	-	ND

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Jurisdictional Wells Sampled in Anza Area
(As reported by Riverside County)

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
2/13/2014	-	-	-	-	-	-	-	-	-	ND
2/10/2016	-	-	-	-	-	-	-	-	-	ND
Anza First Southern Baptist Church Well #1										
4/18/2012	-	-	-	-	-	-	-	-	-	17.9
10/17/2012	-	-	-	-	-	-	-	-	-	17.6
4/17/2013	-	-	-	-	-	-	-	-	-	19.2
10/16/2013	-	-	-	-	-	-	-	-	-	16.1
1/15/2014	-	-	-	-	-	-	-	-	-	15.8
6/18/2014	-	-	-	-	-	-	-	-	-	16.7
7/20/2014	-	-	-	-	-	-	-	-	-	19.5
10/9/2014	-	-	-	-	-	-	-	-	-	17.9
1/5/2015	-	-	-	-	-	-	-	-	-	18.8
4/7/2015	-	-	-	-	-	-	-	-	-	19.2
7/7/2015	-	-	-	-	-	-	-	-	-	18.1
10/20/2015	-	-	-	-	-	-	-	-	-	19.2
4/12/2016	-	-	-	-	-	-	-	-	-	22.0
7/13/2016	-	-	-	-	-	-	-	-	-	22.0
10/11/2016	-	-	-	-	-	-	-	-	-	19.0
1/17/2017	-	-	-	-	-	-	-	-	-	16.0
4/11/2017	-	-	-	-	-	-	-	-	-	22.0
7/11/2017	-	-	-	-	-	-	-	-	-	21.0
Company Patterson Well										
12/20/2012	-	-	-	-	-	-	-	-	-	4.5
2/13/2013	-	-	-	-	-	-	-	-	-	4.1
2/13/2014	-	-	-	-	-	-	-	-	-	4.1
12/11/2014	-	-	-	-	-	-	-	-	-	4.3
3/7/2017	380	270	35.0	7.1	22.0	11.0	30.0	4.9	150.0	4.5
Company Well #1 Ranch (Inactive)										
12/13/2016	-	-	-	-	-	-	-	-	-	4.3
5/30/2017	-	-	-	-	-	-	-	-	-	0.5
Company Well #2 Red Shank										
3/30/2009	-	-	-	-	-	-	-	-	-	8.6
6/22/2009	-	-	-	-	-	-	-	-	-	8.4
9/28/2009	-	-	-	-	-	-	-	-	-	9.3
11/19/2009	-	-	-	-	-	-	-	-	-	8.6
12/14/2009	-	-	-	-	-	-	-	-	-	8.6
6/17/2010	-	-	-	-	-	-	-	-	-	8.1
8/19/2010	-	-	-	-	-	-	-	-	-	10.0
9/20/2010	-	-	-	-	-	-	-	-	-	10.6
9/23/2010	-	-	-	-	-	-	-	-	-	8.6
2/17/2011	-	-	-	-	-	-	-	-	-	9.3
5/18/2011	580	ND	57.0	13.0	42.0	8.2	48.0	11.0	210.0	9.3
6/28/2011	-	-	-	-	-	-	-	-	-	9.7
11/17/2011	-	-	-	-	-	-	-	-	-	9.3
2/8/2012	-	-	-	-	-	-	-	-	-	10.0
4/11/2012	-	-	-	-	-	-	-	-	-	9.5
8/8/2012	-	-	-	-	-	-	-	-	-	10.6
11/8/2012	-	-	-	-	-	-	-	-	-	11.8
2/13/2013	-	-	-	-	-	-	-	-	-	11.1
5/15/2013	-	-	-	-	-	-	-	-	-	10.9
9/6/2013	-	-	-	-	-	-	-	-	-	11.1
11/14/2013	-	-	-	-	-	-	-	-	-	11.5
2/13/2014	-	-	-	-	-	-	-	-	-	11.1
5/8/2014	-	-	-	-	-	-	-	-	-	12.0
6/12/2014	-	-	-	-	-	-	-	-	-	11.3
8/14/2014	-	-	-	-	-	-	-	-	-	11.1
12/11/2014	-	-	-	-	-	-	-	-	-	10.9
4/8/2015	-	-	-	-	-	-	-	-	-	9.5
6/24/2015	-	-	-	-	-	-	-	-	-	10.9
1/12/2016	-	-	-	-	-	-	-	-	-	10.0

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

TABLE D-13
Santa Margarita River Watershed
Water Quality Data

Jurisdictional Wells Sampled in Anza Area
(As reported by Riverside County)

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
2/9/2016	-	-	-	-	-	-	-	-	-	12.0
12/13/2016	-	-	-	-	-	-	-	-	-	12.0
4/12/2017	-	-	-	-	-	-	-	-	-	11.0
Company Well #3 Burnt Valley										
3/30/2009	-	-	-	-	-	-	-	-	-	1.5
12/14/2009	-	-	-	-	-	-	-	-	-	1.1
2/17/2011	-	-	-	-	-	-	-	-	-	1.7
5/18/2011	600	-	57.0	17.0	35.0	11.0	61.0	12.0	240.0	1.3
4/11/2012	-	-	-	-	-	-	-	-	-	1.8
10/20/2015	-	-	-	-	-	-	-	-	-	1.5
2/8/2017	590	330	50.0	19.0	38.0	11.0	57.0	10.0	240.0	1.8
Company Well #4 Reynolds										
3/30/2009	-	-	-	-	-	-	-	-	-	4.5
6/22/2009	-	-	-	-	-	-	-	-	-	8.4
9/28/2009	-	-	-	-	-	-	-	-	-	5.4
11/19/2009	-	-	-	-	-	-	-	-	-	5.0
12/14/2009	-	-	-	-	-	-	-	-	-	4.8
7/15/2010	-	-	-	-	-	-	-	-	-	6.6
8/19/2010	-	-	-	-	-	-	-	-	-	5.4
5/18/2011	510	-	47.0	11.0	39.0	10.0	39.0	9.4	200.0	7.2
6/28/2011	-	-	-	-	-	-	-	-	-	6.1
11/17/2011	-	-	-	-	-	-	-	-	-	6.1
2/8/2012	-	-	-	-	-	-	-	-	-	7.5
4/11/2012	-	-	-	-	-	-	-	-	-	5.7
8/8/2012	-	-	-	-	-	-	-	-	-	5.9
11/8/2012	-	-	-	-	-	-	-	-	-	6.8
2/13/2013	-	-	-	-	-	-	-	-	-	6.1
5/15/2013	-	-	-	-	-	-	-	-	-	7.2
9/6/2013	-	-	-	-	-	-	-	-	-	6.3
11/14/2013	-	-	-	-	-	-	-	-	-	9.5
9/11/2014	-	-	-	-	-	-	-	-	-	10.2
9/17/2014	-	-	-	-	-	-	-	-	-	9.5
12/11/2014	-	-	-	-	-	-	-	-	-	7.0
4/8/2015	-	-	-	-	-	-	-	-	-	9.0
12/13/2016	-	-	-	-	-	-	-	-	-	9.1
2/8/2017	570	350	47.0	12.0	42.0	11.0	36.0	11.0	220.0	10.0
Company Well #5 Everett										
3/30/2009	-	-	-	-	-	-	-	-	-	14.0
9/28/2009	-	-	-	-	-	-	-	-	-	11.1
11/19/2009	-	-	-	-	-	-	-	-	-	12.9
12/14/2009	-	-	-	-	-	-	-	-	-	12.7
3/15/2010	-	-	-	-	-	-	-	-	-	13.6
6/17/2010	-	-	-	-	-	-	-	-	-	12.4
8/27/2010	-	-	-	-	-	-	-	-	-	12.7
2/17/2011	-	-	-	-	-	-	-	-	-	13.1
2/18/2011	-	-	-	-	-	-	-	-	-	13.3
5/18/2011	660	-	64.0	12.0	52.0	8.2	48.0	12.0	260.0	11.3
6/28/2011	-	-	-	-	-	-	-	-	-	13.1
11/17/2011	-	-	-	-	-	-	-	-	-	13.3
2/8/2012	-	-	-	-	-	-	-	-	-	12.7
4/11/2012	-	-	-	-	-	-	-	-	-	12.2
8/8/2012	-	-	-	-	-	-	-	-	-	12.9
11/8/2012	-	-	-	-	-	-	-	-	-	14.9
2/13/2013	-	-	-	-	-	-	-	-	-	12.7
5/15/2013	-	-	-	-	-	-	-	-	-	11.3
9/6/2013	-	-	-	-	-	-	-	-	-	7.9
11/14/2013	-	-	-	-	-	-	-	-	-	8.6
2/13/2014	-	-	-	-	-	-	-	-	-	8.6
5/8/2014	-	-	-	-	-	-	-	-	-	7.7
7/10/2014	-	-	-	-	-	-	-	-	-	6.6
8/14/2014	-	-	-	-	-	-	-	-	-	6.8
12/11/2014	-	-	-	-	-	-	-	-	-	6.8
7/22/2015	-	-	-	-	-	-	-	-	-	9.5
4/12/2017	-	-	-	-	-	-	-	-	-	12.0

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

Jurisdictional Wells Sampled in Anza Area
(As reported by Riverside County)

Well and Date	Specific Conductance (umho/cm)	Total Dissolved Solids (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Cl (mg/l)	SO4 (mg/l)	HCO3 (mg/l)	Nitrate as N (mg/l)
Company										
Well #6 End Everett										
3/30/2009	-	-	-	-	-	-	-	-	-	5.2
12/14/2009	-	-	-	-	-	-	-	-	-	3.6
2/17/2011	-	-	-	-	-	-	-	-	-	4.3
5/18/2011	390	-	42.0	9.0	22.0	10.0	29.0	5.6	160.0	4.3
4/11/2012	-	-	-	-	-	-	-	-	-	4.1
1/12/2016	-	-	-	-	-	-	-	-	-	2.7
Company										
Well #7 Anzanita										
3/30/2009	-	-	-	-	-	-	-	-	-	3.6
11/19/2009	-	-	-	-	-	-	-	-	-	3.4
8/27/2010	-	-	-	-	-	-	-	-	-	6.8
2/16/2011	-	-	-	-	-	-	-	-	-	4.8
5/18/2011	550	-	50.0	9.2	50.0	8.8	39.0	9.2	240.0	5.4
7/6/2011	-	-	-	-	-	-	-	-	-	7.2
11/18/2011	-	-	-	-	-	-	-	-	-	6.1
2/8/2012	-	-	-	-	-	-	-	-	-	5.4
4/13/2012	-	-	-	-	-	-	-	-	-	5.9
8/8/2012	-	-	-	-	-	-	-	-	-	7.5
9/30/2012	-	-	-	-	-	-	-	-	-	6.8
11/8/2012	-	-	-	-	-	-	-	-	-	8.8
2/13/2013	-	-	-	-	-	-	-	-	-	3.2
5/15/2013	-	-	-	-	-	-	-	-	-	6.3
9/6/2013	-	-	-	-	-	-	-	-	-	9.3
11/14/2013	-	-	-	-	-	-	-	-	-	5.9
2/13/2014	-	-	-	-	-	-	-	-	-	5.4
5/8/2014	-	-	-	-	-	-	-	-	-	5.7
8/14/2014	-	-	-	-	-	-	-	-	-	5.9

NOTES:
(1) Historic values of NO3 were converted to Nitrate as N
(2) "ND" indicates not detected above minimum testing threshold

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX E

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS CALENDAR YEAR 2019

November 2020

APPENDIX E

SANTA MARGARITA RIVER WATERSHED
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

JANUARY 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 3/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK: Input /2	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	3.1	3.1				2.5	4.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
2	4.2	4.2				3.4	6.8	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
3	4.6	4.6				3.8	7.5	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
4	4.6	4.6				3.8	7.5	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
5	4.6	4.6				3.7	7.4	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
6	23.3	23.3				0.8	1.5	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
7	8.0	8.0				0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
8	5.6	5.6				1.0	2.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
9	5.6	5.6				3.3	6.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
10	5.4	5.4				3.9	7.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
11	0.9	0.9	6.7	4.6	2.1	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
12	35.5	35.5	9.8	4.6	5.2	0.6	1.1	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
13	10.8	10.8	10.4	4.6	5.8	1.4	2.8	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
14	48.3	48.3	14.8	4.6	10.2	1.2	2.3	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
15	62.2	62.1	20.6	4.6	16.0	0.3	0.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
16	299.0	295.0	47.7	4.6	43.1	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
17	205.0	202.0	67.1	4.6	62.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
18	57.3	56.0	72.2	4.6	67.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
19	14.3	13.8	73.0	4.6	68.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
20	6.5	6.2	73.1	4.6	68.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
21	3.9	3.7	73.3	4.6	68.7	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
22	2.8	2.7	70.1	4.6	65.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
23	3.1	2.9	69.3	4.6	64.7	1.0	1.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
24	3.3	3.1	64.7	4.6	60.1	1.4	2.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
25	3.3	3.1	58.8	4.6	54.2	1.7	3.4	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
26	3.0	2.9	29.6	4.6	25.0	1.9	3.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
27	3.3	3.2	9.7	4.6	5.1	2.3	4.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
28	3.3	3.3	4.5	4.6	-0.1	2.5	4.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
29	3.3	3.3	3.4	4.6	-1.2	2.5	5.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
30	3.5	3.5	3.1	4.6	-1.5	2.7	5.4	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
31	50.5	50.6	7.8	4.6	3.2	3.4	6.8	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
TOTAL SFD	892.0	881.7	789.7	96.6	693.1	49.1		0.0		213.9		0.0		
TOTAL AF	1,769.3	1,748.8	1,566.3	191.6	1,374.7		97.1		0.0		424.7		0.0	5,000.0

1 - Required flows for January through April are equal to 11.5 cfs less 6.9 cfs of credits (1,107 AF of Climatic Credit earned in 2018 plus 534 AF of CAP Credit remaining from 2017).

2 - Art. 17 - Camp Pendleton rights to groundwater equal the flow indicated in Section 5 of the CWRMA minus the Actual Flow Maintenance Requirement which cannot be less than 3.0 cfs.
Input to Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

3- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS

SANTA MARGARITA RIVER NEAR TEMECULA

FEBRUARY 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 3/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input /2	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	42.6	42.6	11.8	4.6	7.2	0.1	0.1	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
2	408.0	408.0	52.3	4.6	47.7	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
3	259.0	259.0	77.9	4.6	73.3	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
4	480.0	480.0	125.6	4.6	121.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
5	393.0	393.0	164.6	4.6	160.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
6	68.5	68.5	171.2	4.6	166.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
7	21.2	21.2	173.0	4.6	168.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
8	9.5	9.5	173.6	4.6	169.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
9	6.8	6.8	173.9	4.6	169.3	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
10	7.1	7.1	169.6	4.6	165.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
11	11.9	11.9	166.5	4.6	161.9	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
12	3.7	3.7	126.1	4.6	121.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
13	6.7	6.7	100.8	4.6	96.2	0.4	0.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
14	6,770.0	6,760.0	728.8	4.6	724.2	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
15	489.0	495.0	739.0	4.6	734.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
16	135.0	141.0	746.3	4.6	741.7	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
17	53.2	57.9	750.0	4.6	745.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
18	44.1	49.7	754.0	4.6	749.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
19	24.7	28.8	756.2	4.6	751.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
20	15.5	19.1	757.4	4.6	752.8	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
21	78.6	91.0	765.3	4.6	760.7	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
22	70.9	84.1	773.3	4.6	768.7	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
23	19.0	24.0	775.1	4.6	770.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
24	9.9	13.2	100.4	4.6	95.8	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
25	7.1	9.8	51.9	4.6	47.3	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
26	6.8	9.5	38.7	4.6	34.1	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
27	4.5	4.5	33.4	4.6	28.8	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
28	3.2	3.2	28.7	4.6	24.1	0.3	0.5	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
TOTAL SFD	9,449.5	9,508.8	9,485.4	128.8	9,356.6	0.8		0.0		193.2		0.0		
TOTAL AF	18,742.7	18,860.4	18,814.0	255.5	18,558.5		1.3		0.0		383.6		0.0	5,000.0

1 - Required flows for January through April are equal to 11.5 cfs less 6.9 cfs of credits (1,107 AF of Climatic Credit earned in 2018 plus 534 AF of CAP Credit remaining from 2017).

2 - Art. 17 - Camp Pendleton rights to groundwater equal the flow indicated in Section 5 of the CWRMA minus the Actual Flow Maintenance Requirement which cannot be less than 3.0 cfs.
Input to Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

3- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

MARCH 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 3/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input /2	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	2.7	2.7	26.1	4.6	21.5	0.5	0.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
2	98.3	98.3	34.0	4.6	29.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
3	67.3	67.3	31.7	4.6	27.1	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
4	21.4	21.4	25.4	4.6	20.8	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
5	13.9	13.9	24.4	4.6	19.8	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
6	25.9	25.9	25.7	4.6	21.1	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
7	113.0	113.0	36.0	4.6	31.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
8	31.2	31.2	38.1	4.6	33.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
9	18.1	18.1	39.5	4.6	34.9	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
10	13.7	13.7	40.6	4.6	36.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
11	12.7	12.7	41.6	4.6	37.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
12	143.0	135.0	45.2	4.6	40.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
13	36.5	32.8	41.8	4.6	37.2	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
14	13.9	12.1	40.8	4.6	36.2	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
15	7.7	6.5	40.1	4.6	35.5	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
16	5.2	4.2	37.9	4.6	33.3	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
17	3.8	3.8	27.0	4.6	22.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
18	2.9	2.9	24.2	4.6	19.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
19	2.8	2.8	22.6	4.6	18.0	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
20	4.2	4.2	21.7	4.6	17.1	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
21	28.0	28.0	23.2	4.6	18.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
22	16.6	16.6	11.4	4.6	6.8	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
23	9.0	9.0	9.0	4.6	4.4	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
24	3.8	3.8	8.2	4.6	3.6	0.0	0.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
25	3.5	3.5	7.9	4.6	3.3	1.2	2.4	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
26	3.6	3.6	7.8	4.6	3.2	1.8	3.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
27	3.9	3.9	7.8	4.6	3.2	2.2	4.3	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
28	3.9	3.9	7.9	4.6	3.3	2.4	4.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
29	4.0	4.0	8.1	4.6	3.5	2.5	4.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
30	3.9	3.9	8.0	4.6	3.4	2.5	4.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
31	4.4	4.4	5.7	4.6	1.1	2.5	4.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
TOTAL SFD	722.8	707.1	769.4	142.6	626.8	15.6		0.0		213.9		0.0		
TOTAL AF	1,433.7	1,402.5	1,526.1	282.8	1,243.2		30.6		0.0		424.7		0.0	5,000.0

1 - Required flows for January through April are equal to 11.5 cfs less 6.9 cfs of credits (1,107 AF of Climatic Credit earned in 2018 plus 534 AF of CAP Credit remaining from 2017).

2 - Art. 17 - Camp Pendleton rights to groundwater equal the flow indicated in Section 5 of the CWRMA minus the Actual Flow Maintenance Requirement which cannot be less than 3.0 cfs.
Input to Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

3- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

APRIL 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 3/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input /2	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	4.2	4.2	4.4	4.6	-0.2	2.7	5.3	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
2	3.8	3.8	3.9	4.6	-0.7	2.6	5.1	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
3	3.5	3.5	3.9	4.6	-0.7	1.9	3.8	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
4	4.8	4.8	4.0	4.6	-0.6	2.2	4.3	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
5	5.4	5.4	4.2	4.6	-0.4	4.0	7.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
6	4.8	4.8	4.3	4.6	-0.3	3.5	6.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
7	4.9	4.9	4.4	4.6	-0.2	3.5	7.0	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
8	5.1	5.1	4.5	4.6	-0.1	3.8	7.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
9	5.6	5.6	4.6	4.6	0.0	4.4	8.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
10	5.5	5.5	4.7	4.6	0.1	4.4	8.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
11	5.4	5.4	4.9	4.6	0.3	4.3	8.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
12	5.6	5.6	5.0	4.6	0.4	4.4	8.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
13	5.5	5.5	5.3	4.6	0.7	4.4	8.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
14	4.9	4.9	5.3	4.6	0.7	3.8	7.6	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
15	4.1	4.1	5.1	4.6	0.5	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
16	4.1	4.1	5.1	4.6	0.5	3.1	6.1	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
17	4.1	4.1	5.0	4.6	0.4	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
18	4.1	4.1	4.9	4.6	0.3	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
19	4.2	4.2	4.7	4.6	0.1	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
20	4.4	4.4	4.6	4.6	0.0	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
21	4.4	4.4	4.5	4.6	-0.1	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
22	4.4	4.4	4.4	4.6	-0.2	3.1	6.1	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
23	3.6	3.6	4.2	4.6	-0.4	2.4	4.8	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
24	4.7	4.7	4.2	4.6	-0.4	3.4	6.7	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
25	5.2	5.2	4.3	4.6	-0.3	3.8	7.5	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
26	5.8	5.8	4.5	4.6	-0.1	4.3	8.5	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
27	5.7	5.7	4.6	4.6	0.0	4.0	7.9	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
28	5.4	5.4	4.8	4.6	0.2	3.7	7.4	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
29	5.3	5.3	4.9	4.6	0.3	3.2	6.4	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
30	4.9	4.9	4.9	4.6	0.3	3.1	6.2	0.0	0.0	6.9	13.7	0.0	0.0	5,000.0
TOTAL SFD	143.2	143.2	138.1	138.0	0.1	102.6		0.0		207.0		0.0		
TOTAL AF	284.0	284.1	273.9	273.7	0.2		203.7		0.0		411.0		0.0	5,000.0

1 - Required flows for January through April are equal to 11.5 cfs less 6.9 cfs of credits (1,107 AF of Climatic Credit earned in 2018 plus 534 AF of CAP Credit remaining from 2017).

2 - Art. 17 - Camp Pendleton rights to groundwater equal the flow indicated in Section 5 of the CWRMA minus the Actual Flow Maintenance Requirement which cannot be less than 3.0 cfs.
Input to Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

3- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

MAY 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 3/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	5.5	5.5				3.9	7.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
2	10.1	10.1				8.3	16.5	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
3	12.6	12.6				10.5	20.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
4	13.7	13.7				11.5	22.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
5	13.6	13.6				11.5	22.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
6	13.7	13.7				11.5	22.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
7	11.9	11.9				10.2	20.3	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
8	10.7	10.7				9.1	18.0	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
9	10.7	10.7				9.1	18.0	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
10	10.1	10.1				8.6	17.0	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
11	10.5	10.5	11.8	11.5	0.3	9.0	17.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
12	9.5	9.5	11.7	11.5	0.2	8.0	15.9	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
13	9.4	9.4	11.4	11.5	-0.1	7.8	15.5	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
14	9.6	9.6	11.0	11.5	-0.5	8.2	16.3	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
15	10.3	10.3	10.6	11.5	-0.9	8.8	17.5	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
16	9.9	9.9	10.3	11.5	-1.2	8.1	16.0	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
17	9.0	9.0	10.0	11.5	-1.5	7.5	14.9	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
18	8.9	8.9	9.8	11.5	-1.7	7.3	14.5	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
19	10.5	10.5	9.8	11.5	-1.7	6.2	12.2	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
20	11.3	11.3	9.9	11.5	-1.6	4.6	9.1	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
21	10.1	10.1	9.8	11.5	-1.7	8.0	15.9	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
22	13.6	13.6	10.2	11.5	-1.3	6.2	12.2	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
23	18.5	18.5	11.2	11.5	-0.3	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
24	11.1	11.1	11.3	11.5	-0.2	1.7	3.3	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
25	9.9	9.9	11.3	11.5	-0.2	6.5	12.9	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
26	9.9	9.9	11.3	11.5	-0.2	7.9	15.7	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
27	9.9	9.9	11.4	11.5	-0.1	7.1	14.1	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
28	9.9	9.9	11.5	11.5	0.0	8.0	15.8	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
29	9.9	9.9	11.4	11.5	-0.1	8.2	16.2	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
30	9.9	9.9	11.3	11.5	-0.2	8.1	16.1	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
31	10.0	9.9	11.3	11.5	-0.2	8.0	15.9	0.0	0.0	0.2	0.4	0.0	0.0	5,000.0
TOTAL SFD	334.2	334.1	228.3	241.5	-13.2	239.4		0.0		6.2		0.0		
TOTAL AF	662.9	662.6	452.8	479.0	-26.2		474.6		0.0		12.4		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2 - Art. 17 - Camp Pendleton rights to groundwater equal the flow indicated in Section 5 of the CWRMA minus the Actual Flow Maintenance Requirement which cannot be less than 3.0 cfs.
Input to Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

3- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS

SANTA MARGARITA RIVER NEAR TEMECULA

JUNE 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 2/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	7.9	7.9				5.9	11.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
2	8.0	8.0				6.2	12.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
3	8.0	8.0				6.3	12.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
4	8.0	8.0				6.3	12.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
5	8.0	8.0				6.4	12.7	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
6	8.1	8.1				6.5	12.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
7	8.0	8.0				6.6	13.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
8	8.1	8.1				6.7	13.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
9	8.0	8.0				6.9	13.7	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
10	8.0	8.0				7.1	14.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
11	8.1	8.1	8.0	9.4	-1.4	7.3	14.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
12	8.5	8.5	8.1	9.4	-1.3	7.8	15.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
13	12.2	12.2	8.5	9.4	-0.9	10.6	21.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
14	13.4	13.4	9.0	9.4	-0.4	11.5	22.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
15	13.4	13.4	9.6	9.4	0.2	11.5	22.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
16	9.7	9.7	9.7	9.4	0.3	8.2	16.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
17	9.6	9.6	9.9	9.4	0.5	7.9	15.7	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
18	9.4	9.4	10.0	9.4	0.6	7.8	15.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
19	9.3	9.3	10.2	9.4	0.8	7.9	15.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
20	9.4	9.4	10.3	9.4	0.9	8.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
21	9.2	9.2	10.4	9.4	1.0	7.8	15.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
22	9.0	9.0	10.5	9.4	1.1	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
23	9.3	9.3	10.2	9.4	0.8	7.9	15.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
24	9.2	9.2	9.8	9.4	0.4	7.9	15.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
25	9.3	9.3	9.4	9.4	0.0	7.9	15.7	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
26	9.5	9.5	9.3	9.4	-0.1	8.1	16.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
27	9.5	9.5	9.3	9.4	-0.1	8.1	16.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
28	9.5	9.5	9.3	9.4	-0.1	8.2	16.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
29	9.5	9.5	9.3	9.4	-0.1	8.2	16.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
30	9.5	9.5	9.3	9.4	-0.1	8.2	16.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
TOTAL SFD	276.7	276.7	190.1	188.0	2.1	233.3		0.0		0.0		0.0		
TOTAL AF	548.7	548.8	377.1	372.9	4.2		462.2		0.0		0.0		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS

SANTA MARGARITA RIVER NEAR TEMECULA

JULY 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 2/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	7.5	7.9				6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
2	7.5	7.8				6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
3	7.5	7.8				6.8	13.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
4	7.5	7.9				6.8	13.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
5	7.5	7.8				6.7	13.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
6	7.5	7.8				6.7	13.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
7	7.5	7.8				6.6	13.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
8	7.5	7.8				6.6	13.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
9	7.5	7.9				6.7	13.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
10	7.6	7.9				6.7	13.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
11	7.5	7.9	7.8	7.8	0.0	6.7	13.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
12	7.6	7.9	7.8	7.8	0.0	6.8	13.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
13	7.5	7.9	7.9	7.8	0.1	6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
14	7.5	7.9	7.9	7.8	0.1	7.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
15	7.5	7.5	7.8	7.8	0.0	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
16	7.5	7.5	7.8	7.8	0.0	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
17	7.7	7.8	7.8	7.8	0.0	7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
18	7.8	7.8	7.8	7.8	0.0	7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
19	7.8	7.9	7.8	7.8	0.0	7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
20	7.8	7.9	7.8	7.8	0.0	7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
21	7.8	7.9	7.8	7.8	0.0	7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
22	7.8	7.9	7.8	7.8	0.0	7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
23	7.8	7.9	7.8	7.8	0.0	7.3	14.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
24	7.7	7.8	7.8	7.8	0.0	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
25	7.7	7.8	7.8	7.8	0.0	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
26	7.6	7.8	7.8	7.8	0.0	7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
27	7.7	7.9	7.8	7.8	0.0	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
28	7.7	7.9	7.8	7.8	0.0	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
29	7.7	7.9	7.8	7.8	0.0	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
30	7.7	7.9	7.8	7.8	0.0	7.3	14.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
31	7.7	7.9	7.9	7.8	0.1	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
TOTAL SFD	236.6	242.5	164.1	163.8	0.3	218.7		0.0		0.0		0.0		
TOTAL AF	469.3	481.1	325.5	324.9	0.6		432.3		0.0		0.0		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

AUGUST 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 2/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	7.5	7.7				7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
2	7.5	7.7				7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
3	7.5	7.7				7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
4	7.4	7.7				7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
5	7.5	7.7				7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
6	7.4	7.7				7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
7	7.4	7.7				7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
8	7.4	7.7				7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
9	7.4	7.7				7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
10	7.3	7.6				7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
11	7.5	7.5	7.7	7.6	0.1	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
12	7.3	7.3	7.6	7.6	0.0	7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
13	7.5	7.5	7.6	7.6	0.0	7.3	14.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
14	7.7	7.7	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
15	7.7	7.7	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
16	7.6	7.6	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
17	7.6	7.6	7.6	7.6	0.0	7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
18	7.7	7.7	7.6	7.6	0.0	7.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
19	7.6	7.6	7.6	7.6	0.0	7.4	14.7	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
20	6.0	7.6	7.6	7.6	0.0	4.8	9.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
21	7.6	7.6	7.6	7.6	0.0	5.2	10.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
22	7.6	7.6	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
23	7.7	7.7	7.6	7.6	0.0	7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
24	7.6	7.6	7.6	7.6	0.0	7.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
25	7.7	7.7	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
26	7.6	7.6	7.6	7.6	0.0	7.7	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
27	7.7	7.7	7.6	7.6	0.0	7.7	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
28	7.7	7.7	7.6	7.6	0.0	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
29	7.7	7.7	7.6	7.6	0.0	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
30	7.6	7.6	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
31	7.7	7.7	7.6	7.6	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
TOTAL SFD	232.5	236.6	159.7	159.6	0.1	225.2		0.0		0.0		0.0		
TOTAL AF	461.2	469.2	316.8	316.6	0.2		445.7		0.0		0.0		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS

SANTA MARGARITA RIVER NEAR TEMECULA

SEPTEMBER 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 2/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	7.8	7.4				7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
2	7.8	7.5				7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
3	7.8	7.5				7.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
4	7.0	6.7				6.6	13.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
5	7.8	7.5				7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
6	7.8	7.5				7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
7	7.8	7.5				7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
8	7.8	7.8				7.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
9	7.9	7.9				7.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
10	7.7	7.7				7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
11	2.8	2.8	7.0	7.4	-0.4	2.6	5.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
12	7.6	7.6	7.0	7.4	-0.4	7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
13	7.5	7.5	7.0	7.4	-0.4	7.1	14.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
14	7.5	7.5	7.1	7.4	-0.3	7.1	14.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
15	7.5	7.5	7.1	7.4	-0.3	7.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
16	7.4	7.4	7.1	7.4	-0.3	7.1	14.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
17	7.4	7.4	7.1	7.4	-0.3	7.1	14.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
18	7.4	7.4	7.1	7.4	-0.3	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
19	7.4	7.4	7.0	7.4	-0.4	7.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
20	7.5	7.5	7.0	7.4	-0.4	6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
21	7.4	7.4	7.5	7.4	0.1	6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
22	7.4	7.4	7.4	7.4	0.0	6.9	13.7	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
23	7.5	7.5	7.5	7.4	0.1	5.7	11.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
24	7.4	7.4	7.4	7.4	0.0	5.6	11.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
25	7.4	7.4	7.4	7.4	0.0	7.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
26	7.4	7.4	7.4	7.4	0.0	6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
27	7.4	7.4	7.4	7.4	0.0	6.8	13.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
28	7.4	7.4	7.4	7.4	0.0	6.8	13.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
29	7.4	7.4	7.4	7.4	0.0	6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
30	7.4	7.4	7.4	7.4	0.0	6.9	13.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
TOTAL SFD	221.5	219.2	144.7	148.0	-3.3	206.5		0.0		0.0		0.0		
TOTAL AF	439.2	434.8	287.0	293.6	-6.5		408.5		0.0		0.0		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

OCTOBER 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 2/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	7.4	7.4				7.2	14.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
2	7.5	7.5				7.3	14.4	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
3	7.7	7.7				7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
4	7.7	7.7				7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
5	7.7	7.7				7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
6	7.7	7.7				7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
7	7.7	7.7				7.7	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
8	7.7	7.7				7.7	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
9	7.7	7.7				7.5	14.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
10	7.8	7.8				7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
11	7.7	7.7	7.7	7.7	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
12	7.6	7.6	7.7	7.7	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
13	7.7	7.7	7.7	7.7	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
14	7.8	7.8	7.7	7.7	0.0	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
15	6.5	6.5	7.6	7.7	-0.1	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
16	7.1	7.1	7.5	7.7	-0.2	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
17	8.2	8.2	7.6	7.7	-0.1	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
18	7.9	7.9	7.6	7.7	-0.1	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
19	7.2	7.2	7.5	7.7	-0.2	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
20	7.2	7.2	7.5	7.7	-0.2	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
21	7.1	7.1	7.4	7.7	-0.3	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
22	7.1	7.1	7.4	7.7	-0.3	7.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
23	7.5	7.5	7.4	7.7	-0.3	7.4	14.6	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
24	7.7	7.7	7.4	7.7	-0.3	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
25	7.8	7.8	7.5	7.7	-0.2	7.7	15.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
26	7.7	7.7	7.6	7.7	-0.1	7.7	15.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
27	7.7	7.7	7.5	7.7	-0.2	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
28	7.7	7.7	7.5	7.7	-0.2	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
29	7.7	7.7	7.5	7.7	-0.2	7.6	15.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
30	7.7	7.7	7.6	7.7	-0.1	7.6	15.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
31	7.7	7.7	7.6	7.7	-0.1	7.7	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
TOTAL SFD	235.1	235.1	158.5	161.7	-3.2	232.5		0.0		0.0		0.0		
TOTAL AF	466.2	466.2	314.4	320.7	-6.3		460.4		0.0		0.0		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED

COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

NOVEMBER 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 2/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	8.8	8.8				8.7	17.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
2	8.8	8.8				8.7	17.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
3	8.8	8.8				8.7	17.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
4	8.8	8.8				8.7	17.3	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
5	8.8	8.8				8.7	17.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
6	8.8	8.8				8.6	17.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
7	8.8	8.8				8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
8	8.8	8.8				8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
9	8.8	8.8				8.7	17.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
10	8.8	8.8				8.7	17.2	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
11	8.8	8.8	8.8	8.8	0.0	8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
12	8.8	8.8	8.8	8.8	0.0	8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
13	8.8	8.8	8.8	8.8	0.0	8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
14	8.8	8.8	8.8	8.8	0.0	8.6	17.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
15	8.8	8.8	8.8	8.8	0.0	8.6	17.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
16	8.8	8.8	8.8	8.8	0.0	8.6	17.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
17	8.8	8.8	8.8	8.8	0.0	8.6	17.0	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
18	8.8	8.8	8.8	8.8	0.0	8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
19	8.8	8.8	8.8	8.8	0.0	8.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
20	14.0	14.0	9.3	8.8	0.5	8.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
21	15.3	15.3	10.0	8.8	1.2	7.3	14.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
22	8.4	8.4	9.9	8.8	1.1	7.3	14.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
23	8.6	8.6	9.9	8.8	1.1	8.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
24	8.4	8.4	9.9	8.8	1.1	8.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
25	8.3	8.3	9.8	8.8	1.0	8.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
26	8.3	8.3	9.8	8.8	1.0	8.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
27	8.4	8.4	9.7	8.8	0.9	7.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
28	408.0	408.0	49.7	8.8	40.9	1.8	3.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
29	359.0	359.0	84.7	8.8	75.9	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
30	39.8	39.8	87.3	8.8	78.5	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	5,000.0
TOTAL SFD	1,053.6	1,053.6	379.2	176.0	203.2	228.1		0.0		0.0		0.0		
TOTAL AF	2,089.8	2,089.8	752.1	349.1	403.0		452.3		0.0		0.0		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement equals the Section 5 flow for an Above Normal year.

2- As reported by CPEN.

APPENDIX E

SANTA MARGARITA RIVER WATERSHED
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT REQUIRED FLOWS AND ACCOUNTS
SANTA MARGARITA RIVER NEAR TEMECULA

DECEMBER 2019 - ABOVE NORMAL YEAR

Day	USGS Official Discharge	USGS Daily Website Discharge	10-Day Running Average of Website Discharge	Minimum Flow Maintenance Requirement /1	Running Average Less Required Flow	WR-34 Make-Up Discharge 3/		Climatic Credit Earned		CAMP PENDLETON GROUNDWATER BANK Input 2/	Input	Output	Output	Cumulative Balance
	cfs	cfs	cfs	cfs	cfs	cfs	AF	cfs	AF	cfs	AF	cfs	AF	AF
1	11.4	11.4				0.3	0.5	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
2	4.9	4.9				0.5	0.9	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
3	5.6	5.6				3.3	6.5	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
4	391.0	391.0				2.9	5.8	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
5	119.0	119.0				0.2	0.4	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
6	23.7	23.7				0.2	0.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
7	11.7	11.7				0.2	0.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
8	31.2	31.2				0.1	0.2	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
9	9.7	9.7				1.3	2.6	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
10	7.4	7.4				4.5	8.9	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
11	7.8	7.8	61.2	8.8	52.4	6.2	12.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
12	8.4	8.4	61.6	8.8	52.8	7.2	14.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
13	8.8	8.8	61.9	8.8	53.1	7.8	15.5	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
14	8.8	8.8	23.7	8.8	14.9	7.8	15.5	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
15	8.7	8.7	12.6	8.8	3.8	7.8	15.5	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
16	8.7	8.7	11.1	8.8	2.3	8.0	15.9	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
17	8.8	8.8	10.8	8.8	2.0	8.1	16.1	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
18	8.8	8.8	8.6	8.8	-0.2	8.1	16.1	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
19	8.8	8.8	8.5	8.8	-0.3	8.2	16.2	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
20	8.9	8.9	8.7	8.8	-0.1	8.2	16.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
21	8.9	8.9	8.8	8.8	0.0	8.2	16.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
22	9.0	9.0	8.8	8.8	0.0	8.2	16.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
23	17.0	17.0	9.6	8.8	0.8	6.1	12.0	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
24	35.4	35.4	12.3	8.8	3.5	0.2	0.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
25	9.1	9.1	12.3	8.8	3.5	1.7	3.4	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
26	512.0	508.0	62.3	8.8	53.5	1.4	2.7	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
27	83.0	81.3	69.5	8.8	60.7	0.2	0.3	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
28	20.1	19.5	70.6	8.8	61.8	0.1	0.2	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
29	9.1	8.8	70.6	8.8	61.8	1.2	2.4	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
30	8.5	8.1	70.5	8.8	61.7	3.6	7.1	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
31	8.7	9.6	70.6	8.8	61.8	5.1	10.2	0.0	0.0	1.6	3.2	0.0	0.0	5,000.0
TOTAL SFD	1,423.0	1,416.9	734.6	184.8	549.8	126.9		0.0		49.6		0.0		
TOTAL AF	2,822.4	2,810.4	1,457.1	366.5	1,090.5		251.3		0.0		99.2		0.0	5,000.0

1 - Minimum Flow Maintenance Requirement for December reduced from 10.4 cfs to 8.8 cfs per Camp Pendleton's request to forego water to minimize CAP credits.

2 - Foregone make-up water credited to groundwater account but cumulative balance did not increase due to account balance maximum of 5,000 AF.

3- As reported by CPEN.

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX F

ANNUAL REPORT ISSUES SUBORDINATED DURING EFFECTIVE PERIOD OF THE COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

November 2020

APPENDIX F

SANTA MARGARITA RIVER WATERSHED

ANNUAL REPORT ISSUES SUBORDINATED DURING EFFECTIVE PERIOD OF THE COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

Introduction

Prior to implementation of the Cooperative Water Resource Management Agreement (CWRMA) entered into by Rancho California Water District (RCWD) and the United States on behalf of Camp Pendleton, there were contentions raised by Camp Pendleton each year, with respect to various aspects of the Annual Watermaster Report. These contentions are settled so long as CWRMA is in effect. Accordingly, there is no need to raise those particular issues or publish them in the main text of the annual report or in related correspondence.

However, the respective positions on these issues need to be preserved and protected from any finding of waiver, and there is a need to continue to collect related data in the event of need in the future.

Therefore, the applicable textual material in the previous annual reports and related comments and responses have been gathered here for preservation and maintenance of rights, with the understanding that the previous annual exchange of applicable contentions in the process of preparing the annual report is no longer necessary.

Issues Reserved

Section 3, Surface Water Availability and Use: In the absence of CWRMA implementation, Camp Pendleton disputes the method of calculation used in the annual report in Subsection 3.2 (Surface Water Diversions) and Table 3.3 (Surface Water Diversions to Storage for Vail Lake) for presentation of the information regarding Vail Lake and further asserts its belief that the Vail Dam impoundment fails to comply with the 1940 Stipulated Judgment.

Section 4, Subsurface Water Availability and Use: In the absence of CWRMA implementation, and with respect to Figure 4.1 (Water Level Elevations – Windmill Well) and to Subsections 4.3 (Water Levels) and 4.4 (Groundwater Storage), Camp Pendleton is concerned about the apparent excessive pumping in the Upper Basin, and further asserts its belief that the lengthy and significant drawdown and concomitant loss in storage adversely affect the water supply for adjacent and downstream users holding senior water rights.

Section 7, Water Production and Use: First, in the absence of CWRMA implementation, and with regard to the local production figures shown in Table 7.1 (Water Production and Use), Camp Pendleton is concerned about the high level of groundwater production from the Upper Basin, a level that Camp Pendleton believes to be substantially greater than the safe yield.

Second, in the absence of CWRMA implementation, and with regard to Footnote 6 of Table 7.1 (distinction between RCWD pumping of older alluvium water and of Vail recovery water), Camp Pendleton has serious reservations as to the accounting system that is being used as well as the legal and technical bases upon which such system has been formulated.

Third, in the absence of CWRMA implementation, and as to the RCWD part of Subsection 7.2.8 (Water Purveyors – Rancho California Water District), Camp Pendleton has serious reservations as to the accounting system that is being used as well as the legal and technical bases upon which such system has been formulated. These reservations include the following:

1. As to the "Vail Appropriation" part: *Representatives of the United States contend that under the 1940 Stipulated Judgment storage of water in Vail Lake is limited to Rancho California Water District's share of the flood waters of the Santa Margarita River system. However, to date, the parties have not agreed on a definition of "flood waters."*

2. As to the "Division of Local Water" part: *In 1995 well logs and geophysical logs of all Rancho California WD wells were reviewed by representatives of the United States and Rancho California WD to determine the depths of the younger alluvium. There was general agreement between the parties about the depth of the younger alluvium in production wells, except for ten wells shown on Table 7.7 of the 1994-95 report. In 2015, Watermaster, Rancho California WD and Camp Pendleton reviewed available geologic reports, geologic cross sections, well completion reports, driller logs, and geophysical logs to develop new geologic cross sections to delineate the depth of younger alluvium. The parties reached consensus on the depth of younger alluvium for wells previously in dispute as indicated in Table 7.7.*

Section 8, Unauthorized Water Use: In the absence of CWRMA implementation, and with respect to water use by RCWD, Camp Pendleton asserts the following:

1. Such use is in violation of the 1940 Stipulated Judgment by reason of, among other things, Vail Lake operations in excess of entitlement and pumping from both younger and older alluvium in excess of entitlement, which contentions RCWD disputes;

2. Rediversion and use of water impounded by Vail Dam are not in accord with terms of Permit 7032;

3. Unauthorized pumping is being done, including pumping from the younger alluvium outside of Pauba Valley without a permit and pumping from the older alluvium in violation of Court adjudications.

Section 9, Threats to Water Supply: In the absence of CWRMA implementation, and with respect to Subsection 9.3 (Potential Overdraft Conditions) and as noted in the foregoing comments to Sections 4 and 7, Camp Pendleton is seriously concerned regarding the apparent excessive pumping in the Upper Basin.

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2018-19

APPENDIX G

INDEPENDENT AUDITOR'S REPORT

WATER YEAR 2018-19

November 2020

WATERMASTER OF THE SANTA
MARGARITA RIVER WATERSHED
FINANCIAL REPORT
SEPTEMBER 30, 2019

INDEX TO FINANCIAL STATEMENTS

V A U G H N   J O H N S O N ,   C P A

INDEPENDENT AUDITOR'S REPORT

To the Steering Committee
Watermaster of the Santa Margarita River Watershed

I have audited the accompanying financial statements of Watermaster of the Santa Margarita River Watershed, as of and for the year ended September 30, 2019, and the related notes to financial statements, as listed in the index.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express opinion on these financial statements based on my audit. I conducted my audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that I plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, I express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of Watermaster of the Santa Margarita River Watershed as of September 30, 2019, and the respective changes in financial position and cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America, as well as the accounting systems prescribed by the State Controller's Office and state regulations governing special districts.

4120 CAMERON PARK DRIVE SUITE 400 • CAMERON PARK, CA • 95682
PHONE: 530-677-1390 • FAX: 530-676-7379

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and budgetary comparison information on pages 3-5 and page 13 be presented to supplement the financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. I have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to my inquiries, the basic financial statements, and other knowledge I obtained during my audit of the basic financial statements. I do not express an opinion or provide any assurance on the information because the limited procedures do not provide me with sufficient evidence to express an opinion or provide any assurance.

Vaughn Johnson
Vaughn Johnson, CPA
Cameron Park, CA
July 20, 2020

This discussion and analysis of Watermaster of the Santa Margarita River Watershed (the "Watermaster") financial performance provides an overview of the Watermaster's financial activities for the fiscal year ended September 30, 2019. Please read it in conjunction with the Watermaster's financial statements, which immediately follows this section.

FINANCIAL HIGHLIGHTS

Operating revenue for the Watermaster comes from municipal agencies based on an administrative assessment.

- The Watermaster ended the year with a net position of $389,660.
- Operation revenues were $791,733, while operating expenses were $836,922.

OVERVIEW OF THE FINANCIAL STATEMENTS

This annual report consists of two parts—management's discussion and analysis (this section) and the basic financial statements. The financial statements that accompany this report include a statement of net position, statement of revenues, expenses, and changes in net position, and statement of cash flows. These statements provide information about the activities and performance of the Watermaster using accounting methods similar to those used by private sector companies. The Statement of Net Position includes all of the Watermaster's investments in resources (assets) and the obligations to creditor (liabilities). It also provides the basis for computing a rate of return, evaluating the capital structure of the Watermaster and assessing the liquidity and financial flexibility of the Watermaster. All of the current year's revenue and expenses are accounted for in the Statement of Revenues, Expenses and Changes in Net Position. This statement measures the success of the Watermaster's operations over the past year and can be used to determine if the Watermaster has successfully recovered all of its costs thought its rates and other charges. This statement can also be used to evaluate profitability and credit worthiness. The final required financial statement is the Statement of Cash Flows, which provides information about the Watermaster's cash receipts and the cash payments during the reporting period. The Statement of Cash Flows reports cash receipts, cash payments and net change in cash resulting from operations, investing, non-capital financing, and capital and related financing activities and provides answers to such questions as where did cash come from, what was cash used for, and what was the change in cash balance during the reporting period.

FINANCIAL ANALYSIS OF THE WATERMASTER

One of the most important questions asked about the Watermaster's finances is, "Is the Watermaster better off or worse off as a result of this year's activities?" The Statement of Net Position and the Statement of Revenues, Expenses and Changes in Net Position report information about the Watermaster in a way that helps answer this question. These statements include all assets and liabilities using the accrual basis of accounting, which is similar to the accounting method used by most private sector companies. All of the current year's revenues and expenses are taken into account regardless of when the cash is received or paid. These two statements report the Watermaster's net position and changes in net position. You can think of the Watermaster's net position – the difference between assets and liabilities – as one way to measure the Watermaster's financial health, or financial position. Over time, increases or decreases in the Watermaster's net position are one indicator of whether its financial health is improving or deteriorating.

NOTES TO THE BASIC FINANCIAL STATEMENTS

The notes provide additional information that is essential to a full understanding of the data provided in the basic financial statements.

BASIC FINANCIAL STATEMENT – COMPARATIVE ANALYSIS

Statement of Net Position

	2019	2018	Change
ASSETS			
Current assets	$446,856	$490,036	$ (43,180)
Non current assets	1,301	2,169	(868)
Total assets	$448,157	$492,205	$ (44,048)
LIABILITIES			
Current liabilities	$ 58,497	$ 58,420	$ 77
Total liabilities	58,497	58,420	77
NET POSITION			
Unrestricted	389,660	433,785	(44,125)
Total net position	$389,660	$433,785	$ (44,125)

As noted earlier, net position may serve over time as a useful indicator of an entity's financial position. In the case of the Watermaster, assets of the Watermaster exceeded liabilities by $389,660 as of September 30, 2019, a decrease in net position of $44,125 compared to 2018.

Statement of Revenues, Expenses, and Changes in Net Position

	2019	2018	Change
REVENUES			
Operating revenues	$ 791,733	$ 755,085	$ 36,648
Non-operating revenues - interest	1,064	866	198
Total revenues	792,797	755,951	36,846
EXPENSES			
Operating expenses	836,922	785,971	50,951
Change in net position	(44,125)	(30,020)	(14,105)
Net position - beginning of year	433,785	463,805	(30,020)
Net position - end of year	$ 389,660	$433,785	$ (44,125)

The statement of revenues, expenses and changes of net position shows how the Watermaster's net position changed during the fiscal year. In the case of the Watermaster, net position decreased by $44,125 for the year ended September 30, 2019, as compared to a decrease of $30,020 in 2018. This was primarily due to decreases in operating expenses.

SIGNIFICANT VARIANCES BETWEEN ORIGINAL AND FINAL BUDGET

In year 2018-2019, Watermaster fees were larger than budgeted for a couple of reasons. First, the 2016-2017 Annual Watermaster Report planned to be completed during year 2017-2018 was not completed prior to September 30, 2018 (the end of the previous financial year) and therefore work effort and associated and unplanned cost continued into year 2017-2018. The 2016-2017 Report was completed in December of 2018. Additionally, costs were more than budgeted due to unanticipated Court Objectives to the Watermaster Annual Report requiring additional Watermaster and legal fees (review objections, develop and file responses with the Court, and Court hearing).

CONDITIONS AFFECTING CURRENT FINANCIAL POSITION

Management is unaware of any conditions, which could have a significant impact on the Watermaster's current financial position, net position or operating results based on past, present and future events.

CONTACTING THE WATERMASTER'S FINANCIAL MANAGEMENT

This financial report is designed to provide a general overview of the Watermaster's finances and to demonstrate the Watermaster's accountability for the money it receives. If you have any questions about this report or need additional financial information, please contact the Watermaster of the Santa Margarita River Watershed at 169 Parkshore Drive, Suite 110, Folsom, CA 95630.

WATERMASTER OF THE SANTA MARGARITA RIVER WATERSHED
STATEMENT OF NET POSITION
PROPRIETARY FUND
SEPTEMBER 30, 2019

ASSETS		
Current assets:		
Cash and investments	$	390,103
Accounts receivable		56,553
Prepaid expenses		200
Total current assets		446,856
Noncurrent assets:		
Property (net of depreciation)		1,301
Total assets	$	448,157
LIABILITIES		
Current liabilities:		
Accounts Payable		$43,497
Retainer		15,000
Total current liabilities		58,497
NET POSITION		
Unrestricted		389,660
Total net position	$	389,660

The accompanying notes are an integral part of these financial statements.

WATERMASTER OF THE SANTA MARGARITA RIVER WATERSHED
STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION
PROPRIETARY FUND
FOR THE YEAR ENDED
SEPTEMBER 30, 2019

Operating revenues	
Assessments	$ 791,733
Operating expenses	
Watermaster fees:	
Consulting services	501,695
Travel reimburements	14,806
Total Watermaster fees	516,501
Other expenses:	
Gauging station operation	265,994
Accounting services	5,271
Printing	2,468
Audit	6,000
Legal services	38,153
Postage	1,452
Depreciation expense	867
Miscellaneous	216
Total other expenses	320,421
Total operating expenses	836,922
Income from operations	(45,189)
Non operating revenues (expenses)	
Interest	1,064
Change in net position	(44,125)
Net position - beginning of year	433,785
Net position - end of year	$ 389,660

The accompanying notes are an integral part of these financial statements.

WATERMASTER OF THE SANTA MARGARITA RIVER WATERSHED
STATEMENT OF CASH FLOWS
PROPRIETARY FUND
FOR THE YEAR ENDED
SEPTEMBER 30, 2019

CASH FLOWS FORM OPERATING ACTIVITIES:		
Receipts from customers	$	843,050
Payments to suppliers and vendors		(835,977)
Net cash provided by operating activties		7,073
CASH FLOWS FROM INVESTING ACTIVITIES		
Interest received		1,064
Purchases of Certificates of Deposit		
Net cash provided by investing activities		1,064
Change in cash and cash equivalents		8,137
Cash and cash equivalents - beginning of year		381,966
Cash and cash equivalents - end of year	$	390,103
RECONCILIATION OF OPERATING REVENUES TO NET CASH PROVIDED BY OPERATING ACTIVITIES		
Income from operations	$	(45,189)
ADJUSTMENT OT RECONCILE NET INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES		
Depreciation		867
(INCREASE) DECREASE IN:		
Accounts receivable		51,317
INCREASE (DECREASE) IN:		
Accounts payable		(4,922)
Retainer		5,000
Net cash provided by operating activies	$	7,073

The accompanying notes are an integral part of these financial statements.

1. ORGANIZATION

Nature of Operations

Watermaster of the Santa Margarita River Watershed (Watermaster) was created by order of the United States District court, Southern District of California (Court). The Court, as part of its continuing jurisdiction in the case of United States vs. Fallbrook Public Utility District et. al, has authority to make judicial determination of all water rights within the Santa Margarita River Watershed. The Watermaster is empowered by the Court to administer and enforce the provision of a Modified Final Judgment and Decree entered April 6, 1966, and subsequent instructions and orders of the Court. On November 30, 2016, the Court issued an Order appointing Michael Preszler to serve as Watermaster.

A Steering Committee was appointed by the Court to assist the Watermaster and the Court. The Steering Committee is comprised of representatives from the United States (Camp Pendleton Marine Corps Base), Rancho California Water District, Fallbrook Public Utility District (FPUD), Eastern Municipal Water District, Metropolitan Water District of Southern California, the Pechanga Band of Luiseno Mission Indians, and Western Municipal Water District.

The fees and expenses of the Watermaster during the water year ended September 30, 2019, were, per court order, paid from equal assessments against the Steering Committee members. The Court retains the right to assess other parties in the watershed in future years. Pursuant to an agreements between the Watermaster and the United States Geological Survey (USGS), the USGS provides operations and maintenance services for stream gauging stations and groundwater monitoring wells in the watershed.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Accounting and Measurement Focus

The Watermaster reports its activities as an enterprise fund, which is used to account for operations that are financed and operated in a manner similar to a private business enterprise. Revenues and expenses are recognized on the full accrual basis of accounting. Revenues are recognized in the accounting period in which they are earned and expenses are recognized in the period incurred, regardless of when the related cash flows take place.

Operating revenues and expenses, such as Watermaster assessments result from exchange transactions associated with the principal activity of the Watermaster. Exchange transactions are those in which each party receives and gives up essentially equal values. The principal operating revenues of the Watermaster are regulatory assessments to Steering Committee Members. Management, administration and depreciation expenses are also considered operating expenses. Other revenues and expenses are not included in the above categories are reported as non-operating revenues and expenses.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Cash and cash Equivalents

Cash and cash equivalents are composed of cash in banks and liquid investments with original maturities of three months or less.

Investments

Investments in marketable securities with readily determinable fair values and all investments in debt securities are reported at their fair values in the Statement of Net Assets. The fair values of these investments are subject to change based on the fluctuations of market values. Unrealized gains and losses are included in the change in net assets. Investment income and gains restricted by a donor or by the Watermaster are reported as increases in unrestricted net assets if the restrictions are met (either by the passage of time or by use) in the reporting period in which the income and gains are recognized.

Fair Value Measurements

Certain assets and liabilities are required to be reported at fair value. The fair value framework provides a hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of fair value hierarchy are described as follows:

Level 1 – Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets.

Level 2 – Inputs other than quoted prices included within Level 1 that observable for the asset or liability, either directly or indirectly and fair value is determined through the use of models or other valuation methodologies including:

- Quoted prices for similar assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in markets that are inactive;
- Inputs other than quoted prices that are observable for the asset or liability;
- Inputs that are derived principally from or corroborated by observable market data by correlation or other means.

Level 3 – Inputs to the valuation methodology are unobservable and significant to the fair value measurement. These unobservable input reflect the Waternaster's own assumptions about the inputs market participants would use in pricing the asset or liability (including assumptions about risk). These unobservable inputs are developed based on the best information available in the circumstances and may include the Watermaster's own data.

Accounts Receivable

Watermaster considers accounts receivable to be fully collectible; accordingly, no allowances for doubtful accounts is required.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Fixed Assets

Fixed assets are recorded at cost and depreciated under the straight-line method over their estimated useful lives of 3 to 10 years. Repair and maintenance costs, which do not extend the useful lives of the asset, are charge to expense. The cost of assets, sold or retired, and related amounts of accumulated depreciation are eliminated from the accounts in the year of disposal, and any resulting gain or loss is included in the earnings. Management has elected to capitalize and depreciate all assets costing $2,000 or more; all other assets are charged to expense in the year incurred.

Unearned Assessments

Advanced assessments represent amounts levied or collected in the current year that apply to the next fiscal year.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

3. CASH AND INVESTMENTS

Cash and investments at September 30, 2019, consisted of the following:

Cash in bank	$ 1,607
Money market	147,272
Certificates of deposit	241,224
Total cash and investments	$ 390,103

Custodial credit risk is the risk that in the event of a bank failure, the Watermaster's deposits may not be returned. Cash balances held in banks are insured up to $250,000 by the Federal Deposit Insurance Corporation (FDIC). The California Government Code requires that a financial institution secure deposits made by state or local governmental units by pledging securities in an undivided collateral pool held by a depository regulated under state law (unless so waived by the governmental unit). The market value of the pledge securities in the collateral pool must equal at least 110 percent of the total amount deposited by the public agency. California law also allows financial institutions to secure public deposits by pledging first trust deed mortgage notes having a value of 150 percent of the secured public deposits and letters of credit issued by the Federal Home Loan Bank of San Francisco having a value of 105 percent of the secured deposits. At September 30, 2019 the Watermaster's bank balance was $1,607. The bank balance and the Certificates of deposit of $241,224 are fully insured by FDIC. The Watermaster's money market account is uninsured in the amount of $147,272.

Custodial credit risk for investments is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This is measured by assigning a minimum credit rating by a national credit rating agency. This does not apply to money market funds or certificates of deposit. The investment policy of the Watermaster contains no limitations on the amount that can be invested in any one issuer beyond that stipulated by the California Government Code. The Watermaster's funds are held by one institution, Pacific Western Bank. Fair value level reporting and interest rate risk do not apply to money market funds or certificates of deposit.

4. CAPITAL ASSETS

Capital assets at September 30, 2019, consisted of the following:

Computer equipment	$ 10,862
Office furniture and equipment	19,461
Less: accumulated depreciation	(29,022)
Total fixed assets, net of depreciation	$ 1,301

5. RELATED PARTY TRANSACTIONS

The Watermaster has entered into an agreement with Rancho California Water District (RCWD), which is a member of the Watermaster Steering Committee, whereby RCWD provides accounting services.

Data management and clerical support services are performed at the Watermaster office.

6. GAUGING STATION OPERATION

The cooperative water resources program is a Joint Funding Agreement (FA) between the Watermaster (SMRW) and the U.S. Geological Survey (USGS) and associated costs for streamgaging activities and groundwater levels. Groundwater levels consists of operation and maintenance of six continuous monitors and GOES transmitter at Pala Park, Temecula Creek Trial Park and Temecula Via Caballos, and two continuous monitors at Wolf Valley Well Cluster including monthly levels.

7. SUBSEQUENT EVENTS

Management evaluated all the activities have been evaluated of the Watermaster through July 20, 2020 the date the financial statements were available to be issued.

In December 2019, a novel strain of coronavirus (COVID-19) was reported to have surfaced in China. The World Health Organization has characterized COVID-19 as a pandemic. The spread of this virus has caused business disruption to the Watermaster when stay at home orders were issued by the Governor of California. The extent of the impact of COVID-19 on the Watermaster's operational and financial performance will depend on future developments, including the duration and spread of the outbreak and the length of stay-at-home orders, all of which are highly uncertain and cannot be predicted at this time.

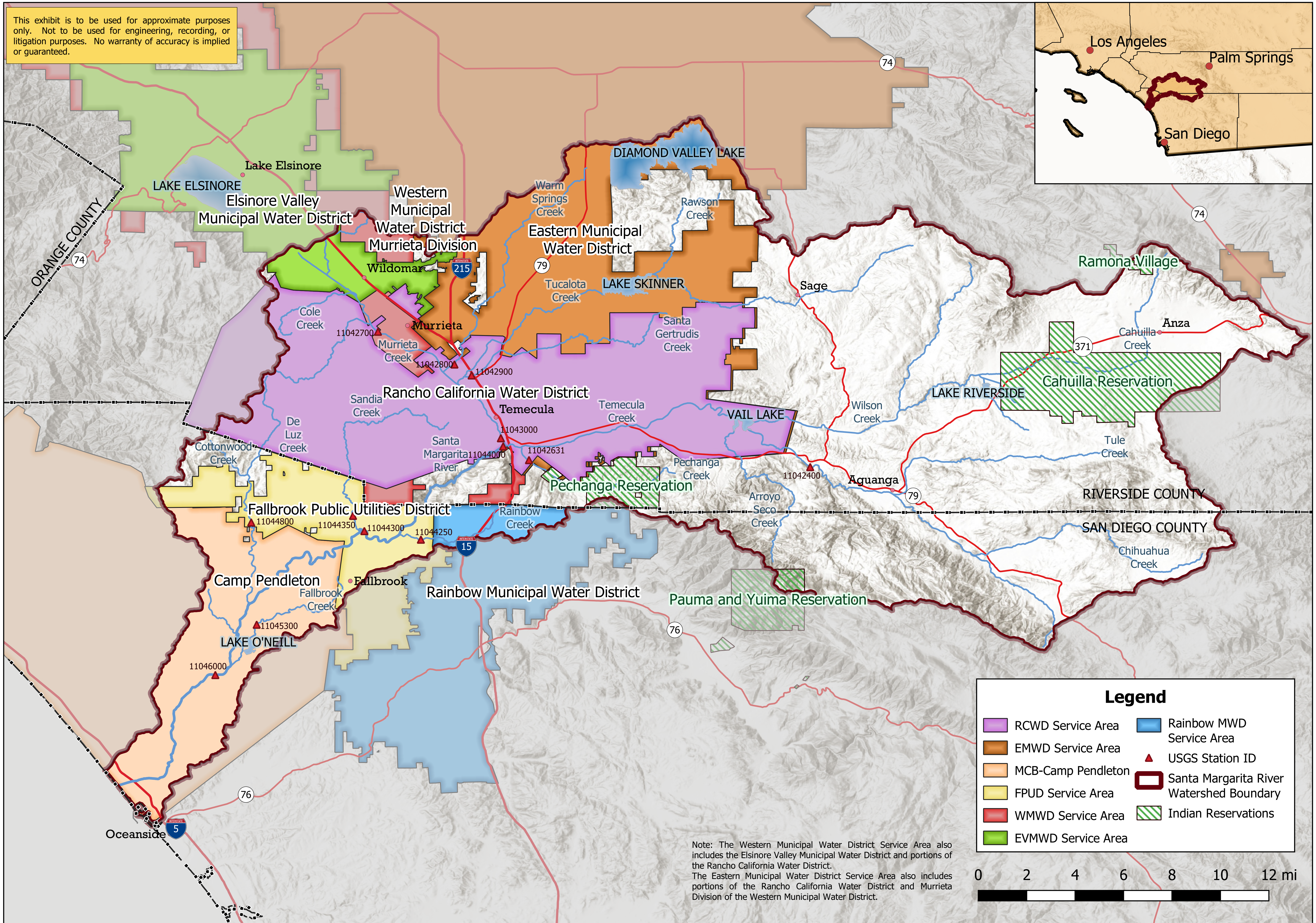
SUPPLEMENTARY INFORMATION

WATERMASTER OF THE SANTA MARGARITA RIVER WATERSHED
SCHEDULE OF REVENUES AND EXPENSES--BUDGET AND ACTUAL
PROPRIETARY FUND
FOR THE YEAR ENDED
SEPTEMBER 30, 2019

	Original/ Final Budget	Actual	Variance Favorable (Unfavorable)
Revenues			
Assessments	$ 791,733	$ 791,733	$ -
Interest		1,064	1,064
Total revenues	791,733	792,797	1,064
Expenses			
Watermaster fees:			
Consulting services	439,258	501,695	(62,437)
Travel reimbursements	25,000	14,806	10,194
Other expenses:			
Gauging station operation	268,975	265,994	2,981
Accounting services	7,500	5,271	2,229
Audit	7,000	6,000	1,000
Insurance			-
IT System/Computer	3,000		3,000
Printing	7,000	2,468	4,532
Legal services	30,000	38,153	(8,153)
Postage	1,500	1,452	48
Depreciation		867	(867)
Miscellaneous	2,500	216	2,284
Total expenses	$ 791,733	$ 836,922	$ (45,189)

The budget is prepared on the accrual basis to account for all revenues and expenses necessary to carry out the Watermaster's activities.

Santa Margarita River Watershed Major Water Purveyors



Prepared by: Robert Heather   Date: 2018-09-14   Document Path:P:\SMRW Watermaster\Maps\Layout_1_Master