SANTA ANA RIVER WATERMASTER

FOR

ORANGE COUNTY WATER DISTRICT

v. CITY OF CHINO, et al.

CASE NO. 117628 - COUNTY OF ORANGE

THIRTY-NINTH

ANNUAL REPORT

OF THE

SANTA ANA RIVER WATERMASTER

FOR WATER YEAR

OCTOBER 1, 2008 - SEPTEMBER 30, 2009

APRIL 30, 2010

SANTA ANA RIVER WATERMASTER

ORANGE COUNTY WATER DISTRICT v. CITY OF CHINO, et al.
CASE NO. 117628--COUNTY OF ORANGE

WATERMASTER
Richard W. Atwater
Samuel H. Fuller
Craig D. Miller
John V. Rossi
Robert C. Wagner

MAILING ADDRESS
c/o SBVMWD
Post Office Box 5906
San Bernardino CA 92412-5906
Telephone 909/387-9200
FAX 909/387-9247

April 30, 2010

To: Clerk of Superior Court of Orange County and all Parties

Re: Watermaster Report for Water Year October 1, 2008 - September 30, 2009

Ladies and Gentlemen:

We have the honor of submitting herewith the Thirty-Ninth Annual Report of the Santa Ana River Watermaster. The supporting basic data Appendices are bound separately.

The principal findings of the Watermaster for the water year 2008-09 are as follows:

At Prado

1	Measured Outflow at Prado	162,698	acre-feet
2	Base Flow at Prado	102,711	acre-feet
3	Annual Weighted TDS in Base and Storm Flows	527	mg/L
4	Annual Adjusted Base Flow	117,519	acre-feet
5	Cumulative Adjusted Base Flow	4,779,825	acre-feet
6	Other Credits (Debits)	2,189	acre-feet
7	Cumulative Entitlement of OCWD	1,638,000	acre-feet
8	Cumulative Credit	3,178,543	acre-feet
9	One-Third of Cumulative Debit	0	acre-feet
10	Minimum Required Base Flow in 2009-10	34,000	acre-feet

At Riverside Narrows

1	Base Flow at Riverside Narrows	43,902	acre-feet
2	Annual Weighted TDS in Base Flow	663	mg/L
3	Annual Adjusted Base Flow	43,902	acre-feet
4	Cumulative Adjusted Base Flow	1,751,243	acre-feet
5	Cumulative Entitlement of IEUA and WMWD	594,750	acre-feet
6	Cumulative Credit	1,156,493	acre-feet
7	One-Third of Cumulative Debit	0	acre-feet
8	Minimum Required Base Flow in 2009-10	12,420	acre-feet

Based on these findings, the Watermaster concludes that there was full compliance with the provisions of the Stipulated Judgment in 2008-09.

At the end of the 2008-09 water year, Inland Empire Utilities Agency (formerly Chino Basin Municipal Water District) and Western Municipal Water District have a cumulative credit of 3,178,543 acre-feet to their Base Flow obligation at Prado Dam.
San Bernardino Valley Municipal Water District has a cumulative credit of 1,156,493 acre-feet to its Base Flow obligation at Riverside Narrows.

The Watermaster continued to exercise surveillance over the many active and proposed projects within the watershed for their potential effect on Base Flow.

Sincerely yours,

Santa Ana River Watermaster

By: Richard W. Atwater

John V. Rossi

Samuel H. Fuller

Robert C. Wagner

Craig D. Miller

SANTA ANA RIVER WATERMASTER

FOR

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The following appendices are bound separately and available for review at the office of the Secretary of the Santa Ana River Watermaster.

CHAPTER I

WATERMASTER ACTIVITIES AND WATER CONDITIONS

Introduction

This Thirty-Ninth Annual Report of the Santa Ana River Watermaster covers Water Year 2008-09. The annual report is required by the Stipulated Judgment (Judgment) in the case of Orange County Water District v. City of Chino, et al., entered by the court on April 17, 1969 (Case No. 117628-County of Orange). The Judgment became effective on October 1, 1970. It contains a declaration of rights of the water users and other entities in the Lower Area of the Santa Ana River Basin downstream of Prado Dam as against those in the Upper Area tributary to Prado Dam, and provides a physical solution to satisfy those rights. Chapter IV presents a history of the litigation and a summary of the Judgment.

The physical solution accomplishes, in general, a regional intrabasin allocation of the surface flow of the Santa Ana River System. The Judgment leaves to each of the major hydrologic units within the basin the determination and regulation of individual rights therein and the development and implementation of its own water management plan subject only to compliance with the physical solution.

The Judgment designates four public agencies to represent the interests of the Upper and Lower Areas and gives them the responsibility to fulfill the obligations set forth in the Judgment, including the implementation of the physical solution. The Lower Area is represented by Orange County Water District (OCWD). The Upper Area is represented by San Bernardino Valley Municipal Water District (SBVMWD), Western Municipal Water District of Riverside County (WMWD), and Inland Empire Utilities Agency (IEUA), formerly the Chino Basin Municipal Water District (CBMWD). The locations of the districts are shown on Plate 1, "Santa Ana River Watershed".

The court appoints a five-member Watermaster Committee to administer the provisions of the Judgment. The Watermaster's duty is to maintain a continuous accounting of each of the items listed in the letter of transmittal at the front of this report and to report thereon annually for each water year to the court and the parties. The water year begins October 1 and ends the following September 30. The time for submission of the annual report is April 30, seven months after the end of the water year.

For the 2008-09 Water Year the Watermaster Committee consisted of Bill B. Dendy, Richard W. Atwater, John V. Rossi, Craig D. Miller, and Samuel H. Fuller. Mr. Dendy retired during 2009. OCWD nominated and the Court appointed Mr. Robert C. Wagner to replace Mr. Dendy. Mr. Miller was elected Chairman and Mr. Fuller was elected Secretary/Treasurer at the November 6, 2009 meeting. The history of the Watermaster Committee membership is presented in Chapter IV.

Compilation of Basic Data

The Watermaster annually compiles the basic hydrologic and water quality data necessary to determine compliance with the provisions of the Judgment. The data include records of stream discharge (flow) and quality for the Santa Ana River (River) at Prado Dam and at Riverside Narrows as well as discharges for most tributaries; flow and quality of nontributary water entering the River; rainfall records at locations in or adjacent to the Watershed; and other data that may be used to support the Watermaster's determinations.

For Water Year 2008-09 the United States Geological Survey (USGS) provided discharge and water quality data for the Santa Ana River at two gaging stations, "Santa Ana River Below Prado" (Prado) and "Santa Ana River at Metropolitan Water District (MWD) Crossing" (Riverside Narrows). The discharge data at both stations consist of computed daily mean discharges, expressed in cubic feet per second (cfs), based on continuous recordings. The water quality data at Prado consist of daily maximum and minimum and flow-weighted mean values for electrical conductivity (EC), measured as specific conductance and expressed in microsiemens per centimeter (μs/cm) based on a continuous recording, and twice-monthly measured values for total dissolved solids (TDS), expressed in milligrams per liter (mg/L). The water quality data at Riverside Narrows consist of twice-monthly values for both EC and TDS. The USGS also provided discharge data for other gaging stations for streams tributary to Prado, including, among others, the Santa Ana River at E Street in San Bernardino, Chino Creek at Schaefer Avenue, Cucamonga Creek near Mira Loma, and Temescal Creek in the City of Corona (see Appendix A). At times the USGS must estimate daily mean discharges due to damaged or malfunctioning recording equipment.

The 2008-09 daily mean discharge record at Prado is considered by the USGS to be "good" except for estimated data, which are rated "poor". Daily mean discharges at the station are controlled at times by storage operations in the reservoir behind Prado Dam just upstream. The maximum and minimum daily mean discharge values during the water year were, respectively, 2,040 cfs on December 18, 2008 and 75 cfs on September 4, 2009. The maximum and minimum daily flow-weighted mean EC values reported by the USGS at Prado were 1,184 μs/cm on April 3, 2009 and 412 μs/cm on February 10, 2009. The corresponding calculated TDS concentrations were 711 and 247 mg/L, respectively. EC records were rated "good" except for October 1 through October 7, which are rated "fair", and October 8 through December 23, which are rated "poor" by the USGS.

The 2008-09 daily mean discharge record at Riverside Narrows was rated by the USGS to be "fair" below 100 cfs and "poor" above. The maximum and minimum daily mean discharge values during the year were 2,020 cfs on February 9, 2009 and 35 cfs on August 30, 2009. The maximum and minimum EC values reported by the USGS were 1,040 μs/cm on May 6, 2009 and 512 μs/cm on February 10, 2009. The corresponding measured TDS concentrations were 668 and 314 mg/L, respectively.

To assist in making its determinations each year the Watermaster refers to the records of many precipitation stations located in or near the Santa Ana River watershed. The record for San Bernardino County Department of Public Works (SBCDPW) Station 2146, located

at the San Bernardino County Hospital, was used to define the hydrologic base period for the physical solution in the Judgment, and until Water Year 2000-01 the annual reports of the Watermaster presented the daily and total annual precipitation record at Station 2146 in order to provide a comparison with historical conditions.

During Water Year 2000-01 Station 2146 was destroyed when the hospital buildings were demolished. For many days of that year precipitation data were missing entirely, and for many other days the reported data were clearly inconsistent with data from other nearby stations. The Watermaster decided that the record for Station 2146 for that entire year might be unreliable and decided to replace it with estimated data. Beginning with Water Year 2001-02 OCWD hydrogeologists Roy Herndon and Gwen Sharp have annually obtained the records for three nearby stations (2357 at San Bernardino, California Department of Forestry, 2015 at Del Rosa Ranger Station, and 2001B2 or 2001B3 at San Bernardino County Flood Control District) and, using the method recommended by the U.S. Weather Service, have annually estimated the precipitation at the location of the former Station 2146, and the Watermaster has accepted their estimates.

A new Station 2146-A was established by SBCDPW very near the site of the former Station 2146 and the intent of the Watermaster was to determine, over time, whether or not the quality of the record at the new station is adequate to justify its use in lieu of an estimated record. During the preparation of the report for Water Year 2004-05 the rainfall total recorded at Station 2146-A was sufficiently close to the estimate prepared by Herndon and Sharp for the Watermaster to accept the record at Station 2146-A in lieu of an estimate.

The USGS established a precipitation gage network during the 2003-04 Water Year to assist local flood control agencies with flood prediction in the area of the “Old Fire” which burned a large portion of the northerly mountains of the Santa Ana River Watershed area during October and November 2003. When the local flood control agencies declined to fund the precipitation gage network the Santa Ana River Watermaster Committee recommended that the parties to the Judgment pay the annual operating expense for several of the gages and the parties agreed to do so. The parties also agreed to pay the cost for the USGS to establish and operate a precipitation gage, designated the Gilbert Street Precipitation Gage (USGS No. 340742117161701), at the same location as SBCDPW Station 2146-A. The Gilbert Street Gage was placed into operation in October 2005.

Beginning in Water Year 2005-06 Herndon and Sharp have annually compared the record for the Gilbert Street Gage to the record for Station 2146-A and found them to be virtually identical. The Watermaster has accepted their recommendation to use the Gilbert Street Gage in this and future annual reports. For Water Year 2008-09, the total precipitation recorded at the Gilbert Street gage was 10.14 inches, or 56% of the average of 17.98 inches that occurred during the 26-year base period (1934-35 through 1959-60) that was used in the formulation of the physical solution. Plate 3 graphically portrays the annual precipitation reported by the Watermaster from 1934-35 through 2008-09.

Watermaster Determinations

Each year the Watermaster uses its long-established procedures to analyze the basic hydrologic and water quality data in order to determine, at Riverside Narrows and at Prado, the Base Flow, the Adjusted Base Flow, the Cumulative Credits or Debits to Upper Area parties, and the Minimum Required Base Flow for the following water year. The procedures include determining, for both locations, the amounts of Nontributary Flow or other non-storm flow to be excluded from Base Flow.

During 2008-09 there was one source of non-storm flow in the river at Riverside Narrows, and two at Prado, that the Watermaster has included in neither Base Flow nor in the calculation of Cumulative Credits: WMWD-OCWD exchange water at both locations and Arlington Desalter water at Prado. A third source, treated municipal wastewater discharged to Temescal Creek from the San Jacinto River Watershed, was also excluded from Base Flow but was partially added to the Cumulative Credit at Prado.

- A total of 1,460 acre-feet of WMWD-OCWD Transfer water was discharged to the River above Riverside Narrows. The estimated average TDS concentration was 437 mg/L.
- At its Arlington Desalter in Riverside WMWD produced and delivered to a channel tributary to the River between Riverside Narrows and Prado 211 acre-feet of water having an average TDS of 346 mg/L.
- Eastern Municipal Water District (EMWD) reported that it discharged 6,669 acre-feet of municipal wastewater to Temescal Creek, with a flow-weighted average TDS of 748 mg/L, that originated in the San Jacinto River Watershed. Discharges from the San Jacinto Watershed were not taken into account in the settlement discussions and calculations that led to the flow obligations in the Judgment. In the past the Watermaster decided that fifty percent of any portion of such discharges that reach Prado Reservoir and that are subsequently captured by OCWD should be added to the Cumulative Credit at Prado (after the usual water quality adjustment). OCWD Hydrogeologist Gwen Sharp estimated that 4,653 acre-feet of the EMWD wastewater, with an average TDS concentration of 787 mg/L, reached Prado Reservoir and that 4,378 acre-feet of it was captured by OCWD, and recommended that the Cumulative Credit at Prado be increased accordingly, using the previously established fifty percent rule. The Watermaster accepted the estimate and the recommendation.

The Watermaster's determinations for the 2008-09 Water Year are explained in detail for Prado in Chapter II and for Riverside Narrows in Chapter III. A summary of annual determinations by the Watermaster for both locations for the period 1970-71 through 2008-09 is presented in Table 1. Note that the Base Flow obligations set forth in the Judgment at both Prado and Riverside Narrows have been met and cumulative credits have accrued to the Upper Area.

TABLE 1

SUMMARY OF FINDINGS AT PRADO

Water Year	Rainfall (in)[1]	USGS Measured Flow (ac-ft)	Total Flow (ac-ft)[2]	Base Flow (ac-ft)[3]	Weighted TDS (mg/L)[4]	Adjusted Base Flow (ac-ft)	Cumulative Credit (ac-ft)[5]
1970-71	11.97	51,864	51,864	38,402	727	38,402	-3,598
1971-72	9.62	51,743	51,743	40,416	707	40,416	-5,182
1972-73	18.46	76,848	77,484	48,999	638	51,531	4,349
1973-74	12.72	128,436	62,511	43,106	633	45,513	7,862
1974-75	13.49	93,397	61,855	50,176	694	51,263	17,125
1975-76	15.86	120,590	59,209	45,627	635	48,098	23,223
1976-77	11.95	72,278	62,953	48,387	660	50,000	31,223
1977-78	30.47	255,043	252,850	58,501	383	73,955	63,178
1978-79	17.51	145,198	134,506	71,863	580	79,049	100,227
1979-80	30.93	536,174	527,760	82,509	351	106,505	164,732
1980-81	10.45	118,300	117,888	74,875	728	74,875	205,652
1981-82	18.34	143,702	143,367	81,548	584	89,431	253,083
1982-83	32.36	426,273	426,750	111,692	411	138,591	353,036
1983-84	10.81	178,730	177,606	109,231	627	115,876	431,514
1984-85	12.86	163,247	162,912	125,023	617	133,670	523,184
1985-86	17.86	196,900	197,373	127,215	567	141,315	622,499
1986-87	8.08	140,872	143,191	119,848	622	127,638	708,137
1987-88	13.78	176,292	166,818	124,104	582	136,308	802,445
1988-89	12.64	159,659	152,743	119,572	583	131,230	891,675
1989-90	8.53	144,817	143,463	119,149	611	127,986	977,661
1990-91	15.48	195,186	186,426	111,151	514	128,379	1,064,040
1991-92	16.54	198,280	189,677	106,948	499	124,862	1,146,902
1992-93	30.92	571,138	566,630	128,067	368	163,499	1,268,401
1993-94	11.62	159,560	152,808	111,186	611	119,432	1,345,833
1994-95	25.14	429,270	422,816	123,468	415	152,792	1,458,387
1995-96	11.92	217,160	190,553	131,861	514	152,299	1,568,686
1996-97	18.64	249,685	198,459	136,676	514	157,861	1,684,547
1997-98	33.41	462,646	456,316	154,021	392	193,553	1,836,100
1998-99	8.02	184,998	182,310	158,637	581	174,369	1,968,469
1999-00	11.09	207,850	188,538	148,269	527	169,644	2,096,113
2000-01	16.13	222,559	208,535	153,914	525	176,360	2,230,473
2001-02	5.08	174,968	156,596	145,981	587	159,728	2,348,201
2002-03	16.22	256,157	245,947	146,113	463	174,970	2,482,058
2003-04	10.80	214,102	201,967	143,510	508	166,472	2,606,777
2004-05	29.89	638,513	637,568	154,307	348	199,570	2,766,713
2005-06	13.23	247,593	246,101	147,736	517	170,266	2,898,541
2006-07	4.61	156,147	153,823	129,830	604	140,216	3,002,288
2007-08	13.70	199,690	194,309	116,483	495	136,382	3,100,835
2008-09	10.14	162,698	161,026	102,711	527	117,519	3,178,543

TABLE 1 (Continued)

SUMMARY OF FINDINGS AT RIVERSIDE NARROWS

Water Year	Rainfall (in)[1]	USGS Measured Flow (ac-ft)	Total Flow (ac-ft)[2]	Base Flow (ac-ft)[3]	Weighted TDS (mg/L)[4]	Adjusted Base Flow (ac-ft)	Cumulative Credit (ac-ft)[5]
1970-71	11.97	42,732	24,112	17,061	704	17,012	1,762
1971-72	9.62	41,257	22,253	16,157	712	16,017	2,529
1972-73	18.46	33,048	32,571	17,105	700	17,105	4,384
1973-74	12.72	25,494	24,494	16,203	700	16,203	5,337
1974-75	13.49	20,970	19,644	15,445	731	15,100	5,187
1975-76	15.86	27,627	26,540	17,263	723	16,977	6,914
1976-77	11.95	24,871	23,978	18,581	722	18,286	9,950
1977-78	30.47	182,500	181,760	22,360	726	21,941	16,641
1978-79	17.51	47,916	47,298	26,590	707	26,456	27,847
1979-80	30.93	254,333	253,817	25,549	676	25,549	38,146
1980-81	10.45	34,698	34,278	19,764	715	19,550	42,446
1981-82	18.34	83,050	82,708	32,778	678	32,778	59,974
1982-83	32.36	279,987	279,645	57,128	610	57,128	101,852
1983-84	10.81	83,087	82,745	56,948	647	56,948	143,550
1984-85	12.86	79,113	78,771	69,772	633	69,772	198,072
1985-86	17.86	99,600	99,258	68,220	624	68,220	251,042
1986-87	8.08	78,093	77,752	59,808	649	59,808	295,600
1987-88	13.78	80,047	79,706	55,324	620	55,324	335,674
1988-89	12.64	62,717	62,376	52,259	607	52,259	372,683
1989-90	8.53	58,500	58,159	53,199	590	53,583	411,016
1990-91	15.48	74,525	73,790	45,041	616	45,041	440,807
1991-92	16.54	71,768	71,427	40,306	620	40,306	465,863
1992-93	30.92	267,384	267,043	41,434	634	41,434	492,047
1993-94	11.62	45,477	45,006	31,278	677	31,278	508,075
1994-95	25.14	245,617	243,411	45,562	646	45,562	538,387
1995-96	11.92	83,256	81,786	54,548	625	54,548	577,685
1996-97	18.64	107,280	104,518	62,618	624	62,618	625,053
1997-98	33.41	214,375	213,033	65,013	601	65,013	674,816
1998-99	8.02	76,294	76,294	73,094	603	73,094	732,660
1999-00	11.09	75,572	75,572	63,499	602	63,499	780,909
2000-01	16.13	78,091	75,331	61,872	603	61,872	827,531
2001-02	5.08	68,844	59,434	58,705	606	58,705	870,986
2002-03	16.22	92,166	88,502	57,747	617	57,747	913,483
2003-04	10.80	77,336	75,799	54,788	634	54,788	953,021
2004-05	29.89	355,503	355,503	65,760	616	65,760	1,003,531
2005-06	13.23	111,840	111,113	67,161	608	67,161	1,055,442
2006-07	4.61	57,868	56,022	56,123	635	56,123	1,096,315
2007-08	13.70	78,619	74,554	46,776[6]	674	46,776 [6]	1,127,841
2008-09	10.14	69,027	67,567	43,902	663	43,902	1,156,493

TABLE 1 (Continued)

(1) Measured at San Bernardino County Department of Public Works (SBCDPW) Station 2146 (former San Bernardino County Hospital) until Water Year 2000-01. Estimated for that location for Water Years 2000-01 through 2003-04. Measured at SBCDPW Station 2146-A for Water Year 2004-05. Measured at USGS Gilbert Street Precipitation Gage at San Bernardino for Water Year 2005-06. For 2006-07, measured at SBCDPW 2146 from Oct. 1 to Dec. 21 and at USGS Gilbert Street Precipitation Gage for the remainder of the year. Measured at USGS Gilbert Street Precipitation Gage at San Bernardino for Water Year 2007-08 and 2008-09.

(2) As determined by the Watermaster, Total Flow based on Computed Inflow at either Prado or Riverside Narrows in any year may be exclusive of any Nontributary Flow, Exchange Water or other "water management" flows and, at Prado, may include discharges from Lake Elsinore or the San Jacinto Watershed that reach the Santa Ana River.

(3) As determined by the Watermaster: (a) Base Flow at Prado in any year is exclusive of Storm Flow and may be exclusive of any Nontributary Flow, Exchange Water or other "water management" flows as well as any discharges from Lake Elsinore or the San Jacinto Watershed that reach the Santa Ana River; (b) Base Flow at Riverside Narrows in any year is exclusive of Storm Flow and may be exclusive of any Nontributary Flow, Exchange Water or other "water management" flows and, beginning in 1979-80, includes wastewater from Rubidoux CSD that is treated at the Riverside Regional WWTP.

(4) For Base and Storm Flow at Prado and Base Flow only at Riverside Narrows.

(5) As determined by the Watermaster, Cumulative Credit at Prado in any year may include credit for a portion of any water discharged from Lake Elsinore or the San Jacinto Watershed that reach the Santa Ana River.

(6) The Base Flow amount for 2007-08 at Riverside Narrows was published as 47,760 acre-feet in the 2007-08 report. The correct amount is 46,776 acre-feet.

Notable Watershed Programs and Activities

Each year when the Watermaster is compiling and analyzing the information it needs to prepare its report to the Court it also takes notice of programs and activities in the Watershed that, while they do not directly enter into the Watermaster's determinations, do have significant potential to affect River flow or quality. Following are brief descriptions of five such items.

Upper Area Wastewater Discharges

Data on municipal wastewater discharged in the Upper Area are compiled annually because it is a major contributor to Base Flow in the River. The historical data on wastewater discharged are summarized in Table 2. The locations of wastewater treatment plants are shown on Plate 2.

Salt Exports from the Upper Area

High salinity water, mostly from groundwater desalters, is exported from the Upper Area to the ocean through Santa Ana Watershed Project Authority's Santa Ana Regional Interceptor (SARI) and IEUA's Non-Reclaimable Wastewater System (NRWS). This salt export helps to protect River water quality and, therefore, helps the Upper Area parties comply with the Judgment. The available historical data on salt export are summarized in Table 3. The SARI first went into service in 1985-86. The NRWS has been in service since prior to 1970, but records of flow data prior to 1981-82 are missing.

The locations of the SARI and NRWS pipelines are shown on Plate 2.

Arundo donax Eradication

Arundo donax is a non-native species of reed that has invaded many waterways in California. It displaces native vegetation, resulting in undesirable habitat for animals. *Arundo* also consumes water at the rate of about 5.6 acre-feet per acre per year compared to only about 1.9 for native plants, a net water loss of about 3.7 acre-feet per year per acre of *Arundo*. By the early 1990s there were about 10,000 acres of *Arundo* in the Santa Ana River watershed. In 1997 a consortium of local, state and federal agencies launched a long term eradication program in the watershed for reasons of both habitat restoration and water savings. *Arundo* spreads quickly downstream as roots and rhizomes break off during high streamflows. Therefore the eradication program began at the farthest upstream locations and is working toward the River mouth. Each location requires multiyear retreatment. During Water Year 2008-09 the consortium eradicated 400 acres of *Arundo,* bringing the total eradicated to date to 3,900 acres.

TABLE 2
MUNICIPAL WASTEWATER EFFLUENT DISCHARGED ABOVE PRADO
(acre-feet)

Water Year	Wastewater discharges upstream from Colton that generally do not flow continuously to Santa Ana River above E Street				Wastewater discharges to Santa Ana River and its tributaries that have hydraulic continuity to the Santa Ana River above Riverside Narrows					Wastewater discharges to Santa Ana River between Riverside Narrows and Prado Dam								Wastewater discharges to Temescal Creek or its tributaries which have hydraulic continuity to the Santa Ana River					Total Discharge to Surface Flow of the Santa Ana River	Total Wastewater Discharged in Watershed
	Redlands	Beaumont	Yucaipa	Subtotal (A)	San Bernardino	Colton	Rialto	RIX[1]	Subtotal (B)	Riverside	Corona	IEUA #1[2]	IEUA #2	IEUA #5	IEUA CCWRF[3]	WRCR[4]	Subtotal (C)	EMWD Discharge (1)	Est. EMWD Arriving at Prado (2)	Elsinore Valley MWD (3)	Lee Lake WRP (4)	Subtotal (D) (2 + 3 + 4)	(B + C + D)	(A + B + C + D + 1 - 2)
1970-71	2,650	no record	--	2,650	17,860	2,520	2,270	--	22,650	18,620	3,190	--	--	--	--	--	21,810	--	--	--	--	--	44,460	47,110
1971-72	2,830	no record	--	2,830	16,020	2,230	2,400	--	20,650	19,010	3,230	6,740	--	--	--	--	28,980	--	--	--	--	--	49,630	52,460
1972-73	2,810	450	--	3,260	18,670	2,530	2,260	--	23,460	19,060	3,340	10,380	--	--	--	--	32,780	--	--	--	--	--	56,240	59,500
1973-74	2,770	600	--	3,370	17,680	2,530	2,320	--	22,530	19,560	3,510	11,440	2,320	--	--	--	36,830	--	--	--	--	--	59,360	62,730
1974-75	2,540	570	--	3,110	16,750	1,980	2,320	--	21,050	19,340	4,020	14,960	2,280	--	--	--	40,600	--	--	--	--	--	61,650	64,760
1975-76	2,450	620	--	3,070	17,250	2,540	2,240	--	22,030	19,580	4,700	15,450	2,950	--	--	--	42,680	--	--	--	--	--	64,710	67,780
1976-77	3,170	580	--	3,750	17,650	3,260	2,330	--	23,240	18,770	5,010	14,640	3,380	--	--	--	41,800	--	--	--	--	--	65,040	68,790
1977-78	3,280	620	--	3,900	18,590	3,810	2,380	--	24,780	20,310	5,200	14,650	4,060	--	--	--	44,220	--	--	--	--	--	69,000	72,900
1978-79	3,740	670	--	4,410	19,040	3,850	3,050	--	25,940	21,070	5,390	15,040	5,070	--	--	--	46,570	--	--	--	--	--	72,510	76,920
1979-80	4,190	690	--	4,880	20,360	4,190	2,990	--	27,540	22,910	5,360	14,410	5,520	--	--	--	48,200	--	--	--	--	--	75,740	80,620
1980-81	4,410	690	--	5,100	20,550	3,930	3,370	--	27,850	24,180	5,590	17,270	5,260	--	--	--	52,300	--	--	--	--	--	80,150	85,250
1981-82	4,420	700	--	5,120	23,340	3,780	3,470	--	30,590	25,640	5,410	19,580	5,360	--	--	--	55,990	--	--	--	--	--	86,580	91,700
1982-83	4,530	710	--	5,240	24,160	3,600	3,620	--	31,380	25,020	5,860	20,790	4,290	--	--	--	55,960	--	--	--	--	--	87,340	92,580
1983-84	5,150	800	--	5,950	22,080	3,700	3,830	--	29,610	26,090	6,200	20,950	3,950	--	--	--	57,190	--	--	--	--	--	86,800	92,750
1984-85	4,990	840	--	5,830	23,270	3,830	4,070	--	31,170	27,750	6,250	25,160	4,280	--	--	--	63,440	--	--	--	--	--	94,610	100,440
1985-86	5,200	820	--	6,020	24,720	4,010	4,720	--	33,450	28,820	5,900	28,240	2,660	--	--	--	65,620	--	--	--	--	--	99,070	105,090
1986-87	5,780	880	800	7,460	26,810	4,170	5,350	--	36,330	30,340	6,170	27,160	5,000	--	--	--	68,670	--	--	--	--	--	105,000	112,460
1987-88	6,060	940	1,850	8,850	27,880	5,240	6,040	--	39,160	34,660	6,050	31,290	5,500	--	--	--	77,500	--	--	--	--	--	116,660	125,510
1988-89	5,250	1,030	2,260	8,540	27,640	5,550	6,280	--	39,470	35,490	8,080	35,510	6,180	--	--	--	85,260	--	--	--	--	--	124,730	133,270
1989-90	6,360	1,100	2,370	9,830	28,350	5,810	6,260	--	40,420	33,210	9,140	34,760	5,730	--	--	--	82,840	--	--	--	--	--	123,260	133,090
1990-91	6,690	1,120	2,490	10,300	27,570	5,670	6,290	--	39,530	32,180	9,110	36,840	6,100	--	--	--	84,230	--	--	--	--	--	123,760	134,060
1991-92	6,230	1,150	2,580	9,960	25,060	5,660	6,360	--	37,080	32,660	9,010	40,360	5,780	--	1,550	--	89,360	--	--	--	--	--	126,440	136,400
1992-93	6,880	1,180	2,580	10,640	25,550	6,210	6,460	--	38,220	34,100	9,600	41,510	5,640	--	4,720	--	95,570	--	--	--	--	--	133,790	144,430
1993-94	6,440	1,150	2,710	10,300	23,800	5,830	6,540	--	36,170	32,640	7,790	37,310	5,430	--	7,010	--	90,180	--	--	--	--	--	126,350	136,650
1994-95	6,720	1,180	2,560	10,460	26,330	5,500	6,820	--	38,650	33,950	7,340	39,680	5,360	--	8,690	--	95,020	--	--	--	--	--	133,670	144,130
1995-96	6,550	1,260	2,640	10,450	13,240	2,770	6,890	20,760	43,660	33,960	7,850	39,590	4,810	--	9,060	--	95,270	--	--	--	--	--	138,930	149,380
1996-97	6,510	1,280	2,780	10,570	--	--	7,160	42,800	49,960	34,240	5,040	39,940	4,790	--	9,750	--	93,760	--	--	--	--	--	143,720	154,290
1997-98	7,022	1,356	3,116	11,494	--	--	7,063	49,683	56,746	35,422	8,718	44,940	4,969	--	9,264	1,461	104,774	1,779	1,690	--	--	1,690	163,210	173,014
1998-99	7,379	1,367	3,128	11,874	--	--	6,524	47,587	54,111	34,844	11,629	43,354	5,345	--	9,534	4,594	109,299	--	--	3,049	--	3,049	166,459	178,333
1999-00	7,670	1,373	3,284	12,327	--	--	7,392	45,012	52,404	35,399	13,152	42,967	4,378	--	9,954	2,371	108,221	--	--	4,159	--	4,159	164,784	177,111
2000-01	7,379	1,377	3,345	12,101	--	--	8,346	49,407	57,753	35,663	13,100	43,863	4,401	--	11,615	2,210	110,852	--	--	4,245	--	4,245	172,850	184,951
2001-02	7,395	1,434	3,285	12,114	--	--	7,952	44,513	52,465	35,586	12,378	40,377	4,056	--	10,677	2,380	105,454	--	--	4,477	352	4,829	162,748	174,862
2002-03	7,499	1,593	3,480	12,572	217	4	8,042	45,570	53,833	36,298	12,027	45,838	4,343	--	10,837	2,409	111,752	2,312	2,024	5,012	444	7,480	173,065	185,637
2003-04	6,625	1,793	3,898	12,316	124	0	8,158	44,526	52,808	36,664	11,394	39,734	2,307	4,821	9,113	2,818	106,851	4,345	1,140	5,037	549	6,726	166,385	181,906
2004-05	7,632	2,051	3,899	13,582	4,406	346	7,815	42,025	54,592	38,123	12,558	40,644	--	8,777	8,637	3,521	112,260	15,195	13,746	7,025	653	21,424	188,276	203,307
2005-06	5,789	2,246	3,945	11,980	1,184	101	7,883	45,259	54,427	37,358	13,021	35,486	--	9,036	8,389	3,311	106,601	14,669	12,631	6,529	701	19,861	180,889	194,907
2006-07	4,991	2,555	4,056	11,602	3	0	7,654	44,011	51,668	36,355	11,727	31,829	--	12,534	6,851	4,376	103,672	13,105	11,092	4,792	691	16,575	171,915	185,530
2007-08	3,665	2,856	4,055	10,576	563	0	7,258	42,476	50,297	35,703	9,408	26,001	--	12,200	8,029	5,952	97,293	10,808	8,930	1,553	419	10,902	158,492	170,946
2008-09	2,386	2,894	3,993	9,273	0	0	6,724	40,310	47,034	33,636	9,062	23,854	--	9,711	8,920	6,374	91,557	6,669	4,653	644	948	6,245	144,836	156,125

1. RIX = Rapid Infiltration and Extraction Facility for San Bernadino and Colton, including over-extraction of groundwater
2. Beginning in 1997-98, includes IEUA Plant #4 flows.
3. CCWRF = Carbon Canyon Water Reclamation Facility
4. WRCR = Western Riverside County Regional Wastewater Treatment Plant

The amounts shown in this table were determined from data provided by the agencies.

TABLE 3

HIGH SALINITY WATER EXPORTED
FROM THE SANTA ANA RIVER WATERSHED

Water Year	Inland Empire Utility Agency Non-Reclaimable Wastewater North System (acre-feet)	Santa Ana Watershed Project Authority Santa Ana Regional Interceptor (SARI)[1] SARI Flow[2] (acre-feet)	Average TDS (mg/L)	Total Flow (acre-feet)
1970-71	NA	---	---	---
1971-72	NA	---	---	---
1972-73	NA	---	---	---
1973-74	NA	---	---	---
1974-75	NA	---	---	---
1975-76	NA	---	---	---
1976-77	NA	---	---	---
1977-78	NA	---	---	---
1978-79	NA	---	---	---
1979-80	NA	---	---	---
1980-81	NA	---	---	---
1981-82	4,236	---	---	4,236
1982-83	4,651	---	---	4,651
1983-84	4,142	---	---	4,142
1984-85	2,346	---	---	2,346
1985-86	2,995	2,791 [3]	NA	5,786 [3]
1986-87	4,943	2,869 [3]	NA	7,813 [3]
1987-88	5,177	2,948 [3]	NA	8,125 [3]
1988-89	5,949	3,622 [3]	NA	9,572 [3]
1989-90	5,240	7,393	1,649	12,633
1990-91	2,847	7,340	1,906	10,187
1991-92	3,421	6,457	2,346	9,878
1992-93	3,774	5,277	2,516	9,051
1993-94	3,764	7,860	2,302	11,624
1994-95	4,131	8,656	1,903	12,787
1995-96	3,863	9,597	2,175	13,460
1996-97	4,191	10,225	2,292	14,417
1997-98	4,575	8,210	2,456	12,785
1998-99	3,666	4,305	2,611	7,971
1999-00	4,272	7,711	2,154	11,983
2000-01	5,075	8,205	2,504	13,280
2001-02	4,297	8,385	3,289	12,682
2002-03	3,926	9,331	3,482	13,257
2003-04	3,950	10,505	3,798	14,455
2004-05	4,220	10,971	3,460	15,191
2005-06	5,085	12,847	4,118	17,932
2006-07	4,609	13,168	4,120	17,777
2007-08	4,658	12,123	4,986	16,781
2008-09	4,284	12,993	5,037	17,277

1. Santa Ana Regional Interceptor began operation in 1985-86.
2. IEUA Non-Reclaimable Wastewater from the South System goes into the SARI and is included in SARI Flow.
3. SARI flow and Total Flow for 1985-86 through 1988-89 is partial flow.

NA = Data Not Available

Chino Groundwater Basin Hydraulic Control

During most of the twentieth century much of the land overlying the Chino Basin was devoted to irrigated agriculture that obtained its water supply directly from the basin. In more recent times the agriculture is being replaced by urban development, but the agricultural water use left behind a legacy of high concentrations of nitrates and other salts in the groundwater, making it unsuitable for urban use unless treated. As agricultural pumping of groundwater in the lower part of the Basin was cut back, the California Regional Water Quality Control Board, Santa Ana Region ("RWQCB"), and Orange County Water District both became concerned about the outlook for increased amounts of poor quality water rising in the Santa Ana River above Prado Dam.

Under historic anti-degradation water quality standards, the recharge of recycled water in the Chino Basin was impossible because the Basin lacked assimilative capacity. In order to allow for the use and recharge of recycled water, the RWQCB amended the Basin Plan for the Santa Ana Watershed to allow for the use of special "maximum benefit" standards. As a condition of approval of the use of the maximum benefit standards, the Regional Board's Water Quality Control Plan requires that the Chino Basin entities develop and implement a Hydraulic Control Program ("HCP") with the dual objectives of minimizing the loss of groundwater to the River and protecting the River against the salts by increasing pumping from wells low in the Basin. Much of the pumped groundwater is treated in desalination facilities, with the product water being served to municipalities and the brine stream being exported to the ocean via the SARI.

The Chino Basin Watermaster files an annual report with RWQCB on the program, water chemistry, hydrologic balance, piezometric groundwater surface elevations, and groundwater modeling.

Water Right Permits for Appropriation of Water from the Santa Ana River

On October 3, 1991, SBVMWD submitted an application to the State Water Resources Control Board (SWRCB) Division of Water Rights to appropriate un-appropriated water from the Santa Ana River. On May 31, 1995 SBVMWD and WMWD submitted a joint application to replace the October 3, 1991 application. The SBVMWD and WMWD joint application was accompanied by a petition for reconsideration of Order WR 89-25 which previously designated the Santa Ana River Watershed as a fully appropriated stream system. SBVMWD and WMWD requested authorization to direct divert and divert to underground storage and surface storage, water from the Santa Ana River at numerous points including the soon to be completed Seven Oaks Dam. The United States Army Corps of Engineers was constructing the Seven Oaks Dam as a portion of the Santa Ana River Mainstem Project in conjunction with the local sponsors for the project, Orange County Flood Control District, Riverside County Flood Control and Water Conservation District, and San Bernardino County Flood Control (and Water Conservation) District.

On September 2, 1999, OCWD submitted an application and petition to the SWRCB Division of Water Rights. OCWD requested authorization to divert water from the Santa Ana River to underground storage and surface storage.

On November 16, 1999, the Parties, IEUA, OCWD, SBVMWD and WMWD, entered into a Memorandum of Understanding to Affirm and Preserve Existing Rights in the Santa Ana River Watershed. This agreement Affirmed the Declared Rights under the Judgment and established the intent of the Parties to cooperate with one another as may be necessary, appropriate or convenient to implement their respective projects and the Judgment.

In 2000, the SWRCB conducted a hearing and found in Order WR 2000-12 that the Fully Appropriated Stream status on the Santa Ana River could be removed to allow consideration of the application from SBVMWD and WMWD and the application from OCWD. In November 2002, additional applications and petitions were submitted by: Chino Basin Watermaster, SBVMWD and WMWD, San Bernardino Valley Water Conservation District (San Bernardino Valley Water Conservation District later withdrew its application) and the City of Riverside. Based on evidence in the record, the SWRCB found that the Declaration as adopted in Order WR 98-08 should be revised to allow processing of these water right applications. On May 2, 3, 4 and 8, 2007 the SWRCB conducted a hearing for all applications submitted to appropriate water from the Santa Ana River.

During 2008 the SWRCB began to issue separate water right permits to several agencies within the Santa Ana River Watershed:

City of Riverside Application 31372: City of Riverside withdrew its application 31372 and requested a Wastewater Change Petition. On May 30, 2008, the SWRCB approved Wastewater Change Petition WW-0045 of the City of Riverside. Wastewater Change Petition WW-0045 requires the City of Riverside to discharge a minimum of 25,000 acre-feet per year of treated effluent to the Santa Ana River and allows the City of Riverside to recycle water from the wastewater treatment plant in amounts greater than the 25,000 acre-feet per year discharge requirement.

Chino Basin Watermaster Application 31369: On October 9, 2008, the SWRCB issued Permit Number 21225 to the Chino Basin Watermaster. Permit Number 21225 authorizes the Chino Basin Watermaster to divert up to 68,500 acre-feet of water per year from 29 points of diversion on numerous streams that are tributary to the Santa Ana River to underground storage at a maximum rate of flow of 115,570 cubic feet per second from January 1 to December 31 of each year.

OCWD Application Number 31174A: On June 30, 2009, the SWRCB issued Permit Number 21243 to OCWD. Permit Number 21243 authorizes OCWD to divert up to 362,000 acre-feet of water per year from numerous points of diversion on the Santa Ana River to underground storage and/or surface storage at a maximum flow rate of 1,670 cfs from January 1 to December 31 of each year.

SBVMWD and WMWD Application Numbers 31165 and 31370: On October 20, 2009, the SWRCB issued Decision 1649 in the matter of applications 31165 and 31370. Decision 1649 authorizes the granting of permits that would allow SBVMWD and WMWD to divert up to 198,317 acre-feet of water per year from numerous points of diversion on the Santa Ana River and its tributaries to direct diversion uses, diversion to underground storage and diversion to onstream and offstream surface storage at a maximum flow rate of 1,250 cfs from October 1 of each year to September 30 of the following year.

Watermaster Service Expenses

In accordance with Paragraph 7(d) of the Stipulated Judgment, the fees and expenses of each of the members of the Watermaster are borne by the parties by whom they were nominated. All other Watermaster service expenses are shared by the parties, with OCWD paying 40% of the cost and WMWD, SBVMWD, and IEUA each paying 20% of the cost.

The Watermaster annually adopts a budget for the costs of services other than those provided by the USGS. Table 4 shows the budget and actual expenses incurred for such services during the 2008-09 fiscal year as well as the budget adopted for the 2009-10 fiscal year. A financial review was performed by OCWD and is reported in Appendix C.

TABLE 4

WATERMASTER SERVICE BUDGET AND EXPENSES

Budget Item	July 1, 2008 to June 30, 2009 Budget	July 1, 2008 to June 30, 2009 Expenses*	July 1, 2009 to June 30, 2010 Budget
Support Services	$13,000.00	$12,210.00	$12,500.00
Reproduction of Annual Report	1,000.00	1,031.98	1,500.00
TOTAL	$14,000.00	$13,241.98	$14,000.00

Stream flow measurements and water quality data required by the Watermaster are, for the most part, furnished by the USGS through a cooperative monitoring program which also includes some precipitation data to supplement data provided by the USGS and other agencies. The costs of the cooperative monitoring program for the 2008-09 Water Year, and each party's share of the costs, are set forth in Table 5.

TABLE 5

COSTS TO THE PARTIES AND USGS FOR MEASUREMENTS WHICH PROVIDE DATA USED BY THE SANTA ANA RIVER WATERMASTER

October 1, 2008 to September 30, 2009

	Total Cost	USGS Share	Parties' Share
USGS PRECIPITATION GAGING STATIONS			
Gilbert Street Gage at San Bernardino	$7,550	$0	$7,550
"E" Street Gage	7,550	0	7,550
Middle Fork Lytle Creek Gage	7,550	0	7,550
Ridge Top Gage near Devore	7,550	0	7,550
USGS FLOW AND WATER QUALITY GAGING STATIONS			
Santa Ana River at MWD Crossing (Riverside Narrows)			
Surface Water Gage	30,350	12,150	18,200
Water Quality Monitoring/TDS Sampling	12,600	5,050	7,550
Santa Ana River below Prado Dam			
Surface Water Gage	21,600	8,650	12,950
Continuous Temperature and Conductance	28,850	11,550	17,300
Water Quality Conductance Program	2,400	0	2,400
Extra Measurements	10,000	0	10,000
Temescal Creek above Main St., near Corona	21,600	8,650	12,950
Chino Creek at Schaefer	21,600	8,650	12,950
Cucamonga Creek at Mira Loma	21,600	8,650	12,950
TOTAL COST AND SHARES	$200,800	$63,350	$137,450
COST DISTRIBUTION AMONG PARTIES			
Inland Empire Utilities Agency	20%		$27,490
Orange County Water District	40%		$54,980
San Bernardino Valley Municipal Water District	20%		$27,490
Western Municipal Water District	20%		$27,490

CHAPTER II

BASE FLOW AT PRADO

This chapter deals with determinations of 1) the components of flow at Prado, which include Nontributary Flow, Arlington Desalter discharge, water discharged from San Jacinto Watershed, Storm Flow, and Base Flow and 2) the Adjusted Base Flow at Prado credited to IEUA and WMWD.

Flow at Prado

During the 2008-09 Water Year, the flow of the Santa Ana River as measured at the USGS gaging station below Prado Dam amounted to 162,698 acre-feet. Four acre-feet of water was in storage at the beginning of the year, and three acre-feet of water remained in storage at the end of the year. Inflow to the reservoir included 102,711 acre-feet of Base Flow and 53,662 acre-feet of Storm Flow. Nontributary flows consisted of Arlington Desalter discharges and WMWD-OCWD Transfer flows. Water discharged from the San Jacinto Watershed was also excluded from Base Flow but was partially credited to the Cumulative Credit at Prado. Of the Nontributary Flow due to the Arlington Desalter discharge, 211 acre-feet reached Prado Reservoir during 2008-09. WMWD-OCWD Transfer flow at Prado was 1,460 acre-feet. Discharge from the San Jacinto Watershed calculated to have reached Prado Reservoir was 4,653 acre-feet. The monthly components of flow of the Santa Ana River at Prado Dam for 2008-09 are listed in Table 6 and are shown graphically on Plate 4. Historical Base and Storm Flows of the Santa Ana River below Prado during the period 1934-35 through 2008-09 are presented on Plate 5.

Nontributary Flow

Nontributary Flow includes water that originated outside the watershed, as well as other water that the Watermaster has determined should be excluded from Base Flow. During the 2008-09 Water Year it included Arlington Desalter discharge and WMWD-OCWD Transfer flow deliveries made to the Santa Ana River upstream of Riverside Narrows and Prado Dam. Flows from the San Jacinto Watershed were also determined to have reached Prado Reservoir. In the past it has included, and in the future may include, other water discharged to the river pursuant to the water exchanges or other such programs.

High Groundwater Mitigation Project

No High Groundwater Mitigation Project water was discharged to the Santa Ana River during the 2008-09 Water Year.

TABLE 6

COMPONENTS OF FLOW AT PRADO DAM
WATER YEAR 2008-09
(acre-feet)

	USGS Measured Outflow	Storage Change (1)	Computed Inflow	San Jacinto Watershed Flow at Prado (2)	WMWD Transfer Water (3)	San Antonio Creek (4)	Arlington Desalter	Storm Flow	Base Flow
2008									
October	8,331	(3)	8,328	0	758	0	55	0	7,515
November	10,050	1,997	12,047	0	618	0	90	2,868	8,471
December	27,306	3,878	31,184	0	0	0	0	21,211	9,973
2009									
January	19,571	(5,622)	13,949	1,482	0	0	0	1,727	10,740
February	30,303	7,173	37,476	1,271	0	0	0	26,094	10,111
March	21,136	(6,852)	14,284	1,900	84	0	0	1,222	11,078
April	10,909	(566)	10,343	0	0	0	12	540	9,791
May	9,261	(3)	9,258	0	0	0	17	0	9,241
June	7,952	(2)	7,950	0	0	0	17	0	7,933
July	5,990	(1)	5,989	0	0	0	11	0	5,978
August	6,020	(1)	6,019	0	0	0	0	0	6,019
September	5,869	1	5,870	0	0	0	9	0	5,861
Total	162,698	(1)	162,697	4,653	1,460	0	211	53,662	102,711

(1) The monthly change in storage is included in the monthly components of flow.

(2) Discharge due to overflow of Lake Elsinore and/or discharge of wastewater by EMWD from the San Jacinto Watershed.

(3) WMWD-OCWD Transfer Program water pumped from the Bunker Hill, Riverside, and Colton basins and discharged to the Santa Ana River above the Riverside Narrows delivered this year.

(4) State Water Project water released into San Antonio Creek from turnout OC-59 for OCWD and calculated to have reached Prado Dam this Water Year.

Releases to San Antonio Creek

During the 2008-09 Water Year, no State Water Project water was released into San Antonio Creek from the Foothill Feeder at turnout OC-59 near Upland for OCWD.

Arlington Desalter Discharge

Groundwater flowing from the Arlington Basin has historically been a component of the Santa Ana River flow. This groundwater has been degraded through agricultural and other uses. Two parties to the Stipulated Judgment, WMWD and OCWD, as members of the Santa Ana Watershed Project Authority, constructed a groundwater cleanup project that is designed to reduce the poor quality underflow from the basin. This project is known as the Arlington Desalter and consists of five extraction wells and a treatment facility that reduces salinity. The capacity of the facility is approximately 6 million gallons per day (mgd). The facility began operation in July 1990, with OCWD buying the product water delivered through the Santa Ana River. Beginning in 2004, the City of Norco began purchasing a portion of the Arlington Desalter product water for direct potable use.

The Watermaster determined that the flow and TDS of the water delivered to OCWD via the Santa Ana River from this facility would be excluded from the computation of Base Flow and Adjusted Base at Prado. During the 2008-09 Water Year, 211 acre-feet of Arlington Desalter flows were discharged to the Arlington drain. WMWD provided daily discharge rates and electrical conductance of water discharged. A summary of Arlington Desalter discharges is contained in Appendix F.

WMWD-OCWD Transfer Program

In 2001, OCWD and WMWD entered into an agreement that provides for delivery of groundwater pumped primarily from the Colton and Riverside Basins via the Riverside Canal and Santa Ana River. During the 2008-09 Water Year, 1,460 acre-feet of WMWD-OCWD Transfer Program water deliveries were made to the Santa Ana River upstream of Riverside Narrows and Prado Dam. A summary of the WMWD-OCWD Transfer Program discharges is contained in Appendix K.

San Jacinto Watershed Discharge

Prior to the 1997-98 Water Year, discharges from the San Jacinto Watershed reaching Prado Reservoir were due to discharges from Lake Elsinore, and had been accounted for as “Lake Elsinore Discharge.” In 1998 Eastern Municipal Water District (EMWD) completed its Reach 4 discharge pipeline to Wasson Canyon, which is tributary to Temescal Wash. The pipeline discharges tertiary-treated wastewater to Temescal Wash above Lee Lake when flows exceed EMWD’s storage facility capacity. The collective discharges from Lake Elsinore and EMWD to Temescal Wash are referred to herein as San Jacinto Watershed discharges.

During the 2008-09 Water Year, EMWD discharged 6,669 acre-feet of treated wastewater to Temescal Wash, and 4,653 acre-feet of that discharge was estimated to have reached Prado Reservoir. The Watermaster previously determined that to the extent such

discharges occur and are captured by OCWD, fifty percent of such captured water will be added as Cumulative Credit at Prado. OCWD captured 4,378 acre-feet of the San Jacinto Watershed discharge and 276 acre-feet flowed past OCWD's groundwater recharge facilities and was considered as lost to the ocean. A summary of the EMWD Discharges, San Jacinto Watershed Discharge Calculations, and San Jacinto Watershed Discharges is contained in Appendix G. Page G-16, Discharge of Temescal Creek at Main Street in Corona, EMWD Discharge, and Elsinore Precipitation, illustrates the known and estimated components of flow of Temescal Creek.

Storm Flow

Portions of storm flows are retained behind Prado Dam for flow regulation and for water conservation purposes. The Army Corps of Engineers (ACOE) owns the Dam, which has a spillway elevation of 543 feet above mean sea level, and operates it according to a flow release schedule which allows for water to be captured and subsequently released at rates which can be captured and recharged by OCWD. On April 12, 1995, the ACOE, the U.S. Fish and Wildlife Service, and OCWD reached an agreement to increase the seasonal water conservation pool from elevation 494 to elevation 505 feet after March 1 of each year in exchange for a $1 million contribution by OCWD to the U.S. Fish and Wildlife Service to be used to develop least Bell's vireo habitat by the removal of a non-native plant, *Arundo donax*. In 2006 the ACOE and OCWD signed an agreement to increase the winter conservation pool elevation from elevation 494 to 498 in exchange for a $930,000 contribution to habitat restoration in the watershed. Monthly and annual quantities of Storm Flow are shown in Table 6.

During the 2008-09 Water Year, the maximum volume of water stored in Prado Reservoir reached 10,347 acre-feet on February 9, 2009. The maximum daily mean flow released from Prado Dam to the Santa Ana River was 2,040 cfs on December 18, 2008.

Base Flow

The Base Flow is that portion of the total flow remaining after subtracting Storm Flow, Nontributary Flow, Exchange Water, and certain other flows determined by the Watermaster. Flows affecting the determination of Base Flow in 2008-09 included Arlington Desalter discharge, WMWD-OCWD Transfer Program flows, and discharges from the San Jacinto Watershed. The general procedure used by the Watermaster to separate the 2008-09 flow components was the same as used for previous years and is fully described in the Fifth (1974-75) and the Twelfth (1981-82) Annual Reports. Table 6 shows the monthly and annual quantities of Base Flow.

Water Quality Adjustments

The flow-weighted average TDS for the total flow passing Prado Dam, including Arlington Desalter discharge, WMWD-OCWD Transfer Program water deliveries, and San Jacinto Watershed discharge, was found to be 533 milligrams per liter (mg/L). This determination was based on records from a continuous monitoring device operated by the USGS for EC of the Santa Ana River flow below Prado Dam. This record was supplemented by twenty-four (24) grab samples for EC collected by the USGS and analyzed for TDS.

A correlation between TDS and EC yields the following best fit equation:

$$TDS = EC \times 0.600414$$

(where the units of TDS and EC are mg/L and μs/cm, respectively)

Using the daily EC data, flow-weighted average daily values for TDS were calculated using the above equation. The plot of TDS on Plate 6 shows the daily average TDS concentration of the Santa Ana River flow passing Prado Dam. A summary of daily TDS and EC of the Santa Ana River below Prado Dam is contained in Appendix H. At Prado Dam, the flow-weighted average annual TDS value of 533 mg/L represents the quality of the total flow including Arlington Desalter discharge, WMWD-OCWD Transfer Program water deliveries, and discharges from the San Jacinto Watershed. The Stipulated Judgment requires that Base Flow shall be subject to adjustment based on the TDS of Base Flow and Storm Flow only. Hence, a determination of the TDS of Base Flow plus Storm Flow only, is detailed in the following paragraphs.

Adjustment for High Groundwater Mitigation Project Discharge

During the 2008-09 Water Year SBVMWD discharged no High Groundwater Mitigation Project water. Therefore, no water quality adjustment was necessary.

Adjustment for Flow to San Antonio Creek

During the 2008-09 Water Year, no water was released from OC-59 to San Antonio Creek. Therefore, no water quality adjustment was necessary.

Adjustment for Arlington Desalter Discharge

During the 2008-09 Water Year, 211 acre-feet of Arlington Desalter discharges were made. A flow-weighted average TDS of 346 mg/L was calculated for Arlington Desalter water reaching Prado Dam. A summary of the Arlington Desalter discharge, daily mean EC, and computed TDS is contained in Appendix F.

Adjustment for WMWD-OCWD Transfer Program Discharge

During the 2008-09 Water Year, 1,460 acre-feet of WMWD-OCWD Transfer Program water was delivered. A flow-weighted average TDS of 437 mg/L was calculated for WMWD-OCWD Transfer water reaching Prado Dam. A summary of the WMWD-OCWD Transfer Program flows is contained in Appendix K.

Adjustment for San Jacinto Watershed Discharge

Discharge from the San Jacinto Watershed during the 2008-09 Water Year reaching Prado Reservoir was estimated to be 4,653 acre-feet. Using EMWD discharge data, the TDS data for the discharge, and monthly volume of the discharge estimated to have reached Prado reservoir, a flow-weighted average TDS of 787 mg/L was calculated. A summary of these calculations is contained in Appendix G.

Flow Component	Annual Flow (acre-feet)	Average TDS (mg/L)	Annual Flow X Average TDS
1. Measured Outflow	162,698	533	86,718,034
2. Less High Groundwater Mitigation Project	0	---	---
3. Less Nontributary Flow San Antonio Creek	0	---	---
4. Less Arlington Desalter	(211)	346	(73,006)
5. Less WMWD Transfer Program	(1,460)	437	(638,020)
6. Less San Jacinto Watershed Discharge	(4,653)	787	(3,661,911)
7. Measured Outflow less lines 2 through 6	156,374		82,345,097
Average TDS in Total Base and Storm Flow		82,345,097 ÷ 156,374 =	527 mg/L

After adjusting for Arlington Desalter discharges, WMWD-OCWD Transfer Program flows, and San Jacinto Watershed discharge, the weighted average annual TDS of Storm Flow and Base Flow for 2008-09 is 527 mg/L, as shown above.

Adjusted Base Flow at Prado

The Stipulated Judgment provides that the amount of Base Flow at Prado received during any year shall be subject to adjustment based on weighted average annual TDS of the Base Flow and Storm Flow at Prado as follows:

If the Weighted Average TDS in Base Flow and Storm Flow at Prado is:	Then the Adjusted Base Flow shall be determined by the formula:
Greater than 800 mg/L	$Q - \frac{35}{42{,}000} Q(TDS-800)$
700 mg/L to 800 mg/L	Q
Less than 700 mg/L	$Q + \frac{35}{42{,}000} Q(700-TDS)$

Where: Q = Base Flow actually received.

The weighted average annual TDS of 527 mg/L is less than 700 mg/L. Therefore, the Base Flow must be adjusted by the above equation for TDS less than 700 mg/L. Thus the Adjusted Base Flow is as follows:

$$(102{,}711 \text{ acre-feet}) + \frac{35}{42{,}000} (102{,}711 \text{ acre-feet}) (700 - 527) = 117{,}519 \text{ acre-feet}$$

Entitlement and Credit or Debit

Paragraph 5(c) of the Stipulated Judgment states that "CBMWD (now IEUA) and WMWD shall be responsible for an average annual Adjusted Base Flow of 42,000 acre-feet at Prado. CBMWD (IEUA) and WMWD each year shall be responsible for not less than 37,000 acre-feet of Base Flow at Prado, plus one-third of any cumulative debit; provided, however, that for any year commencing on or after October 1, 1986, when there is no cumulative debit, or for any year prior to 1986 whenever the cumulative credit exceeds 30,000 acre-feet, said minimum shall be 34,000 acre-feet."

The Watermasters agreed that San Jacinto Watershed outflows were not envisioned during the formulation of the Judgment and because of the occurrence of San Jacinto Watershed flows at Prado, the Watermaster decided, as in previous years, to credit one-half of any such outflows recharging the groundwater basin in Orange County to CBMWD (IEUA) and WMWD.

Of the 4,653 acre-feet of San Jacinto Watershed outflows reaching Prado Reservoir in 2008-09, 276 acre-feet flowed past OCWD's groundwater recharge facilities and was considered as lost to the ocean. Therefore, a net amount of 4,378 acre-feet of San Jacinto Watershed outflow recharged the Orange County groundwater basin in 2008-09. One-half of that amount has been considered a credit against the Upper Area Base Flow obligation

at Prado Dam. Thus, an additional 2,189 acre-feet was added to the Cumulative Credit at Prado Dam.

While compiling the 2002-03 Watermaster Report, it came to the attention of the Watermaster that in previous reports one-half the San Jacinto Watershed discharge reaching Prado and recharging Orange County groundwater basin had been included in the Cumulative Adjusted Base Flow as well as in the Cumulative Credit. The Watermaster determined that the San Jacinto Watershed discharge should be included only in the Cumulative Credit and not in the Cumulative Adjusted Base Flow. Therefore, the Watermaster revised the Cumulative Adjusted Base Flow and has included Table 7 summarizing the historical Watermaster findings concerning flow at Prado that reflect the revision in the report following the Watermaster's findings.

The Watermaster's findings concerning flow at Prado for 2008-09 required under the Stipulated Judgment are as follows:

1.	Measured Outflow at Prado	162,698 acre-feet
2.	Base Flow at Prado	102,711 acre-feet
3.	Annual Weighted TDS of Base and Storm Flow	527 mg/L
4.	Annual Adjusted Base Flow	117,519 acre-feet
5.	Cumulative Adjusted Base Flow	4,779,825 acre-feet
6.	Other Credits (Debits) [1]	2,189 acre-feet
7.	Cumulative Entitlement of OCWD	1,638,000 acre-feet
8.	Cumulative Credit [2]	3,178,543 acre-feet
9.	One-Third of Cumulative Debit	0 acre-feet
10.	Minimum Required Base Flow in 2009-10	34,000 acre-feet

1. Other Credits (Debits) are comprised of San Jacinto Watershed outflow.
2. Cumulative Credit includes 36,718 acre-feet of San Jacinto Watershed outflow.

TABLE 7
HISTORICAL WATERMASTER FINDINGS AT PRADO DAM
(acre-feet)

Water Year	Base Flow	Annual Adjusted Base Flow	Cumulative Adjusted Base Flow	Other Credits (Debits)[1]	Cumulative Entitlement of OCWD	Cumulative Credit[2]
1970-71	38,402	38,402	38,402	0	42,000	(3,598)
1971-72	40,416	40,416	78,818	0	84,000	(5,182)
1972-73	48,999	51,531	130,349	0	126,000	4,349
1973-74	43,106	45,513	175,862	0	168,000	7,862
1974-75	50,176	51,263	227,125	0	210,000	17,125
1975-76	45,627	48,098	275,223	0	252,000	23,223
1976-77	48,387	50,000	325,223	0	294,000	31,223
1977-78	58,501	73,955	399,178	0	336,000	63,178
1978-79	71,863	79,049	478,227	0	378,000	100,227
1979-80	82,509	106,505	584,732	0	420,000	164,732
1980-81	74,875	74,875	659,607	8,045	462,000	205,652
1981-82	81,548	89,431	749,038	0	504,000	253,083
1982-83	111,692	138,591	887,629	3,362	546,000	353,036
1983-84	109,231	115,876	1,003,505	4,602	588,000	431,514
1984-85	125,023	133,670	1,137,175	0	630,000	523,184
1985-86	127,215	141,315	1,278,490	0	672,000	622,499
1986-87	119,848	127,638	1,406,128	0	714,000	708,137
1987-88	124,104	136,308	1,542,436	0	756,000	802,445
1988-89	119,572	131,230	1,673,666	0	798,000	891,675
1989-90	119,149	127,986	1,801,652	0	840,000	977,661
1990-91	111,515	128,379	1,930,031	0	882,000	1,064,040
1991-92	106,948	124,862	2,054,893	0	924,000	1,146,902
1992-93	128,067	163,499	2,218,392	0	966,000	1,268,401
1993-94	111,186	119,432	2,337,824	0	1,008,000	1,345,833
1994-95	123,468	152,792	2,490,616	1,762	1,050,000	1,458,387
1995-96	131,861	152,299	2,642,915	0	1,092,000	1,568,686
1996-97	136,676	157,861	2,800,776	0	1,134,000	1,684,547
1997-98	154,021	193,553	2,994,329	0	1,176,000	1,836,100
1998-99	158,637	174,369	3,168,698	0	1,218,000	1,968,469
1999-00	148,269	169,644	3,338,342	0	1,260,000	2,096,113
2000-01	153,914	176,360	3,514,702	0	1,302,000	2,230,473
2001-02	145,981	159,728	3,674,430	0	1,344,000	2,348,201
2002-03	146,113	174,970	3,849,400	887	1,386,000	2,482,058
2003-04	143,510	166,472	4,015,872	247	1,428,000	2,606,777
2004-05	154,307	199,570	4,215,442	2,366	1,470,000	2,766,713
2005-06	147,736	170,266	4,385,708	3,562	1,512,000	2,898,541
2006-07	129,830	140,216	4,525,924	5,531	1,554,000	3,002,288
2007-08	116,483	136,382	4,662,306	4,165	1,596,000	3,100,835
2008-09	102,711	117,519	4,779,825	2,189	1,638,000	3,178,543

1. Other Credits (Debits) are comprised of San Jacinto Watershed outflow.
2. Cumulative Credit includes 36,718 acre-feet of San Jacinto Watershed outflow.

CHAPTER III

BASE FLOW AT RIVERSIDE NARROWS

This chapter deals with determinations of 1) the components of flow at Riverside Narrows, which include Storm Flow and Base Flow and 2) the Adjusted Base Flow at Riverside Narrows credited to SBVMWD.

Flow at Riverside Narrows

The flow of the Santa Ana River at Riverside Narrows amounted to 69,027 acre-feet, measured at the USGS gaging station near the MWD Crossing. Separated into its components, Base Flow was 43,902 acre-feet and Storm Flow was 25,947 acre-feet. Included in Base Flow are 2,282 acre-feet of wastewater from Rubidoux Community Services District that now bypasses the USGS gaging station. Also present in the stream flow, but excluded from the Base Flow was 1,460 acre-feet of WMWD-OCWD Transfer Program flows. The Storm and Base Flow components of the flow of the Santa Ana River at Riverside Narrows for each month in the 2008-09 Water Year are listed in Table 8 and shown graphically on Plate 7. The components of flow of the Santa Ana River at Riverside Narrows during the period 1934-35 through 2008-09 are presented on Plate 8.

Nontributary Flow

Nontributary Flow includes water that originated outside the watershed, as well as other water that the Watermaster has determined should be excluded from Base Flow. During the 2008-09 Water Year WMWD-OCWD Transfer Program flow was delivered to the Santa Ana River upstream of Riverside Narrows and Prado Dam.

High Groundwater Mitigation Project

No High Groundwater Mitigation Project water was discharged to the Santa Ana River during the 2008-09 Water Year.

WMWD-OCWD Transfer Program

In 2001, OCWD and WMWD entered into an agreement that provides for delivery of groundwater pumped primarily from the Colton and Riverside Basins to OCWD via the Riverside Canal and the Santa Ana River. During the 2008-09 Water Year, WMWD delivered 1,460 acre-feet to the Santa Ana River via the Tava Lanes turnout upstream of Riverside Narrows and Prado Dam. A summary of the WMWD-OCWD Transfer Program flows is contained in Appendix K.

TABLE 8

COMPONENTS OF FLOW AT RIVERSIDE NARROWS
WATER YEAR 2008-09
(acre-feet)

	Month	USGS Measured Flow	Storm Flow	SBVMWD HGMP Water[1]	WMWD Transfer Program[2]	Rubidoux Waste-water	Base Flow[3]
2008	October	4,447	0	0	758	199	3,888
	November	6,012	2,203	0	618	190	3,381
	December	14,333	10,513	0	0	196	4,016
2009	January	4,602	93	0	0	193	4,702
	February	17,000	13,069	0	0	176	4,107
	March	4,600	69	0	84	192	4,639
	April	3,344	0	0	0	185	3,529
	May	2,957	0	0	0	194	3,151
	June	3,487	0	0	0	187	3,674
	July	3,178	0	0	0	194	3,372
	August	2,727	0	0	0	190	2,917
	September	2,340	0	0	0	186	2,526
Total		69,027	25,947	0	1,460	2,282	43,902

(1) HGMP water pumped from the Bunker Hill groundwater basin and discharged into the Santa Ana River less 1% for evapotranspiration above Riverside Narrows.

(2) WMWD-OCWD Transfer Program water pumped from the Bunker Hill, Riverside, and Colton basins and discharged to the Santa Ana River above the Riverside Narrows.

(3) Base Flow equals USGS measured flow, minus storm flow, minus HGMP, and minus WMWD-OCWD Transfer water, plus Rubidoux Wastewater.

Base Flow

Based on the hydrograph shown on Plate 7 and utilizing in general the procedures reflected in the Work Papers of the engineers (as referenced in Paragraph 2 of the Engineering Appendix of the Stipulated Judgment), a separation was made between Storm Flow and the sum of Base Flow and Nontributary Flow.

In April 1980, Rubidoux Community Services District made the first delivery of wastewater to the regional treatment plant at Riverside. Prior to that time, Rubidoux had discharged to the river upstream of the Riverside Narrows gaging station. Wastewater from Rubidoux during Water Year 2008-09, in the amount of 2,282 acre-feet, has been added to the Base Flow as measured at the gaging station. A summary of Rubidoux discharges is contained in Appendix I.

Water Quality Adjustments

The determination of water quality at the Riverside Narrows Gaging Station was made using periodic grab samples taken and analyzed for TDS by the USGS and the City of Riverside. Water quality data based on samples taken during storm flow periods were not used in the calculations. A summary of TDS and EC data of the Santa Ana River at Riverside Narrows is contained in Appendix J.

Adjustment for High Groundwater Mitigation Project Discharge

Since there was no discharge of High Groundwater Mitigation Project water during Water Year 2008-09, no water quality adjustment was required.

Adjustment for WMWD-OCWD Transfer Program Flows

During the 2008-09 Water Year, WMWD delivered 1,460 acre-feet to the Santa Ana River upstream of Riverside Narrows and Prado. A TDS of 437 mg/L was calculated for that water. A summary of the WMWD-OCWD Transfer Program flows is contained in Appendix K.

Adjustment for Wastewater Discharges from the Rubidoux Community Services District

The flow-weighted quality of wastewater from Rubidoux was 732 mg/L. A monthly summary of discharges and quality is contained in Appendix I.

The Base Flow quality resulting from exclusion of the Nontributary Flow and inclusion of the Rubidoux wastewater is shown in the following table as 663 mg/L.

Flow Component	Annual Flow (acre-feet)	Average TDS (mg/L)	Annual Flow x Average TDS
1. Base Flow plus Nontributary Flow	43,080	652	28,088,160
2. Less Nontributary Flow HGMP Pumped Water	0	---	---
3. Less WMWD Transfer Flow	(1,460)	437	(638,020)
4. Plus Rubidoux Wastewater	2,282	732	1,670,424
5. Base Flow (line 1 less lines 2 and 3 plus line 4)	43,902		29,120,564
Average TDS of Base Flow	29,120,564 ÷ 43,902 = 663 mg/L		

Adjusted Base Flow at Riverside Narrows

The Stipulated Judgment provides that the amount of Base Flow at Riverside Narrows received during any year shall be subject to adjustment based on weighted average annual TDS in the Base Flow as follows:

If the Weighted Average TDS in Base Flow at Riverside Narrows is:	Then the Adjusted Base Flow shall be determined by the formula:
Greater than 700 mg/L	$Q - \frac{11}{15,250}Q(TDS-700)$
600 mg/L to 700 mg/L	Q
Less than 600 mg/L	$Q + \frac{11}{15,250}Q(600-TDS)$

Where: Q = Base Flow actually received.

From the previous subsection, the weighted average annual TDS in the Base Flow at Riverside Narrows for Water Year 2008-09 was 663 mg/L. Therefore, no adjustment is necessary, and the Adjusted Base Flow for 2008-09 is 43,902 acre-feet.

Entitlement and Credit or Debit

Paragraph 5(b) of the Stipulated Judgment states that "SBVMWD shall be responsible for an average annual Adjusted Base Flow of 15,250 acre-feet at Riverside Narrows . . . SBVMWD each year shall be responsible for not less than 13,420 acre-feet of Base Flow plus one-third of any cumulative debit, provided, however, that for any year commencing on or after October 1, 1986, when there is no cumulative debit, or for any year prior to 1986 whenever the cumulative credit exceeds 10,000 acre-feet, said minimum shall be 12,420 acre-feet."

The Watermaster's findings concerning flow at Riverside Narrows for 2008-09 required under the Stipulated Judgment are as follows:

1.	Base Flow at Riverside Narrows	43,902 acre-feet
2.	Annual Weighted TDS of Base Flow	663 mg/L
3.	Annual Adjusted Base Flow	43,902 acre-feet
4.	Cumulative Adjusted Base Flow	1,751,243 acre-feet
5.	Cumulative Entitlement of IEUA and WMWD	594,750 acre-feet
6.	Cumulative Credit	1,156,493 acre-feet
7.	One-Third of Cumulative Debit	0 acre-feet
8.	Minimum Required Base Flow in 2009-10	12,420 acre-feet

CHAPTER IV

HISTORY AND SUMMARY OF THE JUDGMENT in the case of Orange County Water District v. City of Chino, et al. (Case No. 117628-County of Orange)

History of Litigation

The complaint in the case was filed by Orange County Water District on October 18, 1963, seeking an adjudication of water rights against substantially all water users in the area tributary to Prado Dam within the Santa Ana River Watershed, but excluding the area tributary to Lake Elsinore. Thirteen cross-complaints were filed in 1968, extending the adjudication to include substantially all water users in the area downstream from Prado Dam. With some 4,000 parties involved in the case (2,500 from the Upper Area and 1,500 from the Lower Area), it became obvious that every effort should be made to arrive at a settlement and physical solution in order to avoid enormous and unwieldy litigation.

Efforts to arrive at a settlement and physical solution were pursued by public officials, individuals, attorneys, and engineers. Attorneys for the parties organized in order to facilitate settlement discussions and, among other things, provided guidance for the formation and activities of an engineering committee to provide information on the physical facts.

An initial meeting of the engineers representing the parties was held on January 10, 1964. Agreement was reached that it would be beneficial to undertake jointly the compilation of basic data. Liaison was established with the Department of Water Resources, State of California, to expedite the acquisition of data. Engineers representing the parties were divided into subcommittees which were given the responsibility of investigating such things as the boundary of the Santa Ana River Watershed and its subareas, standardization of the terminology, the location and description of wells and diversion facilities, waste disposal and transfer of water between subareas.

In response to a request from the attorneys' committee at a meeting held April 17, 1964, on April 30, 1964, the joint engineering committee prepared a list of preliminary engineering studies directed toward settlement of the Santa Ana River water rights litigation. Special assignments were made to individual engineers on selected items requested by the attorneys' committee.

The attorneys and engineers for the defendants then commenced a series of meetings separate from the representatives of the plaintiffs in order to consolidate their positions and to determine a course of action. On October 7, 1964, engineers for the defendants presented the results of the studies made by the joint engineering committee. The defendants' attorneys requested that additional information be provided on the methods of measuring flow at Prado Dam, the historical supply and disposal of water passing Prado Dam, segregation of flow into components, and determination of the amount of supply which was usable by the downstream area. On December 11, 1964, the supplemental information was presented to the defendants' attorneys.

During 1965, engineers and attorneys for the defendants held numerous conferences and conducted additional studies in an attempt to determine their respective positions in the case. Early in 1966, the plaintiff and defendants exchanged drafts of possible principles for settlement. Commencing March 22 and ending April 13, 1966, four meetings were held by the engineers to discuss the draft of principles for settlement.

On February 25, 1968, the defendants submitted a request to the Court that the Order of Reference be issued requesting the California Department of Water Resources to determine the physical facts. On May 9, 1968, the plaintiffs' attorney submitted motions opposing the Order of Reference and requested that a preliminary injunction be issued. In the meantime, every effort was being made to come to an agreement on the Stipulated Judgment. Commencing on February 28, 1968 and extending until May 14, 1968, six meetings were held to determine the scope of physical facts on which agreement could be reached so that if an Order of Reference were to be approved by the Court, the work under the proposed reference would not repeat the extensive basic data collection and compilation which had already been completed and on which engineers for both plaintiffs and defendants had reached substantial agreement. Such basic data were compiled and published in two volumes under date of May 14, 1968 entitled "Appendix A, Basic Data."

On May 21, 1968, an outline of a proposal for settlement of the case was prepared and a committee of attorneys and engineers for the parties commenced preparation of the settlement documents. On June 16, 1968, the Court held a hearing on the motions it had received requesting a preliminary injunction and an Order of Reference. The parties requested that the Court delay the preliminary hearings on these motions in view of the efforts toward settlement that were underway. The plaintiff, however, was concerned regarding the necessity of bringing the case to trial within the statutory limitation and, accordingly, on July 15, 1968, submitted a motion to set the complaint in the case for trial. On October 15, 1968, the trial was commenced and was adjourned after one-half day of testimony on behalf of the plaintiff. Thereafter, the parties filed with the Court the necessary Settlement Documents including a Stipulation for Judgment. The Court entered the Judgment on April 17, 1969, along with Stipulations and Orders dismissing all defendants and cross-defendants except for the four major public water districts overlying, in aggregate, substantially all of the major areas of water use in the watershed. The districts, the locations of which are shown on Plate 1, "Santa Ana River Watershed", are as follows:

(1) Orange County Water District (OCWD), representing all lower basin entities located within Orange County downstream of Prado Dam.

(2) Western Municipal Water District (WMWD), representing middle basin entities located within Riverside County on both sides of the Santa Ana River primarily upstream from Prado Dam.

(3) Inland Empire Utilities Agency (IEUA), formerly Chino Basin Municipal Water District (CBMWD), located in the San Bernardino County Chino Basin area, representing middle basin entities within its boundaries and located primarily upstream from Prado Dam.

(4) San Bernardino Valley Municipal Water District (SBVMWD), representing all entities within its boundaries, and embraced within the upper portion of the Riverside Basin area, the Colton Basin area (being an upstream portion of the middle basin) and the San Bernardino Basin area, being essentially the upper basin.

Summary of Judgment

Declaration of Rights. The Judgment sets forth a declaration of rights. Briefly stated, the Judgment provides that the water users in the Lower Area have rights, as against the water users in the Upper Area, to receive certain average and minimum annual amounts of non-storm flow ("base flow") at Prado Dam, together with the right to all storm flow reaching Prado Dam. The amount of the Lower Area entitlement is variable based on the quality of the water received by the Lower Area. Water users in the Upper Area have the right as against the water users in the Lower Area to divert, pump, extract, conserve, store and use all surface and groundwater supplies originating within the Upper Area, so long as the Lower Area receives the water to which it is entitled under the Judgment and there is compliance with all of its provisions.

Physical Solution. The Judgment also sets forth a comprehensive "physical solution" for satisfying the rights of the Lower Area. To understand the physical solution it is necessary to understand the following terms that are used in the Judgment:

Storm Flow – That portion of the total flow which originates from precipitation and runoff and which passes a point of measurement (either Riverside Narrows or Prado Dam) without having first percolated to groundwater storage in the zone of saturation, calculated in accordance with procedures referred to in the Judgment.

Base Flow - That portion of the total surface flow passing a point of measurement (either Riverside Narrows or Prado Dam) which remains after deduction of storm flow, nontributary flows, exchange water purchased by OCWD, and certain other flows as determined by the Watermaster.

Adjusted Base Flow - Actual base flow in each year adjusted for water quality pursuant to formulas specified in the Judgment. The adjustment of Base Flow for water quality is intended to provide an incentive to the Upper Area to maintain a better quality of water in the river. When the total dissolved solids (TDS) is lower than a specified value at one of the measuring points, the water quantity obligation is lower. When the TDS is higher than a specified value, the water quantity obligation is higher. This is the first comprehensive adjudication in Southern California in which the quality of water is taken into consideration in the quantification of water rights.

Credits and Debits - Under the accounting procedures provided for in the Judgment, credits accrue to SBVMWD in any year when the Adjusted Base Flow exceeds 15,250 acre-feet at Riverside Narrows and jointly to IEUA and WMWD when the Adjusted Base Flow exceeds 42,000 acre-feet at Prado Dam. Debits accrue in any

year when the Adjusted Base Flows falls below those levels. Credits or debits accumulate year to year.

Obligation at Riverside Narrows. SBVMWD has an obligation to assure an average annual Adjusted Base Flow of 15,250 acre-feet at Riverside Narrows, subject to the following:

(1) A minimum Base Flow of 13,420 acre-feet plus one-third of any cumulative debit.

(2) After October 1, 1986, if no cumulative debit exists, the minimum Base Flow shall be 12,420 acre-feet.

(3) Prior to 1986, if the cumulative credits exceed 10,000 acre-feet, the minimum Base Flow shall be 12,420 acre-feet.

(4) All cumulative debits shall be removed by the discharge of a sufficient Base Flow at Riverside Narrows at least once in any ten consecutive years following October 1, 1976. Any cumulative credits shall remain on the books of account until used to offset any subsequent debits or until otherwise disposed of by SBVMWD.

(5) The Base Flow at Riverside Narrows shall be adjusted using weighted average annual TDS in such Base Flow in accordance with the formula set forth in the Judgment.

Obligation at Prado Dam. IEUA and WMWD have a joint obligation to assure an average annual Adjusted Base Flow of 42,000 acre-feet at Prado Dam, subject to the following:

(1) Minimum Base Flow at Prado shall not be less than 37,000 acre-feet plus one-third of any cumulative debit.

(2) After October 1, 1986, if no cumulative debit exists, the minimum Base Flow quantity shall be 34,000 acre-feet.

(3) Prior to 1986, if the cumulative credit exceeds 30,000 acre-feet, the minimum Base Flow shall be 34,000 acre-feet.

(4) Sufficient quantities of Base Flow shall be provided at Prado to discharge completely any cumulative debits at least once in any ten consecutive years following October 1, 1976. Any cumulative credits shall remain on the books of account until used to offset any debits, or until otherwise disposed of by IEUA and WMWD.

(5) The Base Flow at Prado during any year shall be adjusted using the weighted average annual TDS in the total flow at Prado (Base Flow plus Storm Flow) in accordance with the formula set forth in the Judgment.

Other Provisions. SBVMWD, IEUA and WMWD are enjoined from exporting water from the Lower Area to the Upper Area, directly or indirectly. OCWD is enjoined from exporting or "directly or indirectly causing water to flow" from the Upper Area to the Lower Area. Any inter-basin acquisition of water rights will have no effect on Lower Area entitlements. OCWD is prohibited from enforcing two prior judgments so long as the Upper Area Districts are in compliance with the physical solution. The composition of the Watermaster and the nomination and appointment process for members are described along with a definition of the Watermaster's duties and a formula for sharing its costs. The court retains continuing jurisdiction over the case. There are provisions for appointment of successor parties and rules for dealing with future actions that might conflict with the physical solution.

History of the Watermaster Committee Membership

The Santa Ana River Watermaster is a committee composed of five members nominated by the parties and appointed by the court. SBVMWD, IEUA (formerly CBMWD), and WMWD nominate one member each and OCWD nominates two. The Watermaster members annually elect a Chairman, Secretary, and Treasurer.

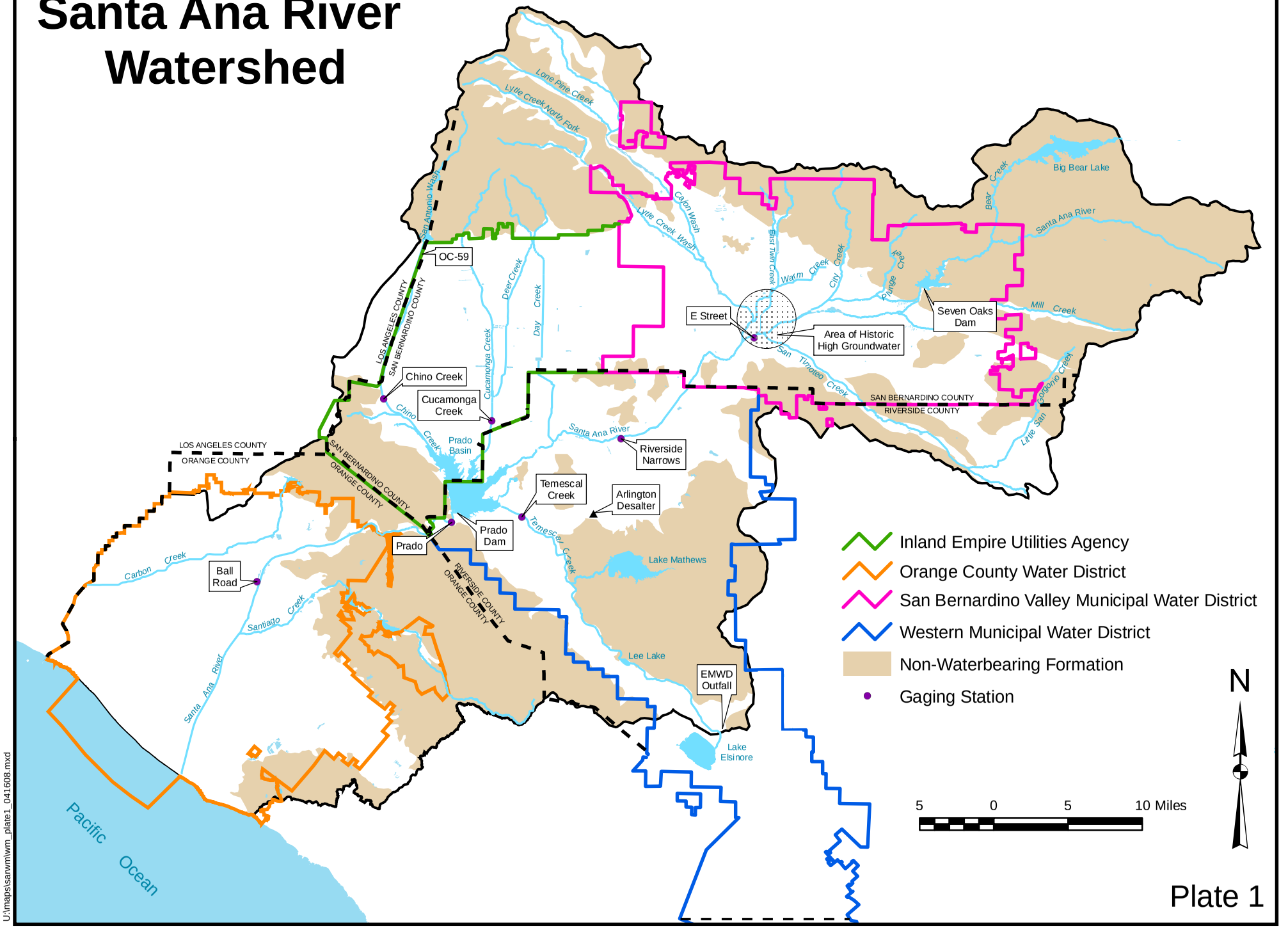
The original five members were appointed at the time of entry of the judgment. They prepared a *pro forma* annual report for the 1969-70 Water Year. The first annual report required by the judgment was prepared for the 1970-71 Water Year and reports have been prepared annually since then.

The membership of the Watermaster has changed over the years. The historical listing of members and officers shown in Table 9 reflects the signatories to each annual report.

TABLE 9
HISTORY OF THE WATERMASTER COMMITTEE MEMBERSHIP

Water Year	SBVMWD	IEUA	WMWD	OCWD	OCWD
1969-70	Clinton O. Henning	William J. Carroll	Albert A. Webb, Secretary	Max Bookman, Chairman	John M. Toups
1970-71 through 1973-74	James C. Hanson	William J. Carroll	Albert A. Webb, Secretary	Max Bookman, Chairman	John M. Toups
1974-75 through 1977-78	James C. Hanson	William J. Carroll	Donald L. Harriger	Max Bookman, Chairman	John M. Toups, Secretary
1978-79 through 1981-82	James C. Hanson	William J. Carroll	Donald L. Harriger	Max Bookman, Chairman	William R. Mills, Jr., Secretary
1982-83 through 1983-84	James C. Hanson	William J. Carroll	Donald L. Harriger	Harvey O. Banks, Chairman	William R. Mills, Jr., Secretary
1984-85 through 1988-89	Robert L. Reiter	William J. Carroll	Donald L. Harriger	Harvey O. Banks, Chairman	William R. Mills, Jr., Secretary
1989-90 through 1994-95	Robert L. Reiter, Secretary/Treasurer	William J. Carroll	Donald L. Harriger	Harvey O. Banks, Chairman	William R. Mills, Jr.
1995-96	Robert L. Reiter, Secretary/Treasurer	William J. Carroll, Chairman	Donald L. Harriger	Bill B. Dendy	William R. Mills, Jr.
1996-97	Robert L. Reiter, Secretary/Treasurer	William J. Carroll	Donald L. Harriger	Bill B. Dendy	William R. Mills, Jr., Chairman
1997-98	Robert L. Reiter, Secretary/Treasurer	Robb D. Quincey	Donald L. Harriger	Bill B. Dendy	William R. Mills, Jr., Chairman
1998-99 through 2000-01	Robert L. Reiter, Secretary/Treasurer	Richard W. Atwater	Donald L. Harriger	Bill B. Dendy	William R. Mills, Jr., Chairman
2001-02 through 2002-03	Robert L. Reiter, Secretary/Treasurer	Richard W. Atwater	Donald L. Harriger, Chairman	Bill B. Dendy	Virginia L. Grebbien
2003-04 through 2005-06	Robert L. Reiter, Chairman/Treasurer	Richard W. Atwater	John V. Rossi	Bill B. Dendy, Secretary	Virginia L. Grebbien
2006-07 through 2008-09	Samuel H. Fuller, Secretary/Treasurer	Richard W. Atwater	John V. Rossi	Robert C. Wagner	Craig D. Miller, Chairman

Santa Ana River Watershed



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Santa Ana River Watershed Wastewater Treatment Plants and Salt Export Pipelines

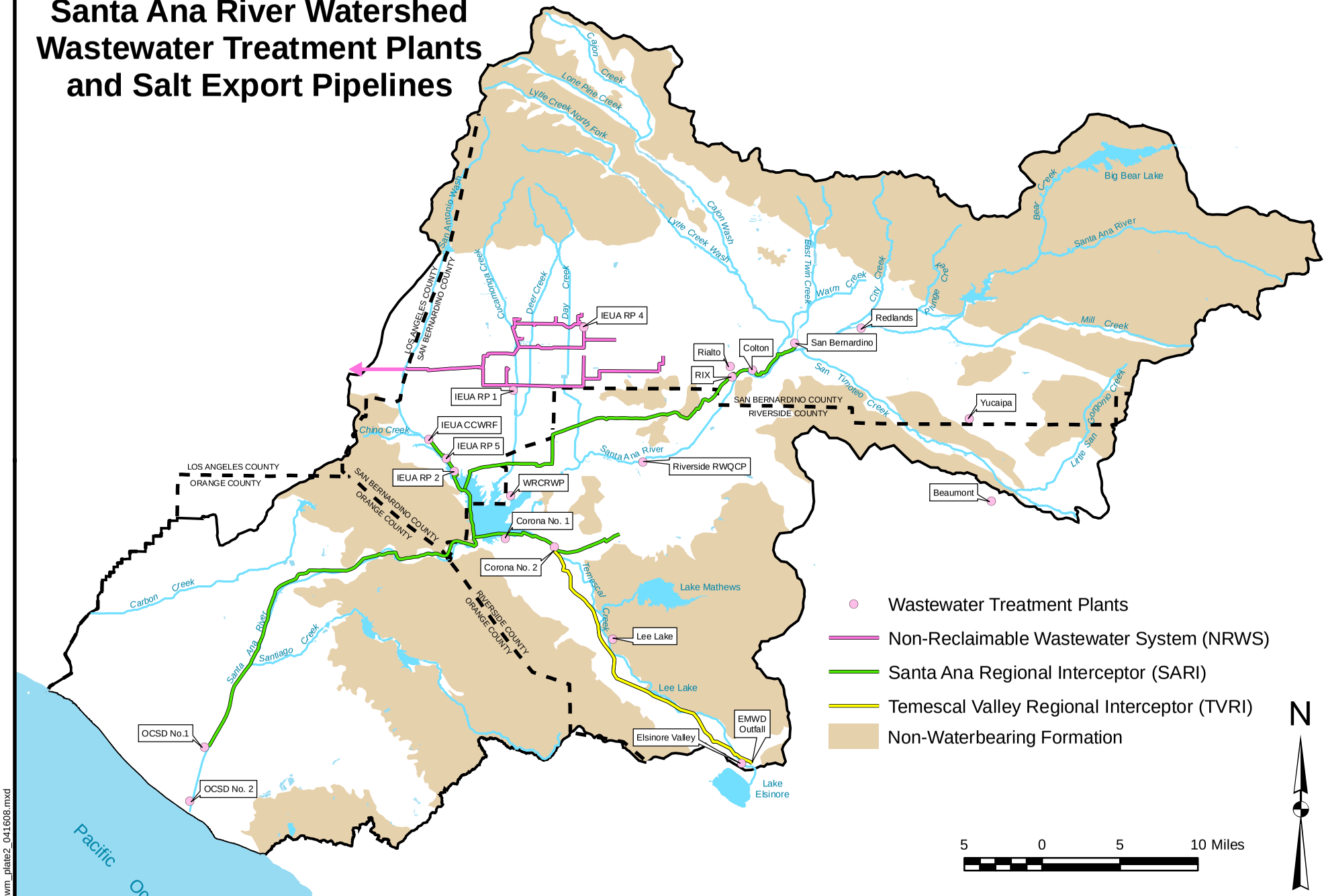

Plate 2

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PRECIPITATION AT SAN BERNARDINO STARTING WITH 1934-35

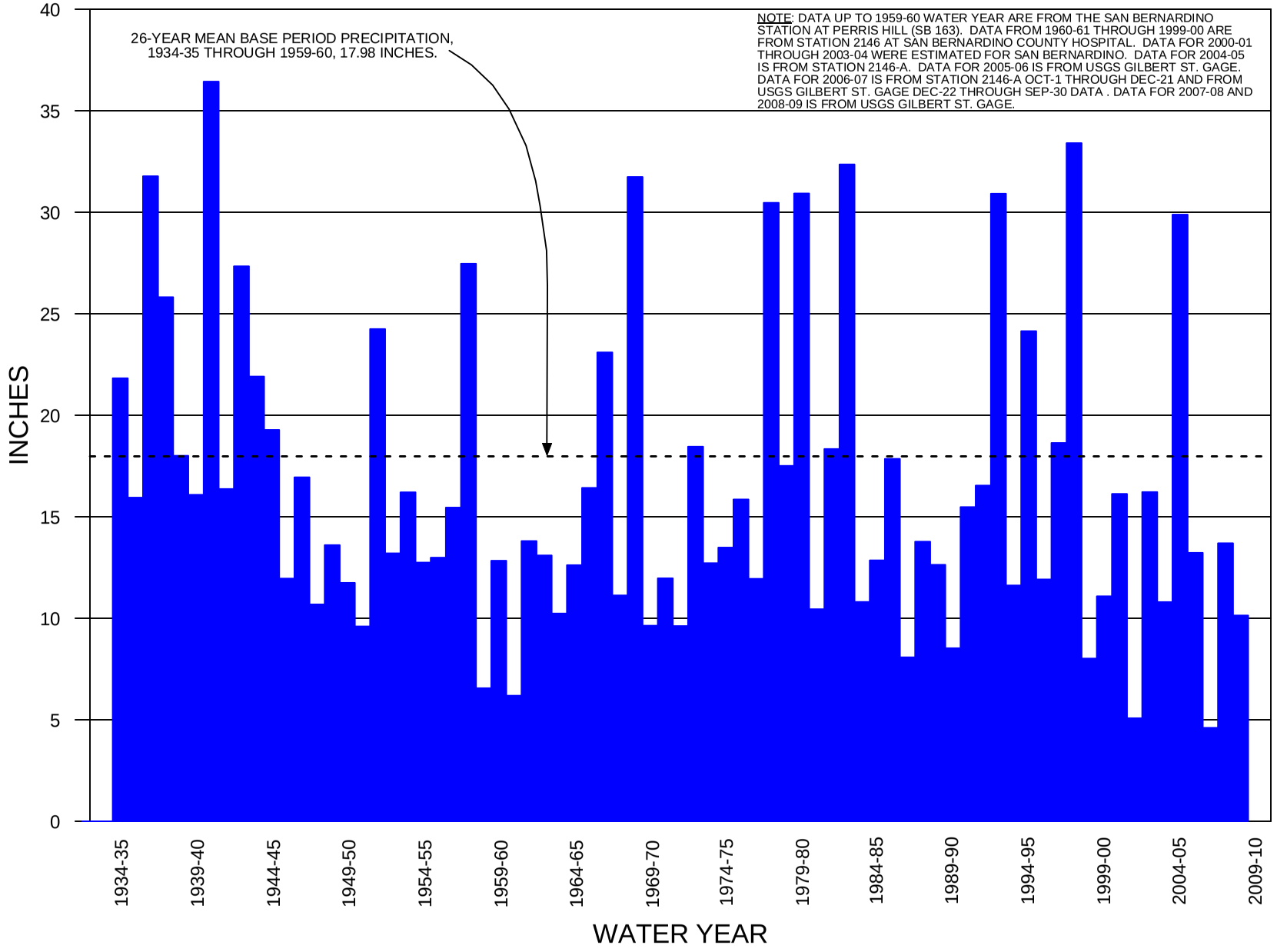
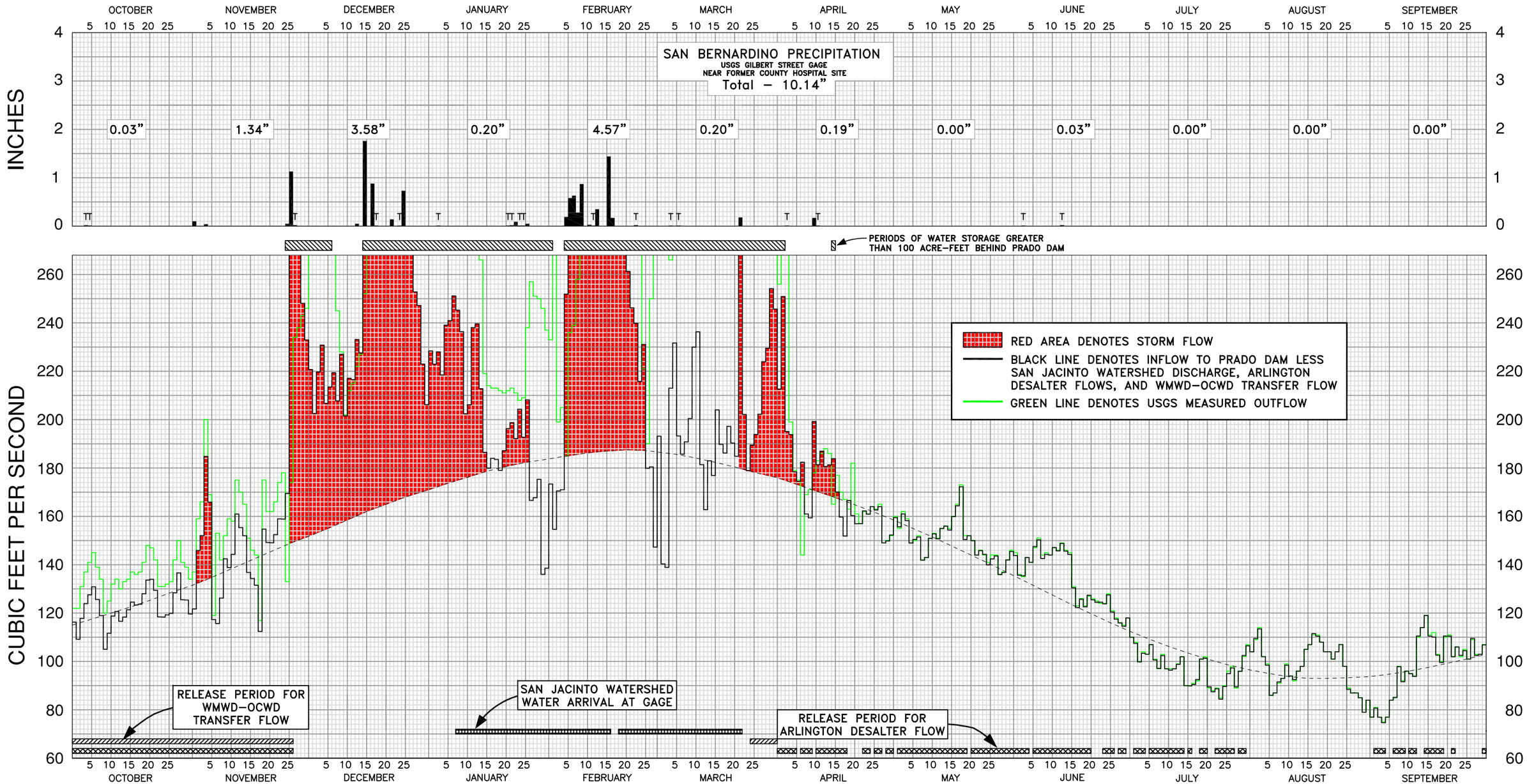


PLATE 3



DISCHARGE OF SANTA ANA RIVER AT PRADO DAM & SAN BERNARDINO PRECIPITATION
WATER YEAR 2008-09

Plate 4

DISCHARGE OF SANTA ANA RIVER AT PRADO STARTING WITH 1934-35

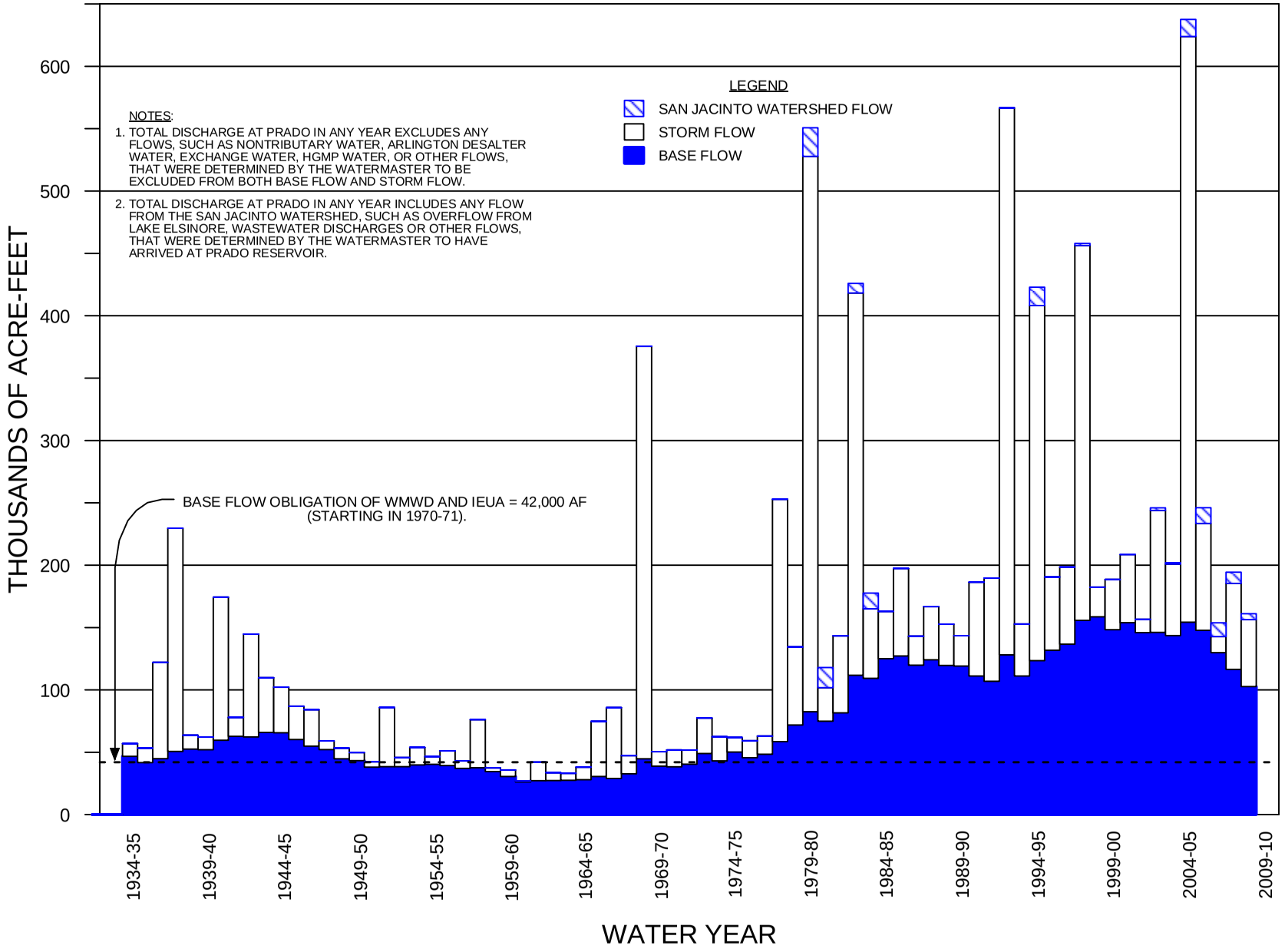
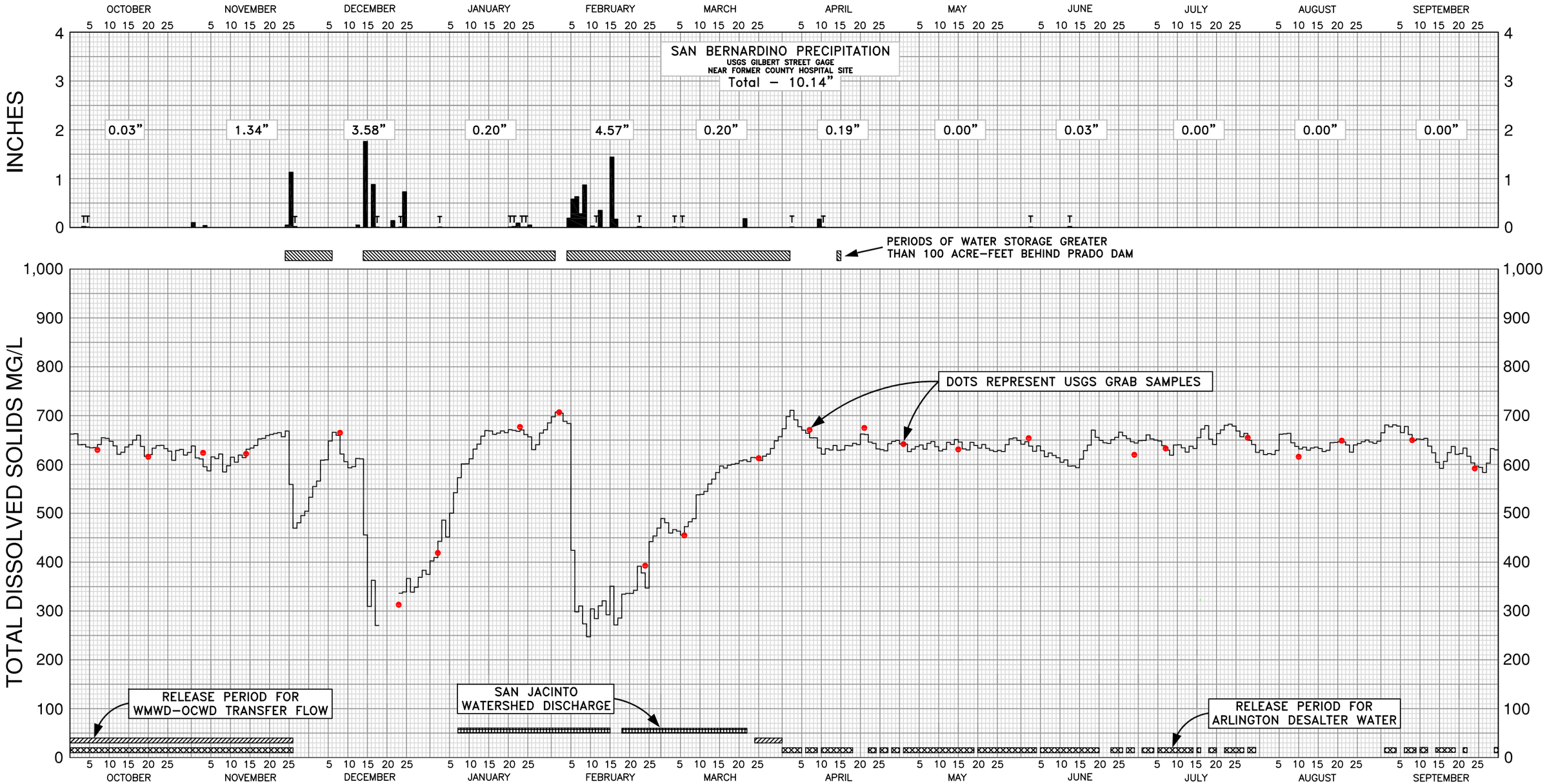
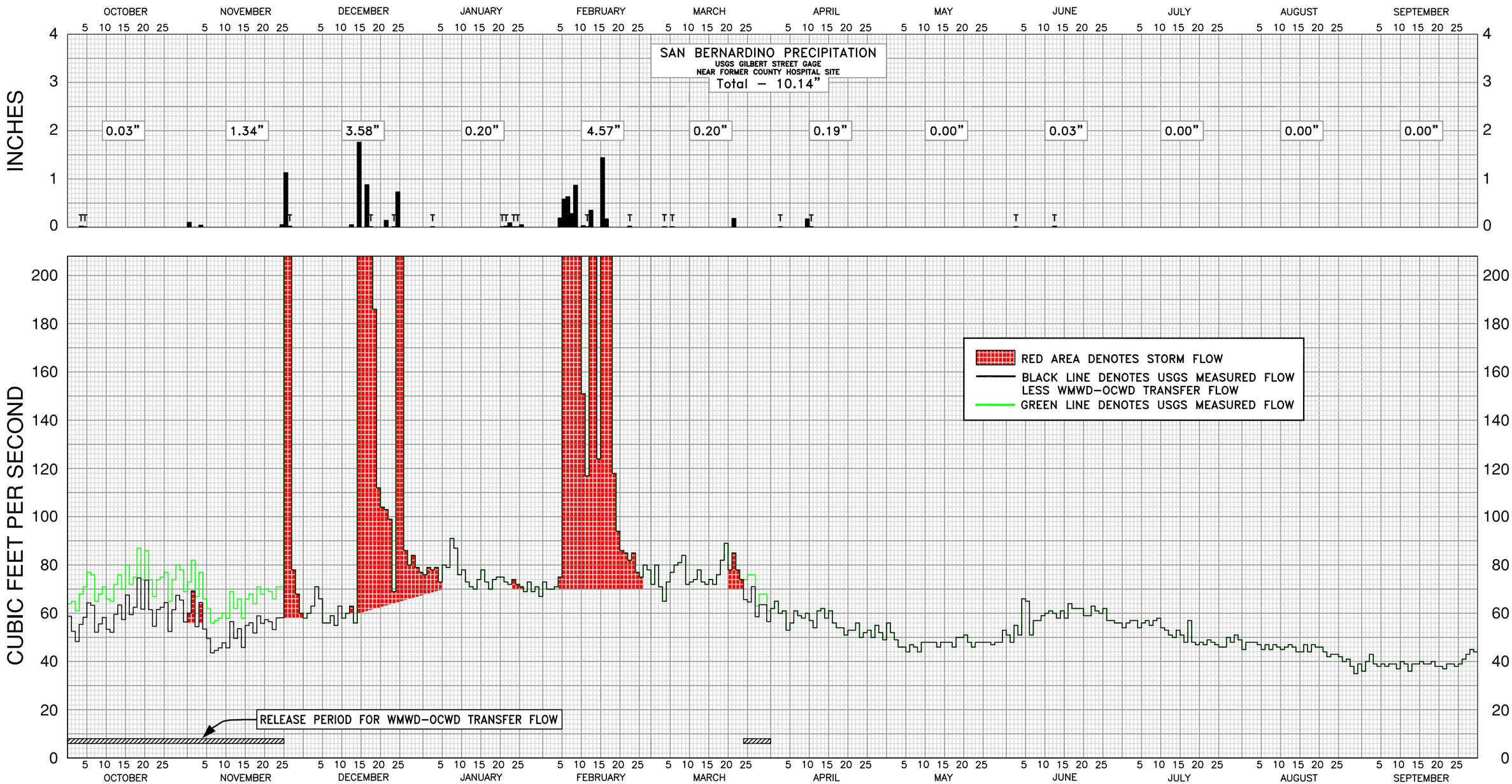


PLATE 5



DISSOLVED SOLIDS IN SANTA ANA RIVER BELOW PRADO DAM
WATER YEAR 2008-09

Plate 6



DISCHARGE OF SANTA ANA RIVER AT RIVERSIDE NARROWS & SAN BERNARDINO PRECIPITATION
WATER YEAR 2008-09

Plate 7

DISCHARGE OF SANTA ANA RIVER AT RIVERSIDE NARROWS STARTING WITH 1934-35

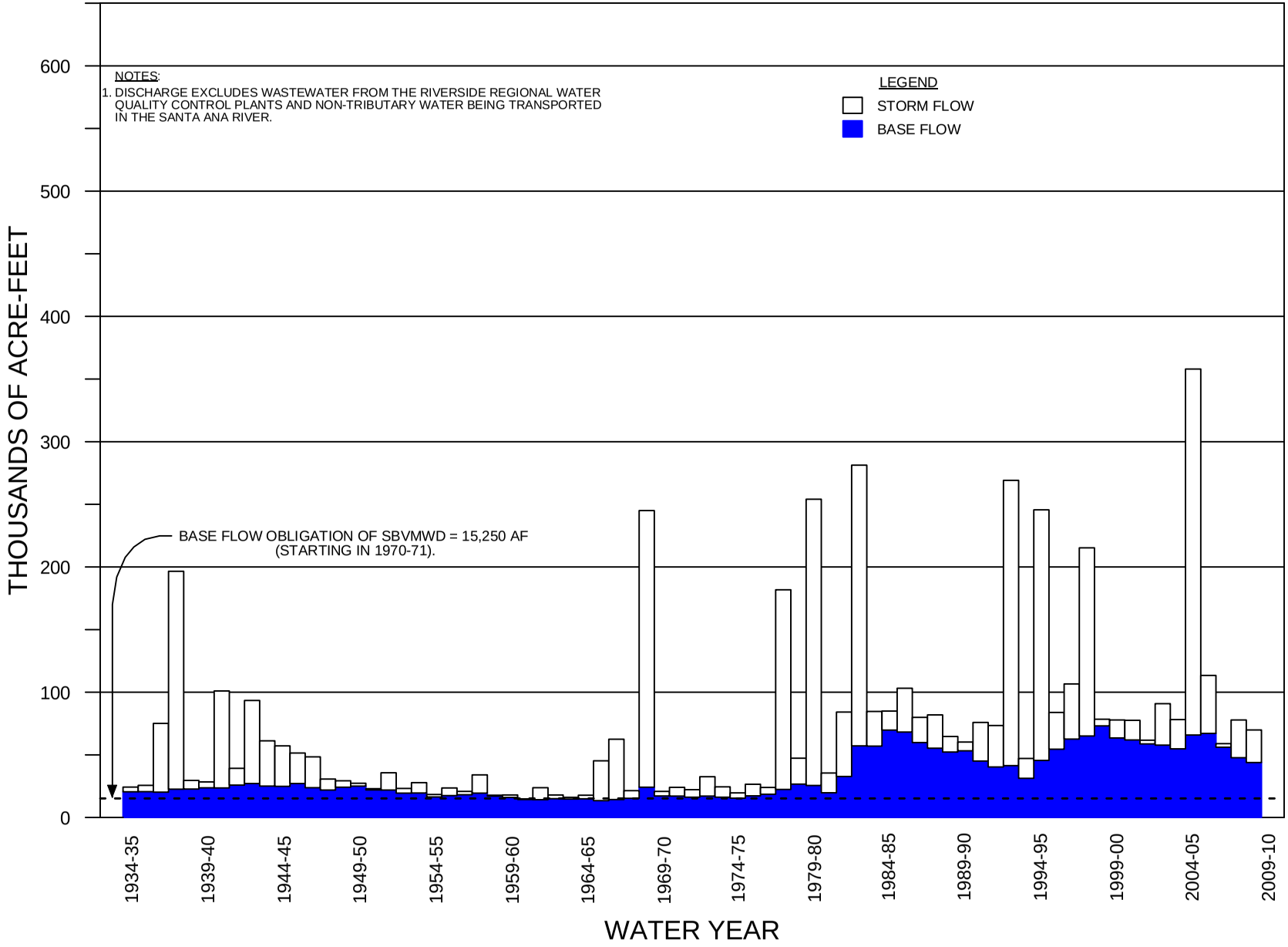


PLATE 8

SANTA ANA RIVER WATERMASTER

FOR

ORANGE COUNTY WATER DISTRICT

v. CITY OF CHINO et al.

CASE NO. 117628 - COUNTY OF ORANGE

BASIC DATA

FOR THE

THIRTY-NINTH ANNUAL REPORT

OF THE

SANTA ANA RIVER WATERMASTER

FOR WATER YEAR

OCTOBER 1, 2008 - SEPTEMBER 30, 2009

APRIL 30, 2010

APPENDIX A

USGS FLOW MEASUREMENTS OF THE SANTA ANA RIVER FLOWS BELOW PRADO, AT MWD CROSSING, AND WATER QUALITY RECORDS FOR THE SANTA ANA RIVER AT PRADO DAM AND AT MWD CROSSING; USGS FLOW MEASUREMENTS AT E STREET, AND OF TEMESCAL CREEK ABOVE MAIN STREET (AT CORONA), CUCAMONGA CREEK (NEAR MIRA LOMA) AND CHINO CREEK AT SCHAEFER AVENUE (NEAR CHINO)

WATER YEAR 2008-09

Water-Data Report 2009

11074000 Santa Ana River below Prado Dam, CA

Santa Ana River Basin

LOCATION.--Lat 33°53′00″, long 117°38′40″ referenced to North American Datum of 1927, Riverside County, CA, Hydrologic Unit 18070203, in La Sierra Grant, on left bank of outlet channel, 2,500 ft downstream from axis of Prado Dam, and 4.5 mi west of Corona.

DRAINAGE AREA.--2,258 mi² of which 768 mi² probably is noncontributing, above Lake Elsinore.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May 1930 to November 1939 (irrigation seasons only), March 1940 to current year. Published as "at Santa Fe Railroad Bridge, near Prado" May 1930 to November 1931, as "at Atchison, Topeka, and Santa Fe Railroad Bridge, near Prado" May 1932 to November 1939, and as "below Prado Dam, near Prado" March 1940 to September 1950.

GAGE.--Water-stage recorder and concrete control August 1944 through Apr. 25, 2005, and since Nov. 14, 2005. Datum of gage is approximately 449 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Mar. 18, 1940, at about same site at various datums. From Apr. 26, 2005, to Nov. 13, 2005, gage was located on right bank of a temporary bypass (diversion) channel, in use during the construction of an improved outlet channel from Prado Dam. Temporary gage was at a different datum. From Nov. 14, 2005 to Oct. 7, 2008, gage was located on right bank of reconstructed outlet channel. Since Oct. 7, 2008, gage is located on left bank of channel.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated since 1940 by Prado Flood-Control Reservoir, capacity, 196,200 acre-ft. Natural streamflow affected by extensive ground-water withdrawals, diversion for irrigation, discharges of treated effluent, and return flow from irrigated areas. Releases of imported water are made to the basin by the California Water Project at times in some years, via San Antonio Creek from Rialto Pipeline below San Antonio Dam. During the current year, no California Water Project releases were made. See schematic diagram of Santa Ana River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,200 ft³/s, Jan. 15, 2005, gage height, 8.73 ft, site and datum then in use, from rating curve extended above 11,600 ft³/s; minimum daily, 2.4 ft³/s, July 29 to Aug. 3, Sept. 20, 1978 (result of gate closure).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 2, 1938, reached a discharge of 100,000 ft³/s, on basis of slope-area measurement of peak flow at site 2.5 mi downstream.

11074000 Santa Ana River below Prado Dam, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	122	137	321	487	233	301	256	160	145	110	104	77
2	122	159	387	479	e292	274	379	155	136	108	109	81
3	131	166	381	472	199	324	299	162	135	100	114	77
4	137	200	380	466	205	266	199	159	143	104	102	75
5	141	169	367	478	185	330	179	149	141	103	99	77
6	145	e119	339	491	236	334	175	150	147	107	86	84
7	139	153	299	481	239	335	144	152	151	101	87	85
8	134	142	245	463	258	333	169	142	144	97	91	98
9	120	152	228	440	1,300	331	171	143	145	103	93	92
10	125	159	202	406	1,750	354	178	151	144	97	99	96
11	132	158	212	385	500	379	183	153	147	97	94	95
12	134	175	215	369	512	376	186	151	146	97	92	94
13	130	170	222	370	639	371	188	155	149	99	96	110
14	133	165	227	266	1,110	365	186	156	146	102	98	114
15	134	151	252	219	954	361	165	155	145	90	105	119
16	137	146	387	214	478	366	177	160	131	90	107	111
17	136	144	580	213	1,730	366	170	165	123	91	111	112
18	137	117	2,040	213	912	362	167	173	126	92	111	103
19	141	175	928	212	504	366	163	152	123	101	108	100
20	148	162	467	211	423	346	182	152	127	102	104	110
21	147	162	461	212	419	331	161	150	126	89	104	111
22	142	166	492	213	418	325	157	144	125	88	101	102
23	131	174	409	211	417	314	162	146	124	89	104	106
24	131	178	459	208	410	310	161	144	124	85	107	102
25	132	133	454	209	221	e345	164	141	128	90	98	105
26	133	174	464	238	190	364	163	144	121	96	89	101
27	142	234	462	257	250	367	165	144	118	98	87	109
28	150	238	460	251	294	366	149	136	116	89	87	103
29	141	243	467	250	---	364	150	137	115	96	85	103
30	139	246	473	246	---	371	152	142	118	102	79	107
31	134	---	487	237	---	359	---	146	---	107	84	---
Total	4,200	5,067	13,767	9,867	15,278	10,656	5,500	4,669	4,009	3,020	3,035	2,959
Mean	135	169	444	318	546	344	183	151	134	97.4	97.9	98.6
Max	150	246	2,040	491	1,750	379	379	173	151	110	114	119
Min	120	117	202	208	185	266	144	136	115	85	79	75
Ac-ft	8,330	10,050	27,310	19,570	30,300	21,140	10,910	9,260	7,950	5,990	6,020	5,870

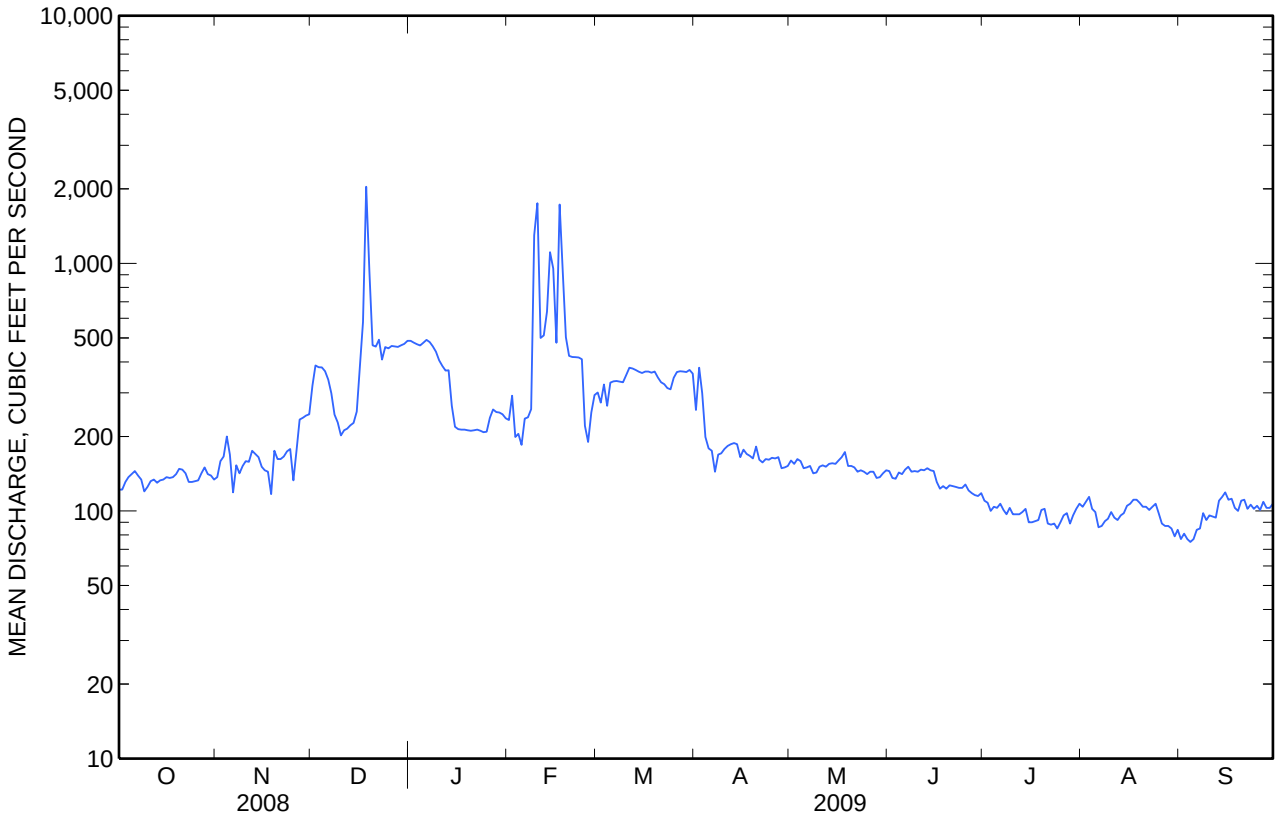
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	130	150	222	369	440	401	265	191	156	128	108	103
Max	910	322	709	3,543	2,733	2,556	1,101	915	736	446	402	372
(WY)	(2005)	(1997)	(1967)	(1993)	(1998)	(1980)	(1980)	(1998)	(1983)	(1998)	(2005)	(1997)
Min	22.4	33.5	39.5	49.2	49.8	54.3	43.3	35.2	29.0	17.7	14.8	16.2
(WY)	(1962)	(1963)	(1963)	(1963)	(1961)	(1961)	(1961)	(1961)	(1961)	(1960)	(1960)	(1960)

11074000 Santa Ana River below Prado Dam, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1941 - 2009	
Annual total	99,468		82,027			
Annual mean	272		225		221	
Highest annual mean					882	2005
Lowest annual mean					36.4	1961
Highest daily mean	2,570	Jan 28	2,040	Dec 18	11,400	Jan 14, 2005
Lowest daily mean	73	Jul 1	75	Sep 4	2.4	Jul 29, 1978
Annual seven-day minimum	113	Jun 27	79	Aug 30	3.0	Sep 24, 1973
Maximum peak flow			2,350	Feb 9	13,200	Jan 15, 2005
Maximum peak stage			5.81	Feb 9	8.73	Jan 15, 2005
Annual runoff (ac-ft)	197,300		162,700		160,000	
10 percent exceeds	467		418		386	
50 percent exceeds	170		152		138	
90 percent exceeds	126		97		41	



Water-Data Report 2009

11066460 Santa Ana River at Metropolitan Water District Crossing, near Arlington, CA

Santa Ana River Basin

LOCATION.--Lat 33°58′07″, long 117°26′51″ referenced to North American Datum of 1927, in NE ¼ SW ¼ sec.30, T.2 S., R.5 W., Riverside County, CA, Hydrologic Unit 18070203, near center of Metropolitan Water District pipeline crossing, 0.8 mi downstream from Union Pacific Railroad Bridge, 1.1 mi upstream from bridge on Van Buren Boulevard, and 3.3 mi north of Arlington.

DRAINAGE AREA.--852 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1970 to current year.

REVISED RECORDS.--WDR CA-83-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 685 ft above NGVD of 1929, from topographic map. Prior to Apr. 15, 1985, water-stage recorder at site 300 ft upstream on left bank at different datum. From Apr. 15 to Sept. 30, 1985, water-stage recorder near right bank (atop pier 9 of Metropolitan Water District pipeline crossing), at same site and datum. From Oct. 1, 1985, to June 16, 1993, water-stage recorder and crest-stage gage on right bank at same site and datum. From June 17, 1993, to Sept. 30, 2003, water-stage recorder and crest-stage gage on left bank at same site and datum.

REMARKS.--Records fair below 100 ft³/s and poor above. Flow partly regulated by Big Bear Lake (station 11049000) and, since November 1999, by Seven Oaks Flood-Control Reservoir, capacity, 145,600 acre-ft. Natural streamflow affected by ground-water withdrawals, diversions for irrigation, return flows from irrigated areas, and discharges of treated effluent. The records at this station are equivalent to those collected at "Santa Ana River at Riverside Narrows, near Arlington" minus the flow at "Riverside Water-Quality Control Plant at Riverside Narrows, near Arlington". See schematic diagram of Santa Ana River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,800 ft³/s, Jan. 11, 2005, gage height, 14.64 ft, from rating curve extended above 21,900 ft³/s on basis of area-velocity studies; maximum gage height, 20.23 ft, site and datum then in use, Mar. 4, 1978; minimum daily, 15 ft³/s, Sept. 7, 8, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1927, 100,000 ft³/s, Mar. 2, 1938, on basis of slope-area measurement, at site 1.1 mi downstream. Flood of Jan. 22, 1862, 320,000 ft³/s, on basis of slope-conveyance study, at site 8.2 mi upstream. Stage at that site was 5 ft higher than that of Mar. 2, 1938.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and (or) maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov 26	0930	3,200	9.31
Dec 15	1530	*7,500	*10.74
Dec 25	2130	2,960	9.25
Feb 9	1645	4,820	9.90
Feb 16	1215	3,090	9.28

11066460 Santa Ana River at Metropolitan Water District Crossing, near Arlington, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	64	73	58	76	73	72	62	56	51	54	45	36
2	65	82	60	79	70	80	65	52	48	56	48	40
3	61	67	63	78	70	71	60	49	55	57	48	43
4	68	77	71	79	71	65	61	46	51	57	48	39
5	71	66	66	73	75	73	53	46	66	54	47	38
6	77	62	56	80	245	77	56	44	65	56	45	39
7	76	56	56	79	1,170	80	61	47	51	57	47	38
8	65	57	59	91	518	81	59	46	57	55	45	39
9	68	58	55	87	2,020	84	58	44	57	57	47	39
10	71	60	63	76	406	72	60	48	59	58	46	37
11	66	58	58	78	151	73	57	48	60	54	45	40
12	65	69	60	73	117	74	54	48	61	53	46	39
13	72	62	63	71	275	78	61	48	60	51	47	36
14	76	66	56	70	210	73	62	46	58	50	46	39
15	70	58	1,770	74	124	72	58	48	61	53	44	e39
16	80	66	514	78	1,110	74	61	48	58	51	44	e40
17	72	68	1,600	73	684	72	56	48	64	48	47	e39
18	75	64	656	70	322	76	54	46	62	57	44	e39
19	87	71	186	74	118	82	54	50	62	48	47	40
20	74	68	112	75	94	89	51	50	62	47	46	38
21	86	70	104	75	86	78	53	51	59	48	46	38
22	74	69	103	73	85	85	53	48	59	47	44	37
23	67	66	99	72	82	78	56	46	63	49	42	39
24	74	71	69	74	85	74	50	48	61	48	43	39
25	75	71	477	72	77	74	52	48	60	47	43	38
26	77	711	286	71	75	76	53	48	62	46	42	39
27	65	459	86	69	80	76	50	48	57	46	40	41
28	74	78	80	73	78	63	55	47	57	50	41	43
29	80	68	84	69	---	68	52	48	56	48	38	45
30	78	60	79	71	---	68	49	48	56	51	35	44
31	69	---	77	67	---	61	---	53	---	49	39	---
Total	2,242	3,031	7,226	2,320	8,571	2,319	1,686	1,491	1,758	1,602	1,375	1,180
Mean	72.3	101	233	74.8	306	74.8	56.2	48.1	58.6	51.7	44.4	39.3
Max	87	711	1,770	91	2,020	89	65	56	66	58	48	45
Min	61	56	55	67	70	61	49	44	48	46	35	36
Ac-ft	4,450	6,010	14,330	4,600	17,000	4,600	3,340	2,960	3,490	3,180	2,730	2,340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1999, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	59.5	78.3	103	238	293	326	148	121	79.2	52.9	52.5	53.8
Max	194	259	292	1,839	1,411	1,806	604	666	351	145	233	129
(WY)	(1988)	(1984)	(1984)	(1993)	(1980)	(1995)	(1983)	(1983)	(1983)	(1983)	(1983)	(1976)
Min	20.5	21.2	23.3	24.7	23.1	23.7	23.1	22.3	20.2	16.8	17.9	18.0
(WY)	(1974)	(1975)	(1974)	(1972)	(1972)	(1972)	(1971)	(1972)	(1981)	(1981)	(1981)	(1974)

11066460 Santa Ana River at Metropolitan Water District Crossing, near Arlington, CA—Continued

SUMMARY STATISTICS

	Water Years 1970 - 1999	
Annual mean	134	
Highest annual mean	416	1983
Lowest annual mean	29.0	1975
Highest daily mean	11,500 Mar	2, 1983
Lowest daily mean	15 Sep	7, 1980
Annual seven-day minimum	16 Jul	1, 1981
Maximum peak flow	31,300 Feb	24, 1998
Maximum peak stage	20.23 Mar	4, 1978
Annual runoff (ac-ft)	97,140	
10 percent exceeds	209	
50 percent exceeds	63	
90 percent exceeds	23	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2009, BY WATER YEAR (WY)

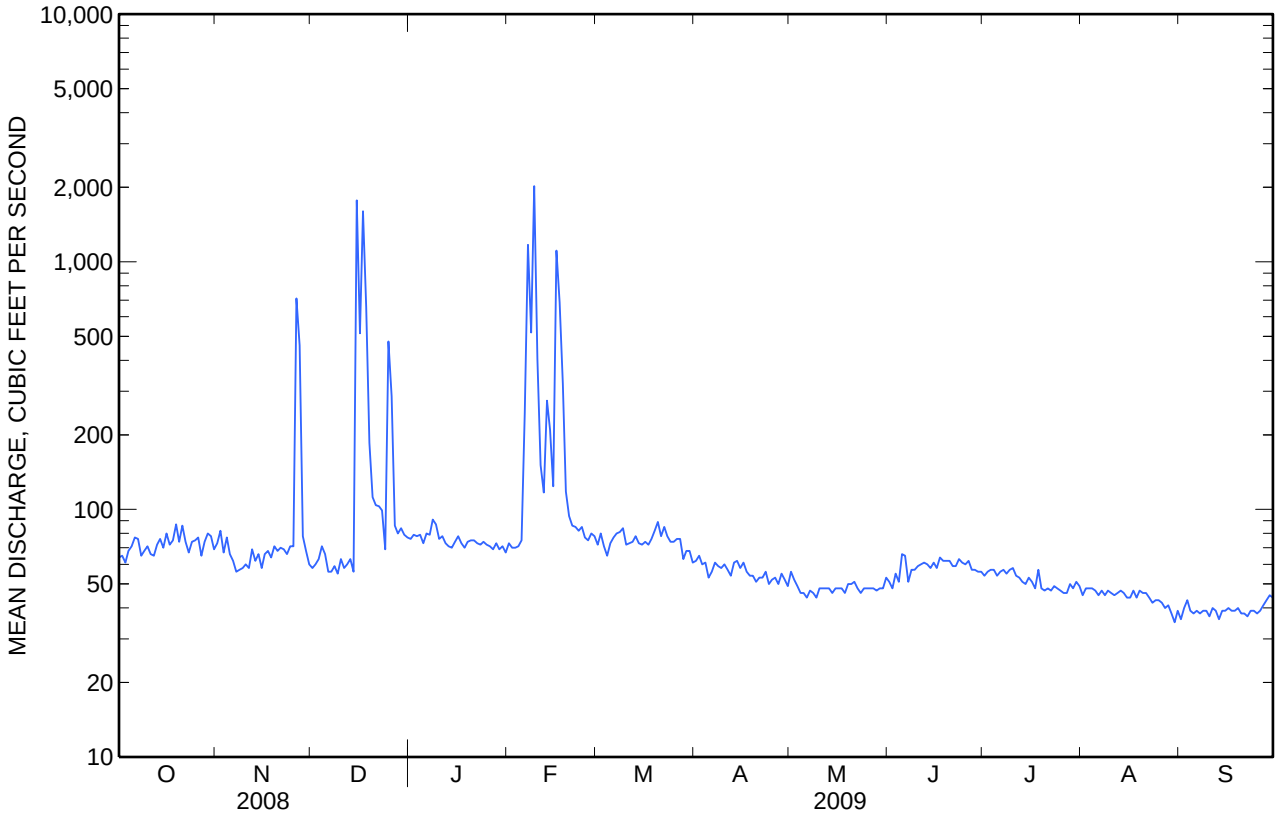
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	126	102	145	357	265	171	177	115	85.9	73.3	81.9	70.0
Max	498	141	255	2,350	755	498	500	314	192	137	201	86.6
(WY)	(2005)	(2003)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)
Min	68.9	81.5	85.9	74.8	87.9	74.8	56.2	48.1	58.6	51.5	44.4	39.3
(WY)	(2008)	(2000)	(2000)	(2009)	(2002)	(2009)	(2009)	(2009)	(2009)	(2008)	(2009)	(2009)

SUMMARY STATISTICS

[e, estimated]

	Calendar Year 2008		Water Year 2009		Water Years 2000 - 2009	
Annual total	42,223		34,801			
Annual mean	115		95.3		147	
Highest annual mean					491	2005
Lowest annual mean					79.9	2007
Highest daily mean	3,180	Jan 5	2,020	Feb 9	e22,000	Jan 11, 2005
Lowest daily mean	47	Jun 21	35	Aug 30	35	Aug 30, 2009
Annual seven-day minimum	49	Jun 21	38	Sep 7	38	Sep 7, 2009
Maximum peak flow			7,500	Dec 15	47,800	Jan 11, 2005
Maximum peak stage			10.74	Dec 15	16.58	Oct 20, 2004
Annual runoff (ac-ft)	83,750		69,030		106,500	
10 percent exceeds	100		85		164	
50 percent exceeds	70		61		83	
90 percent exceeds	52		43		61	

11066460 Santa Ana River at Metropolitan Water District Crossing, near Arlington, CA—Continued



Water-Data Report 2009

11074000 Santa Ana River below Prado Dam, CA

Santa Ana River Basin

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.
CHEMICAL DATA: Water years 1967 to current year.
SPECIFIC CONDUCTANCE: Water years 1968, 1970 to current year.
WATER TEMPERATURE: Water years 1968 (monthly max/min only), 1970 to current year.
BIOLOGICAL DATA: Water years 1975-81.
CHLORIDE: Water year 1971.
SEDIMENT DATA: Water years 1974-94, 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1968 to current year.
WATER TEMPERATURE: October 1969 to current year.
CHLORIDE: October 1970 to September 1971.
SUSPENDED-SEDIMENT DISCHARGE: October 1973 to June 1982.

INSTRUMENTATION.--Water-quality monitor recording specific conductance and water temperature since October 1969.

REMARKS.--Specific conductance and water temperature records are affected by releases from Prado Dam. Interruptions in record at times due to malfunction of recording or sensing equipment. Sediment data and a portion of chemical data collected for the National Water-Quality Assessment (NAWQA) Program.

Specific conductance records rated good except for Oct. 1-7, which are rated fair, and Oct. 8 to Dec. 23, which are rated poor.

Water temperature records rated excellent.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 1,830 microsiemens, Apr. 30, 1971; minimum recorded, 150 microsiemens, Jan. 5, 2008.
WATER TEMPERATURE: Maximum recorded, 36.0°C, Sept. 4, 1972, Sept. 8, 1984; minimum recorded, 2.5°C, Dec. 30, 1969.
SEDIMENT CONCENTRATION: Maximum daily mean, 2,870 mg/L, Mar. 5, 1978; minimum daily mean, 3 mg/L, Apr. 2, 1980, and several days during 1982.
SEDIMENT LOAD: Maximum daily, 18,900 tons, Mar. 5, 1978; minimum daily, 0.58 ton, Sept. 20, 1978.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 1,210 microsiemens, Feb. 2; minimum recorded, 355 microsiemens, Feb. 10.
WATER TEMPERATURE: Maximum recorded, 27.1°C, July 20, 22; minimum recorded, 8.6°C, Dec. 18.

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Date	Time	Temperature, air, deg C (00020)	Instantaneous discharge, ft^3/s (00061)	Specific conductance, wat unf µS/cm @ 25 degC (00095)	Temperature, water, deg C (00010)	Dissolved solids dried @ 180deg C wat flt mg/L (70300)
Oct						
07...	0915	30.0	150	1,050	21.0	630
20...	1015	27.5	150	1,020	19.1	616
Nov						
03...	0940	25.0	174	1,020	19.2	624
14...	0955	31.0	170	1,040	18.1	622
Dec						
08...	1000	16.5	250	1,100	16.6	665
23...	1200	21.5	450	518	10.6	313
Jan						
02...	1035	10.5	484	696	11.1	419
23...	1015	18.0	213	1,110	16.4	677
Feb						
02...	1010	25.0	479	1,150	15.1	707
24...	0945	23.0	411	660	14.6	393
Mar						
06...	0800	19.5	335	750	14.4	455
25...	1000	18.0	358	1,050	17.1	613
Apr						
07...	1115	25.0	115	1,090	19.2	671
21...	1020	32.0	179	1,110	21.6	675
May						
01...	1015	25.5	160	1,070	20.2	642
15...	0955	26.5	157	1,080	22.2	631
Jun						
02...	1015	26.0	140	1,070	22.1	654
29...	0935	27.0	114	1,060	24.6	620
Jul						
07...	1150	24.5	102	1,070	24.2	633
28...	1000	25.5	84	1,120	25.8	655
Aug						
10...	0955	33.0	108	1,040	23.6	616
21...	0930	31.5	112	1,080	23.5	649
Sep						
08...	0925	20.0	100	1,080	23.4	650
24...	0935	26.5	106	986	22.0	592

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 1 of 8

[Remark codes: <, less than; E, estimated.]

Date	Time	Barometric pressure, mm Hg (00025)	Temperature, air, deg C (00020)	Instantaneous discharge, ft³/s (00061)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm @ 25 degC (00095)	Temperature, water, deg C (00010)	Alkalinity, wat flt inf tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt infl pt titr., field, mg/L (00453)	Carbonate, wat flt infl pt titr., field, mg/L (00452)	Chloride, water, fltrd, mg/L (00940)
Oct													
22...	0945	751	29.5	148	8.9	99	8.1	1,050	19.5	210	256	--	121
Nov													
13...	1315	748	27.0	168	10.6	112	8.1	1,020	17.0	205	247	2	117
Dec													
09...	1315	758	--	227	12.0	120	7.9	1,020	15.0	214	261	--	128
Jan													
12...	1545	753	--	362	9.8	94	8.0	1,080	13.0	229	279	--	129
28...	1445	754	23.0	247	10.4	101	8.1	1,050	13.5	216	263	--	121
Feb													
11...	1430	754	17.0	502	9.7	102	7.8	519	17.0	109	133	--	51.2
23...	1345	754	--	422	9.9	96	8.0	658	13.5	140	171	--	66.2
Mar													
09...	1430	751	16.0	327	12.0	122	8.5	820	15.5	167	195	4	96.6
24...	1115	753	21.5	313	9.0	95	8.1	1,030	17.0	225	270	2	124
Apr													
09...	1415	750	--	171	9.2	99	8.1	1,100	18.0	231	276	3	130
24...	1015	751	19.5	164	8.9	100	8.1	1,100	20.0	228	274	2	134
May													
08...	1000	746	27.0	142	10.6	126	8.2	1,080	22.5	194	232	2	134
21...	1430	748	28.5	148	9.8	117	8.1	1,060	23.0	184	219	2	134
Jun													
04...	1200	750	22.0	148	8.8	101	8.0	1,050	21.0	207	248	2	132
17...	1300	748	25.0	122	9.4	111	8.2	1,100	22.5	219	262	2	132
Jul													
15...	1200	750	31.0	93	9.4	116	8.4	1,070	25.0	205	242	4	134
Aug													
10...	1530	748	31.0	93	11.0	135	8.3	1,070	24.5	209	250	3	132
Sep													
01...	1530	747	34.0	78	9.1	115	8.2	1,120	26.0	215	254	4	133

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 2 of 8

[Remark codes: <, less than; E, estimated.]

Date	Sulfate water, fltrd, mg/L (00945)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate + nitrite water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L as P (00665)	Total nitro-gen, wat unf by analysis, mg/L (62855)	1-Naph-thol, water, fltrd 0.7µ GF µg/L (49295)	2,6-Di-ethyl-aniline water, fltrd 0.7µ GF µg/L (82660)	2Chloro-2',6'-diethyl acet-anilide wat flt µg/L (61618)	CIAT, water, fltrd, µg/L (04040)	2-Ethyl-6-methyl-aniline wat flt µg/L (61620)	3,4-Di-chloro-aniline water, fltrd, µg/L (61625)
Oct													
22...	106	.057	4.84	.072	1.29	1.32	5.53	<.04	<.006	<.010	E.010	<.010	E.012
Nov													
13...	99.0	.037	6.18	.031	1.19	1.21	6.84	<.04	<.006	<.010	E.011	<.010	E.003
Dec													
09...	108	.125	5.51	.039	1.04	1.11	6.10	<.04	<.006	<.008	E.012	<.010	E.017
Jan													
12...	108	.038	3.69	.075	.953	1.16	4.68	<.04	<.006	<.010	<.014	<.010	E.016
28...	113	.039	4.59	.049	.991	1.04	5.42	<.04	<.006	<.010	<.014	<.010	E.015
Feb													
11...	54.1	.112	2.32	.045	.487	.56	3.20	<.04	<.006	<.010	<.014	<.010	E.046
23...	64.9	<.020	3.02	.056	.705	.75	3.63	<.04	<.006	<.010	<.014	<.010	E.025
Mar													
09...	92.5	E.011	1.90	.057	.501	.54	2.62	<.04	<.006	<.010	<.014	<.010	E.013
24...	99.9	E.014	2.86	.076	.844	.84	3.37	<.04	<.006	<.010	<.014	<.010	<.004
Apr													
09...	110	.096	4.78	.075	.933	1.02	5.56	<.04	<.006	<.010	E.013	<.010	E.011
24...	114	.067	4.59	.077	.934	1.08	5.09	<.04	<.006	<.010	E.013	<.010	E.015
May													
08...	109	.140	3.77	.086	1.06	1.15	4.55	<.04	<.006	<.010	E.011	<.010	E.019
21...	104	.044	3.52	.072	1.00	1.14	4.42	<.04	<.006	<.010	<.014	<.010	E.015
Jun													
04...	102	.052	4.09	.076	1.04	1.10	4.75	<.04	<.006	<.010	E.011	<.010	E.013
17...	109	<.020	4.17	.031	1.12	1.18	4.70	<.04	<.006	<.010	E.010	<.010	E.010
Jul													
15...	106	<.020	3.69	.076	1.26	1.27	4.39	<.04	<.006	<.010	<.014	<.010	<.010
Aug													
10...	110	E.017	3.90	.064	1.06	1.10	4.50	<.04	<.006	<.010	E.011	<.010	E.012
Sep													
01...	116	<.020	3.53	.053	1.03	1.05	4.14	<.04	<.006	<.010	<.015	<.010	<.004

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 3 of 8

[Remark codes: <, less than; E, estimated.]

Date	3,5-Di-chloro-aniline water, fltrd, µg/L (61627)	4-Chloro-2-methyl-phenol, wat flt µg/L (61633)	Aceto-chlor, water, fltrd, µg/L (49260)	Ala-chlor, water, fltrd, µg/L (46342)	alpha-Endo-sulfan, water, fltrd, µg/L (34362)	Atra-zine, water, fltrd, µg/L (39632)	Azin-phos-methyl oxon, water, fltrd, µg/L (61635)	Azin-phos-methyl, water, fltrd 0.7µ GF µg/L (82686)	Ben-flur-alin, water, fltrd 0.7µ GF µg/L (82673)	Car-baryl, water, fltrd 0.7µ GF µg/L (82680)	Carbo-furan, water, fltrd 0.7µ GF µg/L (82674)	Chlor-pyrifos oxon, water, fltrd, µg/L (61636)	Chlor-pyrifos water, fltrd, µg/L (38933)
Oct													
22...	<.004	<.005	<.010	<.008	<.006	E.006	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Nov													
13...	<.004	<.005	<.010	<.008	<.008	<.009	<.04	<.120	<.014	E.012	<.060	<.05	<.010
Dec													
09...	<.004	<.005	<.010	<.015	<.006	.009	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Jan													
12...	<.004	<.005	<.010	<.011	<.006	<.007	<.04	<.120	<.014	E.018	<.060	<.05	<.010
28...	<.004	<.005	<.010	<.008	<.006	<.009	<.04	<.120	<.014	E.013	<.060	<.05	<.010
Feb													
11...	<.004	<.005	<.010	<.008	<.006	<.007	<.04	<.120	<.014	E.018	<.060	<.05	<.010
23...	<.004	<.005	<.010	<.008	<.006	<.007	<.04	<.120	<.014	E.011	<.060	<.05	<.010
Mar													
09...	<.004	<.005	<.010	<.008	<.006	<.007	<.04	<.120	<.014	<.200	<.060	<.05	<.010
24...	<.004	<.005	<.010	<.008	<.006	<.007	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Apr													
09...	<.004	<.005	<.010	<.008	<.008	.008	<.04	<.120	<.014	<.200	<.060	<.05	<.010
24...	<.004	<.005	<.010	<.010	<.006	.008	<.04	<.120	<.014	<.200	<.060	<.05	<.010
May													
08...	<.004	<.005	<.010	<.008	<.006	E.007	<.04	<.120	<.014	<.200	<.060	<.05	<.010
21...	<.004	<.005	<.010	<.008	<.006	<.011	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Jun													
04...	<.004	<.005	<.010	<.016	<.006	.010	<.04	<.120	<.014	<.200	<.060	<.05	<.010
17...	<.004	<.005	<.010	<.008	<.006	E.007	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Jul													
15...	<.004	<.005	<.010	<.008	<.008	E.007	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Aug													
10...	<.004	<.005	<.010	<.008	<.006	.012	<.04	<.120	<.014	<.200	<.060	<.05	<.010
Sep													
01...	<.004	<.005	<.010	.014	<.006	<.010	<.04	<.120	<.014	E.025	<.060	<.05	<.010

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 4 of 8

[Remark codes: <, less than; E, estimated.]

Date	cis-Permethrin water fltrd 0.7µ GF µg/L (82687)	cis-Propiconazole, water, fltrd, µg/L (79846)	Cyanazine, water, fltrd, µg/L (04041)	Cyfluthrin, water, fltrd, µg/L (61585)	Cypermethrin water, fltrd, µg/L (61586)	DCPA, water, fltrd 0.7µ GF µg/L (82682)	Desulfinylfipronil amide, wat flt µg/L (62169)	Desulfinylfipronil, water, fltrd, µg/L (62170)	Diazinon, water, fltrd, µg/L (39572)	Diazoxon, water, fltrd, µg/L (61638)	Dichlorvos, water, fltrd, µg/L (38775)	Dicrotophos, water, fltrd, µg/L (38454)	Dieldrin, water, fltrd, µg/L (39381)
Oct													
22...	<.014	<.006	<.040	<.016	<.020	E.006	<.029	E.005	<.005	--	<.02	<.08	<.009
Nov													
13...	<.014	<.006	<.040	<.016	<.020	E.005	<.029	E.007	<.005	--	<.02	<.08	<.009
Dec													
09...	<.014	<.006	<.040	<.016	<.020	E.004	E.002	E.006	<.005	--	<.02	<.08	<.009
Jan													
12...	<.014	<.006	<.040	<.016	<.020	.016	E.006	E.007	.017	--	<.02	<.08	<.009
28...	<.014	<.006	<.040	<.016	<.020	E.006	<.029	E.007	<.005	--	<.02	<.08	<.009
Feb													
11...	<.014	E.013	<.040	<.016	<.020	.018	E.007	E.009	<.008	--	<.02	<.08	<.009
23...	<.014	E.009	<.040	<.016	<.020	.012	E.006	E.008	<.005	--	<.02	<.08	<.009
Mar													
09...	<.014	E.012	<.040	<.016	<.020	E.006	E.005	E.007	<.005	--	<.02	<.08	<.009
24...	<.014	<.006	<.040	<.016	<.020	E.005	<.029	E.008	<.005	--	<.02	<.08	<.009
Apr													
09...	<.014	<.006	<.040	<.016	<.020	E.002	<.029	E.006	<.005	--	<.02	<.08	<.009
24...	<.014	<.006	<.040	<.016	<.020	E.003	<.029	E.006	<.010	--	<.02	<.08	<.009
May													
08...	<.014	<.006	<.040	<.016	<.020	E.002	E.005	E.007	<.005	--	<.02	<.08	<.009
21...	<.014	<.006	<.040	<.016	<.020	E.002	<.029	E.006	<.005	--	<.02	<.08	<.009
Jun													
04...	<.014	<.006	<.040	<.016	<.020	<.006	E.004	E.008	<.009	--	<.02	<.08	<.009
17...	<.014	<.006	<.040	<.016	<.020	<.006	E.002	E.005	<.005	--	<.02	<.08	<.009
Jul													
15...	<.014	<.006	<.040	<.016	<.020	E.003	<.029	E.006	<.005	<.01	<.02	<.08	<.009
Aug													
10...	<.014	<.006	<.040	<.016	<.020	E.002	E.005	E.007	<.005	<.01	<.02	<.08	<.009
Sep													
01...	<.014	<.006	<.040	<.016	<.020	E.003	<.029	.012	<.005	<.01	<.02	<.08	<.009

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 5 of 8

[Remark codes: <, less than; E, estimated.]

Date	Dimeth-oate, water, fltrd 0.7µ GF µg/L (82662)	Disulf-oton sulfone water, fltrd, µg/L (61640)	Disul-foton, water, fltrd 0.7µ GF µg/L (82677)	Endo-sulfan sulfate water, fltrd, µg/L (61590)	EPTC, water, fltrd 0.7µ GF µg/L (82668)	Ethion monoxo n water, fltrd, µg/L (61644)	Ethion, water, fltrd, µg/L (82346)	Etho-prop, water, fltrd 0.7µ GF µg/L (82672)	Fenami-phos sulfone water, fltrd, µg/L (61645)	Fenami-phos sulf-oxide, water, fltrd, µg/L (61646)	Fenami-phos, water, fltrd, µg/L (61591)	Fipro-nil sulfide water, fltrd, µg/L (62167)	Fipro-nil sulfone water, fltrd, µg/L (62168)
Oct													
22...	<.006	<.01	<.04	<.022	<.003	<.02	<.012	<.016	<.053	<.08	<.03	E.004	<.024
Nov													
13...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.007	<.024
Dec													
09...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.005	<.024
Jan													
12...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.007	E.008
28...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.007	<.024
Feb													
11...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.007	<.024
23...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.007	E.008
Mar													
09...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.004	<.024
24...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.005	<.024
Apr													
09...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.006	<.024
24...	<.008	<.01	<.04	<.022	<.004	<.02	<.012	<.016	<.053	<.08	<.03	E.004	<.024
May													
08...	<.006	<.01	<.04	<.022	<.003	<.02	<.012	<.016	<.053	<.08	<.03	E.005	<.024
21...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	<.013	<.024
Jun													
04...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.006	<.024
17...	<.007	<.01	<.04	<.022	<.003	<.02	<.012	<.016	<.053	<.08	<.03	E.003	<.024
Jul													
15...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	<.08	<.03	E.004	<.024
Aug													
10...	<.007	<.01	<.04	<.022	<.003	<.02	<.012	<.016	<.053	<.08	<.03	E.005	E.006
Sep													
01...	<.006	<.01	<.04	<.022	<.002	<.02	<.012	<.016	<.053	--	<.03	E.005	<.024

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 6 of 8

[Remark codes: <, less than; E, estimated.]

Date	Fipronil, water, fltrd, µg/L (62166)	Fonofos water, fltrd, µg/L (04095)	Hexazinone, water, fltrd, µg/L (04025)	Iprodione, water, fltrd, µg/L (61593)	Isofenphos, water, fltrd, µg/L (61594)	lambda-Cyhalothrin, water, fltrd, µg/L (61595)	Malaoxon, water, fltrd, µg/L (61652)	Malathion, water, fltrd, µg/L (39532)	Metalaxyl, water, fltrd, µg/L (61596)	Methidathion, water, fltrd, µg/L (61598)	Methyl paraoxon, water, fltrd, µg/L (61664)	Methyl parathion, water, fltrd 0.7µ GF µg/L (82667)	Metolachlor, water, fltrd, µg/L (39415)
Oct													
22...	E.005	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Nov													
13...	E.008	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Dec													
09...	E.005	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Jan													
12...	E.009	<.010	.013	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
28...	E.011	<.010	.047	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Feb													
11...	E.020	<.010	.497	<.014	<.006	<.010	<.080	.024	<.007	<.006	<.01	<.008	<.014
23...	E.013	<.010	.132	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Mar													
09...	<.040	<.010	.037	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
24...	<.040	<.010	.032	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Apr													
09...	<.040	<.010	.017	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
24...	E.004	<.010	<.010	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
May													
08...	E.006	<.010	<.013	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
21...	<.040	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Jun													
04...	E.010	<.010	.025	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
17...	E.004	<.010	<.011	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Jul													
15...	E.005	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014
Aug													
10...	E.006	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.030	<.006	<.01	<.008	<.014
Sep													
01...	<.040	<.010	<.008	<.014	<.006	<.010	<.080	<.020	<.007	<.006	<.01	<.008	<.014

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 7 of 8

[Remark codes: <, less than; E, estimated.]

Date	Metribuzin, water, fltrd, µg/L (82630)	Molinate, water, fltrd 0.7µ GF µg/L (82671)	Myclobutanil water, fltrd, µg/L (61599)	Oxyfluorfen, water, fltrd, µg/L (61600)	Pendimethalin, water, fltrd 0.7µ GF µg/L (82683)	Phorate oxon, water, fltrd, µg/L (61666)	Phorate water, fltrd 0.7µ GF µg/L (82664)	Phosmet oxon, water, fltrd, µg/L (61668)	Phosmet water, fltrd, µg/L (61601)	Prometon, water, fltrd, µg/L (04037)	Prometryn, water, fltrd, µg/L (04036)	Propanil, water, fltrd 0.7µ GF µg/L (82679)	Propargite, water, fltrd 0.7µ GF µg/L (82685)
Oct													
22...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	E.01	<.006	<.014	<.02
Nov													
13...	<.016	<.005	<.010	<.006	<.012	<.03	<.020	<.05	<.200	E.01	<.006	<.014	<.02
Dec													
09...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.01	<.006	<.014	<.02
Jan													
12...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.02	<.006	<.014	<.02
28...	<.016	<.005	<.010	<.006	.018	<.03	<.020	<.05	<.200	.02	<.006	<.014	<.02
Feb													
11...	<.016	<.002	<.010	<.006	.047	<.03	<.020	--	<.200	.02	<.006	<.014	<.02
23...	<.016	<.002	<.010	<.006	<.022	<.03	<.020	<.05	<.200	E.01	<.006	<.014	<.02
Mar													
09...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.02	<.006	<.014	<.02
24...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.02	<.006	<.014	<.02
Apr													
09...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.02	<.006	<.014	<.02
24...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.03	<.006	<.014	<.02
May													
08...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	<.01	<.006	<.014	<.02
21...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	--	--	<.01	<.006	<.014	<.02
Jun													
04...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.01	<.006	<.014	<.02
17...	<.016	<.004	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.05	<.006	<.014	<.02
Jul													
15...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	<.05	<.200	.01	<.006	<.014	<.02
Aug													
10...	<.016	<.004	<.010	<.006	<.012	<.04	<.020	<.05	<.200	.02	<.006	<.014	<.02
Sep													
01...	<.016	<.002	<.010	<.006	<.012	<.03	<.020	--	<.200	.02	<.006	<.014	<.02

11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA
(NATIONAL WATER-QUALITY ASSESSMENT (NAWQA) PROGRAM)
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 8 of 8

[Remark codes: <, less than; E, estimated.]

Date	Propy-zamide, water, fltrd 0.7µ GF µg/L (82676)	Sima-zine, water, fltrd, µg/L (04035)	Tebu-con-azole, water, fltrd, µg/L (62852)	Tebu-thiuron water, fltrd 0.7µ GF µg/L (82670)	Teflu-thrin, water, fltrd, µg/L (61606)	Ter-bufos oxon sulfone water, fltrd, µg/L (61674)	Terbu-fos, water, fltrd 0.7µ GF µg/L (82675)	Ter-buthyl-azine, water, fltrd, µg/L (04022)	Thio-bencarb water, fltrd 0.7µ GF µg/L (82681)	trans-Propi-cona-zole, water, fltrd, µg/L (79847)	Tribu-phos, water, fltrd, µg/L (61610)	Tri-flur-alin, water, fltrd 0.7µ GF µg/L (82661)
Oct												
22...	<.004	.022	--	<.02	<.006	<.14	<.02	<.01	<.016	<.02	<.240	<.012
Nov												
13...	<.004	.078	--	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.035	<.012
Dec												
09...	<.004	.056	--	<.02	<.008	<.28	<.02	<.01	<.016	<.02	<.100	<.012
Jan												
12...	<.008	.075	--	<.03	<.010	<.12	<.02	<.01	<.016	<.02	<.035	<.012
28...	<.004	.218	--	<.02	<.010	<.12	<.02	<.01	<.016	<.02	<.035	<.012
Feb												
11...	<.004	.209	--	<.03	<.010	<.04	<.02	<.01	<.016	E.02	<.035	<.012
23...	<.004	.082	--	.03	<.010	<.04	<.02	<.01	<.016	E.02	<.035	<.012
Mar												
09...	<.004	.061	--	.04	<.010	<.04	<.02	<.01	<.016	E.01	<.035	<.012
24...	<.004	.083	--	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.035	<.012
Apr												
09...	<.004	.052	--	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.035	<.012
24...	<.004	.050	--	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.300	<.012
May												
08...	<.004	.052	--	<.02	<.010	<.15	<.02	<.01	<.016	<.02	<.250	<.012
21...	<.004	.049	--	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.035	<.012
Jun												
04...	<.004	.071	--	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.035	<.012
17...	<.004	.031	--	<.02	<.010	<.11	<.02	<.01	<.016	<.02	<.060	<.012
Jul												
15...	<.004	.032	<.02	<.02	<.010	<.04	<.02	<.01	<.016	<.02	<.200	<.012
Aug												
10...	<.004	.025	<.02	<.03	<.010	<.04	<.02	.02	<.016	<.02	<.200	<.012
Sep												
01...	<.004	.027	<.02	<.02	<.010	<.04	<.02	.01	<.016	<.02	<.035	<.012

11074000 Santa Ana River below Prado Dam, CA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

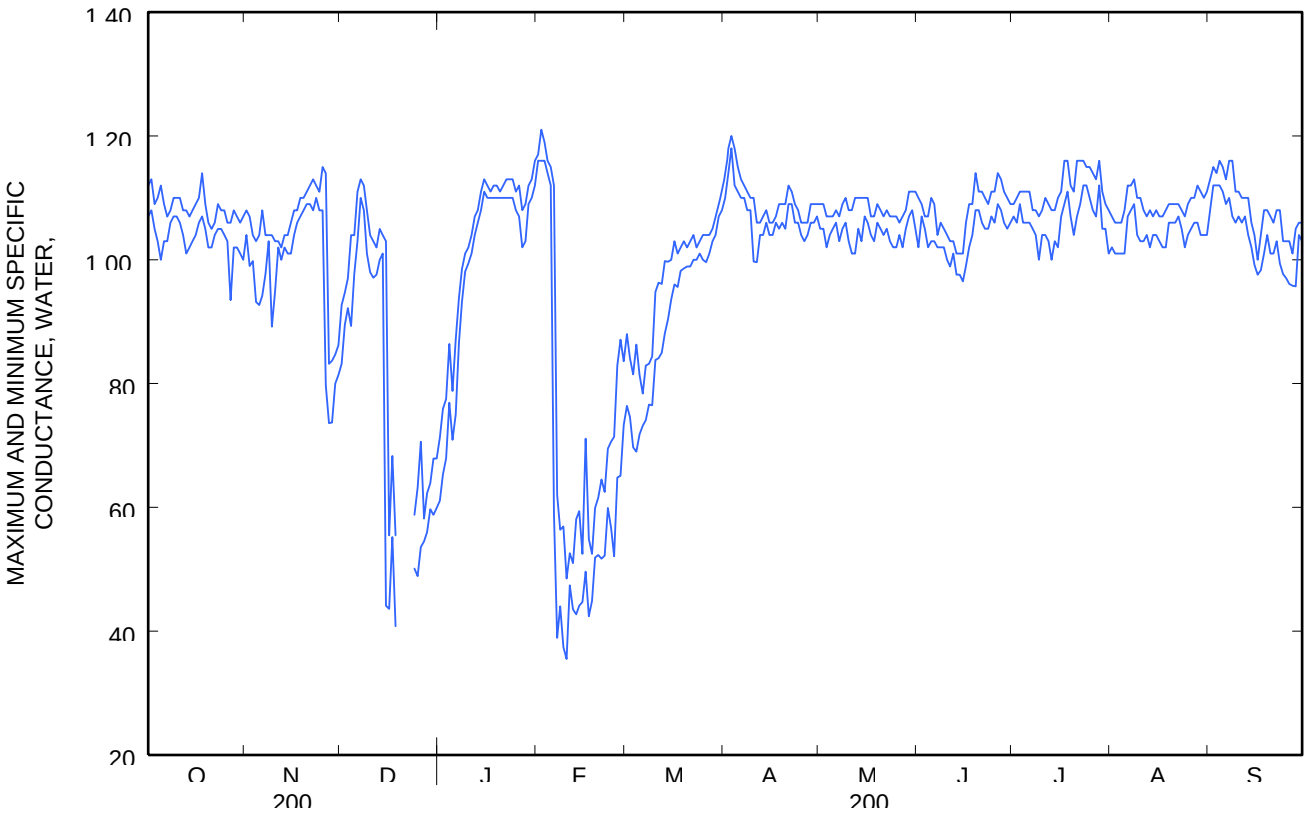
Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	October		November		December		January		February		March	
1	1,120	1,070	1,080	1,040	927	832	713	611	1,170	1,160	880	764
2	1,130	1,080	1,070	990	947	895	759	653	1,210	1,160	841	746
3	1,090	1,050	1,040	998	970	922	775	679	1,190	1,160	815	697
4	1,100	1,030	1,030	932	1,040	893	864	769	1,160	1,140	863	690
5	1,120	1,000	1,040	927	1,040	977	788	709	1,150	1,120	814	718
6	1,090	1,030	1,080	942	1,110	1,030	871	750	1,120	590	784	732
7	1,070	1,030	1,040	977	1,130	1,100	938	865	620	389	829	741
8	1,080	1,060	1,040	1,030	1,120	1,080	985	932	564	440	832	766
9	1,100	1,070	1,040	892	1,080	1,010	1,010	981	569	374	844	765
10	1,100	1,070	1,030	949	1,040	980	1,020	994	485	355	948	838
11	1,100	1,060	1,030	1,020	1,030	971	1,040	1,010	526	474	963	841
12	1,080	1,040	1,020	1,000	1,020	976	1,070	1,040	510	435	961	850
13	1,080	1,010	1,040	1,020	1,050	1,000	1,080	1,060	581	427	998	881
14	1,070	1,020	1,040	1,010	1,040	1,010	1,110	1,080	594	441	997	904
15	1,080	1,030	1,060	1,010	1,030	441	1,130	1,110	525	447	1,000	936
16	1,090	1,040	1,080	1,040	555	436	1,120	1,100	711	496	1,030	960
17	1,100	1,060	1,080	1,060	683	552	1,110	1,100	549	424	1,010	956
18	1,140	1,070	1,100	1,070	555	408	1,120	1,100	525	449	1,020	982
19	1,090	1,050	1,100	1,080	---	---	1,120	1,100	599	519	1,030	986
20	1,060	1,020	1,110	1,090	---	---	1,110	1,100	616	523	1,020	989
21	1,050	1,020	1,120	1,090	---	---	1,120	1,100	645	517	1,030	989
22	1,060	1,040	1,130	1,080	---	---	1,130	1,100	625	522	1,040	1,000
23	1,090	1,050	1,120	1,100	---	---	1,130	1,100	695	599	1,020	1,000
24	1,080	1,050	1,110	1,080	588	501	1,130	1,100	706	567	1,030	1,010
25	1,080	1,040	1,150	1,080	632	489	1,110	1,080	714	521	1,040	1,000
26	1,060	1,030	1,140	797	706	536	1,120	1,070	829	648	1,040	996
27	1,060	935	832	736	582	545	1,080	1,020	871	651	1,040	1,010
28	1,080	1,020	837	737	623	560	1,090	1,030	836	733	1,050	1,030
29	1,070	1,020	847	800	639	597	1,120	1,090	---	---	1,070	1,040
30	1,060	1,010	862	814	679	588	1,130	1,100	---	---	1,090	1,070
31	1,070	1,000	---	---	679	599	1,160	1,120	---	---	1,110	1,080
Month	1,140	935	1,150	736	---	---	1,160	611	1,210	355	1,110	690

11074000 Santa Ana River below Prado Dam, CA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	April		May		June		July		August		September	
1	1,140	1,100	1,090	1,050	1,100	1,020	1,090	1,070	1,070	1,020	1,130	1,080
2	1,180	1,140	1,090	1,050	1,090	1,070	1,100	1,060	1,060	1,010	1,150	1,120
3	1,200	1,180	1,070	1,020	1,070	1,050	1,110	1,090	1,060	1,010	1,140	1,120
4	1,180	1,120	1,070	1,040	1,070	1,020	1,110	1,060	1,060	1,010	1,160	1,120
5	1,150	1,110	1,070	1,050	1,100	1,030	1,110	1,060	1,080	1,010	1,150	1,110
6	1,130	1,100	1,080	1,060	1,090	1,030	1,110	1,060	1,120	1,070	1,130	1,090
7	1,120	1,100	1,070	1,030	1,040	1,020	1,080	1,050	1,120	1,080	1,160	1,100
8	1,110	1,080	1,090	1,050	1,060	1,020	1,080	1,040	1,130	1,090	1,160	1,070
9	1,100	1,080	1,100	1,060	1,050	1,020	1,070	1,000	1,100	1,040	1,110	1,060
10	1,100	997	1,080	1,030	1,040	1,000	1,080	1,040	1,100	1,030	1,110	1,070
11	1,060	996	1,080	1,010	1,030	989	1,100	1,040	1,080	1,030	1,100	1,060
12	1,060	1,040	1,100	1,010	1,030	1,010	1,090	1,030	1,070	1,040	1,100	1,070
13	1,070	1,040	1,100	1,050	1,010	976	1,080	1,000	1,080	1,020	1,100	1,040
14	1,080	1,060	1,100	1,030	1,010	976	1,080	1,030	1,070	1,040	1,060	1,020
15	1,060	1,040	1,100	1,070	1,010	965	1,100	1,020	1,080	1,040	1,040	992
16	1,060	1,040	1,100	1,060	1,060	990	1,110	1,070	1,070	1,030	1,000	976
17	1,070	1,060	1,070	1,040	1,090	1,020	1,160	1,090	1,070	1,020	1,040	983
18	1,090	1,050	1,070	1,030	1,090	1,040	1,160	1,110	1,080	1,020	1,080	1,010
19	1,090	1,060	1,090	1,060	1,140	1,080	1,120	1,070	1,090	1,060	1,080	1,040
20	1,090	1,050	1,080	1,050	1,110	1,080	1,110	1,040	1,090	1,060	1,070	1,010
21	1,120	1,090	1,070	1,040	1,110	1,060	1,160	1,070	1,090	1,060	1,060	1,010
22	1,110	1,090	1,080	1,050	1,100	1,050	1,160	1,090	1,090	1,070	1,080	1,030
23	1,090	1,060	1,070	1,030	1,090	1,050	1,160	1,120	1,080	1,050	1,080	994
24	1,080	1,060	1,070	1,020	1,110	1,070	1,150	1,120	1,070	1,020	1,030	977
25	1,060	1,040	1,070	1,020	1,110	1,060	1,150	1,100	1,090	1,040	1,030	970
26	1,060	1,030	1,060	1,040	1,140	1,090	1,140	1,080	1,100	1,050	1,030	961
27	1,060	1,040	1,070	1,020	1,130	1,080	1,130	1,070	1,100	1,060	1,010	958
28	1,090	1,060	1,080	1,050	1,110	1,060	1,160	1,120	1,120	1,060	1,050	957
29	1,090	1,060	1,110	1,070	1,100	1,050	1,110	1,050	1,110	1,040	1,060	1,040
30	1,090	1,070	1,110	1,080	1,090	1,060	1,090	1,050	1,100	1,040	1,060	1,030
31	---	---	1,110	1,050	---	---	1,080	1,010	1,110	1,040	---	---
Month	1,200	996	1,110	1,010	1,140	965	1,160	1,000	1,130	1,010	1,160	957

11074000 Santa Ana River below Prado Dam, CA—Continued



11074000 Santa Ana River below Prado Dam, CA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	October		November		December		January		February		March	
1	24.0	23.4	20.8	19.8	16.5	16.3	11.3	10.4	15.2	14.3	15.3	13.9
2	24.1	23.3	20.4	19.8	16.5	16.2	11.6	10.7	15.6	14.3	15.0	14.1
3	23.3	22.1	20.1	18.9	16.6	16.1	11.8	10.9	15.8	14.1	15.5	14.4
4	22.4	21.2	19.5	18.6	16.6	16.1	11.9	11.1	16.0	14.3	14.8	14.3
5	21.5	20.7	19.3	17.1	16.8	15.9	11.4	10.7	16.0	14.5	15.4	14.3
6	21.7	20.8	20.6	16.5	16.3	15.6	11.7	11.0	15.7	14.9	15.4	14.3
7	21.8	21.1	18.0	16.6	16.5	15.6	12.3	11.5	15.0	12.8	15.4	14.2
8	21.8	21.2	18.0	17.2	16.7	16.4	12.5	11.9	13.2	13.0	15.6	14.4
9	21.7	20.8	18.1	17.1	16.7	14.2	12.8	12.2	13.2	11.5	15.7	14.6
10	21.6	20.9	17.5	16.0	14.3	13.5	12.2	11.5	12.5	11.2	15.8	14.6
11	20.9	18.6	17.5	16.0	15.0	13.9	12.9	11.8	12.2	11.8	15.7	14.9
12	18.6	17.2	18.6	17.0	15.2	14.5	13.3	12.3	12.4	11.6	16.1	14.8
13	17.2	15.6	18.8	17.0	15.3	14.7	14.4	13.3	12.6	11.5	16.2	14.8
14	17.4	15.4	18.8	18.0	14.7	13.1	14.9	14.2	12.3	11.9	16.4	15.3
15	18.8	17.4	18.9	17.0	13.7	10.2	14.7	14.0	12.1	11.7	16.3	15.4
16	19.2	18.7	17.9	17.0	11.1	10.2	14.6	13.9	12.5	11.6	16.6	15.5
17	19.1	18.5	18.2	16.9	11.5	10.0	15.4	14.1	12.2	11.5	17.2	15.9
18	19.3	18.9	18.7	16.6	10.0	8.6	15.2	14.5	12.3	11.7	17.5	16.4
19	19.5	18.8	17.9	16.9	9.9	9.6	15.1	14.4	12.7	11.9	17.9	16.7
20	19.6	19.0	18.1	16.4	10.0	9.6	16.1	14.7	13.0	12.0	18.2	17.1
21	19.9	18.7	17.7	16.4	10.0	9.5	16.7	15.6	13.4	12.2	17.9	17.2
22	20.1	19.2	17.9	16.6	10.0	9.6	16.8	16.3	13.1	12.5	17.7	17.0
23	19.3	18.4	17.9	16.8	10.5	9.3	16.7	16.4	13.8	13.0	17.6	16.4
24	18.8	17.9	17.8	16.4	10.4	9.8	16.7	16.3	14.4	13.0	17.8	16.8
25	18.2	17.7	18.9	17.3	11.0	9.9	16.7	15.6	13.6	12.8	17.8	16.9
26	18.4	17.9	18.4	16.6	11.4	9.8	15.9	15.0	14.3	12.8	17.9	16.7
27	19.0	18.3	16.9	16.4	10.5	9.9	15.0	14.1	14.7	13.3	18.1	17.0
28	19.4	18.4	16.9	16.6	10.2	9.8	14.1	13.0	14.8	13.8	18.6	17.4
29	19.8	18.8	16.9	16.4	10.4	9.8	13.2	12.8	---	---	18.8	17.4
30	20.0	18.6	16.5	16.2	11.0	10.3	13.8	13.0	---	---	19.0	17.8
31	20.6	19.7	---	---	11.0	10.2	15.0	13.6	---	---	19.4	17.9
Month	24.1	15.4	20.8	16.0	16.8	8.6	16.8	10.4	16.0	11.2	19.4	13.9

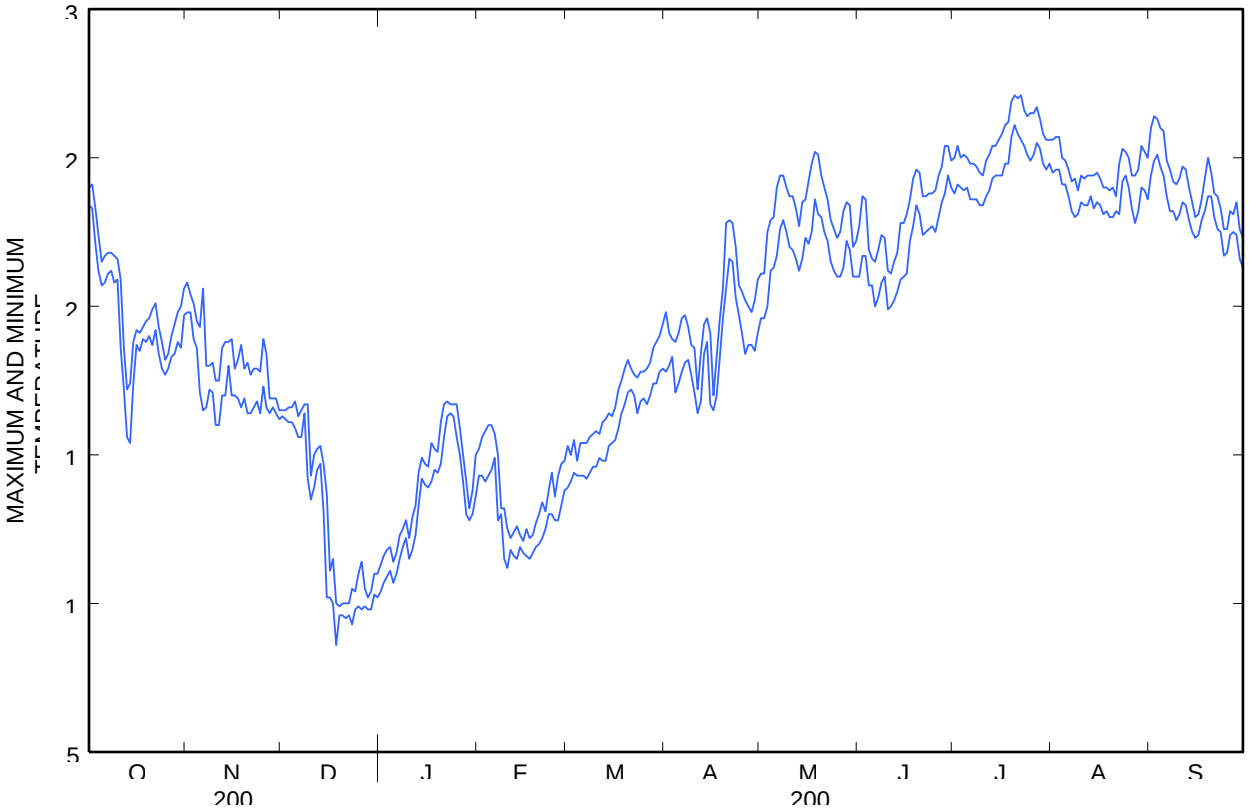
11074000 Santa Ana River below Prado Dam, CA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	April		May		June		July		August		September	
1	19.8	17.8	21.1	19.6	22.7	21.0	25.0	23.8	25.6	24.5	26.0	24.4
2	19.1	18.0	21.1	19.6	23.7	21.7	25.4	24.1	25.7	24.6	26.4	24.9
3	18.9	18.3	22.5	20.0	23.6	21.7	25.0	24.0	25.7	24.6	26.3	25.1
4	18.8	17.1	22.9	21.2	21.9	20.7	25.1	23.9	25.0	24.1	26.0	24.7
5	19.1	17.4	23.0	21.3	21.6	20.7	25.0	24.0	24.9	24.1	25.9	24.4
6	19.6	17.8	24.0	21.7	21.5	20.0	24.8	23.6	24.6	23.7	24.9	23.7
7	19.7	18.1	24.4	22.6	21.9	20.3	24.8	23.6	24.2	23.2	24.6	23.2
8	19.3	18.2	24.4	22.9	22.4	20.8	24.7	23.6	24.3	23.0	24.2	23.2
9	18.7	17.7	24.0	22.5	22.3	21.0	24.5	23.4	23.9	23.1	24.1	22.9
10	18.6	17.1	23.7	22.0	21.2	19.9	24.4	23.4	24.4	23.5	24.3	23.1
11	17.2	16.4	23.7	21.9	21.1	20.0	24.9	23.7	24.3	23.4	24.7	23.5
12	18.4	16.8	23.3	21.6	21.5	20.2	25.1	23.9	24.4	23.4	24.6	23.4
13	19.4	18.4	22.7	21.2	21.8	20.5	25.4	24.3	24.4	23.7	24.0	22.9
14	19.6	18.8	23.5	21.6	22.8	20.9	25.4	24.4	24.4	23.3	23.5	22.5
15	19.1	16.7	23.6	22.3	22.8	21.0	25.6	24.4	24.5	23.5	23.0	22.3
16	17.0	16.5	24.2	22.1	23.1	21.1	25.8	24.4	24.3	23.4	23.1	22.4
17	18.3	17.0	24.8	22.5	23.6	22.2	26.1	24.8	24.0	23.1	23.6	22.9
18	19.6	18.3	25.2	23.6	24.3	22.7	26.2	24.8	24.0	23.2	24.3	23.2
19	20.6	19.6	25.1	23.1	24.6	23.4	26.9	25.7	23.9	23.0	25.0	23.7
20	22.8	20.6	24.4	23.0	24.5	23.1	27.1	26.1	24.0	23.0	24.5	23.7
21	22.9	21.6	24.0	22.5	23.7	22.4	27.0	25.8	23.7	23.2	23.8	23.0
22	22.8	21.5	23.6	22.2	23.7	22.5	27.1	25.6	24.8	23.1	23.7	22.6
23	22.0	20.3	22.9	21.5	23.8	22.6	26.6	25.4	25.3	24.2	23.3	22.5
24	20.7	19.7	22.6	21.2	23.8	22.7	26.4	25.1	25.2	24.4	22.6	21.7
25	20.5	19.1	22.3	21.0	23.9	22.5	26.5	24.9	25.0	24.0	22.6	21.8
26	20.2	18.4	22.5	21.0	24.4	23.0	26.5	25.1	24.4	23.3	23.2	22.4
27	20.0	18.7	23.2	21.3	24.7	23.5	26.7	25.5	24.4	22.8	23.1	22.5
28	19.8	18.7	23.5	22.2	25.4	23.8	26.3	25.3	24.6	23.2	23.5	22.4
29	20.2	18.5	23.4	21.9	25.4	24.4	25.8	24.8	25.4	24.0	22.6	21.6
30	20.9	19.1	22.0	21.0	24.9	24.0	25.6	24.6	25.2	23.9	22.3	21.3
31	---	---	22.2	21.0	---	---	25.6	24.8	25.0	23.6	---	---
Month	22.9	16.4	25.2	19.6	25.4	19.9	27.1	23.4	25.7	22.8	26.4	21.3

	Max	Min
Year	27.1	8.6

11074000 Santa Ana River below Prado Dam, CA—Continued



11074000 Santa Ana River below Prado Dam, CA—Continued

**PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009**

Date	Time	Instantaneous discharge, ft^3/s (00061)	Temperature, water, deg C (00010)	Suspnd. sedimnt sieve diametr percent <0.0625 mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Oct						
22...SS	0945	148	19.5	92	42	17
Nov						
13...SS	1315	168	17.0	94	25	11
Dec						
09...SS	1315	227	15.0	--	46	28
Jan						
12...SS	1545	362	13.0	--	19	19
28...SS	1445	247	13.5	--	12	8.0
Feb						
11...SS	1430	502	17.0	--	47	64
23...SS	1345	422	13.5	--	11	13
Mar						
09...SS	1430	327	15.5	--	2	1.8
24...SS	1115	313	17.0	--	3	2.5
Apr						
09...SS	1415	171	18.0	--	53	24
24...SS	1015	164	20.0	--	44	19
May						
08...SS	1000	142	22.5	--	42	16
21...SS	1430	148	23.0	--	51	20
Jun						
04...SS	1200	148	21.0	--	32	13
17...SS	1300	122	22.5	--	36	12
Jul						
15...SS	1200	93	25.0	--	30	7.5
Aug						
10...SS	1530	93	24.5	--	18	4.5
Sep						
01...SS	1530	78	26.0	--	33	6.9

SS Suspended-sediment data determined from a sample collected and processed according to National Water-Quality Assessment (NAWQA) Program protocol.

11074000 Santa Ana River below Prado Dam, CA—Continued

CROSS SECTION ANALYSES
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Date	Time	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif-ic conduc-tance, wat unf µS/cm @ 25 degC (00095)	Temper-ature, water, deg C (00010)	Stream width, feet (00004)	Loca-tion in X-sect. looking dwnstr m ft from l bank (00009)
Apr							
21...	1101	--	--	1,110	21.6	32.3	2.30
21...	1102	--	--	1,110	21.6	32.3	5.80
21...	1103	--	--	1,110	21.6	32.3	5.80
21...	1104	--	--	1,110	21.6	32.3	9.80
21...	1105	--	--	1,110	21.6	32.3	9.80
21...	1106	--	--	1,110	21.6	32.3	13.8
21...	1107	--	--	1,110	21.6	32.3	13.8
21...	1108	--	--	1,110	21.5	32.3	17.8
21...	1109	--	--	1,110	21.5	32.3	17.8
21...	1110	--	--	1,110	21.5	32.3	21.8
21...	1111	--	--	1,110	21.5	32.3	21.8
21...	1112	--	--	1,110	21.5	32.3	25.8
21...	1113	--	--	1,110	21.5	32.3	25.8
21...	1114	--	--	1,110	21.6	32.3	29.8
Aug							
10...	1541	10.4	8.2	1,070	24.5	--	--
10...	1548	11.5	8.3	1,070	24.5	30.0	3.00
10...	1550	11.2	8.3	1,070	24.5	30.0	9.00
10...	1554	11.0	8.3	1,070	24.5	30.0	15.0
10...	1555	10.9	8.3	1,070	24.5	30.0	21.0
10...	1558	11.0	8.3	1,070	24.5	30.0	27.0
21...	1031	--	--	1,070	23.6	32.0	3.00
21...	1032	--	--	1,080	23.6	32.0	3.00
21...	1033	--	--	1,080	23.6	32.0	6.00
21...	1034	--	--	1,080	23.6	32.0	6.00
21...	1035	--	--	1,080	23.6	32.0	9.00
21...	1036	--	--	1,080	23.6	32.0	9.00
21...	1037	--	--	1,080	23.6	32.0	12.0
21...	1038	--	--	1,080	23.6	32.0	12.0
21...	1039	--	--	1,080	23.6	32.0	15.0
21...	1040	--	--	1,080	23.6	32.0	15.0
21...	1041	--	--	1,080	23.6	32.0	18.0
21...	1042	--	--	1,080	23.6	32.0	18.0
21...	1043	--	--	1,080	23.6	32.0	21.0
21...	1044	--	--	1,080	23.6	32.0	21.0
21...	1045	--	--	1,070	23.6	32.0	24.0
21...	1046	--	--	1,080	23.6	32.0	24.0
21...	1047	--	--	1,070	23.6	32.0	27.0
21...	1048	--	--	1,070	23.7	32.0	30.0

Note: Instantaneous discharge at the mean time of cross-sectional measurements: Apr. 21, 172 ft^3/s; Aug. 10, 93 ft^3/s; Aug. 21, 108 ft^3/s.

Water-Data Report 2009

11066460 Santa Ana River at Metropolitan Water District Crossing, near Arlington, CA

Santa Ana River Basin

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970 to current year.
CHEMICAL DATA: Water years 1970 to current year.
SPECIFIC CONDUCTANCE: Water years 1970-78, 1999-2000.
WATER TEMPERATURE: Water years 1999-2000.
SEDIMENT DATA: Water years 1999-2000.

U.S. Department of the Interior
U.S. Geological Survey

11066460 Santa Ana River at Metropolitan Water District Crossing, near Arlington, CA—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Date	Time	Temperature, air, deg C (00020)	Instantaneous discharge, ft^3/s (00061)	Specific conductance, wat unf µS/cm @ 25 degC (00095)	Temperature, water, deg C (00010)	Dissolved solids dried @ 180deg C wat flt mg/L (70300)
Oct						
09...	1120	25.1	76	937	22.2	570
23...	1200	20.9	62	931	21.4	572
Nov						
06...	1125	22.0	65	970	19.4	601
20...	1050	23.7	69	909	18.5	564
Dec						
03...	1300	21.9	62	944	20.5	569
19...	1235	9.7	184	706	13.2	424
Jan						
07...	1225	17.7	77	942	18.0	572
21...	1400	23.7	66	981	19.9	613
Feb						
10...	1200	15.2	477	512	12.1	314
20...	1045	16.0	91	919	16.4	570
Mar						
06...	0945	12.3	71	950	16.2	598
23...	1445	18.1	81	911	21.3	570
Apr						
02...	1305	20.3	61	944	24.0	590
16...	1205	20.4	59	980	22.0	619
May						
06...	1335	24.3	39	1,040	30.3	668
20...	1205	33.0	46	996	28.9	623
Jun						
01...	1405	24.4	48	993	26.9	593
19...	1215	28.1	58	965	28.9	604
Jul						
08...	1035	23.1	54	985	25.4	604
22...	1345	35.1	37	990	32.6	618
Aug						
10...	1445	27.1	46	1,010	31.2	635
25...	1425	29.5	41	973	31.1	594
Sep						
01...	1255	39.3	34	1,000	30.2	618
22...	1345	28.5	37	1,000	27.4	599

Water-Data Report 2009

11059300 Santa Ana River at E Street, near San Bernardino, CA

Santa Ana River Basin

LOCATION.--Lat 34°03′54″, long 117°17′58″ referenced to North American Datum of 1927, San Bernardino County, CA, Hydrologic Unit 18070203, in San Bernardino Grant, on left bank, 0.4 mi downstream from E Street Bridge, 0.4 mi upstream from Warm Creek, 1.2 mi downstream from San Timoteo Creek, 2.8 mi south of San Bernardino, and 26 mi downstream from Big Bear Lake.

DRAINAGE AREA.--541 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1939 to September 1954, October 1966 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 940 ft above NGVD of 1929, from topographic map. Prior to Nov. 10, 1950, on right bank 0.4 mi upstream at datum 24.50 ft higher. Nov. 11, 1950, to September 1954, on both banks 0.4 mi upstream at datum 24.50 ft higher. October 1966 to September 1976, on right bank 0.4 mi upstream at datum 14.50 ft higher. October 1976 to September 1977, gage was removed for channel construction. October 1977 to Jan. 28, 1981, on right bank, 0.5 mi upstream at elevation 10 ft higher.

REMARKS.--Records poor. Flow partly regulated by Big Bear Lake (station 11049000) and, since November 1999, by Seven Oaks Flood-Control Reservoir, capacity, 145,600 acre-ft. Natural flow of stream affected by ground-water withdrawals and diversion for domestic use and irrigation upstream from station. Effluent from sewage reclamation plant 1.0 mi upstream caused sustained flow past gage from 1967 to Mar. 21, 1996. See schematic diagram of Santa Ana River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,700 ft³/s, Jan. 11, 2005, gage height, 9.04 ft, current site and datum, from rating curve extended above 5,930 ft³/s on basis of critical-depth computations; maximum gage height, 11.9 ft, Feb. 25, 1969, site and datum then in use; no flow for many days many years prior to 1967 and since Mar. 21, 1996.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and (or) maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov 26	0415	1,690	4.98
Dec 15	1145	*2,430	*5.08
Dec 25	1630	1,420	4.69
Feb 7	0300	1,970	4.86
Feb 9	0715	2,180	4.94
Feb 13	1930	1,020	4.41
Feb 16	1830	1,360	4.61

11059300 Santa Ana River at E Street, near San Bernardino, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.10	0.14	1.7	9.3	5.8	6.9	6.6	2.7	1.9	0.00	0.00	0.00
2	0.00	5.4	4.4	8.9	5.8	6.8	6.4	1.9	1.5	0.37	0.00	0.00
3	0.00	3.9	8.4	9.9	5.4	7.0	5.7	2.3	1.8	0.00	0.00	0.00
4	0.00	2.8	4.2	9.4	5.6	6.8	4.8	1.8	2.2	0.00	0.00	0.00
5	0.00	1.6	1.9	8.2	7.8	6.7	3.9	2.0	2.2	0.00	0.00	0.00
6	0.00	0.50	1.8	8.0	180	6.6	4.9	0.64	2.1	0.09	0.00	0.00
7	0.00	0.00	1.6	7.0	471	6.8	4.2	0.47	1.8	0.02	0.00	0.00
8	0.00	0.03	3.6	7.1	209	6.7	4.2	0.09	1.8	0.00	0.00	0.00
9	0.00	0.03	4.0	6.9	950	6.5	4.8	0.10	1.5	0.00	0.00	0.00
10	0.00	2.0	3.2	6.7	188	6.7	8.4	0.00	1.7	0.00	0.00	0.00
11	0.00	2.7	3.3	6.8	38	5.8	5.6	0.18	1.9	0.00	0.00	0.00
12	0.00	2.8	2.8	7.4	17	6.2	4.3	0.86	2.0	0.00	0.00	0.00
13	0.00	2.7	3.4	6.8	93	5.1	4.3	0.86	2.4	0.00	0.00	0.00
14	0.00	2.7	3.8	7.0	24	5.2	4.1	0.59	2.4	0.00	0.00	0.00
15	0.00	2.6	681	6.7	13	6.0	4.3	0.22	2.4	0.00	0.00	0.00
16	0.00	2.6	287	6.2	469	6.0	4.1	0.50	1.3	0.00	0.00	0.00
17	0.00	2.4	731	5.9	320	5.8	4.0	0.00	0.00	0.00	0.00	0.00
18	0.00	2.6	223	6.0	85	5.8	3.5	0.09	0.00	0.00	0.00	0.00
19	0.00	2.3	59	6.2	21	5.6	3.4	0.00	0.00	0.00	0.00	0.00
20	0.00	1.9	13	6.7	17	5.4	3.1	0.00	0.00	0.00	0.00	0.00
21	0.00	2.1	11	7.5	14	5.6	2.4	0.01	0.00	0.00	0.00	0.00
22	0.06	2.6	13	6.2	11	8.1	1.4	0.23	0.00	0.00	0.00	0.00
23	0.00	3.2	18	7.0	11	5.0	1.5	0.34	0.04	0.00	0.00	0.00
24	0.00	3.3	8.4	6.5	12	4.4	3.0	0.44	0.00	0.00	0.00	0.00
25	0.00	4.3	302	6.3	10	5.9	4.5	0.29	0.00	0.00	0.00	0.00
26	0.00	459	84	13	9.1	7.0	3.1	1.6	0.00	0.00	0.00	0.00
27	0.00	138	16	6.9	7.4	4.9	3.0	1.3	0.00	0.00	0.00	0.00
28	0.12	21	9.4	6.3	6.9	5.3	2.5	1.3	0.02	0.00	0.00	0.00
29	0.00	4.2	7.9	5.0	---	5.3	3.8	0.73	0.00	0.00	0.00	0.00
30	0.63	1.4	7.4	5.5	---	5.7	3.5	1.5	0.00	0.00	0.00	0.00
31	0.47	---	9.5	5.8	---	5.3	---	2.1	---	0.00	0.00	---
Total	1.38	680.80	2,528.7	223.1	3,206.8	186.9	123.3	25.14	30.96	0.48	0.00	0.00
Mean	0.04	22.7	81.6	7.20	115	6.03	4.11	0.81	1.03	0.02	0.00	0.00
Max	0.63	459	731	13	950	8.1	8.4	2.7	2.4	0.37	0.00	0.00
Min	0.00	0.00	1.6	5.0	5.4	4.4	1.4	0.00	0.00	0.00	0.00	0.00
Ac-ft	2.7	1,350	5,020	443	6,360	371	245	50	61	1.0	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1954, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	.88	3.47	20.9	23.7	20.6	37.4	27.2	11.3	2.39	.93	.87	.63
Max	3.35	21.3	117	109	72.2	183	237	145	31.2	9.87	8.37	6.32
(WY)	(1942)	(1945)	(1946)	(1943)	(1945)	(1943)	(1941)	(1941)	(1941)	(1940)	(1940)	(1939)
Min	.000	.007	.000	1.90	2.41	1.70	1.14	.14	.000	.000	.000	.000
(WY)	(1951)	(1952)	(1951)	(1948)	(1942)	(1951)	(1951)	(1942)	(1950)	(1950)	(1942)	(1948)

11059300 Santa Ana River at E Street, near San Bernardino, CA—Continued

SUMMARY STATISTICS

	Water Years 1939 - 1954	
Annual mean	12.7	
Highest annual mean	56.6	1941
Lowest annual mean	.78	1951
Highest daily mean	2,350	Jan 23, 1943
Lowest daily mean	.00	Jun 19, 1940
Annual seven-day minimum	.00	Sep 10, 1940
Maximum peak flow	7,600	Jan 23, 1943
Maximum peak stage	6.50	Jan 23, 1943
Annual runoff (ac-ft)	9,190	
10 percent exceeds	16	
50 percent exceeds	1.0	
90 percent exceeds	.00	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1995, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	33.9	43.3	77.4	158	232	253	132	103	63.9	40.8	36.8	34.6
Max	117	191	469	1,327	2,096	1,279	742	707	339	162	160	75.0
(WY)	(1984)	(1984)	(1967)	(1993)	(1980)	(1980)	(1980)	(1983)	(1983)	(1969)	(1983)	(1983)
Min	12.4	13.2	14.8	13.2	11.6	10.6	12.5	9.35	13.0	9.08	9.97	9.93
(WY)	(1968)	(1972)	(1970)	(1972)	(1968)	(1972)	(1972)	(1967)	(1971)	(1967)	(1967)	(1967)

SUMMARY STATISTICS

	Water Years 1967 - 1995	
Annual mean	100	
Highest annual mean	441	1980
Lowest annual mean	17.2	1968
Highest daily mean	14,800	Feb 25, 1969
Lowest daily mean	6.4	Jul 13, 1967
Annual seven-day minimum	8.1	Sep 16, 1967
Maximum peak flow	28,000	Feb 25, 1969
Maximum peak stage	11.90	Feb 25, 1969
Annual runoff (ac-ft)	72,490	
10 percent exceeds	165	
50 percent exceeds	35	
90 percent exceeds	14	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1999, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	17.5	31.2	29.8	101	253	48.0	55.4	110	31.2	9.13	18.4	22.6
Max	38.1	56.2	42.6	230	729	114	190	430	116	20.9	66.1	75.8
(WY)	(1996)	(1997)	(1998)	(1997)	(1998)	(1998)	(1998)	(1998)	(1998)	(1999)	(1998)	(1998)
Min	4.97	11.0	16.5	22.2	7.57	0.10	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(1998)	(1998)	(1999)	(1999)	(1997)	(1997)	(1997)	(1996)	(1996)	(1996)	(1996)	(1996)

11059300 Santa Ana River at E Street, near San Bernardino, CA—Continued

SUMMARY STATISTICS

	Water Years 1996 - 1999	
Annual mean	59.4	
Highest annual mean	152	1998
Lowest annual mean	15.9	1999
Highest daily mean	5,050	Feb 24, 1998
Lowest daily mean	0.00	Mar 22, 1996
Annual seven-day minimum	0.00	Mar 22, 1996
Maximum peak flow	21,100	Feb 23, 1998
Maximum peak stage	7.70	Feb 23, 1998
Annual runoff (ac-ft)	43,010	
10 percent exceeds	138	
50 percent exceeds	7.5	
90 percent exceeds	0.00	

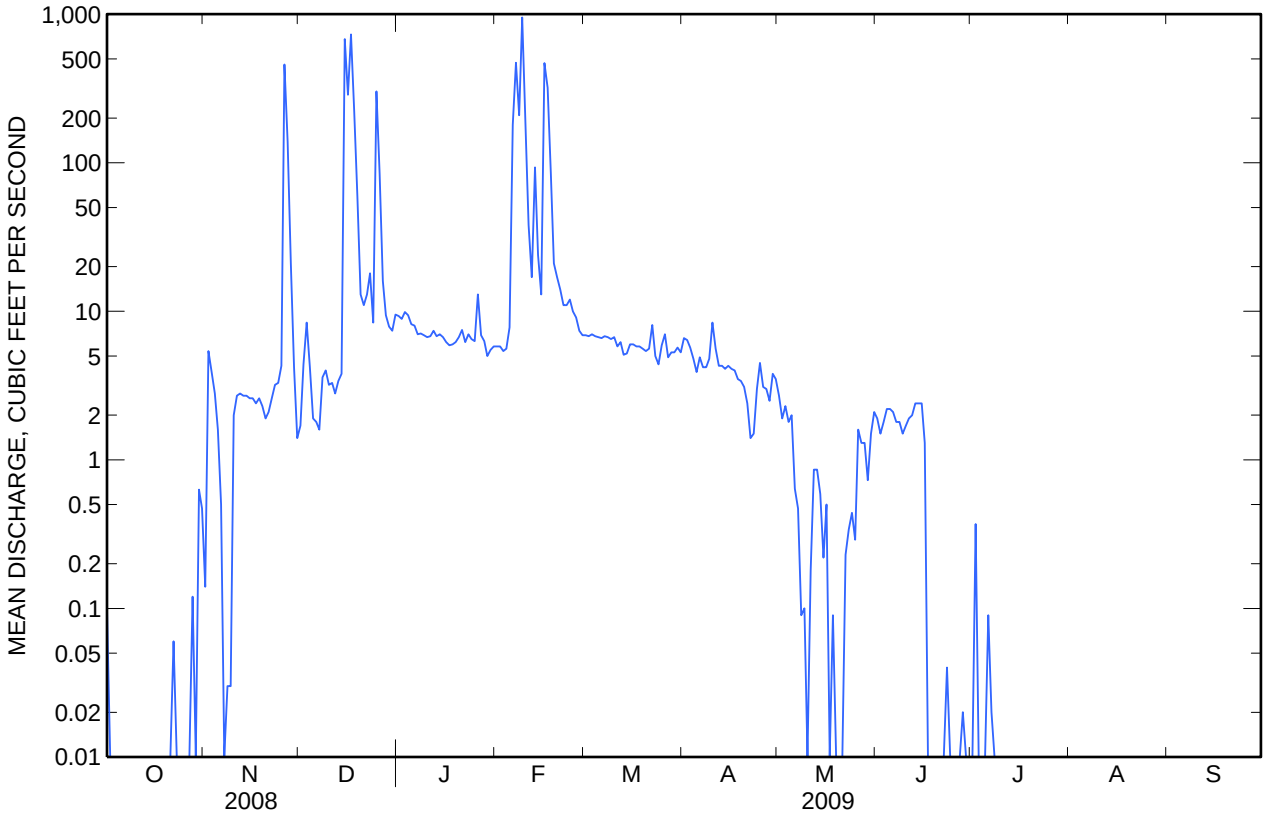
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	26.1	13.3	33.2	143	102	64.9	71.1	37.5	11.6	5.65	10.7	5.40
Max	200	39.7	96.9	1,185	376	398	351	247	112	52.9	102	40.6
(WY)	(2005)	(2003)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)
Min	0.00	0.67	1.16	0.00	0.82	4.10	0.04	0.00	0.00	0.00	0.00	0.00
(WY)	(2003)	(2001)	(2001)	(2003)	(2002)	(2008)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 2000 - 2009	
Annual total	10,755.98		7,007.56			
Annual mean	29.4		19.2		43.5	
Highest annual mean					265	2005
Lowest annual mean					1.70	2002
Highest daily mean	884	Jan 5	950	Feb 9	12,500	Jan 11, 2005
Lowest daily mean	0.00	May 18	0.00	Oct 2	0.00	May 14, 2000
Annual seven-day minimum	0.00	Jun 26	0.00	Oct 2	0.00	Sep 11, 2000
Maximum peak flow			2,430	Dec 15	35,700	Jan 11, 2005
Maximum peak stage			5.08	Dec 15	9.04	Jan 11, 2005
Annual runoff (ac-ft)	21,330		13,900		31,480	
10 percent exceeds	21		9.9		67	
50 percent exceeds	2.1		1.9		1.3	
90 percent exceeds	0.00		0.00		0.00	

11059300 Santa Ana River at E Street, near San Bernardino, CA—Continued



Water-Data Report 2009

11072100 Temescal Creek above Main Street, at Corona, CA

Santa Ana River Basin

LOCATION.--Lat 33°53′21″, long 117°33′43″ referenced to North American Datum of 1927, Riverside County, CA, Hydrologic Unit 18070203, in La Sierra Grant, on right bank, 500 ft upstream from Main Street Bridge in Corona, and 1.5 mi upstream from topographic boundary of Prado Flood-Control Basin.

DRAINAGE AREA.--224 mi², excludes 768 mi² above Lake Elsinore.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1980 to July 1983, February 1984 to current year.

GAGE.--Water-stage recorder and concrete-lined flood-control channel. Elevation of gage is 600 ft above NGVD of 1929, from topographic map. December 1967 to September 1974, water-stage recorder at site 1.2 mi downstream at different datum (published as station 11072200, "Temescal Creek at Corona"). October 1980 to July 1983 at site 500 ft downstream at different datum.

REMARKS.--Records fair above 500 ft³/s and poor below. Flow regulated by several small storage reservoirs. Many diversions upstream from station for irrigation. Water discharged to channel from Arlington Desalter at times since September 1990; records for water years 1981 to 1990 and 1991 to current year are not equivalent. See schematic diagram of Santa Ana River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,720 ft³/s, Mar. 1, 1983, gage height, 11.67 ft, site and datum then in use, on basis of slope-conveyance study; minimum daily, 0.27 ft³/s, Sept. 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 8,850 ft³/s, Feb. 25, 1969, gage height, 8.17 ft, from floodmark, at old site (station 11072200) 1.2 mi downstream on basis of slope-area measurement of peak flow.

11072100 Temescal Creek above Main Street, at Corona, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2.3	14	4.8	7.4	48	70	5.3	5.7	8.6	3.0	5.8	2.5
2	2.6	10	5.6	7.8	40	65	6.1	5.6	5.9	5.1	4.7	3.1
3	2.3	7.9	3.0	7.9	35	63	6.0	5.5	5.6	4.1	3.4	3.1
4	3.2	18	3.1	8.1	42	62	6.1	5.5	5.6	6.0	3.2	3.5
5	2.9	7.0	3.0	6.5	55	64	6.2	5.5	4.6	4.7	3.1	3.4
6	4.0	6.5	3.3	5.1	125	58	6.3	5.5	4.4	5.1	2.3	3.9
7	5.6	6.8	3.6	5.4	303	62	5.7	5.5	3.6	5.8	2.2	3.8
8	3.5	5.4	4.4	8.1	94	65	6.9	5.5	5.6	6.4	2.4	3.5
9	4.6	3.1	3.9	13	249	68	6.8	5.5	6.3	6.2	2.6	4.3
10	3.3	6.5	3.7	19	69	65	5.8	5.4	5.6	6.0	3.1	3.3
11	2.1	5.7	3.6	19	38	66	5.9	5.4	5.0	5.9	2.9	3.1
12	2.2	4.2	4.2	21	30	69	6.3	5.2	5.2	5.3	2.9	3.7
13	2.1	3.7	5.0	24	51	66	6.1	5.6	5.4	6.0	3.0	4.3
14	4.5	3.5	4.8	29	26	63	6.4	5.5	4.5	6.0	3.3	4.6
15	2.3	3.5	328	31	18	57	5.7	5.5	4.4	6.7	3.6	4.4
16	2.5	3.5	17	33	161	47	6.1	5.5	3.4	6.6	3.6	5.8
17	2.3	4.0	389	36	151	33	7.2	5.4	2.9	6.4	3.5	6.8
18	3.6	4.2	116	39	46	26	5.5	5.3	3.4	7.3	3.9	4.9
19	3.5	5.4	15	40	27	21	5.5	5.4	3.3	7.6	3.7	4.6
20	5.8	6.4	7.3	45	21	21	5.7	6.4	2.8	8.1	3.6	3.7
21	5.0	5.7	7.1	47	18	15	5.7	5.5	2.8	8.1	3.7	4.3
22	3.5	6.9	12	46	22	23	5.7	5.7	2.8	8.6	3.7	4.3
23	3.1	9.4	7.6	49	42	8.8	5.7	5.8	2.7	8.4	2.6	4.0
24	3.6	13	7.2	51	54	6.5	5.8	6.4	3.7	10	3.3	3.6
25	3.6	11	43	56	62	5.7	5.7	7.9	4.4	9.1	3.0	3.1
26	4.8	215	9.6	58	67	5.7	5.6	11	4.3	11	2.5	2.9
27	6.4	9.8	6.6	56	68	5.6	6.0	8.0	2.6	6.8	2.3	3.3
28	6.9	3.6	6.3	58	68	5.5	5.8	7.1	3.2	6.1	2.2	3.4
29	8.4	3.1	7.5	60	---	5.5	5.7	8.7	3.8	6.6	2.7	3.5
30	11	2.9	7.0	59	---	5.8	5.7	10	3.2	6.7	2.4	4.3
31	9.4	---	7.3	54	---	5.7	---	9.2	---	6.7	2.6	---
Total	130.9	409.7	1,049.5	999.3	2,030	1,203.8	179.0	195.7	129.6	206.4	97.8	117.0
Mean	4.22	13.7	33.9	32.2	72.5	38.8	5.97	6.31	4.32	6.66	3.15	3.90
Max	11	215	389	60	303	70	7.2	11	8.6	11	5.8	6.8
Min	2.1	2.9	3.0	5.1	18	5.5	5.3	5.2	2.6	3.0	2.2	2.5
Ac-ft	260	813	2,080	1,980	4,030	2,390	355	388	257	409	194	232

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1990, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	7.62	15.1	23.8	23.0	14.5	40.9	13.1	12.0	9.35	7.15	6.45	6.99
Max	16.1	55.9	126	116	25.5	237	39.3	43.7	30.0	10.9	13.4	11.3
(WY)	(1986)	(1981)	(1981)	(1981)	(1981)	(1983)	(1983)	(1983)	(1983)	(1985)	(1990)	(1985)
Min	2.36	4.67	2.53	7.01	7.42	6.26	4.02	3.77	1.12	1.20	1.79	1.09
(WY)	(1985)	(1987)	(1982)	(1989)	(1982)	(1990)	(1989)	(1982)	(1982)	(1982)	(1982)	(1981)

11072100 Temescal Creek above Main Street, at Corona, CA—Continued

SUMMARY STATISTICS

	Water Years 1981 - 1990	
Annual mean	12.4	
Highest annual mean	33.7	1981
Lowest annual mean	6.10	1987
Highest daily mean	1,720	Mar 1, 1983
Lowest daily mean	.27	Sep 25, 1981
Annual seven-day minimum	.56	Sep 23, 1981
Maximum peak flow	4,720	Mar 1, 1983
Maximum peak stage	11.67	Mar 1, 1983
Annual runoff (ac-ft)	8,990	
10 percent exceeds	27	
50 percent exceeds	6.1	
90 percent exceeds	2.7	

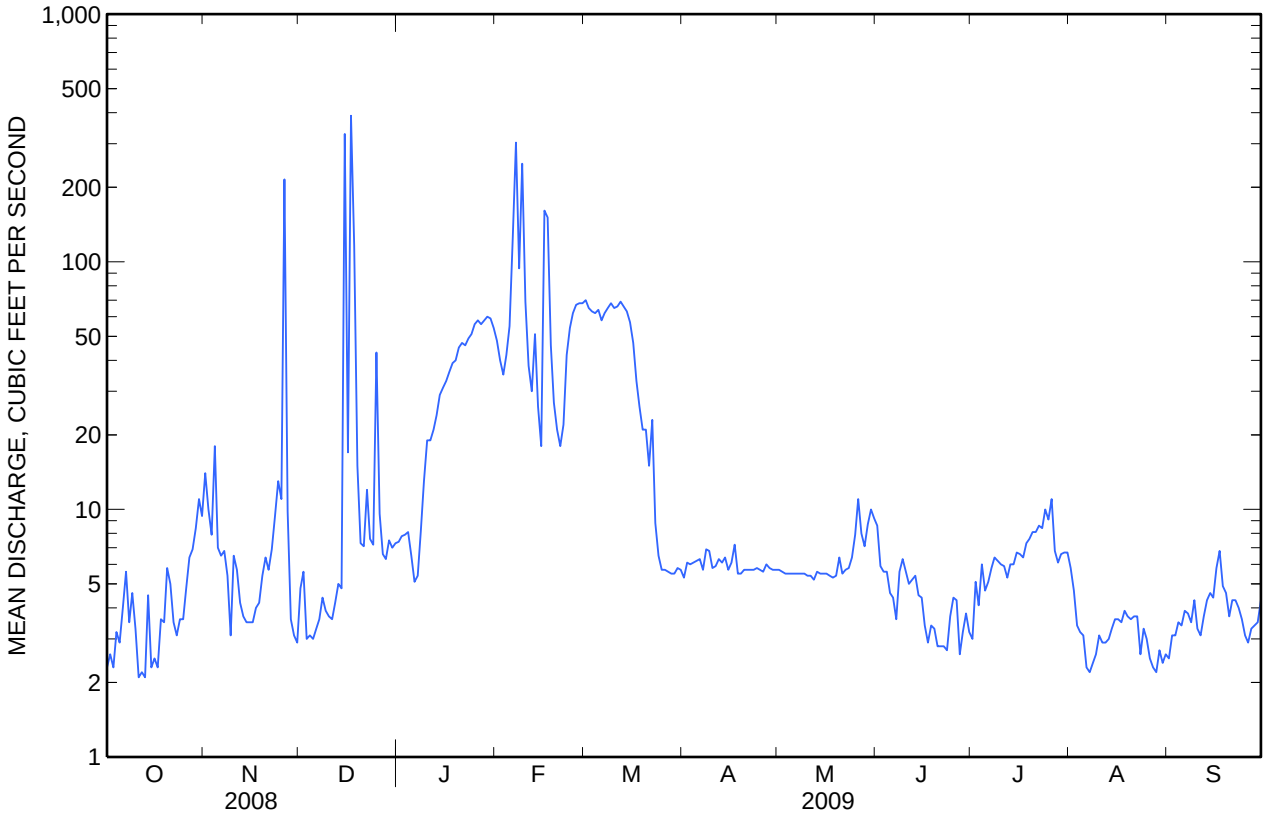
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	15.5	18.9	22.0	58.7	95.5	63.1	39.0	21.8	13.0	11.3	10.9	11.6
Max	52.5	58.2	66.5	335	400	349	190	100	34.3	24.9	20.7	30.4
(WY)	(2005)	(2006)	(2005)	(2005)	(2005)	(1995)	(1995)	(1995)	(1995)	(1993)	(2005)	(2005)
Min	4.22	5.55	9.35	10.7	10.5	5.19	2.89	3.24	3.25	3.56	3.15	3.04
(WY)	(2009)	(1996)	(1999)	(2003)	(2002)	(2001)	(1991)	(1992)	(2003)	(1994)	(2009)	(2004)

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1991 - 2009	
Annual total	9,922.0		6,748.7			
Annual mean	27.1		18.5		31.4	
Highest annual mean					104	2005
Lowest annual mean					12.5	2004
Highest daily mean	402	Jan 27	389	Dec 17	2,090	Feb 24, 1998
Lowest daily mean	2.1	May 13	2.1	Oct 11	0.34	Jul 3, 1992
Annual seven-day minimum	2.6	Oct 11	2.5	Aug 26	0.89	Jan 13, 1992
Maximum peak flow			1,980	Dec 15	4,030	Jan 9, 2005
Maximum peak stage			5.54	Dec 15	6.72	Jan 9, 2005
Annual runoff (ac-ft)	19,680		13,390		22,760	
10 percent exceeds	68		55		61	
50 percent exceeds	6.3		5.7		13	
90 percent exceeds	3.4		3.0		4.2	

11072100 Temescal Creek above Main Street, at Corona, CA—Continued



Water-Data Report 2009

11073495 Cucamonga Creek near Mira Loma, CA

Santa Ana River Basin

LOCATION.--Lat 33°58′58″, long 117°35′55″ referenced to North American Datum of 1927, in SW ¼ NE ¼ sec.22, T.2 S., R.7 W., San Bernardino County, CA, Hydrologic Unit 18070203, on right bank, 300 ft upstream from Merrill Avenue Bridge, and 4.6 mi west of Mira Loma.

DRAINAGE AREA.--75.8 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--January 1968 to July 1977, December 1978 to current year.
CHEMICAL DATA: Water years 1999-2000.
SPECIFIC CONDUCTANCE: Water years 1999-2000.
WATER TEMPERATURE: Water years 1999-2000.
SEDIMENT DATA: Water years 1999-2000.

GAGE.--Water-stage recorder, crest-stage gage, and concrete-lined flood-control channel. Elevation of gage is 660 ft above NGVD of 1929, from topographic map. Prior to July 1977 at site 100 ft downstream at different datum.

REMARKS.--Records poor. Channel is a trapezoidal concrete floodway; records for low and medium flows prior to July 31, 1977, are not equivalent (channel concrete lined since July 31, 1977). Inland Empire Utilities Agency Tertiary Plant No. 1 began discharging effluent 3.3 mi upstream from station on May 8, 1985. See schematic diagram of Santa Ana River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,300 ft³/s, Oct. 20, 2004, gage height, 6.58 ft, from rating curve extended above 617 ft³/s on basis of step-backwater computations; maximum gage height, 7.85 ft, Feb. 27, 1983. Prior to operation of Plant No. 1, no flow for most of some years. Minimum daily since 1985, 2.5 ft³/s, June 6, 1987.

11073495 Cucamonga Creek near Mira Loma, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	20	37	44	43	63	43	e24	33	29	18	19	4.6
2	24	44	39	42	23	35	40	48	24	9.0	26	6.3
3	31	50	44	39	20	32	28	47	34	13	24	4.3
4	43	57	41	34	23	63	34	35	33	17	14	3.5
5	34	34	33	35	148	47	34	34	27	16	9.1	8.3
6	27	18	35	31	324	46	35	44	29	18	13	7.6
7	18	16	38	38	374	43	30	38	24	8.6	13	13
8	14	24	51	32	88	46	36	31	14	13	20	13
9	11	48	51	30	411	51	37	38	18	11	23	11
10	20	30	35	26	67	49	45	44	26	13	19	13
11	35	37	49	27	66	52	32	41	29	13	18	9.9
12	31	40	48	25	53	46	41	30	36	19	16	15
13	39	32	48	21	171	40	34	37	31	19	15	20
14	40	40	48	17	72	43	34	34	44	14	14	30
15	40	33	792	21	57	44	36	34	30	14	18	27
16	26	32	75	14	360	39	33	43	7.9	7.0	23	32
17	19	27	303	21	196	37	37	46	10	7.4	22	21
18	28	26	105	16	58	35	29	35	19	16	13	13
19	34	25	58	15	50	33	37	33	19	18	14	20
20	39	24	62	25	47	46	32	39	25	11	11	26
21	30	25	66	45	50	43	22	40	22	7.4	11	22
22	25	28	69	34	50	71	24	37	19	10	13	25
23	14	45	72	37	47	40	25	44	21	6.7	21	30
24	17	43	71	41	46	39	30	48	20	9.0	12	29
25	20	42	176	40	43	31	39	32	25	10	8.8	31
26	28	295	75	60	37	34	37	41	16	15	4.1	33
27	20	59	53	29	39	32	36	35	20	8.2	4.5	39
28	23	44	52	34	43	32	23	28	24	12	5.0	18
29	18	46	46	34	---	30	23	23	15	17	4.5	24
30	35	45	48	55	---	29	41	35	20	23	8.7	19
31	23	---	48	56	---	e34	---	37	---	14	7.7	---
Total	826	1,346	2,775	1,017	3,026	1,285	988	1,164	710.9	407.3	444.4	568.5
Mean	26.6	44.9	89.5	32.8	108	41.5	32.9	37.5	23.7	13.1	14.3	18.9
Max	43	295	792	60	411	71	45	48	44	23	26	39
Min	11	16	33	14	20	29	22	23	7.9	6.7	4.1	3.5
Ac-ft	1,640	2,670	5,500	2,020	6,000	2,550	1,960	2,310	1,410	808	881	1,130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1977, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	.021	1.15	1.55	18.2	4.65	1.91	1.35	.065	.001	.000	.000	.11
Max	.19	6.07	7.91	149	30.7	7.94	13.1	.54	.007	.000	.000	1.03
(WY)	(1972)	(1971)	(1972)	(1969)	(1969)	(1969)	(1969)	(1977)	(1969)	(1968)	(1968)	(1976)
Min	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	(1969)	(1969)	(1970)	(1975)	(1972)	(1972)	(1968)	(1968)	(1968)	(1968)	(1968)	(1968)

11073495 Cucamonga Creek near Mira Loma, CA—Continued

SUMMARY STATISTICS

	Water Years 1968 - 1977	
Annual mean	2.73	
Highest annual mean	16.8	1969
Lowest annual mean	.16	1976
Highest daily mean	2,600	Jan 25, 1969
Lowest daily mean	.00	Feb 1, 1968
Annual seven-day minimum	.00	Feb 1, 1968
Maximum peak flow	9,100	Jan 25, 1969
Maximum peak stage	7.08	Jan 25, 1969
Annual runoff (ac-ft)	1,980	
10 percent exceeds	.10	
50 percent exceeds	.00	
90 percent exceeds	.00	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1984, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	3.49	11.3	7.69	34.1	65.0	46.3	12.1	3.43	.48	.37	1.47	1.08
Max	11.1	27.9	24.7	149	216	205	63.4	19.8	2.30	1.22	6.99	3.45
(WY)	(1984)	(1983)	(1984)	(1983)	(1980)	(1983)	(1983)	(1983)	(1983)	(1983)	(1983)	(1983)
Min	.091	.002	.006	1.67	1.29	2.44	.056	.063	.008	.019	.009	.011
(WY)	(1981)	(1980)	(1980)	(1984)	(1984)	(1984)	(1981)	(1979)	(1979)	(1981)	(1979)	(1979)

SUMMARY STATISTICS

	Water Years 1979 - 1984	
Annual mean	17.5	
Highest annual mean	53.4	1983
Lowest annual mean	1.51	1981
Highest daily mean	2,530	Mar 1, 1983
Lowest daily mean	.00	Feb 6, 1979
Annual seven-day minimum	.00	Feb 6, 1979
Maximum peak flow	16,100	Feb 27, 1983
Maximum peak stage	7.85	Feb 27, 1983
Annual runoff (ac-ft)	12,700	
10 percent exceeds	10	
50 percent exceeds	.13	
90 percent exceeds	.01	

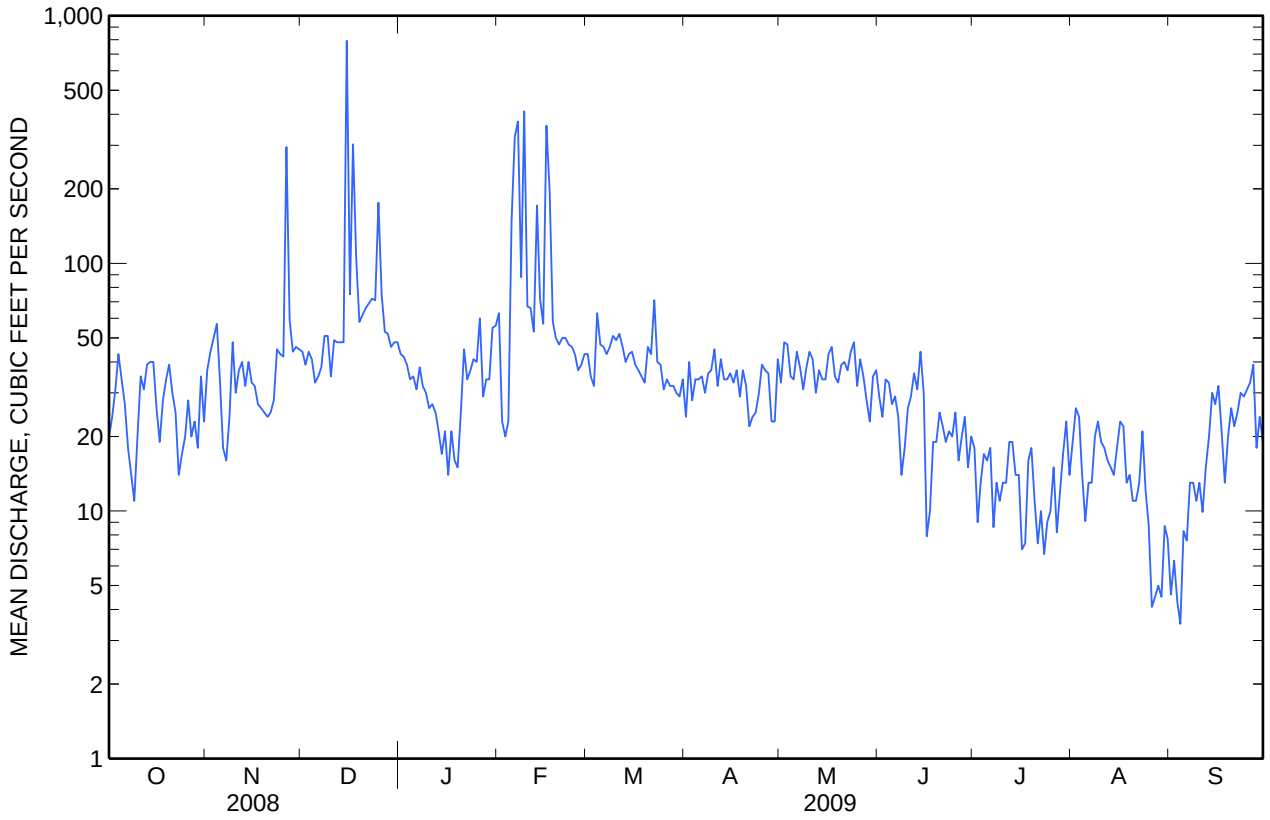
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	46.9	45.3	55.5	91.4	109	67.7	49.9	39.1	36.3	34.2	33.4	37.3
Max	223	102	113	442	350	198	114	69.4	57.1	53.4	51.8	52.0
(WY)	(2005)	(2003)	(2005)	(2005)	(2005)	(1995)	(2006)	(2003)	(1992)	(2004)	(1992)	(1986)
Min	20.4	23.4	21.0	26.1	34.9	25.3	20.5	18.5	18.1	13.1	14.3	16.4
(WY)	(1987)	(1989)	(1987)	(1989)	(1989)	(1988)	(1987)	(1988)	(1988)	(2009)	(2009)	(1988)

11073495 Cucamonga Creek near Mira Loma, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1986 - 2009	
Annual total	19,220		14,558.1			
Annual mean	52.5		39.9		53.6	
Highest annual mean					137	2005
Lowest annual mean					26.6	1987
Highest daily mean	1,310	Jan 5	792	Dec 15	5,200	Jan 9, 2005
Lowest daily mean	11	Oct 9	3.5	Sep 4	2.5	Jun 6, 1987
Annual seven-day minimum	20	Oct 23	5.6	Aug 26	5.6	Aug 26, 2009
Maximum peak flow			4,160	Dec 15	17,300	Oct 20, 2004
Maximum peak stage			3.99	Dec 15	6.58	Oct 20, 2004
Annual runoff (ac-ft)	38,120		28,880		38,810	
10 percent exceeds	64		52		62	
50 percent exceeds	33		32		37	
90 percent exceeds	23		13		21	



Water-Data Report 2009

11073360 Chino Creek at Schaefer Avenue, near Chino, CA

Santa Ana River Basin

LOCATION.--Lat 34°00′14″, long 117°43′34″ referenced to North American Datum of 1927, San Bernardino County, CA, Hydrologic Unit 18070203, in Santa Ana del Chino Grant, on right bank, 300 ft downstream from old Schaefer Avenue Bridge, 0.8 mi downstream from San Antonio Creek, and 1.5 mi southwest of Chino.

DRAINAGE AREA.--48.9 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1969 to current year.
CHEMICAL DATA: Water year 1998.
SEDIMENT DATA: Water year 1998.

REVISED RECORDS.--WDR CA-84-1: 1983 (instantaneous maximum discharge). WDR CA-95-1: 1992, 1993.

GAGE.--Water-stage recorder and concrete-lined flood-control channel. Concrete dikes formed low-water control from October 1975 to Apr. 16, 1991. Elevation of gage is 685 ft above NGVD of 1929, from topographic map.

REMARKS.--Records rated fair. Since 1997, due to construction in area of gage, Schaefer Avenue no longer extends to the Chino Creek crossing. The Schaefer Avenue Bridge, however, remains. Flow mostly regulated by San Antonio Flood-Control Reservoir, capacity, 7,700 acre-ft. Natural streamflow affected by extensive ground-water withdrawals, diversions for power, domestic use, irrigation, and return flow from irrigated areas. Releases of imported water are made to the basin by the California Water Project at times in some years, via San Antonio Creek from Rialto Pipeline below San Antonio Dam, at a site approximately 11 mi upstream. During the current year, no California Water Project releases were made. See schematic diagram of Santa Ana River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s, Feb. 27, 1983, gage height, 10.32 ft, from rating curve extended above 560 ft³/s, on basis of slope-conveyance study; no flow May 21, June 30, July 1, Oct. 30, Nov. 3, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 25, 1969, reached a stage of 9.23 ft, present datum, discharge, 9,200 ft³/s, on basis of contracted-opening measurement at site 6.1 mi downstream.

11073360 Chino Creek at Schaefer Avenue, near Chino, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.97	1.00	1.2	1.3	0.97	2.5	1.1	0.83	0.61	0.63	0.70	0.74
2	0.91	0.78	1.1	1.4	0.99	2.4	1.2	0.81	0.65	0.69	0.71	0.80
3	0.83	0.70	1.3	1.4	1.00	2.6	0.99	0.88	0.90	0.77	0.77	0.69
4	1.1	5.8	1.2	1.3	1.1	11	0.93	0.96	0.57	0.71	0.71	0.67
5	0.98	0.68	1.2	1.3	62	4.1	0.89	0.92	0.63	0.71	0.75	0.67
6	0.71	0.72	1.2	1.2	180	2.4	0.95	0.96	0.57	0.72	0.69	0.68
7	0.77	0.59	3.4	1.1	147	2.0	1.0	0.93	0.58	0.85	0.71	0.69
8	0.83	0.64	1.3	1.2	26	2.0	1.00	0.92	0.61	0.75	0.71	0.68
9	0.71	0.73	1.2	1.2	237	2.0	0.97	0.87	0.54	0.72	0.71	0.71
10	0.85	0.69	1.2	1.1	6.1	2.1	1.6	0.83	0.73	0.69	0.71	0.73
11	0.63	0.82	1.1	1.1	3.8	1.9	0.91	0.81	0.53	0.78	0.72	0.71
12	0.60	0.67	1.2	1.2	3.4	1.7	1.0	1.0	0.52	0.72	0.75	0.73
13	0.61	0.68	1.2	1.2	63	1.8	1.0	0.61	0.53	0.75	0.72	0.75
14	0.66	0.69	1.1	1.2	5.2	1.7	0.97	0.62	0.51	0.75	0.76	0.76
15	0.81	0.66	373	1.2	3.1	1.6	0.78	0.74	0.55	0.89	0.61	0.76
16	0.73	0.81	3.0	1.1	167	1.6	0.80	0.63	0.65	0.74	0.60	0.77
17	0.67	0.68	145	1.2	102	1.6	0.90	0.66	0.65	0.80	0.62	0.78
18	0.66	0.74	8.8	1.1	6.0	1.7	0.95	0.67	0.69	0.72	0.61	0.80
19	1.3	1.0	1.5	1.1	4.2	1.7	0.98	0.68	0.71	0.69	0.62	0.77
20	0.69	1.0	1.3	1.4	3.7	1.6	1.1	0.68	0.67	0.78	0.58	0.79
21	0.82	0.99	1.2	1.4	3.4	1.8	1.1	0.68	0.68	0.78	0.68	0.86
22	0.77	0.97	3.8	1.3	3.1	20	1.1	0.65	0.67	0.82	0.67	0.78
23	0.69	0.93	1.3	12	2.8	1.5	0.95	0.67	0.63	1.0	0.68	0.82
24	0.70	0.97	1.2	2.3	2.6	1.5	0.93	0.64	0.66	0.95	0.72	0.71
25	0.74	1.0	60	1.1	2.5	1.6	1.00	0.65	0.67	0.94	0.72	0.70
26	0.71	280	2.2	4.9	2.5	2.9	1.0	0.68	0.79	1.1	0.69	0.70
27	0.73	6.6	1.5	1.1	2.4	6.6	1.0	0.71	0.80	0.76	0.80	0.69
28	0.75	1.6	1.4	1.1	2.5	6.1	0.96	0.68	0.79	0.68	0.80	0.83
29	0.85	1.4	1.3	1.1	---	6.0	0.82	0.64	0.73	0.67	0.81	0.74
30	0.73	1.4	2.5	1.2	---	3.4	0.86	0.64	0.67	0.68	0.80	0.94
31	0.80	---	1.4	1.1	---	1.2	---	0.66	---	0.69	0.85	---
Total	24.31	315.94	629.3	52.9	1,045.36	102.6	29.74	23.31	19.49	23.93	21.98	22.45
Mean	0.78	10.5	20.3	1.71	37.3	3.31	0.99	0.75	0.65	0.77	0.71	0.75
Max	1.3	280	373	12	237	20	1.6	1.0	0.90	1.1	0.85	0.94
Min	0.60	0.59	1.1	1.1	0.97	1.2	0.78	0.61	0.51	0.63	0.58	0.67
Ac-ft	48	627	1,250	105	2,070	204	59	46	39	47	44	45

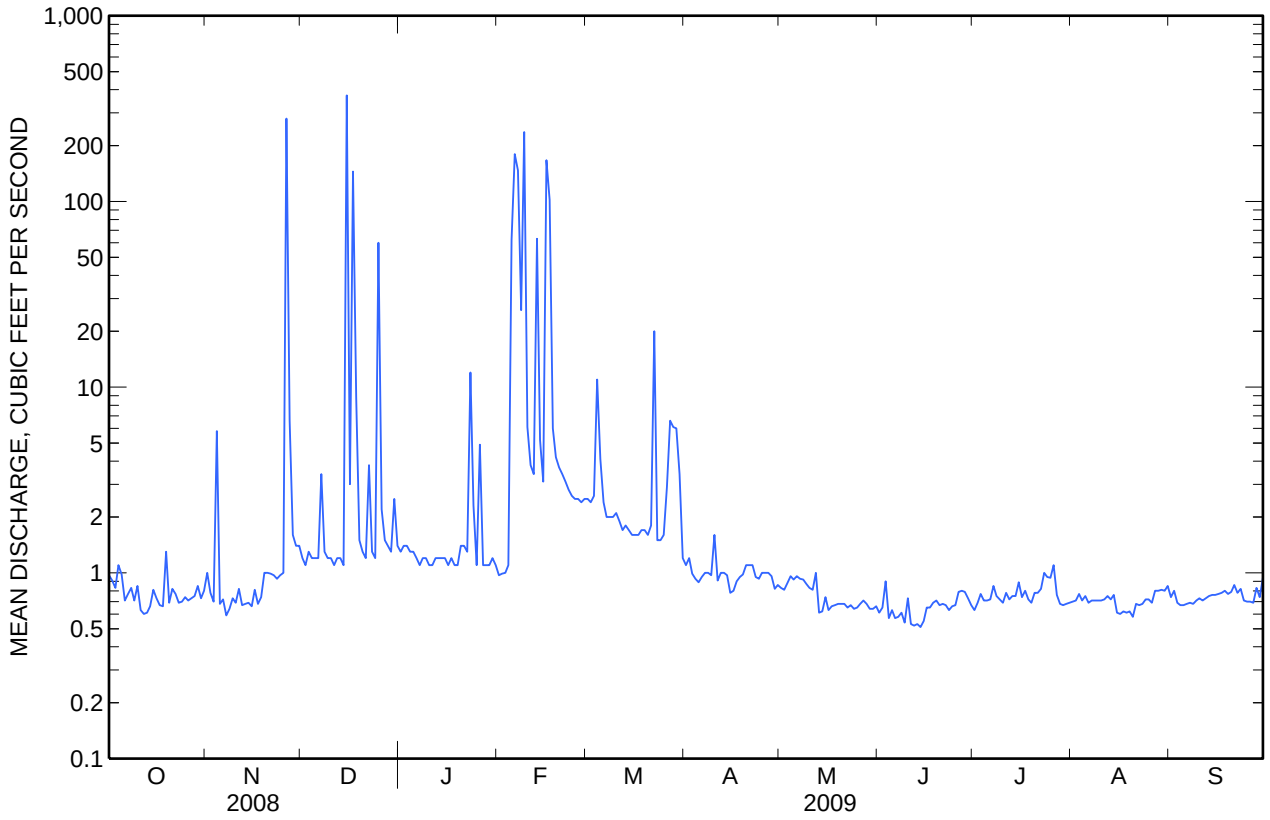
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	17.0	15.8	24.4	35.2	38.8	26.3	9.56	12.1	16.3	16.7	14.7	13.2
Max	126	113	189	221	193	257	68.6	104	184	176	191	198
(WY)	(1979)	(1976)	(1976)	(2005)	(1980)	(1978)	(1974)	(1997)	(1976)	(1974)	(1974)	(1997)
Min	0.06	0.23	0.53	0.55	0.33	0.30	0.14	0.22	0.06	0.07	0.14	0.13
(WY)	(1978)	(1978)	(1970)	(1972)	(1972)	(1972)	(1977)	(1973)	(1977)	(1977)	(1976)	(1977)

11073360 Chino Creek at Schaefer Avenue, near Chino, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1970 - 2009	
Annual total	3,141.63		2,311.31			
Annual mean	8.58		6.33		19.9	
Highest annual mean					92.4	1974
Lowest annual mean					2.81	2007
Highest daily mean	373	Dec 15	373	Dec 15	2,060	Mar 1, 1978
Lowest daily mean	0.59	Nov 7	0.51	Jun 14	0.00	May 21, 1977
Annual seven-day minimum	0.67	Oct 11	0.56	Jun 9	0.02	Oct 28, 1977
Maximum peak flow			2,150	Dec 15	12,700	Feb 27, 1983
Maximum peak stage			6.38	Dec 15	10.32	Feb 27, 1983
Annual runoff (ac-ft)	6,230		4,580		14,440	
10 percent exceeds	3.9		3.0		66	
50 percent exceeds	1.5		0.86		1.3	
90 percent exceeds	0.82		0.66		0.40	



APPENDIX B

DAILY PRECIPITATION DATA
FOR SAN BERNARDINO

WATER YEAR 2008-09

TABLE B-1

DAILY PRECIPITATION
USGS GILBERT STREET PRECIPITATION GAGE AT SAN BERNARDINO
NEAR FORMER COUNTY HOSPITAL SITE
(inches)

	2008			2009								
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.10	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0.01	0	0	0.01	0	0.01	0	0	0
4	0.02	0.04	0	0	0	0.01	0	0	0	0	0	0
5	0.01	0	0	0	0.19	0	0	0	0	0	0	0
6	0	0	0	0	0.58	0.01	0	0	0	0	0	0
7	0	0	0	0	0.63	0	0	0	0	0	0	0
8	0	0	0	0	0.28	0	0	0	0	0	0	0
9	0	0	0	0	0.87	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0.17	0	0	0	0	0
11	0	0	0	0	0.03	0	0.01	0	0	0	0	0
12	0	0	0	0	0.01	0	0	0	0	0	0	0
13	0	0	0.05	0	0.35	0	0	0	0.02	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	1.76	0	0	0	0	0	0	0	0	0
16	0	0	0	0	1.44	0	0	0	0	0	0	0
17	0	0	0.88	0	0.17	0	0	0	0	0	0	0
18	0	0	0.01	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0.01	0	0	0	0	0	0	0	0
22	0	0	0.14	0.02	0	0.18	0	0	0	0	0	0
23	0	0	0	0.09	0.02	0	0	0	0	0	0	0
24	0	0	0.01	0.01	0	0	0	0	0	0	0	0
25	0	0.05	0.73	0.01	0	0	0	0	0	0	0	0
26	0	1.13	0	0.05	0	0	0	0	0	0	0	0
27	0	0.02	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0		0	0	0	0	0	0	0
30	0	0	0	0		0	0	0	0	0	0	0
31	0		0	0		0		0		0	0	
Total	0.03	1.34	3.58	0.20	4.57	0.20	0.19	0.00	0.03	0.00	0.00	0.00

Total Rainfall = 10.14 Inches

56% of average of 17.98 inches per year

APPENDIX C

SANTA ANA RIVER WATERMASTER
FINANCIAL STATEMENTS WITH REPORT
ON EXAMINATION BY
ORANGE COUNTY WATER DISTRICT CONTROLLER

WATER YEAR 2008-09

SANTA ANA RIVER WATERMASTER

FINANCIAL STATEMENTS

JUNE 30, 2009

SANTA ANA RIVER WATERMASTER

STATEMENT OF ASSETS AND LIABILITIES ARISING FROM CASH TRANSACTIONS

JUNE 30, 2009

ASSETS

Cash in savings account	$ 3,592

FUND BALANCE

Fund Balance	$ 3,592

SANTA ANA RIVER WATERMASTER

STATEMENT OF REVENUE AND EXPENSES ARISING FROM CASH TRANSACTIONS

FOR THE PERIOD JULY 1, 2008 - JUNE 30, 2009

	Actual	Budget	Variance - Favorable (Unfavorable)
REVENUE COLLECTED:			
Water District Contributions			
Orange County Water District	$ 5,600	$ 5,600	0
Inland Empire Utilities Agency	2,800	2,800	0
Western Municipal Water District	-	2,800	(2,800) (A)
San Bernardino Valley Municipal Water District	2,800	2,800	0
TOTAL REVENUE COLLECTED	$ 11,200	$ 14,000	$ (2,800)
EXPENSES PAID:			
Professional Engineering Services	$ 23,478	$ 13,000	(10,478) (B)
Administrative Expenses:			
Auditing Services			
Reproduction of Annual Report	1,838	1,000	(838) (B)
Reimburse SBVMWD **2004-2005** Services		0	0
Bank service charges	$ 14		
	$ 25,330	$ 14,000	$ (11,330)
EXCESS OF REVENUE COLLECTED OVER (UNDER) EXPENSES PAID	$ (14,130)		
FUND BALANCE AT JUNE 30, 2008	$ 17,722		
98	$ 3,592		

(A) Contributions from Western Municipal Water District are outstanding as of June 30, 2009

(B) Expenses represent two year of payments. There was no payment made for expenses during 2007-08 fiscal year.

APPENDIX D

SAN BERNARDINO HIGH GROUNDWATER MITIGATION PROJECT WATER DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS

WATER YEAR 2008-09

There was no discharge of HGMP water to Santa Ana River in the Bunker Hill area during the 2008-09 water year.

APPENDIX E

WATER QUALITY AND DISCHARGE OF WATER RELEASED BY MWDSC TO SAN ANTONIO CREEK NEAR UPLAND (CONNECTION OC-59)

WATER YEAR 2008-09

There was no discharge by MWDSC to San Antonio Creek near Upland (Connection OC-59) during the 2008-09 water year.

APPENDIX F

WATER QUALITY AND DISCHARGE FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN

WATER YEAR 2008-09

TABLE F-1

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

OCTOBER 2008

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0.94	1.86	624	365	343
2	0.38	0.75	926	542	206
3	0.45	0.89	827	484	218
4	0.53	1.05	753	440	233
5	0.79	1.57	691	404	319
6	1.40	2.78	597	349	489
7	0.69	1.37	726	425	293
8	2.18	4.32	646	378	824
9	2.54	5.04	706	413	1,049
10	0.66	1.31	1,031	603	398
11	0.54	1.07	1,042	610	329
12	0.55	1.09	913	534	294
13	0.89	1.77	595	348	310
14	2.11	4.19	471	276	582
15	0.05	0.10	466	273	14
16	0.03	0.06	468	274	8
17	0.10	0.20	467	273	27
18	0.81	1.61	470	275	223
19	0.65	1.29	474	277	180
20	1.98	3.93	473	277	548
21	0.82	1.63	468	273	224
22	0.04	0.08	466	272	11
23	0.13	0.26	466	273	35
24	0.20	0.40	578	338	68
25	0.22	0.44	573	335	74
26	0.58	1.15	806	471	273
27	1.06	2.10	723	423	448
28	0.82	1.63	695	407	334
29	2.85	5.65	542	317	903
30	1.04	2.06	676	396	412
31	1.77	3.51	588	344	609
Total	28	55			10,279
	Monthly Flow Weighted TDS			370	

1. TDS and EC data per WMWD

TABLE F-1 (continued)

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

NOVEMBER 2008

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	2.39	4.74	557	326	779
2	0.37	0.73	1,040	608	225
3	1.45	2.88	463	271	393
4	3.18	6.31	503	294	935
5	2.69	5.34	537	314	845
6	3.84	7.62	664	388	1,490
7	4.72	9.36	690	403	1,902
8	2.36	4.68	666	390	920
9	0.22	0.44	780	456	100
10	3.82	7.58	627	367	1,402
11	2.87	5.69	667	390	1,119
12	1.08	2.14	796	465	502
13	0.72	1.43	964	564	406
14	0.64	1.27	1,035	605	387
15	0.97	1.92	839	491	476
16	0.63	1.25	1,040	608	383
17	0.57	1.13	990	579	330
18	0.45	0.89	694	406	183
19	0.64	1.27	621	363	232
20	0.63	1.25	622	364	229
21	0.24	0.48	867	507	122
22	1.55	3.07	675	395	612
23	2.80	5.55	674	394	1,103
24	3.67	7.28	530	310	1,138
25	2.12	4.20	575	336	712
26	0.92	1.82	658	385	354
27	0	0	---	---	---
28	0	0	---	---	---
29	0	0	---	---	---
30	0	0	---	---	---
Total	46	90			17,281
	Monthly Flow Weighted TDS			379	

1. TDS and EC data per WMWD

TABLE F-1 (continued)

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

APRIL 2009

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0.02	0.04	466	272	5
2	0.08	0.16	469	274	22
3	0.09	0.18	464	271	24
4	0.18	0.36	472	276	50
5	0.08	0.16	462	270	22
6	0.00	0.00	462	270	0
7	0.01	0.02	464	271	3
8	0.46	0.91	454	265	122
9	0.02	0.04	449	263	5
10	0	0	---	---	---
11	0.13	0.26	458	268	35
12	0.09	0.18	459	268	24
13	0.36	0.71	458	268	96
14	0.21	0.42	462	270	57
15	0.83	1.65	456	266	221
16	0.41	0.81	456	267	109
17	1.20	2.38	459	268	322
18	0.02	0.04	461	270	5
19	0.00	0.00	455	266	0
20	0.00	0.00	451	264	0
21	0.00	0.00	450	263	0
22	0.00	0.00	462	270	0
23	0.27	0.54	469	275	74
24	0.58	1.15	490	286	166
25	0	0	---	---	---
26	0.34	0.67	478	280	95
27	0.47	0.93	470	275	129
28	0.00	0.00	468	273	0
29	0.19	0.38	472	276	52
30	0.22	0.44	470	275	61
Total	6	12			1,700
	Monthly Flow Weighted TDS			272	

1. TDS and EC data per WMWD

TABLE F-1

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

MAY 2009

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0	0	---	---	---
2	0.36	0.71	476	279	100
3	0.52	1.03	477	279	145
4	0.25	0.50	473	277	69
5	0.03	0.06	479	280	8
6	0.05	0.10	494	289	14
7	0.05	0.10	475	278	14
8	0.12	0.24	583	341	41
9	0.06	0.12	468	274	16
10	0.14	0.28	465	272	38
11	0.25	0.50	478	280	70
12	0.28	0.56	480	281	79
13	0.02	0.04	477	279	6
14	0.06	0.12	476	278	17
15	0.64	1.27	481	281	180
16	0.59	1.17	481	281	166
17	0.61	1.21	481	281	171
18	0.26	0.52	483	282	73
19	0.06	0.12	483	282	17
20	0	0	---	---	---
21	0.05	0.10	480	281	14
22	0.02	0.04	486	284	6
23	0.17	0.34	494	289	49
24	0.23	0.46	453	265	61
25	0.56	1.11	468	274	153
26	1.59	3.15	477	279	444
27	0.40	0.79	476	278	111
28	0.06	0.12	473	277	17
29	0.20	0.40	475	278	56
30	0.51	1.01	480	281	143
31	0.50	0.99	478	280	140
Total	9	17			2,419
	Monthly Flow Weighted TDS			280	

1. TDS and EC data per WMWD

TABLE F-1 (continued)

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

JUNE 2009

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0.70	1.39	476	279	195
2	0.37	0.73	472	276	102
3	0.08	0.16	478	280	22
4	0.05	0.10	483	282	14
5	0	0	---	---	---
6	0.02	0.04	479	280	6
7	0.20	0.40	473	276	55
8	0.90	1.79	475	278	250
9	0.70	1.39	476	278	195
10	0.52	1.03	474	277	144
11	0.40	0.79	475	278	111
12	0.25	0.50	470	275	69
13	0.25	0.50	475	278	70
14	0.37	0.73	476	278	103
15	0.25	0.50	476	278	70
16	0.06	0.12	470	275	17
17	0.20	0.40	471	275	55
18	0.76	1.51	474	277	211
19	0.37	0.73	484	283	105
20	0.13	0.26	487	285	37
21	0	0	---	---	---
22	0	0	---	---	---
23	0	0	---	---	---
24	0.14	0.28	469	274	38
25	0.48	0.95	473	277	133
26	0.54	1.07	473	276	149
27	0	0	---	---	---
28	0.05	0.10	471	276	14
29	0.46	0.91	474	277	127
30	0	0	---	---	---
Total	8	17			2,291
	Monthly Flow Weighted TDS			278	

1. TDS and EC data per WMWD

TABLE F-1 (continued)

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

JULY 2009

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0	0	---	---	---
2	0.02	0.04	1,579	924	18
3	0.17	0.34	916	536	91
4	0.62	1.23	484	283	175
5	0	0	---	---	---
6	0.02	0.04	466	272	5
7	0.37	0.73	448	262	97
8	0.34	0.67	448	262	89
9	0.03	0.06	446	261	8
10	0.02	0.04	446	261	5
11	0.59	1.17	450	263	155
12	0.02	0.04	449	262	5
13	0.17	0.34	451	264	45
14	0.06	0.12	452	264	16
15	0	0	---	---	---
16	0.08	0.16	452	264	21
17	0	0	---	---	---
18	0	0	---	---	---
19	0.02	0.04	456	267	5
20	0.08	0.16	451	264	21
21	0	0	---	---	---
22	0	0	---	---	---
23	0.28	0.56	475	278	78
24	0.54	1.07	476	279	151
25	0.32	0.63	532	311	100
26	1.53	3.03	527	308	471
27	0.19	0.38	831	486	92
28	0	0	---	---	---
29	0.05	0.10	479	280	14
30	0.04	0.08	486	284	11
31	0	0	---	---	---
Total	6	11			1,675
	Monthly Flow Weighted TDS			301	

1. TDS and EC data per WMWD

TABLE F-1 (continued)

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

AUGUST 2009

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
Total	0	0			0
	Monthly Flow Weighted TDS			0	

1. TDS and EC data per WMWD

TABLE F-1 (continued)

SUMMARY OF DISCHARGE AND WEIGHTED TDS
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2008-09

SEPTEMBER 2009

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L)[1]	Outflow X TDS
1	0	0	---	---	---
2	0.28	0.56	475	278	78
3	0.06	0.12	462	270	16
4	0.30	0.60	446	261	78
5	0	0	---	---	---
6	0	0	---	---	---
7	0.34	0.67	440	258	88
8	0.14	0.28	449	263	37
9	0.34	0.67	439	257	87
10	0	0	---	---	---
11	0	0	---	---	---
12	0.16	0.32	460	269	43
13	0	0	---	---	---
14	0	0	---	---	---
15	0.02	0.04	462	270	5
16	0.50	0.99	469	275	138
17	1.37	2.72	482	282	386
18	0.40	0.79	471	275	110
19	0.41	0.81	468	274	112
20	0	0	---	---	---
21	0	0	---	---	---
22	0.01	0.02	463	271	3
23	0	0	---	---	---
24	0	0	---	---	---
25	0	0	---	---	---
26	0	0	---	---	---
27	0	0	---	---	---
28	0	0	---	---	---
29	0	0	---	---	---
30	0.14	0.28	389	227	32
Total	5	9			1,213
	Monthly Flow Weighted TDS			269	

1. TDS and EC data per WMWD

TABLE F-2

QUALITY OF WATER DISCHARGED
FROM THE ARLINGTON DESALTER
TO THE ARLINGTON VALLEY DRAIN

WATER YEAR 2008-09

Month	Discharge (acre-feet)	TDS (mg/L)[1]	Discharge X TDS
2008			
October	55	370	20,350
November	90	379	34,110
December	0	---	---
2009			
January	0	---	---
February	0	---	---
March	0	---	---
April	12	272	3,258
May	17	280	4,759
June	17	278	4,720
July	11	301	3,323
August	0	0	0
September	9	269	2,421
Total	211		72,942
	Flow-weighted TDS =	346	

APPENDIX G

WATER QUALITY AND DISCHARGE FROM THE SAN JACINTO WATERSHED

WATER YEAR 2008-09

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
OCTOBER 2008

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	1.4	1.4	0	0	0	0	0
2	2.2	2.2	0	0	0	0	0
3	1.9	1.9	0	0	0	0	0
4	2.7	2.7	0	0	0	0	0
5	2.1	2.1	0	0	0	0	0
6	2.6	2.6	0	0	0	0	0
7	4.9	4.9	0	0	0	0	0
8	1.3	1.3	0	0	0	0	0
9	2.1	2.1	0	0	0	0	0
10	2.6	2.6	0	0	0	0	0
11	1.6	1.6	0	0	0	0	0
12	1.7	1.7	0	0	0	0	0
13	1.2	1.2	0	0	0	0	0
14	2.4	2.4	0	0	0	0	0
15	2.3	2.3	0	0	0	0	0
16	2.5	2.5	0	0	0	0	0
17	2.2	2.2	0	0	0	0	0
18	2.8	2.8	0	0	0	0	0
19	2.9	2.9	0	0	0	0	0
20	3.8	3.8	0	0	0	0	0
21	4.2	4.2	0	0	0	0	0
22	3.5	3.5	0	0	0	0	0
23	3.0	3.0	0	0	0	0	0
24	3.4	3.4	0	0	0	0	0
25	3.4	3.4	0	0	0	0	0
26	4.2	4.2	0	0	0	0	0
27	5.3	5.3	0	0	0	0	0
28	6.1	6.1	0	0	0	0	0
29	5.6	5.6	0	0	0	0	0
30	10.0	10.0	0	0	0	0	0
31	7.6	7.6	0	0	0	0	0
Total (cfs)	103	103	0	0	0	0	0
(acre-feet)	204	204	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
NOVEMBER 2008

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	11.6	11.6	0	0	0	0	0
2	9.6	9.6	0	0	0	0	0
3	6.5	6.5	0	0	0	0	0
4	14.8	6.8	8	0	0	0	0
5	4.3	4.3	0	0	0	0	0
6	2.7	2.7	0	0	0	0	0
7	2.1	2.1	0	0	0	0	0
8	3.0	3.0	0	0	0	0	0
9	2.9	2.9	0	0	0	0	0
10	2.7	2.7	0	0	0	0	0
11	2.8	2.8	0	0	0	0	0
12	3.1	3.1	0	0	0	0	0
13	3.0	3.0	0	0	0	0	0
14	2.9	2.9	0	0	0	0	0
15	2.5	2.5	0	0	0	0	0
16	2.9	2.9	0	0	0	0	0
17	3.4	3.4	0	0	0	0	0
18	3.8	3.8	0	0	0	0	0
19	4.8	4.8	0	0	0	0	0
20	5.8	5.8	0	0	0	0	0
21	5.5	5.5	0	0	0	0	0
22	5.4	5.4	0	0	0	0	0
23	6.6	6.6	0	0	0	0	0
24	9.3	9.3	0	0	0	0	0
25	8.9	8.9	0	0	0	0	0
26	214	8.1	206	0	0	151	0
27	9.8	7.8	2	0	0	0	0
28	3.6	3.6	0	0	0	0	0
29	3.1	3.1	0	0	0	0	0
30	2.9	2.9	0	0	0	0	0
Total (cfs)	364	148	216	0	0	151	0
(acre-feet)	722	294	428	0	0	300	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
DECEMBER 2008

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	4.8	4.8	0	0	0	0	0
2	5.6	5.6	0	0	0	0	0
3	3.0	3.0	0	0	0	0	0
4	3.1	3.1	0	0	0	0	0
5	3.0	3.0	0	0	0	0	0
6	3.3	3.3	0	0	0	0	0
7	3.6	3.6	0	0	0	0	0
8	4.4	4.4	0	0	0	0	0
9	3.9	3.9	0	0	0	0	0
10	3.7	3.7	0	0	0	0	0
11	3.6	3.6	0	0	0	0	0
12	4.2	4.2	0	0	0	0	0
13	5.0	5.0	0	0	0	0	0
14	4.8	4.8	0	0	0	0	0
15	328	5.0	323	0	0	908	0
16	17	5.0	12	0	0	0	0
17	389	5.0	384	0	0	315	0
18	116	5.0	111	0	0	875	0
19	15	5.0	10	0	0	710	0
20	7.3	4.8	3	0	0	0	0
21	7.1	4.6	3	0	0	0	0
22	12	5.0	7	0	0	163	0
23	7.6	5.1	3	0	0	21	0
24	7.2	5.2	2	5	0	0	0
25	43	6.0	37	20	0	34	0
26	10	6.6	3	23	0	0	0
27	6.6	6.6	0	14	0	0	0
28	6.3	6.3	0	19	0	0	0
29	7.5	7.5	0	19	0	0	0
30	7.0	7.0	0	43	0	0	0
31	7.3	7.3	0	69	0	0	0
Total (cfs)	1,050	153	897	211	0	3,025	0
(acre-feet)	2,082	303	1,778	418	0	6,000	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
JANUARY 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	7.4	7.4	0	65	0	0	0
2	7.8	7.8	0	60	0	0	0
3	7.9	7.9	0	58	0	0	0
4	8.1	8.1	0	76	0	0	0
5	6.5	6.5	0	52	0	0	0
6	5.1	5.1	0	57	0	0	0
7	5.4	5.4	0	64	0	0	0
8	8.1	7.1	0	77	1	0	1
9	13	7.0	0	55	6	0	6
10	19	7.0	0	55	12	0	12
11	19	7.0	0	68	12	0	12
12	21	7.0	0	55	14	0	14
13	24	7.0	0	52	17	0	17
14	29	7.0	0	56	22	0	22
15	31	7.0	0	65	24	0	24
16	33	7.0	0	58	26	0	26
17	36	7.0	0	54	29	0	29
18	39	7.0	0	51	32	0	32
19	40	7.0	0	44	33	0	33
20	45	7.0	0	32	38	0	38
21	47	7.0	0	48	40	0	40
22	46	7.0	0	46	39	0	39
23	49	8.0	3	63	38	0	38
24	51	8.0	5	56	38	30	8
25	56	8.0	9	63	39	0	39
26	58	8.0	7	45	43	0	43
27	56	8.0	3	69	45	0	45
28	58	8.0	0	44	50	0	50
29	60	8.0	0	53	52	0	52
30	59	8.0	0	55	51	0	51
31	54	8.0	0	0	46	0	46
Total (cfs)	999	225	27	1,693	747	30	717
(acre-feet)	1,982	447	54	3,357	1,482	60	1,422

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
FEBRUARY 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	48	8.0	0	54	40	0	40
2	40	8.0	0	46	32	0	32
3	35	8.0	0	27	27	0	27
4	42	8.0	0	22	34	0	34
5	55	8.0	13	17	34	0	34
6	125	8.0	89	19	28	44	0
7	303	9.0	268	0	26	177	0
8	94	9.0	61	0	24	0	24
9	249	9.0	220	0	20	429	0
10	69	9.0	44	0	16	1,044	0
11	38	9.0	17	0	12	11	1
12	30	9.0	13	0	8	0	8
13	51	10.0	37	0	4	2	2
14	26	10.0	14	0	2	104	0
15	18	10.0	7	0	1	105	0
16	161	10.0	151	0	0	85	0
17	151	10.0	141	0	0	1,012	0
18	46	10.0	36	0	0	545	0
19	27	10.0	14	13	3	23	0
20	21	10.0	4	47	7	0	7
21	18	10.0	0	58	8	0	8
22	22	10.0	0	74	12	0	12
23	42	10.0	0	55	32	0	32
24	54	10.0	0	86	44	0	44
25	62	10.0	0	69	52	0	52
26	67	10.0	0	62	57	0	57
27	68	9.0	0	56	59	0	59
28	68	9.0	0	56	59	0	59
Total (cfs)	2,030	260	1,129	760	641	3,580	532
(acre-feet)	4,026	516	2,239	1,508	1,271	7,100	1,056

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
MARCH 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	70	9.0	0	66	61	0	61
2	65	9.0	0	42	56	0	56
3	63	9.0	0	59	54	0	54
4	62	9.0	0	39	53	0	53
5	64	9.0	0	50	55	0	55
6	58	9.0	0	60	49	0	49
7	62	9.0	0	52	53	0	53
8	65	9.0	0	51	56	0	56
9	68	8.0	0	58	60	0	60
10	65	8.0	0	63	57	0	57
11	66	8.0	0	56	58	0	58
12	69	8.0	0	55	61	0	61
13	66	8.0	0	46	58	0	58
14	63	8.0	0	1	55	0	55
15	57	8.0	0	0	49	0	49
16	47	8.0	0	0	39	0	39
17	33	8.0	0	0	25	0	25
18	26	8.0	0	0	18	0	18
19	21	8.0	0	0	13	0	13
20	21	7.0	0	0	14	0	14
21	15	7.0	0	0	8	0	8
22	23	7.0	10	0	6	0	6
23	8.8	6.8	2	0	0	0	0
24	6.5	6.5	0	0	0	0	0
25	5.7	5.7	0	0	0	0	0
26	5.7	5.7	0	0	0	0	0
27	5.6	5.6	0	0	0	0	0
28	5.5	5.5	0	0	0	0	0
29	5.5	5.5	0	0	0	0	0
30	5.8	5.8	0	0	0	0	0
31	5.7	5.7	0	0	0	0	0
Total (cfs)	1,204	234	12	698	958	0	958
(acre-feet)	2,388	464	24	1,385	1,900	0	1,900

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
APRIL 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	5.3	5.3	0	0	0	0	0
2	6.0	6.0	0	0	0	0	0
3	5.9	5.9	0	0	0	0	0
4	5.9	5.9	0	0	0	0	0
5	6.1	6.1	0	0	0	0	0
6	6.3	6.3	0	0	0	0	0
7	5.7	5.7	0	0	0	0	0
8	6.4	6.4	0	0	0	0	0
9	6.8	6.8	0	0	0	0	0
10	5.8	5.8	0	0	0	0	0
11	5.8	5.8	0	0	0	0	0
12	6.2	6.2	0	0	0	0	0
13	5.7	5.7	0	0	0	0	0
14	6.2	6.2	0	0	0	0	0
15	4.9	4.9	0	0	0	0	0
16	5.7	5.7	0	0	0	0	0
17	6.0	6.0	0	0	0	0	0
18	5.5	5.5	0	0	0	0	0
19	5.5	5.5	0	0	0	0	0
20	5.7	5.7	0	0	0	0	0
21	5.7	5.7	0	0	0	0	0
22	5.7	5.7	0	0	0	0	0
23	5.4	5.4	0	0	0	0	0
24	5.2	5.2	0	0	0	0	0
25	5.7	5.7	0	0	0	0	0
26	5.3	5.3	0	0	0	0	0
27	5.5	5.5	0	0	0	0	0
28	5.8	5.8	0	0	0	0	0
29	5.5	5.5	0	0	0	0	0
30	5.5	5.5	0	0	0	0	0
Total (cfs)	173	173	0	0	0	0	0
(acre-feet)	343	343	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
MAY 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	5.7	5.7	0	0	0	0	0
2	5.2	5.2	0	0	0	0	0
3	5.0	5.0	0	0	0	0	0
4	5.3	5.3	0	0	0	0	0
5	5.5	5.5	0	0	0	0	0
6	5.5	5.5	0	0	0	0	0
7	5.5	5.5	0	0	0	0	0
8	5.4	5.4	0	0	0	0	0
9	5.4	5.4	0	0	0	0	0
10	5.3	5.3	0	0	0	0	0
11	5.2	5.2	0	0	0	0	0
12	4.9	4.9	0	0	0	0	0
13	5.6	5.6	0	0	0	0	0
14	5.4	5.4	0	0	0	0	0
15	4.9	4.9	0	0	0	0	0
16	4.9	4.9	0	0	0	0	0
17	4.8	4.8	0	0	0	0	0
18	5.0	5.0	0	0	0	0	0
19	5.3	5.3	0	0	0	0	0
20	6.4	6.4	0	0	0	0	0
21	5.5	5.5	0	0	0	0	0
22	5.7	5.7	0	0	0	0	0
23	5.6	5.6	0	0	0	0	0
24	6.2	6.2	0	0	0	0	0
25	7.3	7.3	0	0	0	0	0
26	9.4	9.4	0	0	0	0	0
27	7.6	7.6	0	0	0	0	0
28	7.0	7.0	0	0	0	0	0
29	8.5	8.5	0	0	0	0	0
30	9.5	9.5	0	0	0	0	0
31	8.7	8.7	0	0	0	0	0
Total (cfs)	187	187	0	0	0	0	0
(acre-feet)	371	371	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
JUNE 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	7.9	7.9	0	0	0	0	0
2	5.5	5.5	0	0	0	0	0
3	5.5	5.5	0	0	0	0	0
4	5.6	5.6	0	0	0	0	0
5	4.6	4.6	0	0	0	0	0
6	4.4	4.4	0	0	0	0	0
7	3.4	3.4	0	0	0	0	0
8	4.7	4.7	0	0	0	0	0
9	5.6	5.6	0	0	0	0	0
10	5.1	5.1	0	0	0	0	0
11	4.6	4.6	0	0	0	0	0
12	5.0	5.0	0	0	0	0	0
13	5.2	5.2	0	0	0	0	0
14	4.1	4.1	0	0	0	0	0
15	4.2	4.2	0	0	0	0	0
16	3.3	3.3	0	0	0	0	0
17	2.7	2.7	0	0	0	0	0
18	2.6	2.6	0	0	0	0	0
19	2.9	2.9	0	0	0	0	0
20	2.7	2.7	0	0	0	0	0
21	2.8	2.8	0	0	0	0	0
22	2.8	2.8	0	0	0	0	0
23	2.7	2.7	0	0	0	0	0
24	3.6	3.6	0	0	0	0	0
25	3.9	3.9	0	0	0	0	0
26	3.8	3.8	0	0	0	0	0
27	2.6	2.6	0	0	0	0	0
28	3.2	3.2	0	0	0	0	0
29	3.3	3.3	0	0	0	0	0
30	3.2	3.2	0	0	0	0	0
Total (cfs)	121	121	0	0	0	0	0
(acre-feet)	241	241	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
JULY 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	3.0	3.0	0	0	0	0	0
2	5.1	5.1	0	0	0	0	0
3	3.9	3.9	0	0	0	0	0
4	5.4	5.4	0	0	0	0	0
5	4.7	4.7	0	0	0	0	0
6	5.1	5.1	0	0	0	0	0
7	5.4	5.4	0	0	0	0	0
8	6.1	6.1	0	0	0	0	0
9	6.2	6.2	0	0	0	0	0
10	6.0	6.0	0	0	0	0	0
11	5.3	5.3	0	0	0	0	0
12	5.3	5.3	0	0	0	0	0
13	5.8	5.8	0	0	0	0	0
14	5.9	5.9	0	0	0	0	0
15	6.7	6.7	0	0	0	0	0
16	6.5	6.5	0	0	0	0	0
17	6.4	6.4	0	0	0	0	0
18	7.3	7.3	0	0	0	0	0
19	7.6	7.6	0	0	0	0	0
20	8.0	8.0	0	0	0	0	0
21	8.1	8.1	0	0	0	0	0
22	8.6	8.6	0	0	0	0	0
23	8.1	8.1	0	0	0	0	0
24	9.5	9.5	0	0	0	0	0
25	8.8	8.8	0	0	0	0	0
26	9.5	9.5	0	0	0	0	0
27	6.6	6.6	0	0	0	0	0
28	6.1	6.1	0	0	0	0	0
29	6.6	6.6	0	0	0	0	0
30	6.7	6.7	0	0	0	0	0
31	6.7	6.7	0	0	0	0	0
Total (cfs)	201	201	0	0	0	0	0
(acre-feet)	398	398	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
AUGUST 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	5.8	5.8	0	0	0	0	0
2	4.7	4.7	0	0	0	0	0
3	3.4	3.4	0	0	0	0	0
4	3.2	3.2	0	0	0	0	0
5	3.1	3.1	0	0	0	0	0
6	2.3	2.3	0	0	0	0	0
7	2.2	2.2	0	0	0	0	0
8	2.4	2.4	0	0	0	0	0
9	2.6	2.6	0	0	0	0	0
10	3.1	3.1	0	0	0	0	0
11	2.9	2.9	0	0	0	0	0
12	2.9	2.9	0	0	0	0	0
13	3.0	3.0	0	0	0	0	0
14	3.3	3.3	0	0	0	0	0
15	3.6	3.6	0	0	0	0	0
16	3.6	3.6	0	0	0	0	0
17	3.5	3.5	0	0	0	0	0
18	3.9	3.9	0	0	0	0	0
19	3.7	3.7	0	0	0	0	0
20	3.6	3.6	0	0	0	0	0
21	3.7	3.7	0	0	0	0	0
22	3.7	3.7	0	0	0	0	0
23	2.6	2.6	0	0	0	0	0
24	3.3	3.3	0	0	0	0	0
25	3.0	3.0	0	0	0	0	0
26	2.5	2.5	0	0	0	0	0
27	2.3	2.3	0	0	0	0	0
28	2.2	2.2	0	0	0	0	0
29	2.7	2.7	0	0	0	0	0
30	2.4	2.4	0	0	0	0	0
31	2.6	2.6	0	0	0	0	0
Total (cfs)	98	98	0	0	0	0	0
(acre-feet)	194	194	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09
SEPTEMBER 2009

Day	[1] Temescal Creek Flow	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	2.5	2.5	0	0	0	0	0
2	2.8	2.8	0	0	0	0	0
3	3.0	3.0	0	0	0	0	0
4	3.2	3.2	0	0	0	0	0
5	3.4	3.4	0	0	0	0	0
6	3.9	3.9	0	0	0	0	0
7	3.5	3.5	0	0	0	0	0
8	3.4	3.4	0	0	0	0	0
9	4.0	4.0	0	0	0	0	0
10	3.3	3.3	0	0	0	0	0
11	3.1	3.1	0	0	0	0	0
12	3.5	3.5	0	0	0	0	0
13	4.3	4.3	0	0	0	0	0
14	4.6	4.6	0	0	0	0	0
15	4.4	4.4	0	0	0	0	0
16	5.3	5.3	0	0	0	0	0
17	5.4	5.4	0	0	0	0	0
18	4.5	4.5	0	0	0	0	0
19	4.2	4.2	0	0	0	0	0
20	3.7	3.7	0	0	0	0	0
21	4.3	4.3	0	0	0	0	0
22	4.3	4.3	0	0	0	0	0
23	4.0	4.0	0	0	0	0	0
24	3.6	3.6	0	0	0	0	0
25	3.1	3.1	0	0	0	0	0
26	2.9	2.9	0	0	0	0	0
27	3.3	3.3	0	0	0	0	0
28	3.4	3.4	0	0	0	0	0
29	3.5	3.5	0	0	0	0	0
30	4.2	4.2	0	0	0	0	0
Total (cfs)	112	112	0	0	0	0	0
(acre-feet)	223	223	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2008-09

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1. USGS measured flow of Temescal Creek above Main St. at Corona, which can be found in Appendix A.

2. Temescal base flow was assumed to be the flow present when there are no sources of non-tributary flow and there has been no precipitation to cause storm flow.

3. Temescal Creek flow attributed to storm events.

4. Eastern Municipal Water District wastewater discharge to Temescal Creek at Wasson Canyon.

5. Flow in Temescal Creek at Corona attributed to EMWD discharge of wastewater to Temescal Creek.

6. Flow of the Santa Ana River at Ball Road has historically been lost to the ocean. OCWD Forebay Operations currently percolates up to 35 cfs between Ball Road and Orangewood Avenue. Therefore, the Ball Road figure minus 35 cfs was used for "Santa Ana River Flow Lost to the Ocean."

7. When the Santa Ana River flow lost to the ocean is greater than the San Jacinto watershed outflow reaching Prado Dam, it is assumed that no San Jacinto watershed outflow could be recharged by OCWD. When San Jacinto watershed outflow reaching Prado Dam was greater than the Santa Ana River flow lost to the ocean, San Jacinto watershed outflow recharged by OCWD was calculated as the difference between the two.

TABLE G-2

SUMMARY OF SAN JACINTO WATERSHED DISCHARGE
WATER YEAR 2008-09

MONTHLY TOTALS

Month	EMWD Discharge to Temescal Creek	San Jacinto Watershed Outflow At Prado	Santa Ana River Flow Lost to the Ocean	San Jacinto Outflow Recharged By OCWD
2008				
October	0	0	0	0
November	0	0	151	0
December	211	0	3,025	0
2009				
January	1,693	747	30	717
February	760	641	3,580	532
March	698	958	0	958
April	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
Total (cfs)	3,362	2,346	6,786	2,207
(acre-feet)	6,669	4,653	13,460	4,378

TABLE G-3

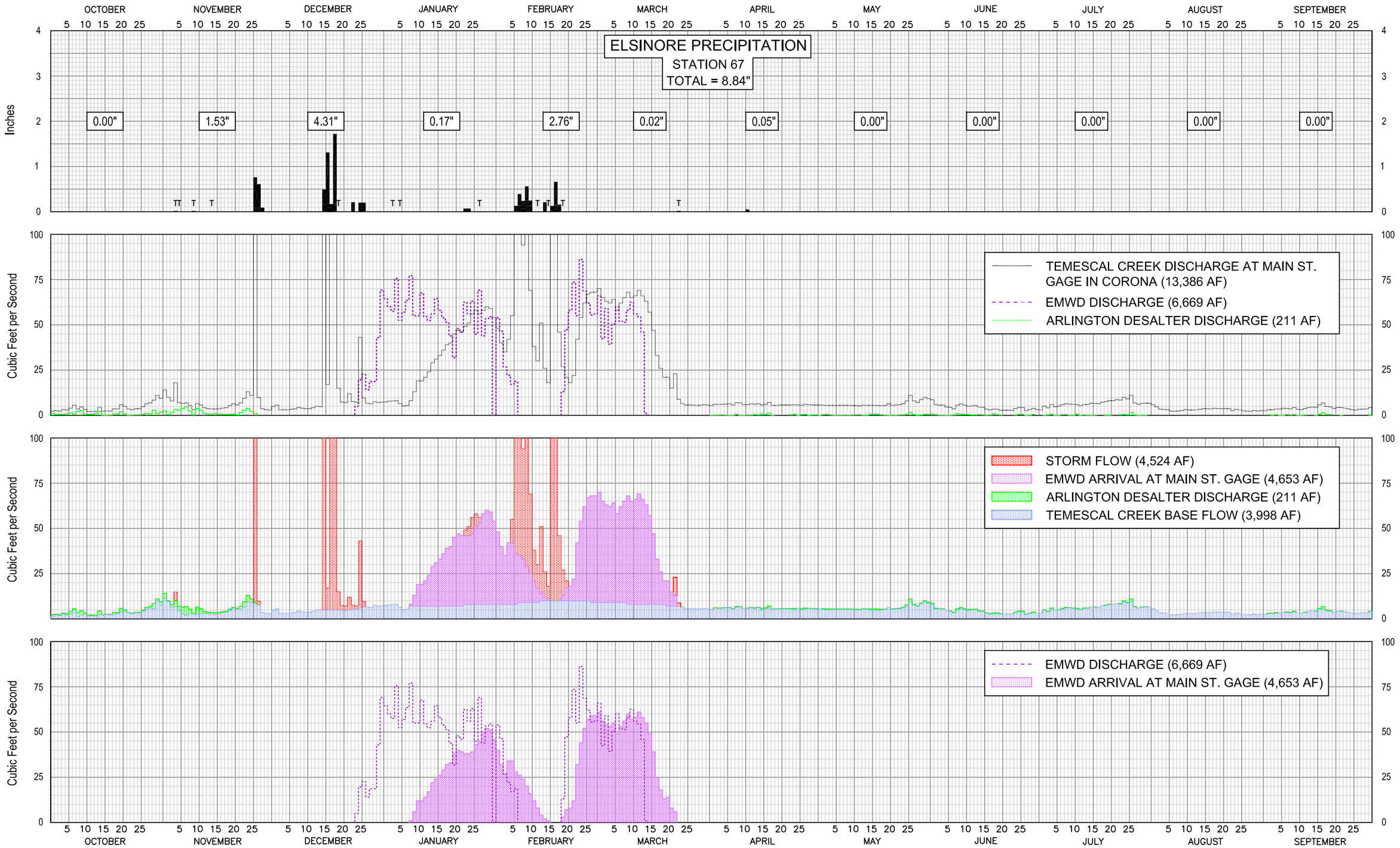
SUMMARY OF FLOW-WEIGHTED AVERAGE TDS
OF SAN JACINTO WATERSHED DISCHARGE
CALCULATED TO REACH PRADO RESERVOIR
WATER YEAR 2008-09

Month	EMWD Discharge to Temescal Creek [1] (acre-feet)	EMWD Discharge TDS [2] (mg/L)	95% of EMWD Discharge [3] (acre-feet)	EMWD Flow at Prado Reservoir x TDS
2008				
October	0	---	0	0
November	0	---	0	0
December	418	830	397	347,200
2009				
January	3,357	710	3,190	2,383,768
February	1,508	790	1,433	1,191,502
March	1,385	770	1,316	1,066,494
April	0	---	0	0
May	0	---	0	0
June	0	---	0	0
July	0	---	0	0
August	0	---	0	0
September	0	---	0	0
Total	6,669		6,336	4,988,965

Flow-weighted TDS at Discharge [5] = 748 mg/L

Flow-weighted TDS of Discharge with 5% Evaporation [6] = 787 mg/L

(1) Actual EMWD discharge to Temescal Creek at Wasson Canyon.
(2) Monthly Average TDS of EMWD Surface Water Discharge to Wasson Canyon.
(3) EMWD discharge assuming 5% evaporation.
(4) Water quality for EMWD discharge at Wasson Canyon =
(Sum of Monthly Discharge Volume X Discharge TDS)/Total Discharge Volume.
(5) Water quality for EMWD discharge arriving at Prado reservoir =
(Sum of Monthly Discharge Volume X Discharge TDS)/95% of Total Discharge Volume.



DISCHARGE OF TEMESCAL CREEK AT MAIN STREET IN CORONA, EMWD DISCHARGE, ARLINGTON DESALTER DISCHARGE, AND ELSINORE PRECIPITATION
WATER YEAR 2008-09

APPENDIX H

WATER QUALITY AND DISCHARGE OF THE SANTA ANA RIVER BELOW PRADO DAM

WATER YEAR 2008-09

TABLE H-1

WATER QUALITY SAMPLES BELOW PRADO DAM
WATER YEAR 2008-09

Date	EC (microsiemens/cm)	TDS (mg/L)	Source
10/07/08	1,050	630	USGS
10/07/08	1,050	632	OCWD
10/20/08	1,020	616	USGS
11/03/08	1,020	624	USGS
11/12/08	1,060	588	OCWD
11/14/08	1,040	622	USGS
12/02/08	829	536	OCWD
12/08/08	1,100	665	USGS
12/23/08	518	313	USGS
01/02/09	696	419	USGS
01/06/09	850	484	OCWD
01/23/09	1,110	677	USGS
02/02/09	1,150	707	USGS
02/03/09	1,180	726	OCWD
02/24/09	660	393	USGS
03/06/09	750	455	USGS
03/10/09	922	546	OCWD
03/25/09	1,050	613	USGS
04/07/09	1,090	671	USGS
04/07/09	1,050	594	OCWD
04/21/09	1,110	675	USGS
05/01/09	1,070	642	USGS
05/05/09	1,050	634	OCWD
05/15/09	1,080	631	USGS
06/02/09	1,070	654	USGS
06/09/09	985	624	OCWD
06/29/09	1,060	620	USGS
07/07/09	1,070	633	USGS
07/07/09	1,050	618	OCWD
07/28/09	1,120	655	USGS
08/04/09	1,060	608	OCWD
08/10/09	1,040	616	USGS
08/12/09	1,080	626	OCWD
08/18/09	985	610	OCWD
08/21/09	1,080	649	USGS
08/26/09	1,050	632	OCWD
09/08/09	1,080	650	USGS
09/24/09	986	592	USGS
09/29/09	1,040	612	OCWD

TABLE H-2

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

OCTOBER 2008

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	122	1,103	662	80,820
2	122	1,104	663	80,901
3	131	1,067	641	83,927
4	137	1,067	641	87,801
5	141	1,059	636	89,670
6	145	1,056	634	91,966
7	139	1,057	635	88,240
8	134	1,067	641	85,882
9	120	1,091	655	78,584
10	125	1,088	653	81,677
11	132	1,079	648	85,483
12	134	1,063	638	85,533
13	130	1,034	621	80,731
14	133	1,041	625	83,147
15	134	1,059	636	85,223
16	137	1,067	641	87,777
17	136	1,083	650	88,424
18	137	1,099	660	90,412
19	141	1,061	637	89,822
20	148	1,027	617	91,279
21	147	1,033	620	91,170
22	142	1,055	633	89,943
23	131	1,064	639	83,674
24	131	1,065	639	83,745
25	132	1,054	633	83,509
26	133	1,045	627	83,430
27	142	1,014	609	86,421
28	150	1,047	629	94,335
29	141	1,051	631	88,952
30	139	1,032	619	86,098
31	134	1,041	625	83,716
Total	4,200			2,672,292
		Monthly Flow Weighted TDS =	636	mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

NOVEMBER 2008

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	137	1,063	638	87,406
2	159	1,022	614	97,575
3	166	1,018	611	101,506
4	200	992	596	119,124
5	169	978	587	99,207
6	119	1,025	616	73,264
7	153	1,020	612	93,667
8	142	1,035	622	88,279
9	152	974	585	88,896
10	159	995	597	95,000
11	158	1,024	615	97,157
12	175	1,008	605	105,869
13	170	1,032	619	105,298
14	165	1,023	614	101,360
15	151	1,051	631	95,330
16	146	1,056	634	92,543
17	144	1,064	639	92,033
18	117	1,087	653	76,345
19	175	1,089	654	114,378
20	162	1,098	659	106,792
21	162	1,102	662	107,194
22	166	1,105	664	110,169
23	174	1,108	665	115,747
24	178	1,094	657	116,928
25	133	1,114	669	88,921
26	174	931	559	97,304
27	234	782	470	109,936
28	238	801	481	114,400
29	243	825	496	120,433
30	246	840	504	124,089
Total	5,067			3,036,149

Monthly Flow Weighted TDS = 599 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

DECEMBER 2008

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	321	888	533	171,105
2	387	925	555	214,839
3	381	943	566	215,744
4	380	1,014	609	231,388
5	367	1,015	610	223,708
6	339	1,079	648	219,685
7	299	1,109	666	199,129
8	245	1,099	660	161,651
9	228	1,035	622	141,719
10	202	1,009	606	122,409
11	212	988	593	125,780
12	215	992	596	128,095
13	222	1,020	612	135,963
14	227	1,019	612	138,821
15	252	759	456	114,871
16	387	516	310	119,785
17	580	604	363	210,500
18	2,040	451	271	551,989
19	928	---	---	---
20	467	---	---	---
21	461	---	---	---
22	492	---	---	---
23	409	---	---	---
24	459	560	337	154,456
25	454	565	339	154,016
26	464	611	367	170,176
27	462	564	339	156,499
28	460	581	349	160,383
29	467	615	369	172,439
30	473	639	383	181,363
31	487	625	375	182,748
Total	11,010 [2]			4,759,260

Monthly Flow Weighted TDS[3] = 432 mg/L

1. TDS = EC x 0.600414
2. EC data missing 12/19-12/23/2008
3. Flow data for period of missing EC is not included.

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

JANUARY 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	487	671	403	196,157
2	479	682	410	196,236
3	472	737	443	208,967
4	466	810	486	226,592
5	478	752	452	215,955
6	491	834	501	245,749
7	481	903	542	260,906
8	463	954	573	265,322
9	440	1,001	601	264,523
10	406	1,002	601	244,206
11	385	1,019	612	235,560
12	369	1,052	632	233,075
13	370	1,069	642	237,445
14	266	1,096	658	175,068
15	219	1,115	670	146,660
16	214	1,114	669	143,104
17	213	1,102	662	140,943
18	213	1,107	664	141,530
19	212	1,114	669	141,769
20	211	1,108	665	140,360
21	212	1,118	671	142,300
22	213	1,116	670	142,701
23	211	1,113	668	140,946
24	208	1,117	671	139,507
25	209	1,102	661	138,237
26	238	1,093	657	156,255
27	257	1,050	631	162,039
28	251	1,067	641	160,811
29	250	1,107	664	166,105
30	246	1,118	671	165,115
31	237	1,141	685	162,394
Total	9,867			5,736,536

Monthly Flow Weighted TDS = 581 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

FEBRUARY 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	233	1,162	698	162,573
2	292	1,178	707	206,529
3	199	1,174	705	140,327
4	205	1,147	688	141,127
5	185	1,139	684	126,552
6	236	707	424	100,173
7	239	497	298	71,305
8	258	517	310	80,080
9	1,300	456	274	355,926
10	1,750	412	247	432,785
11	500	507	304	152,158
12	512	474	285	145,674
13	639	517	311	198,497
14	1,110	534	321	356,197
15	954	487	293	279,125
16	478	585	351	167,751
17	1,730	453	272	470,042
18	912	476	286	260,490
19	504	557	335	168,629
20	423	560	336	142,222
21	419	560	336	140,867
22	418	571	343	143,198
23	417	653	392	163,379
24	410	630	378	155,022
25	221	578	347	76,747
26	190	736	442	84,019
27	250	756	454	113,450
28	294	783	470	138,178
Total	15,278			5,173,023

Monthly Flow Weighted TDS = 339 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

MARCH 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	301	815	489	147,314
2	274	801	481	131,771
3	324	766	460	148,955
4	266	777	467	124,165
5	330	772	464	152,969
6	334	759	456	152,278
7	335	788	473	158,440
8	333	804	483	160,732
9	331	815	489	161,935
10	354	896	538	190,399
11	379	897	539	204,225
12	376	908	545	204,921
13	371	933	560	207,859
14	365	949	570	208,067
15	361	972	584	210,704
16	366	994	597	218,493
17	366	987	593	216,975
18	362	997	599	216,773
19	366	1,000	601	219,825
20	346	1,003	602	208,392
21	331	1,012	608	201,101
22	325	1,015	609	198,075
23	314	1,010	606	190,331
24	310	1,023	614	190,480
25	345	1,022	614	211,745
26	364	1,013	608	221,394
27	367	1,028	617	226,490
28	366	1,035	621	227,440
29	364	1,054	633	230,388
30	371	1,080	648	240,572
31	359	1,094	657	235,911
Total	10,656			6,019,119

Monthly Flow Weighted TDS = 565 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

APRIL 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	256	1,121	673	172,379
2	379	1,163	698	264,560
3	299	1,184	711	212,576
4	199	1,152	692	137,640
5	179	1,128	678	121,274
6	175	1,117	670	117,325
7	144	1,106	664	95,638
8	169	1,090	655	110,652
9	171	1,090	655	111,952
10	178	1,056	634	112,819
11	183	1,035	621	113,696
12	186	1,053	632	117,631
13	188	1,049	630	118,422
14	186	1,065	639	118,889
15	165	1,048	629	103,803
16	177	1,050	630	111,536
17	170	1,064	639	108,621
18	167	1,063	638	106,605
19	163	1,072	643	104,875
20	182	1,067	641	116,624
21	161	1,103	662	106,647
22	157	1,102	661	103,850
23	162	1,076	646	104,646
24	161	1,072	643	103,589
25	164	1,053	632	103,678
26	163	1,050	630	102,759
27	165	1,046	628	103,633
28	149	1,071	643	95,780
29	150	1,078	647	97,119
30	152	1,082	650	98,732
Total	5,500			3,597,950

Monthly Flow Weighted TDS = 654 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

MAY 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	160	1,069	642	102,735
2	155	1,069	642	99,453
3	162	1,043	626	101,482
4	159	1,052	632	100,426
5	149	1,061	637	94,892
6	150	1,066	640	95,999
7	152	1,052	632	95,990
8	142	1,072	644	91,377
9	143	1,078	647	92,541
10	151	1,060	637	96,136
11	153	1,046	628	96,084
12	151	1,051	631	95,295
13	155	1,075	645	100,010
14	156	1,068	641	100,025
15	155	1,085	651	100,935
16	160	1,076	646	103,359
17	165	1,053	632	104,294
18	173	1,049	630	108,984
19	152	1,075	645	98,084
20	152	1,064	639	97,144
21	150	1,055	634	95,042
22	144	1,067	641	92,293
23	146	1,054	633	92,435
24	144	1,048	629	90,597
25	141	1,044	627	88,344
26	144	1,047	629	90,561
27	144	1,044	627	90,235
28	136	1,067	641	87,136
29	137	1,087	653	89,420
30	142	1,090	655	92,943
31	146	1,081	649	94,804
Total	4,669			2,979,057

Monthly Flow Weighted TDS = 638 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

JUNE 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	145	1,068	642	93,023
2	136	1,077	647	87,942
3	135	1,062	638	86,085
4	143	1,044	627	89,675
5	141	1,063	638	89,981
6	147	1,046	628	92,346
7	151	1,026	616	93,043
8	144	1,039	624	89,804
9	145	1,030	619	89,703
10	144	1,023	614	88,411
11	147	1,007	605	88,908
12	146	1,015	609	88,971
13	149	994	597	88,920
14	146	994	597	87,171
15	145	989	594	86,077
16	131	1,018	611	80,056
17	123	1,047	628	77,290
18	126	1,066	640	80,616
19	123	1,117	670	82,470
20	127	1,092	656	83,273
21	126	1,082	649	81,828
22	125	1,074	645	80,573
23	124	1,071	643	79,757
24	124	1,084	651	80,715
25	128	1,092	656	83,914
26	121	1,110	666	80,622
27	118	1,098	659	77,765
28	116	1,088	653	75,763
29	115	1,077	647	74,379
30	118	1,073	644	75,995
Total	4,009			2,535,079
		Monthly Flow Weighted TDS =	632	mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

JULY 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	110	1,081	649	71,379
2	108	1,081	649	70,118
3	100	1,100	661	66,064
4	104	1,087	652	67,859
5	103	1,083	650	66,954
6	107	1,080	648	69,353
7	101	1,064	639	64,496
8	97	1,048	629	61,058
9	103	1,031	619	63,774
10	97	1,066	640	62,072
11	97	1,067	640	62,127
12	97	1,056	634	61,527
13	99	1,042	625	61,920
14	102	1,062	638	65,027
15	90	1,054	633	56,971
16	90	1,091	655	58,958
17	91	1,120	673	61,211
18	92	1,132	680	62,520
19	101	1,086	652	65,842
20	102	1,068	641	65,382
21	89	1,105	663	59,026
22	88	1,117	671	59,039
23	89	1,133	680	60,547
24	85	1,137	683	58,022
25	90	1,130	679	61,076
26	96	1,113	669	64,180
27	98	1,094	657	64,383
28	89	1,105	664	59,057
29	96	1,082	650	62,364
30	102	1,068	641	65,383
31	107	1,041	625	66,874
Total	3,020			1,964,561

Monthly Flow Weighted TDS = 651 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

AUGUST 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	104	1,048	629	65,419
2	109	1,033	620	67,614
3	114	1,037	622	70,964
4	102	1,034	621	63,299
5	99	1,048	629	62,272
6	86	1,103	662	56,940
7	87	1,104	663	57,667
8	91	1,105	664	60,401
9	93	1,074	645	59,952
10	99	1,061	637	63,081
11	94	1,053	632	59,411
12	92	1,058	635	58,460
13	96	1,048	629	60,419
14	98	1,056	634	62,121
15	105	1,059	636	66,747
16	107	1,054	633	67,705
17	111	1,044	627	69,555
18	111	1,048	629	69,840
19	108	1,074	645	69,628
20	104	1,075	645	67,117
21	104	1,077	647	67,256
22	101	1,076	646	65,278
23	104	1,066	640	66,563
24	107	1,041	625	66,906
25	98	1,066	640	62,724
26	89	1,071	643	57,239
27	87	1,077	647	56,273
28	87	1,083	650	56,559
29	85	1,076	646	54,920
30	79	1,072	643	50,829
31	84	1,079	648	54,417
Total	3,035			1,937,579

Monthly Flow Weighted TDS = 638 mg/L

1. TDS = EC x 0.600414

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2008-09

SEPTEMBER 2009

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS [1]	Outflow X TDS
1	77	1,107	665	51,200
2	81	1,134	681	55,153
3	77	1,128	677	52,146
4	75	1,135	681	51,090
5	77	1,131	679	52,266
6	84	1,108	665	55,899
7	85	1,129	678	57,623
8	98	1,102	661	64,826
9	92	1,081	649	59,723
10	96	1,086	652	62,611
11	95	1,085	651	61,865
12	94	1,089	654	61,442
13	110	1,062	638	70,144
14	114	1,040	624	71,151
15	119	1,007	604	71,934
16	111	986	592	65,740
17	112	1,010	606	67,925
18	103	1,040	624	64,323
19	100	1,061	637	63,719
20	110	1,034	621	68,282
21	111	1,037	622	69,090
22	102	1,055	634	64,635
23	106	1,027	617	65,393
24	102	1,005	603	61,539
25	105	994	597	62,663
26	101	990	594	60,028
27	109	972	584	63,632
28	103	1,004	603	62,097
29	103	1,054	633	65,151
30	107	1,049	630	67,419
Total	2,959			1,870,712

Monthly Flow Weighted TDS = 632 mg/L

1. TDS = EC x 0.600414

TABLE H-3

ANNUAL SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM

WATER YEAR 2008-09

Month	Monthly Flow (1) (cfs-days)	Monthly Weighted TDS (1) (mg/L)	Monthly Flow x TDS
2008			
October	4,200	636	2,672,292
November	5,067	599	3,036,149
December	11,010	432	4,759,260
2009			
January	9,867	581	5,736,536
February	15,278	339	5,173,023
March	10,656	565	6,019,119
April	5,500	654	3,597,950
May	4,669	638	2,979,057
June	4,009	632	2,535,079
July	3,020	651	1,964,561
August	3,035	638	1,937,579
September	2,959	632	1,870,712
Total	79,270 (1)		42,281,319
	Yearly Flow-weighted TDS (1) =	533	

1. Prado Outflow Total and Flow Weighted TDS exclude days when EC data was missing.

APPENDIX I

WATER QUALITY AND FLOW OF WASTEWATER FROM RUBIDOUX COMMUNITY SERVICES DISTRICT DISCHARGED BELOW THE RIVERSIDE NARROWS GAGING STATION

WATER YEAR 2008-09

PREPARED BY

JOHN V. ROSSI

TABLE I-1

QUANTITY AND QUALITY OF WASTEWATER FROM RUBIDOUX
DISCHARGED BELOW THE
RIVERSIDE NARROWS GAGING STATION

WATER YEAR 2008-09

MONTH	Discharge (acre -feet)	TDS (mg/L)	Discharge xTDS
2008			
October	199	704	140,096
November	190	716	136,040
December	196	712	139,552
2009			
January	193	728	140,504
February	176	716	126,016
March	192	744	142,848
April	185	748	138,380
May	194	716	138,904
June	187	804	150,348
July	194	744	144,336
August	190	736	139,840
September	186	724	134,664
Total	2,282		1,671,528

Flow weighted TDS = $\frac{1,671,528}{2,282}$ = 732 mg/L

APPENDIX J

WATER QUALITY AND DISCHARGE OF THE SANTA ANA RIVER AT RIVERSIDE NARROWS

WATER YEAR 2008-09

PREPARED BY

JOHN V. ROSSI

TABLE J-1 (continued)

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS
WATER YEAR 2008-09

	Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data		Ratio	Average
2008	10/8/08	1,062	676	C of R		0.64	
	10/9/08	937	570	USGS		0.61	
	10/15/08	1,020	608	C of R		0.60	
	10/22/08	1,057	656	C of R		0.62	
	10/23/08	931	572	USGS		0.61	
	10/29/08	1,040	664	C of R		0.64	624
	11/3/08	1,087	672	C of R		0.62	
	11/6/08	970	601	USGS		0.62	
	11/12/08	1,089	684	C of R		0.63	
	11/19/08	995	632	C of R		0.64	
	11/20/08	909	564	USGS		0.62	
	11/26/08	404	348	C of R	*	0.86	631
	12/3/08	944	569	USGS		0.60	
	12/3/08	1,022	640	C of R		0.63	
	12/10/08	1,064	684	C of R		0.64	
	12/17/08	755	488	C of R	*	0.65	
	12/19/08	706	424	USGS	*	0.60	
	12/24/08	988	600	C of R	*	0.61	
	12/31/08	1,022	640	C of R		0.63	633
2009	1/7/09	942	572	USGS		0.61	
	1/7/09	1,068	644	C of R		0.60	
	1/14/09	1,093	688	C of R		0.63	
	1/21/09	981	613	USGS		0.62	
	1/21/09	1,104	692	C of R		0.63	
	1/28/09	1,092	676	C of R		0.62	648

* Data not used in determining monthly averages; storm flow.
C of R City of Riverside
USGS U.S. Geological Survey

TABLE J-1 (continued)

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS
WATER YEAR 2008-09

Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data		Ratio	Average
2/4/09	1,079	668	C of R		0.62	
2/4/09	821	544	C of R	*	0.66	
2/10/09	512	314	USGS	*	0.61	
2/18/09	637	476	C of R	*	0.75	
2/20/09	919	570	USGS	*	0.62	
2/25/09	1,009	636	C of R		0.63	652
3/4/09	1,033	640	C of R		0.62	
3/6/09	950	598	USGS		0.63	
3/11/09	1,060	648	C of R		0.61	
3/18/09	1,068	660	C of R		0.62	
3/23/09	911	570	USGS		0.63	
3/25/09	1,080	668	C of R		0.62	631
4/1/09	1,072	684	C of R		0.64	
4/2/09	944	590	USGS		0.63	
4/8/09	1,129	707	C of R		0.63	
4/15/09	1,083	675	C of R		0.62	
4/16/09	980	619	USGS		0.63	
4/22/09	1,116	701	C of R		0.63	
4/29/09	1,094	656	C of R		0.60	662
5/6/09	1,040	668	USGS		0.64	
5/6/09	1,114	714	C of R		0.64	
5/13/09	1,085	740	C of R		0.68	
5/20/09	996	623	USGS		0.63	
5/20/09	1,132	700	C of R		0.62	
5/27/09	1,103	694	C of R		0.63	690

* Data not used in determining monthly averages; storm flow.
C of R City of Riverside
USGS U.S. Geological Survey

TABLE J-1 (continued)

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS
WATER YEAR 2008-09

Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average
6/1/09	993	593	USGS	0.60	
6/3/09	1,094	708	C of R	0.65	
6/10/09	1,092	682	C of R	0.62	
6/17/09	1,107	697	C of R	0.63	
6/19/09	965	604	USGS	0.63	
6/19/09	1,087	678	C of R	0.62	
6/24/09	1,097	740	C of R	0.67	672
7/1/09	1,115	712	C of R	0.64	
7/8/09	985	604	USGS	0.61	
7/8/09	1,098	704	C of R	0.64	
7/15/09	1,090	748	C of R	0.69	
7/22/09	990	618	USGS	0.62	
7/29/09	1,090	703	C of R	0.64	682
8/5/09	1,100	784	C of R	0.71	
8/10/09	1,010	635	USGS	0.63	
8/12/09	1,092	680	C of R	0.62	
8/19/09	1,088	752	C of R	0.69	
8/25/09	973	594	USGS	0.61	
8/26/09	1,084	668	C of R	0.62	686
9/1/09	1,000	618	USGS	0.62	
9/2/09	1,094	689	C of R	0.63	
9/9/09	1,093	675	C of R	0.62	
9/22/09	1,000	599	USGS	0.60	
9/23/09	1,096	667	C of R	0.61	
9/30/09	1,074	674	C of R	0.63	654

* Data not used in determining monthly averages; storm flow.
C of R City of Riverside
USGS U.S. Geological Survey

TABLE J-2

ANNUAL SUMMARY OF FLOW WEIGHTED TDS AT RIVERSIDE NARROWS
WATER YEAR 2008-09

	Month	Stream Flow [1] (acre-feet)	Monthly Average TDS [2] (mg/L)	Monthly Flow x TDS
2008	October	4,447	624	2,776,410
	November	3,809	631	2,401,955
	December	3,820	633	2,419,015
2009	January	4,509	648	2,919,578
	February	3,931	652	2,563,012
	March	4,531	631	2,857,551
	April	3,344	662	2,212,773
	May	2,957	690	2,039,837
	June	3,487	672	2,342,268
	July	3,178	682	2,165,807
	August	2,727	686	1,869,359
	September	2,340	654	1,529,580
	Total Stream Flow	43,080		28,097,144

$$\text{Flow-weighted TDS} = \frac{28{,}097{,}144}{43{,}080} = 652 \text{ mg/L}$$

(1) USGS measured flow minus storm flow.

(2) TDS based on water quality data from Table J-1.

APPENDIX K

WMWD TRANSFER PROGRAM WATER DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS

WATER YEAR 2008-09

TABLE K-1

WMWD-OCWD TRANSFER PROGRAM WATER
DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS
WATER YEAR 2008-09
(acre-feet)

Month	Discharge Above Riverside Narrows[1]	Flow Arriving At Riverside Narrows[1]	Flow Arriving At Prado Dam [1]
2008			
October	758	758	758
November	618	618	618
December	0	0	0
2009			
January	0	0	0
February	0	0	0
March	84	84	84
April	0	0	0
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
Total	1,460	1,460	1,460

(1) Unadjusted for evapotranspiration loss per agreement between WMWD and OCWD.

TABLE K-2

WMWD-OCWD TRANSFER PROGRAM WATER
DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS
WATER YEAR 2008-09
OCTOBER 2008

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows[1] (cfs)	Flow Arriving At Prado Dam[1] (cfs)
1	5.2	5.2	5.2
2	12.5	12.5	12.5
3	12.7	12.7	12.7
4	12.6	12.6	12.6
5	12.7	12.7	12.7
6	12.7	12.7	12.7
7	12.7	12.7	12.7
8	12.8	12.8	12.8
9	12.4	12.4	12.4
10	12.8	12.8	12.8
11	12.7	12.7	12.7
12	12.8	12.8	12.8
13	12.5	12.5	12.5
14	12.6	12.6	12.6
15	12.6	12.6	12.6
16	12.4	12.4	12.4
17	12.6	12.6	12.6
18	12.5	12.5	12.5
19	12.4	12.4	12.4
20	12.3	12.3	12.3
21	12.3	12.3	12.3
22	12.5	12.5	12.5
23	12.4	12.4	12.4
24	12.4	12.4	12.4
25	12.5	12.5	12.5
26	12.6	12.6	12.6
27	12.6	12.6	12.6
28	12.6	12.6	12.6
29	12.6	12.6	12.6
30	12.6	12.6	12.6
31	12.6	12.6	12.6
Total in cfs-days	382	382	382
Total in AF	758	758	758

(1) Unadjusted for evapotranspiration loss per agreement between WMWD and OCWD.

TABLE K-2 (continued)

WMWD-OCWD TRANSFER PROGRAM WATER
DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS
WATER YEAR 2008-09
NOVEMBER 2008

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows[1] (cfs)	Flow Arriving At Prado Dam[1] (cfs)
1	12.9	12.9	12.9
2	12.7	12.7	12.7
3	12.5	12.5	12.5
4	12.6	12.6	12.6
5	12.6	12.6	12.6
6	12.5	12.5	12.5
7	12.4	12.4	12.4
8	12.4	12.4	12.4
9	12.4	12.4	12.4
10	12.3	12.3	12.3
11	12.4	12.4	12.4
12	12.5	12.5	12.5
13	12.4	12.4	12.4
14	12.4	12.4	12.4
15	12.2	12.2	12.2
16	11.0	11.0	11.0
17	11.9	11.9	11.9
18	12.2	12.2	12.2
19	12.1	12.1	12.1
20	12.2	12.2	12.2
21	12.7	12.7	12.7
22	12.5	12.5	12.5
23	12.8	12.8	12.8
24	12.9	12.9	12.9
25	12.9	12.9	12.9
26	1.3	1.3	1.3
27	0.0	0.0	0.0
28	0.0	0.0	0.0
29	0.0	0.0	0.0
30	0.0	0.0	0.0
Total in cfs-days	312	312	312
Total in AF	618	618	618

(1) Unadjusted for evapotranspiration loss per agreement between WMWD and OCWD.

TABLE K-2 (continued)

WMWD-OCWD TRANSFER PROGRAM WATER
DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS
WATER YEAR 2008-09
MARCH 2009

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows[1] (cfs)	Flow Arriving At Prado Dam[1] (cfs)
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	0.0	0.0	0.0
8	0.0	0.0	0.0
9	0.0	0.0	0.0
10	0.0	0.0	0.0
11	0.0	0.0	0.0
12	0.0	0.0	0.0
13	0.0	0.0	0.0
14	0.0	0.0	0.0
15	0.0	0.0	0.0
16	0.0	0.0	0.0
17	0.0	0.0	0.0
18	0.0	0.0	0.0
19	0.0	0.0	0.0
20	0.0	0.0	0.0
21	0.0	0.0	0.0
22	0.0	0.0	0.0
23	0.0	0.0	0.0
24	0.0	0.0	0.0
25	8.3	8.3	8.3
26	11.4	11.4	11.4
27	5.0	5.0	5.0
28	4.4	4.4	4.4
29	4.5	4.5	4.5
30	4.5	4.5	4.5
31	4.5	4.5	4.5
Total in cfs-days	42	42	42
Total in AF	84	84	84

(1) Unadjusted for evapotranspiration loss per agreement between WMWD and OCWD.

TABLE K-3

SUMMARY OF TDS OF WMWD-OCWD TRANSFER PROGRAM WATER DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS
WATER YEAR 2008-09

Month	WMWD Transfer Program Discharge (acre-feet)	TDS[1] (mg/L)	Discharge x TDS
2008			
October	758	440	333,520
November	618	420	259,560
December	0	---	0
2009			
January	0	---	0
February	0	---	0
March	84	540	45,456
April	0	---	0
May	0	---	0
June	0	---	0
July	0	---	0
August	0	---	0
September	0	---	0
Total	1,460		638,536

Flow-weighted TDS of pumped groundwater releases to the Santa Ana River:[2]

$$TDS = \frac{638,536}{1,460} = 437 \text{ mg/L}$$

(1) Water quality data collected from the Tava Lanes turnout to the Riverside Canal.
(2) Unadjusted for evaporation loss per agreement between WMWD and OCWD.