

# SANTA ANA RIVER WATERMASTER

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

## WATERMASTER

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April 30, 2008

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

Re: Watermaster Report for Water Year October 1, 2006 - September 30, 2007

Ladies and Gentlemen:

We have the honor of submitting herewith the Thirty-Seventh 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 2006-07 are as follows:

### At Prado

1	Measured Outflow at Prado	156,147 acre-feet
2	Base Flow at Prado	129,830 acre-feet
3	Annual Weighted TDS in Base and Storm Flows	604 mg/L
4	Annual Adjusted Base Flow	140,216 acre-feet
5	Cumulative Adjusted Base Flow	4,528,055 acre-feet
6	Other Credits (Debits)	5,531 acre-feet
7	Cumulative Entitlement of OCWD	1,554,000 acre-feet
8	Cumulative Credit	3,004,419 acre-feet
9	One-Third of Cumulative Debit	0 acre-feet
10	Minimum Required Base Flow in 2007-08	34,000 acre-feet

At Riverside Narrows

1	Base Flow at Riverside Narrows	56,123 acre-feet
2	Annual Weighted TDS in Base Flow	642 mg/L
3	Annual Adjusted Base Flow	56,123 acre-feet
4	Cumulative Adjusted Base Flow	1,660,565 acre-feet
5	Cumulative Entitlement of IEUA and WMWD	564,250 acre-feet
6	Cumulative Credit	1,096,315 acre-feet
7	One-Third of Cumulative Debit	0 acre-feet
8	Minimum Required Base Flow in 2007-08	12,420 acre-feet

Based on these findings, the Watermaster concludes that there was full compliance with the provisions of the Stipulated Judgment in 2006-07.

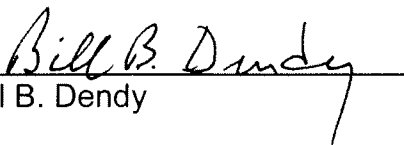
At the end of the 2006-07 water year, Inland Empire Utilities Agency (formerly Chino Basin Municipal Water District) and Western Municipal Water District have a cumulative credit of 3,004,419 acre-feet to their Base Flow obligation at Prado Dam. San Bernardino Valley Municipal Water District has a cumulative credit of 1,096,315 acre-feet to its Base Flow obligation at Riverside Narrows.

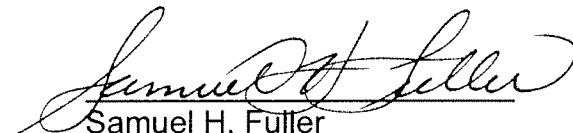
The Watermaster continued to exercise surveillance over the many active and proposed projects within the watershed for their potential effect on Base Flow.

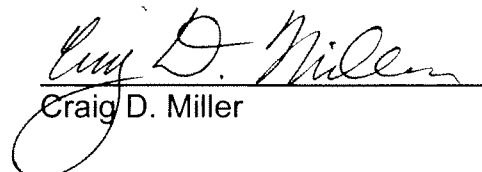
Sincerely yours,

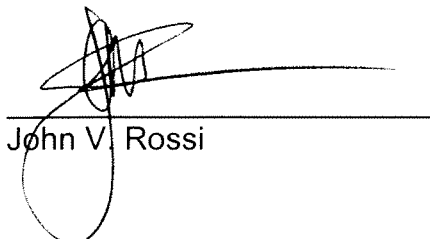
Santa Ana River Watermaster

By:   
Richard W. Atwater

  
Bill B. Dendy

  
Samuel H. Fuller

  
Craig D. Miller

  
John V. Rossi

**SANTA ANA RIVER WATERMASTER  
FOR  
ORANGE COUNTY WATER DISTRICT  
v. CITY OF CHINO, et al.  
CASE NO. 117628 - COUNTY OF ORANGE**

**THIRTY-SEVENTH  
ANNUAL REPORT  
OF THE  
SANTA ANA RIVER WATERMASTER  
FOR WATER YEAR  
OCTOBER 1, 2006 - SEPTEMBER 30, 2007**

**APRIL 30, 2008**

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### APPENDICES

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

- A USGS Flow Measurements of the Santa Ana River Flows below Prado, at MWD Crossing, and 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); and Water Quality Records for the Santa Ana River at Prado Dam and at MWD Crossing
- B Daily Precipitation Data for San Bernardino
- C Santa Ana River Watermaster Statement of Assets and Liabilities Reviewed by Orange County Water District Accounting Manager
- D Water Quality and Flow of High Groundwater Mitigation Project Water Discharged to the Santa Ana River above Riverside Narrows
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## **CHAPTER I**

### **WATERMASTER ACTIVITIES AND WATER CONDITIONS**

#### **Introduction**

This Thirty-Seventh Annual Report of the Santa Ana River Watermaster covers Water Year 2006-07. 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 assigns to 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 2006-07 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 served as Chairman and Mr. Fuller served as Secretary/Treasurer. 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 2006-07 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 values for electrical conductivity (EC), measured as specific conductance and expressed in microsiemens per centimeter ( $\mu\text{s}/\text{cm}$ ) 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 2006-07 daily mean discharge record at Prado is considered by the USGS to be "fair" 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, 442 cfs on December 21, 2006, and 93 cfs on December 6, 2006. The maximum and minimum daily mean EC values reported by the USGS at Prado were 1,160  $\mu\text{s}/\text{cm}$  on December 17, 2006, and 810  $\mu\text{s}/\text{cm}$  on January 31, 2007. The respective corresponding calculated TDS concentrations were 718 and 501 mg/L, respectively. EC records were rated "poor" by the USGS.

The 2006-07 daily mean discharge record at Riverside Narrows was rated by the USGS to be good below 100 cfs and fair above. The maximum and minimum daily mean discharge values during the year were 242 cfs on April 20, 2007, and 58 cfs on July 6 and September 1, 2007. The maximum and minimum EC values reported by the USGS were 1,000  $\mu\text{s}/\text{cm}$  on August 27, 2007, and 870  $\mu\text{s}/\text{cm}$  on October 24, 2006. The corresponding measured TDS concentrations were 612 and 544 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 rainfall 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 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.

For Water Year 2005-06 Herndon and Sharp compared the record for the Gilbert Street Gage to the record for Station 2146-A and found them to be virtually identical. The Watermaster accepted their recommendation to use the Gilbert Street Gage in its annual report for Water Year 2005-06. Due to missing records at the beginning of Water Year 2006-07, data from Station 2146-A were used for the period October 1 through December 21, 2006. Data from the Gilbert Street gage were used for the remainder of the water year. The combined total precipitation recorded at these two gages for the periods specified was 4.61 inches, or 26 % 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 2006-07.

## 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 2006-07 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 1,846 acre-feet of WMWD-OCWD Transfer water was discharged to the River above Riverside Narrows. The estimated average TDS concentration was 479 mg/L.
- At its Arlington Desalter in Riverside WMWD produced and delivered to a channel tributary to the River between Riverside Narrows and Prado 478 acre-feet of water having an average TDS of 357 mg/L.
- Eastern Municipal Water District (EMWD) reported that it discharged 13,105 acre-feet of municipal wastewater to Temescal Creek, with a flow-weighted average TDS of 642 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 11,092 acre-feet of the EMWD wastewater, with an average TDS concentration of 676 mg/L, reached Prado Reservoir and that 11,062 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 2006-07 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 2006-07 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) <sup>(1)</sup>	Total Flow (ac-ft) <sup>(2)</sup>	Base Flow (ac-ft) <sup>(3)</sup>	Weighted TDS (mg/L) <sup>(4)</sup>	Adjusted Base Flow (ac-ft)	Cumulative Credit (ac-ft) <sup>(5)</sup>
1970-71	11.97	51,864	38,402	727	38,402	-3,598
1971-72	9.62	51,743	40,416	707	40,416	-5,182
1972-73	18.46	76,375	48,999	638	51,531	4,349
1973-74	12.72	63,620	43,106	633	45,513	7,862
1974-75	13.49	61,855	50,176	694	51,263	17,125
1975-76	15.86	59,209	45,627	635	48,098	23,223
1976-77	11.95	62,953	48,387	660	50,000	31,223
1977-78	30.47	252,837	58,501	383	73,955	63,178
1978-79	17.51	134,486	71,863	580	79,049	100,227
1979-80	30.93	527,760	82,509	351	106,505	164,732
1980-81	10.45	117,888	74,875	728	74,875	205,652
1981-82	18.34	143,367	81,548	584	89,431	253,083
1982-83	32.36	425,938	111,692	411	138,591	353,036
1983-84	10.81	178,395	109,231	627	115,876	431,514
1984-85	12.86	162,912	125,023	617	133,670	523,184
1985-86	17.86	196,565	127,215	567	141,315	622,499
1986-87	8.08	140,538	119,848	622	127,638	708,137
1987-88	13.78	170,279	124,104	582	136,308	802,445
1988-89	12.64	152,743	119,572	583	131,230	891,675
1989-90	8.53	144,483	119,149	611	127,986	977,611
1990-91	15.48	191,321	111,151	514	128,379	1,064,040
1991-92	16.54	193,225	106,948	499	124,869	1,146,909
1992-93	30.92	568,677	128,068	368	163,499	1,268,408
1993-94	11.62	158,241	111,186	611	119,432	1,345,840
1994-95	25.14	424,017	123,468	415	152,792	1,458,394
1995-96	11.92	194,797	131,861	514	152,299	1,568,693
1996-97	18.64	204,610	136,676	514	157,861	1,684,554
1997-98	33.41	462,633	155,711	392	195,677	1,838,231
1998-99	8.02	182,310	158,637	581	174,369	1,970,600
1999-00	11.09	187,905	148,269	527	169,644	2,098,244
2000-01	16.13	209,168	153,914	525	176,360	2,232,604
2001-02	5.08	156,596	145,981	587	159,728	2,350,332
2002-03	16.22	245,942	146,113	463	174,970	2,484,189
2003-04	10.80	201,967	143,510	508	166,472	2,608,908
2004-05	29.89	637,549	154,307	348	199,570	2,768,844
2005-06	13.23	246,120	147,736	517	170,266	2,900,672
2006-07	4.61	153,823	129,830	604	140,216	3,004,419

**TABLE 1 (Continued)**

**SUMMARY OF FINDINGS AT RIVERSIDE NARROWS**

Water Year	Rainfall (in) <sup>(1)</sup>	Total Flow (ac-ft) <sup>(2)</sup>	Base Flow (ac-ft) <sup>(3)</sup>	Weighted TDS (mg/L) <sup>(4)</sup>	Adjusted Base Flow (ac-ft)	Cumulative Credit (ac-ft)
1970-71	11.97	24,112	17,061	704	17,021	1,762
1971-72	9.62	22,253	16,157	712	16,017	2,529
1972-73	18.46	32,571	17,105	700	17,105	4,384
1973-74	12.72	24,494	16,203	700	16,203	5,337
1974-75	13.49	19,644	15,445	731	15,100	5,187
1975-76	15.86	26,540	17,263	723	16,977	6,914
1976-77	11.95	23,978	18,581	722	18,286	9,950
1977-78	30.47	181,760	22,360	726	21,941	16,641
1978-79	17.51	47,298	26,590	707	26,456	27,847
1979-80	30.93	253,817	25,549	676	25,549	38,146
1980-81	10.45	34,278	19,764	715	19,550	42,446
1981-82	18.34	82,708	32,778	678	32,778	59,974
1982-83	32.36	279,645	57,128	610	57,128	101,852
1983-84	10.81	82,745	56,948	647	56,948	143,550
1984-85	12.86	78,771	69,772	633	69,772	198,072
1985-86	17.86	99,258	68,220	624	68,220	251,042
1986-87	8.08	77,752	59,808	649	59,808	295,600
1987-88	13.78	79,706	55,324	620	55,324	335,674
1988-89	12.64	62,376	52,259	607	52,259	372,683
1989-90	8.53	58,159	53,199	590	53,583	411,016
1990-91	15.48	73,790	45,041	616	45,041	440,807
1991-92	16.54	71,427	40,306	620	40,306	465,863
1992-93	30.92	267,043	41,434	634	41,434	492,047
1993-94	11.62	45,006	31,278	677	31,278	508,075
1994-95	25.14	243,411	45,562	646	45,562	538,387
1995-96	11.92	81,786	54,548	625	54,548	577,685
1996-97	18.64	104,518	62,618	624	62,618	625,053
1997-98	33.41	214,375	65,013	601	65,013	674,816
1998-99	8.02	76,294	73,094	603	73,094	732,660
1999-00	11.09	75,572	63,499	602	63,499	780,909
2000-01	16.13	75,331	61,872	603	61,872	827,531
2001-02	5.08	59,434	58,705	606	58,705	870,986
2002-03	16.22	92,166	57,747	617	57,747	913,483
2003-04	10.80	77,336	54,788	634	54,788	953,021
2004-05	29.89	355,503	65,760	616	65,760	1,003,531
2005-06	13.23	111,113	67,161	608	67,161	1,055,442
2006-07	4.61	56,002	56,123	635	56,123	1,096,315

**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.
- (2) As determined by the Watermaster, Total Flow 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.

## **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 three 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. By the end of Water Year 2006-07 approximately 3,200 acres of *Arundo* had been removed.

## **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 entities will file an annual report to demonstrate compliance to the RWQCB with the HCP’s objectives of Basin isolation and protection of water quality in the River through a program of monitoring of water chemistry, hydrologic balance and piezometric groundwater surface elevations and through groundwater modeling.

**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 (B + C + D)	Total Wastewater Discharged in Watershed (A + B + C + D + 1 - 2)		
	Redlands	Beaumont	Yucaipa	Subtotal (A)	San Bernardino	Colton	Rialto	RIX <sup>1</sup>	Subtotal (B)	Riverside	Corona	IEUA #1 <sup>2</sup>	IEUA #2	IEUA #5	IEUA CCWRF <sup>3</sup>	WRCR <sup>4</sup>	Subtotal (C)	EMWD (1)	Est. EMWD Arriving at Prado (2)	Elsinore Valley MWD (3)			Lee Lake WRP (4)	Subtotal (D) (2 + 3 + 4)
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	--	--	--	--	--	161,520	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	--	--	5,012	444	5,456	171,041	183,613
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

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. WRRCR = 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	Santa Ana Watershed Project Authority Santa Ana Regional Interceptor (SARI) <sup>1</sup>		Total Flow (acre-feet)
	North System (acre-feet)	SARI Flow <sup>2</sup> (acre-feet)	Average TDS (mg/L)	
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 <sup>3</sup>	NA	5,786 <sup>3</sup>
1986-87	4,943	2,869 <sup>3</sup>	NA	7,813 <sup>3</sup>
1987-88	5,177	2,948 <sup>3</sup>	NA	8,125 <sup>3</sup>
1988-89	5,949	3,622 <sup>3</sup>	NA	9,572 <sup>3</sup>
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

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

## 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 2006-07 fiscal year as well as the budget adopted for the 2007-08 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, 2006 to June 30, 2007 Budget	July 1, 2006 to June 30, 2007 Expenses	July 1, 2007 to June 30, 2008 Budget
Support Services	\$13,000.00	\$12,081.04	\$13,000.00
Reproduction of Annual Report	<u>1,000.00</u>	<u>837.96</u>	<u>1,000.00</u>
TOTAL	\$14,000.00	\$12,919.00	\$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 2006-07 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, 2006 to September 30, 2007**

	<u>Total Cost</u>	<u>USGS Share</u>	<u>Parties' Share</u>
<b>USGS PRECIPITATION GAGING STATIONS</b>			
Gilbert Street Gage at San Bernardino	\$6,850	\$0	\$6,850
"E" Street Gage	6,850	0	6,850
Middle Fork Lytle Creek Gage	6,850	0	6,850
Ridge Top Gage near Devore	6,850	0	6,850
<b>USGS FLOW AND WATER QUALITY GAGING</b>			
Santa Ana River at MWD Crossing (Riverside Narrows)			
Surface Water Gage	27,550	13,775	13,775
Water Quality Monitoring/TDS Sampling	11,400	5,700	5,700
Santa Ana River below Prado Dam			
Surface Water Gage	19,600	9,800	9,800
Continuous Temperature and Conductance	26,250	13,125	13,125
Water Quality Conductance Program	2,200	0	2,200
Extra Measurements	5,000	0	5,000
Temescal Creek above Main St., near Corona	19,600	9,800	9,800
Chino Creek at Schaefer	19,600	9,800	9,800
Cucamonga Creek at Mira Loma	<u>19,600</u>	<u>9,800</u>	<u>9,800</u>
<b>TOTAL COST AND SHARES</b>	<b>\$178,200</b>	<b>\$71,800</b>	<b>\$106,400</b>
<b>COST DISTRIBUTION AMONG PARTIES</b>			
Inland Empire Utilities Agency	20%		\$21,280
Orange County Water District	40%		\$42,560
San Bernardino Valley Municipal Water District	20%		\$21,280
Western Municipal Water District	20%		\$21,280

## **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 2006-07 Water Year, the flow of the Santa Ana River as measured at the USGS gaging station below Prado Dam amounted to 156,147 acre-feet. No water was in storage at the beginning or at the end of the year. Inflow to the reservoir included 129,830 acre-feet of Base Flow and 12,901 acre-feet of Storm Flow. Nontributary flows consisted of Arlington Desalter discharges and WMWD-OCWD Transfer flows. Water discharged from 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, 478 acre-feet reached Prado Reservoir during 2006-07. WMWD-OCWD Transfer flow at Prado was 1,846 acre-feet. Discharge from the San Jacinto Watershed calculated to have reached Prado Reservoir was 11,092 acre-feet. The monthly components of flow of the Santa Ana River at Prado Dam for 2006-07 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 2006-07 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 2006-07 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 2006-07 Water Year.

TABLE 6  
 COMPONENTS OF FLOW AT PRADO DAM  
 WATER YEAR 2006-07  
 (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
<u>2006</u>									
October	11,498	0	11,498	48	0	0	0	360	11,090
November	12,936	0	12,936	2,108	0	0	0	219	10,609
December	16,657	58	16,715	2,098	0	0	0	2,966	11,651
<u>2007</u>									
January	17,151	72	17,223	2,652	0	0	0	1,035	13,536
February	16,887	817	17,704	1,613	0	0	0	4,318	11,773
March	15,771	(947)	14,824	1,767	0	0	0	503	12,554
April	14,331	576	14,907	760	157	0	0	2,322	11,668
May	12,306	(576)	11,730	46	415	0	173	0	11,096
June	10,102	0	10,102	0	447	0	76	0	9,579
July	9,372	0	9,372	0	413	0	54	0	8,905
August	9,344	0	9,344	0	383	0	67	0	8,894
September	9,792	0	9,792	0	31	0	108	1,178	8,475
Total	156,147	0	156,147	11,092	1,846	0	478	12,901	129,830

- (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 in the 2006-07 Water Year.

## **Releases to San Antonio Creek**

During the 2006-07 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 2006-07 Water Year, 478 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 Bunker Hill Basin via the Riverside Canal and Santa Ana River. During the 2006-07 Water Year, 1,846 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 2006-07 Water Year, EMWD discharged 13,105 acre-feet of wastewater to Temescal Wash, and 11,092 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 11,062 acre-feet of the San Jacinto Watershed discharge and 30 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 Corp 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 2006-07 Water Year, the maximum volume of water stored in Prado Reservoir reached 3,600 acre-feet on December 18, 2006. The maximum daily mean flow released from Prado Dam to the Santa Ana River was 442 cfs on December 21, 2006.

### **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 2006-07 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 2006-07 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 607 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:

$$\text{TDS} = \text{EC} \times 0.618883$$

(where the units of TDS and EC are mg/L and  $\mu\text{s}/\text{cm}$ , 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 607 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 2006-07 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 2006-07 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 2006-07 Water Year, 478 acre-feet of Arlington Desalter discharges were made. A flow-weighted average TDS of 357 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 2006-07 Water Year, 1,846 acre-feet of WMWD-OCWD Transfer Program water was delivered. A flow-weighted average TDS of 479 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 2006-07 Water Year reaching Prado Reservoir was estimated to be 11,092 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 676 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 (acre-feet x mg/L)
1. Measured Outflow	156,147	607	94,781,229
2. Less High Groundwater Mitigation Project	0	---	---
3. Less Nontributary Flow San Antonio Creek	0	---	---
4. Less Arlington Desalter	(478)	357	(170,646)
5. Less WMWD Transfer Program	(1,846)	479	(884,234)
6. Less San Jacinto Watershed Discharge	(11,092)	676	(7,498,192)
7. Measured Outflow less lines 2 through 6	142,731		86,228,157
Average TDS in Total Base and Storm Flow	86,228,157 ÷ 142,731 = 604 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 2006-07 is 604 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	$Q - \frac{35}{42,000} Q(\text{TDS}-800)$
700 mg/L to 800 mg/L	Q
Less than 700 mg/L	$Q + \frac{35}{42,000} Q(700-\text{TDS})$

Where: Q = Base Flow actually received.

The weighted average annual TDS of 604 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:

$$(129,830 \text{ acre-feet}) + \frac{35}{42,000} (129,830 \text{ acre-feet}) (700 - 604) = 140,216 \text{ acre-feet}$$

### 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 11,092 acre-feet of San Jacinto Watershed outflows reaching Prado Reservoir in 2006-07, 30 acre-feet flowed past OCWD's groundwater recharge facilities and was considered as lost to the ocean. Therefore, a net amount of 11,062 acre-feet of San Jacinto Watershed outflow recharged the Orange County groundwater basin in

2006-07. One-half of that amount has been considered a credit against the Upper Area Base Flow obligation at Prado Dam. Thus, an additional 5,531 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 a table of historical Watermaster findings concerning flow at Prado that reflect that revision in the report following the Watermaster's findings.

The Watermaster's findings concerning flow at Prado for 2006-07 required under the Stipulated Judgment are as follows:

1. Measured Outflow at Prado	156,147 acre-feet
2. Base Flow at Prado	129,830 acre-feet
3. Annual Weighted TDS of Base and Storm Flow	604 mg/L
4. Annual Adjusted Base Flow	140,216 acre-feet
5. Cumulative Adjusted Base Flow	4,528,055 acre-feet
6. Other Credits (Debits) <sup>1</sup>	5,531 acre-feet
7. Cumulative Entitlement of OCWD	1,554,000 acre-feet
8. Cumulative Credit <sup>2</sup>	3,004,419 acre-feet
9. One-Third of Cumulative Debit	0 acre-feet
10. Minimum Required Base Flow in 2007-08	34,000 acre-feet

1. Other Credits (Debits) are comprised of San Jacinto Watershed outflow.

2. Cumulative Credit includes 30,364 acre-feet of San Jacinto Watershed outflow.

**Historical Watermaster Findings at Prado Dam  
(acre-feet)**

Water Year	Base Flow	Annual Adjusted Base Flow	Cumulative Adjusted Base Flow	Other Credits (Debits) <sup>1</sup>	Cumulative Entitlement of OCWD	Cumulative Credit <sup>2</sup>
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	253,038
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	124,869	2,054,900	0	924,000	1,146,909
1992-93	128,067	163,499	2,218,399	0	966,000	1,268,408
1993-94	111,186	119,432	2,337,831	0	1,008,000	1,345,840
1994-95	123,468	152,792	2,490,623	1,762	1,050,000	1,458,394
1995-96	131,861	152,299	2,642,922	0	1,092,000	1,568,693
1996-97	136,676	157,861	2,800,783	0	1,134,000	1,684,554
1997-98	155,711	195,677	2,996,460	0	1,176,000	1,838,231
1998-99	158,637	174,369	3,170,829	0	1,218,000	1,970,600
1999-00	148,269	169,644	3,340,473	0	1,260,000	2,098,244
2000-01	153,914	176,360	3,516,833	0	1,302,000	2,232,604
2001-02	145,981	159,728	3,676,561	0	1,344,000	2,350,332
2002-03	146,113	174,970	3,851,531	887	1,386,000	2,484,189
2003-04	143,510	166,472	4,018,003	247	1,428,000	2,608,908
2004-05	154,307	199,570	4,217,573	2,366	1,470,000	2,768,844
2005-06	147,736	170,266	4,387,839	3,562	1,512,000	2,900,672
2006-07	129,830	140,216	4,528,055	5,531	1,554,000	3,004,419

1. Other Credits (Debits) are comprised of San Jacinto Watershed outflow.
2. Cumulative Credit includes 30,364 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 57,868 acre-feet, measured at the USGS gaging station near the MWD Crossing. Separated into its components, Base Flow was 56,123 acre-feet and Storm Flow was 2,866 acre-feet. Included in Base Flow are 2,967 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 1,846 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 2006-07 Water Year are listed in Table 7 and shown graphically on Plate 7. The components of flow of the Santa Ana River at Riverside Narrows during the period 1934-35 through 2006-07 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 2006-07 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 2006-07 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 Bunker Hill Basin to OCWD via the Riverside Canal and Santa Ana River. During the 2006-07 Water Year, WMWD delivered 1,846 acre-feet to the Santa Ana River via the Tava Lane turnout upstream of Riverside Narrows and Prado Dam. A summary of the WMWD-OCWD Transfer Program flows is contained in Appendix K.

TABLE 7  
 COMPONENTS OF FLOW AT RIVERSIDE NARROWS  
 WATER YEAR 2006-07  
 (acre-feet)

Month	USGS Measured Flow	Storm Flow	SBVMWD HGMP Water <sup>1</sup>	WMWD Transfer Program <sup>2</sup>	Rubidoux Waste-water	Base Flow <sup>3</sup>
<u>2006</u> October	4,766	22	0	0	260	5,004
November	4,850	40	0	0	238	5,048
December	5,623	440	0	0	246	5,429
<u>2007</u> January	5,575	436	0	0	249	5,388
February	5,056	516	0	0	242	4,782
March	5,090	318	0	0	266	5,038
April	5,679	602	0	157	245	5,165
May	4,645	0	0	415	236	4,466
June	4,096	0	0	447	214	3,863
July	3,854	0	0	413	261	3,702
August	4,235	0	0	383	260	4,112
September	4,399	492	0	31	250	4,126
<b>Total</b>	<b>57,868</b>	<b>2,866</b>	<b>0</b>	<b>1,846</b>	<b>2,967</b>	<b>56,123</b>

- (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 2006-07, in the amount of 2,967 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 2006-07, no water quality adjustment was required.

### **Adjustment for WMWD-OCWD Transfer Program Flows**

During the 2006-07 Water Year, WMWD delivered 1,846 acre-feet to the Santa Ana River upstream of Riverside Narrow and Prado. A TDS of 479 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 672 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 642 mg/L.

Flow Component	Annual Flow (acre-feet)	Average TDS (mg/L)	Annual Flow x Average TDS (acre-feet x mg/L)
1. Base Flow plus Nontributary Flow	55,002	635	34,926,270
2. Less Nontributary Flow HGMP Pumped Water	0	---	---
3. Less WMWD Transfer Flow	(1,846)	479	(884,234)
4. Plus Rubidoux Wastewater	2,967	672	1,993,824
5. Base Flow (line 1 less lines 2 and 3 plus line 4)	56,123		36,035,860
Average TDS of Base Flow	36,035,860 ÷ 56,123 = 642 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 2006-07 was 642 mg/L. Therefore, no adjustment is necessary, and the Adjusted Base Flow for 2006-07 is 56,123 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 2006-07 required under the Stipulated Judgment are as follows:

1. Base Flow at Riverside Narrows	56,123 acre-feet
2. Annual Weighted TDS of Base Flow	642 mg/L
3. Annual Adjusted Base Flow	56,123 acre-feet
4. Cumulative Adjusted Base Flow	1,660,565 acre-feet
5. Cumulative Entitlement of CBMWD and WMWD	564,250 acre-feet
6. Cumulative Credit	1,096,315 acre-feet
7. One-Third of Cumulative Debit	0 acre-feet
8. Minimum Required Base Flow in 2007-08	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.

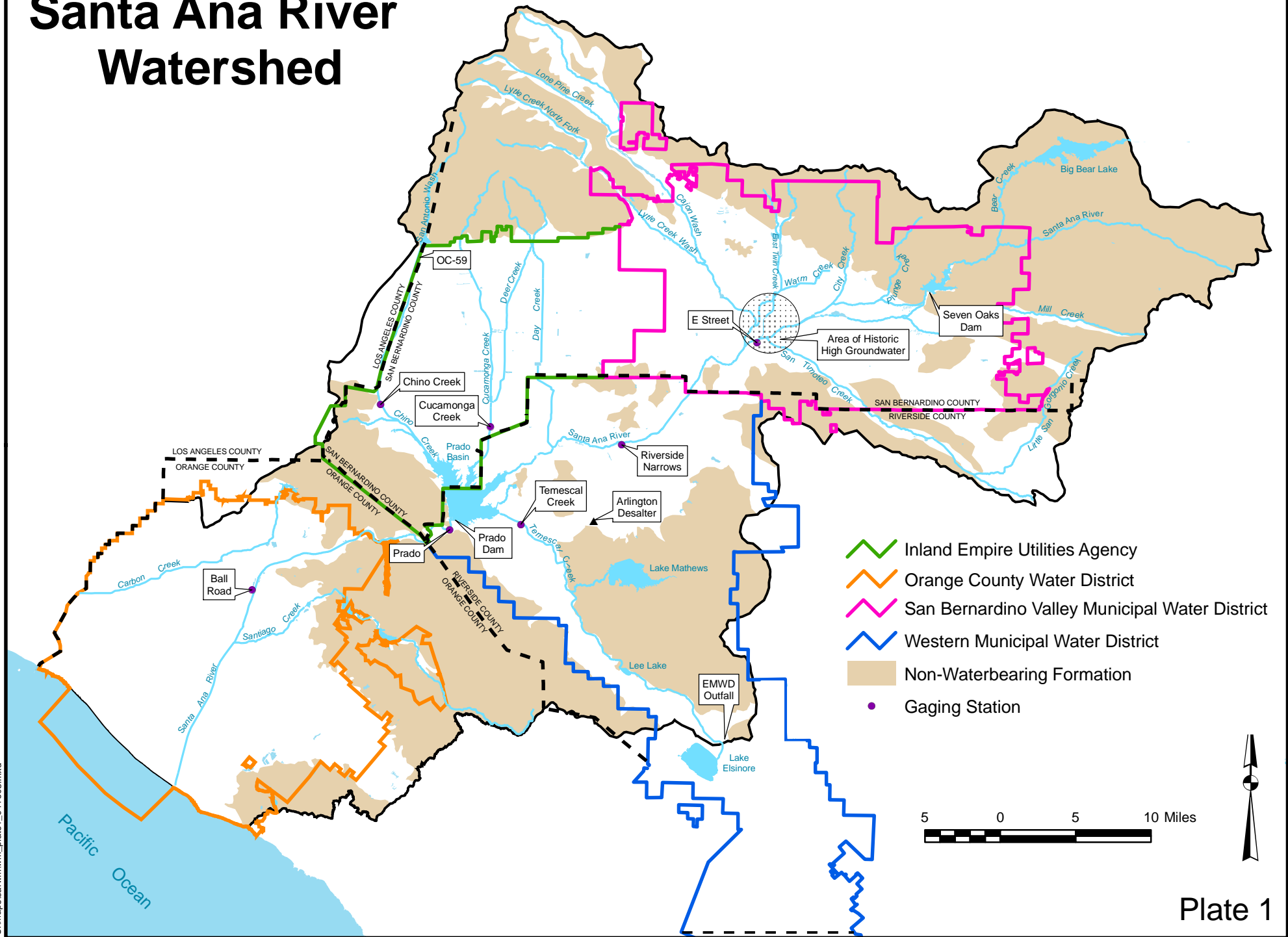
The original five members were appointed at the time of entry of the judgment. They prepared a *pro forma* annual report for the 1969-70 Water Year. The first annual report required by the judgment was prepared for the 1970-71 Water Year and reports have been prepared annually since then.

The membership of the Watermaster has changed over the years. The historical listing of members and officers shown in Table 8 reflects the signatories to each annual report.

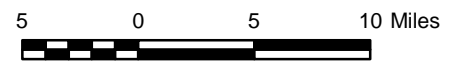
**TABLE 8**  
**HISTORY OF THE WATERMASTER COMMITTEE MEMBERSHIP**

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	Samuel H. Fuller, Secretary/Treasurer	Richard W. Atwater	John V. Rossi	Bill B. Dendy, Chairman	Craig D. Miller

# Santa Ana River Watershed

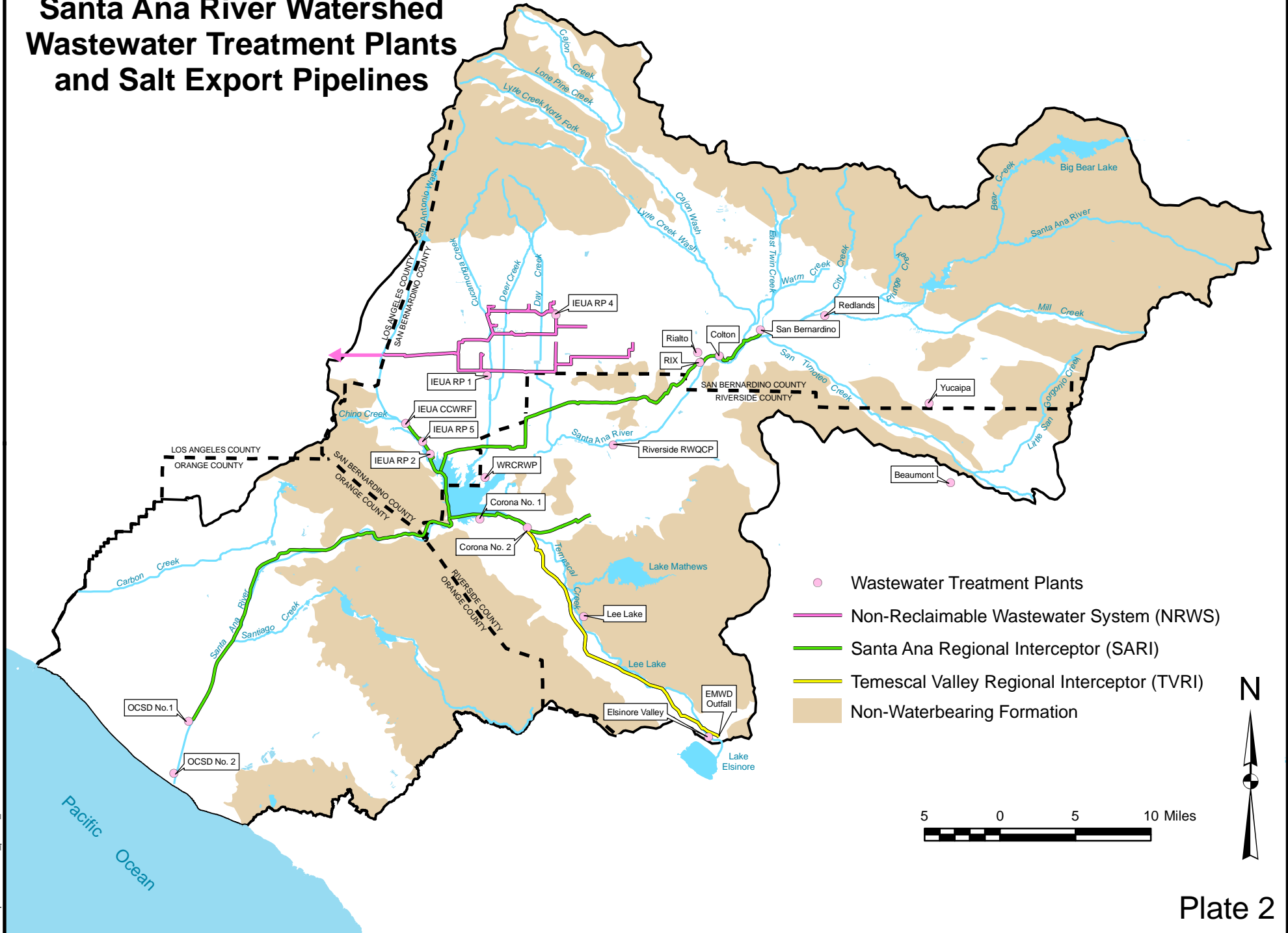


-  Inland Empire Utilities Agency
-  Orange County Water District
-  San Bernardino Valley Municipal Water District
-  Western Municipal Water District
-  Non-Waterbearing Formation
-  Gaging Station



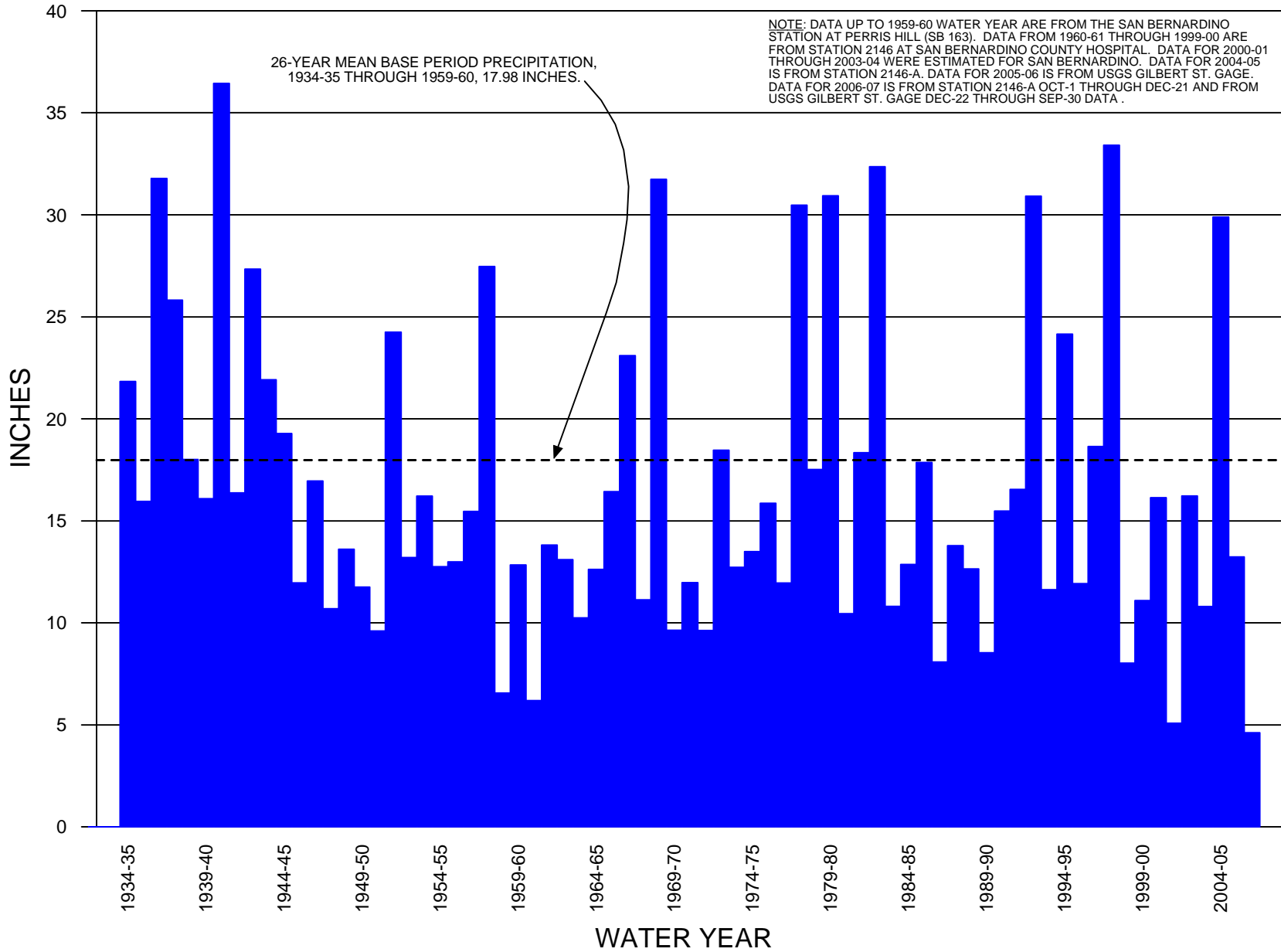


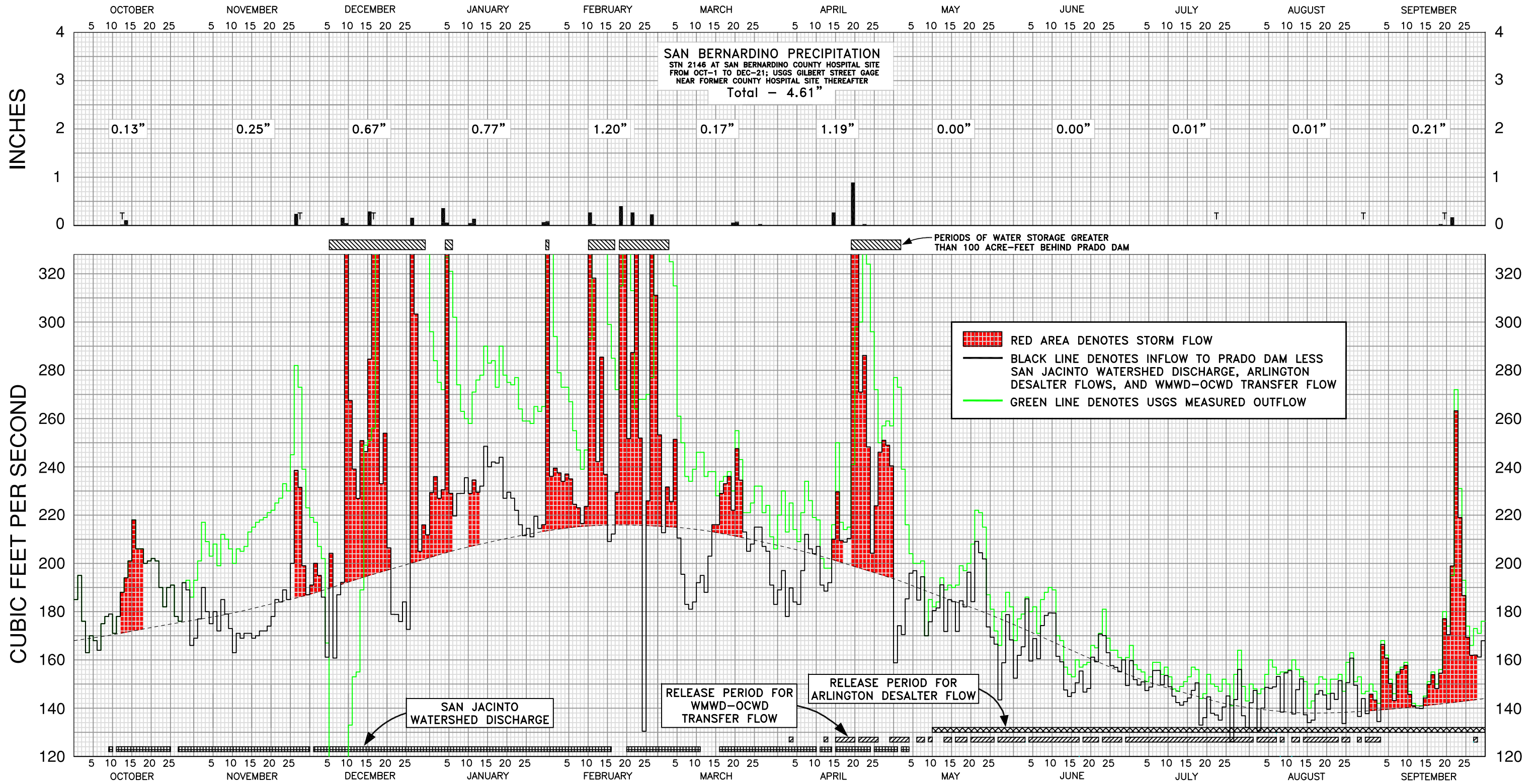
# Santa Ana River Watershed Wastewater Treatment Plants and Salt Export Pipelines



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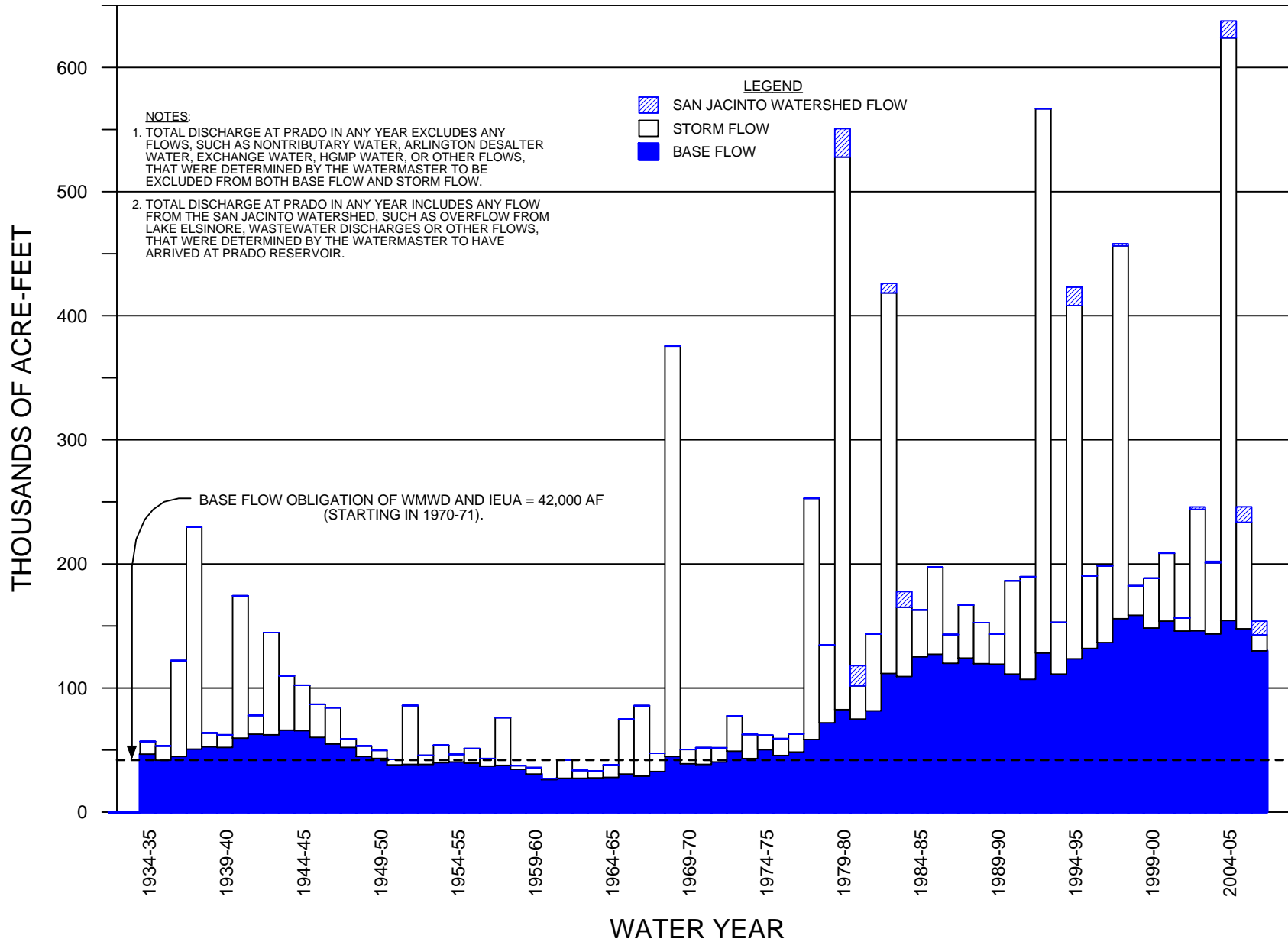
# PRECIPITATION AT SAN BERNARDINO STARTING WITH 1934-35

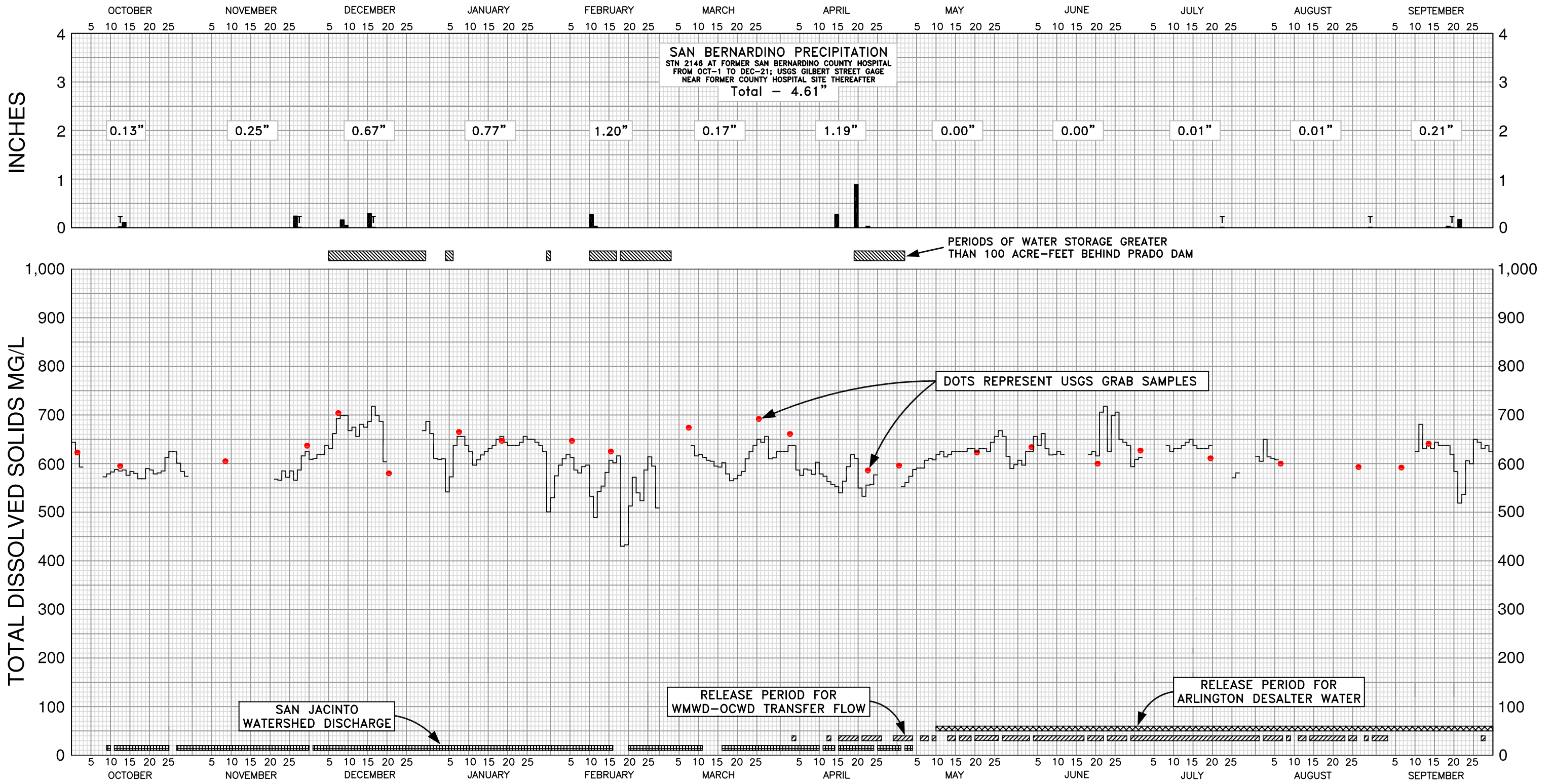




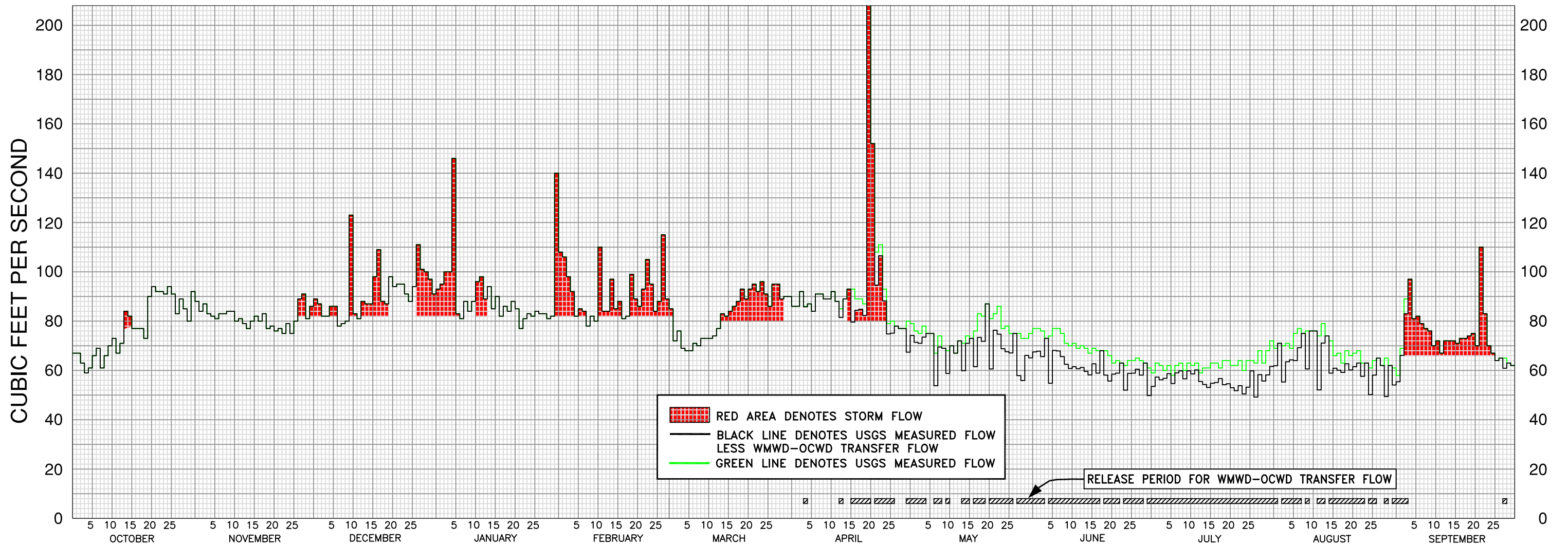
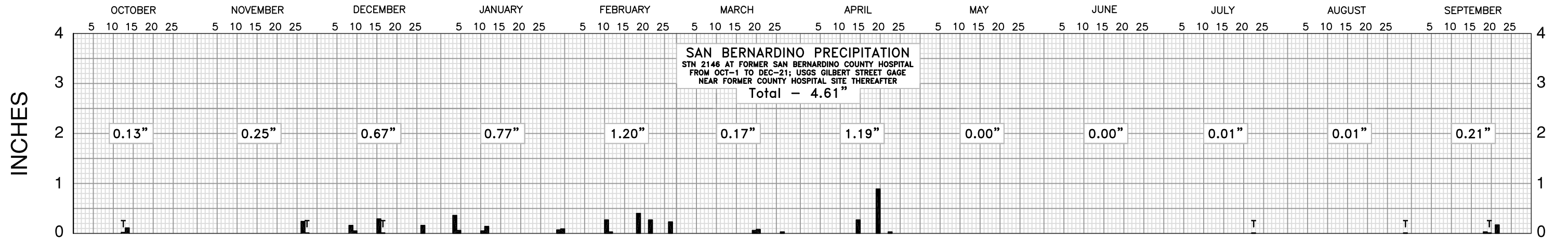
DISCHARGE OF SANTA ANA RIVER AT PRADO DAM & SAN BERNARDINO PRECIPITATION  
 WATER YEAR 2006-07

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



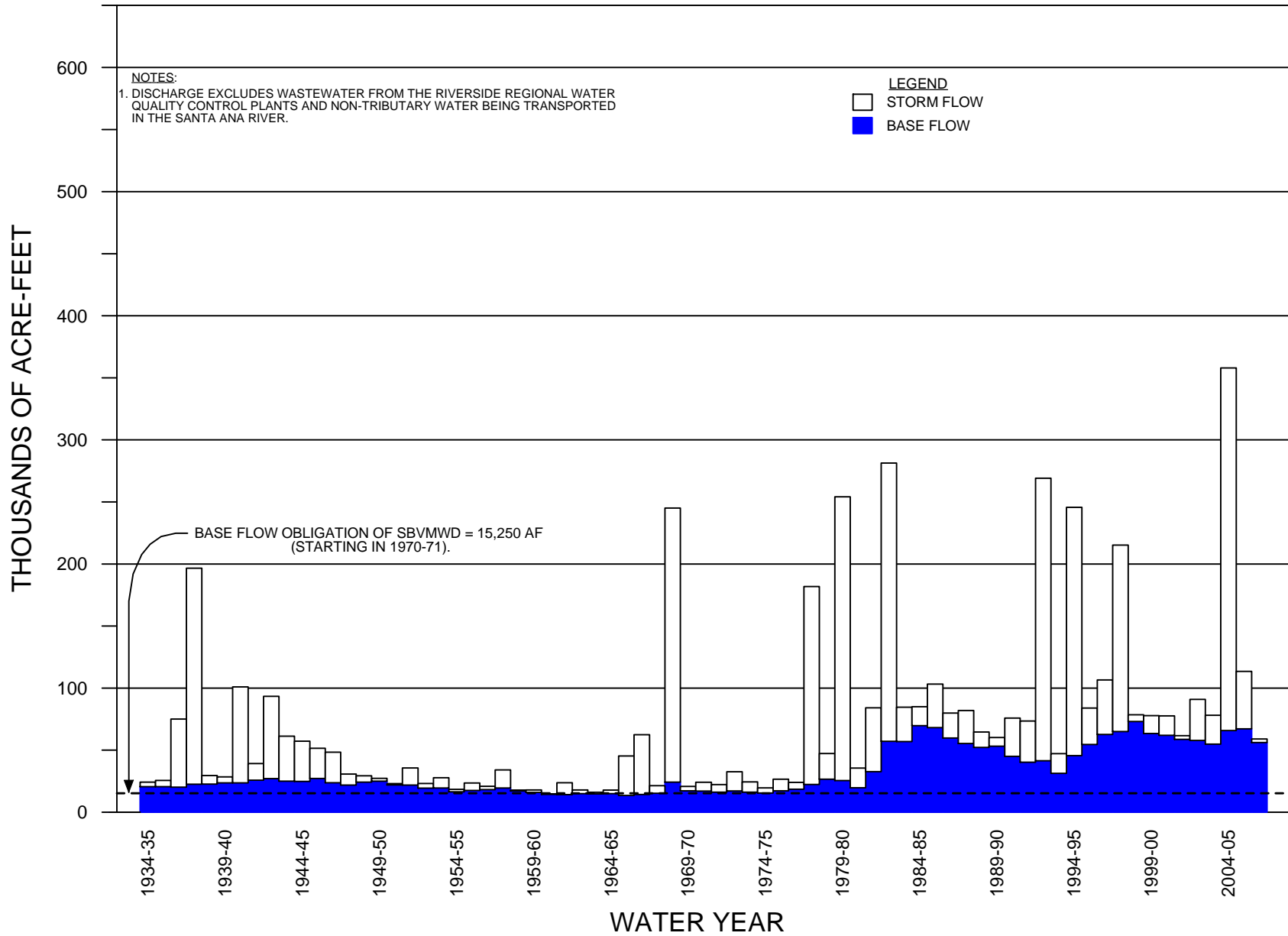


DISSOLVED SOLIDS IN SANTA ANA RIVER BELOW PRADO DAM  
 WATER YEAR 2006-07



**DISCHARGE OF SANTA ANA RIVER AT RIVERSIDE NARROWS & SAN BERNARDINO PRECIPITATION  
 WATER YEAR 2006-07**

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



**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-SEVENTH ANNUAL REPORT  
OF THE  
SANTA ANA RIVER WATERMASTER**

**FOR WATER YEAR  
OCTOBER 1, 2006 - SEPTEMBER 30, 2007**

**APRIL 30, 2008**



## APPENDIX A

USGS FLOW MEASUREMENTS OF THE SANTA ANA RIVER FLOWS  
BELOW PRADO, AT MWD CROSSING, AND 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);  
AND WATER QUALITY RECORDS FOR THE SANTA ANA RIVER  
AT PRADO DAM AND AT MWD CROSSING

WATER YEAR 2006-07

Water-Data Report 2007

## 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 right bank of outlet channel, 2,500 ft downstream from axis of Prado Dam, and 4.5 mi west of Corona.

**DRAINAGE AREA.**--2,258 mi<sup>2</sup> of which 768 mi<sup>2</sup> 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. Since Nov. 14, 2005, gage is located on right bank of reconstructed outlet channel.

**REMARKS.**--Records fair 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 ft<sup>3</sup>/s, Jan. 15, 2005, gage height, 8.73 ft, site and datum then in use, from rating curve extended above 11,600 ft<sup>3</sup>/s; minimum daily, 2.4 ft<sup>3</sup>/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 ft<sup>3</sup>/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 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	185	193	219	296	340	436	220	277	168	166	150	150
2	195	201	217	284	294	413	230	273	177	158	148	147
3	176	217	207	275	279	381	213	239	179	156	146	142
4	163	209	202	272	273	325	225	216	186	155	148	168
5	170	203	167	327	273	315	214	204	180	151	154	162
6	168	208	93	321	267	261	209	200	182	153	160	152
7	164	199	95	302	255	250	221	200	171	159	157	146
8	175	212	95	274	247	236	234	201	185	159	154	155
9	178	210	97	263	239	234	226	170	188	154	155	157
10	179	206	101	260	247	239	219	185	190	157	155	159
11	171	200	133	258	293	246	218	182	189	153	156	147
12	178	206	153	271	343	246	202	184	170	148	160	142
13	188	205	155	276	385	236	198	194	168	147	156	141
14	194	207	189	278	402	238	198	189	157	149	153	141
15	201	e206	249	290	354	238	216	191	154	151	151	145
16	218	e205	251	283	299	228	250	190	153	153	140	151
17	206	e206	256	284	285	234	217	191	160	157	143	155
18	206	e208	353	273	272	236	214	199	157	156	150	150
19	200	e212	394	290	315	238	215	197	158	144	153	156
20	201	e214	425	278	402	230	241	200	159	146	152	180
21	202	e218	442	275	413	255	298	208	166	154	146	174
22	201	225	417	274	313	243	300	222	165	150	152	194
23	190	227	403	277	264	221	332	221	171	149	152	268
24	182	233	398	264	268	221	324	215	181	147	154	229
25	190	230	392	259	268	225	296	187	169	152	147	190
26	191	245	375	259	270	232	e272	181	164	150	159	171
27	178	282	372	258	277	232	e250	172	164	141	163	163
28	176	273	410	265	377	221	e257	166	161	154	151	168
29	192	239	417	263	---	224	e259	180	160	164	153	165
30	193	223	384	265	---	211	e257	188	161	149	146	169
31	186	---	337	333	---	206	---	182	---	143	147	---
<b>Total</b>	5,797	6,522	8,398	8,647	8,514	7,951	7,225	6,204	5,093	4,725	4,711	4,937
<b>Mean</b>	187	217	271	279	304	256	241	200	170	152	152	165
<b>Max</b>	218	282	442	333	413	436	332	277	190	166	163	268
<b>Min</b>	163	193	93	258	239	206	198	166	153	141	140	141
<b>Ac-ft</b>	11,500	12,940	16,660	17,150	16,890	15,770	14,330	12,310	10,100	9,370	9,340	9,790

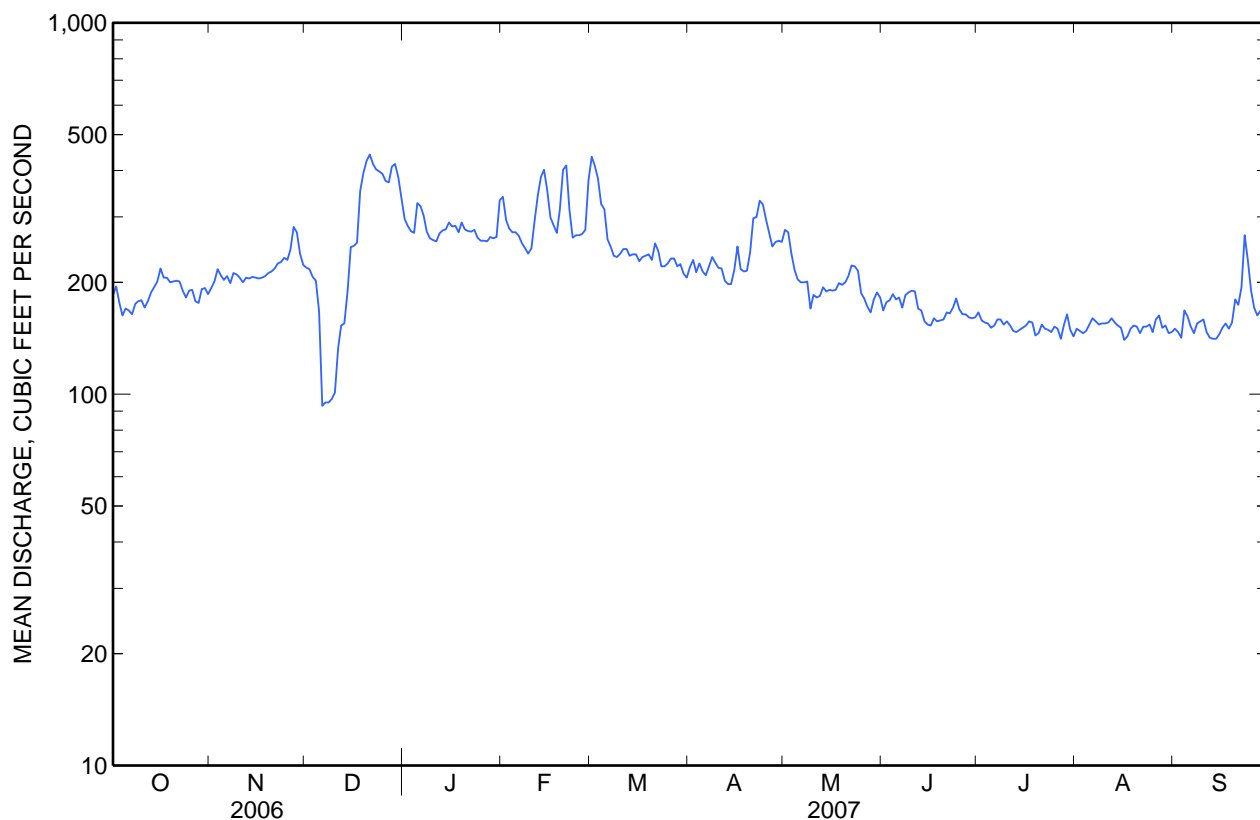
**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	129	149	215	365	438	402	267	192	157	129	108	102
<b>Max</b>	910	322	709	3,543	2,733	2,556	1,101	915	736	446	402	372
<b>(WY)</b>	(2005)	(1997)	(1967)	(1993)	(1998)	(1980)	(1980)	(1998)	(1983)	(1998)	(2005)	(1997)
<b>Min</b>	22.4	33.5	39.5	49.2	49.8	54.3	43.3	35.2	29.0	17.7	14.8	16.2
<b>(WY)</b>	(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 2006		Water Year 2007		Water Years 1941 - 2007	
Annual total	119,322		78,724			
Annual mean	327		216		220	
Highest annual mean					882	2005
Lowest annual mean					36.4	1961
Highest daily mean	3,310	Apr 5	442	Dec 21	11,400	Jan 14, 2005
Lowest daily mean	93	Dec 6	93	Dec 6	2.4	Jul 29, 1978
Annual seven-day minimum	110	Dec 6	110	Dec 6	3.0	Sep 24, 1973
Maximum peak flow			570	Apr 21	13,200	Jan 15, 2005
Maximum peak stage			3.76	Apr 21	8.73	Jan 15, 2005
Annual runoff (ac-ft)	236,700		156,100		159,400	
10 percent exceeds	482		299		383	
50 percent exceeds	252		201		136	
90 percent exceeds	168		150		40	





Water-Data Report 2007

**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 mi<sup>2</sup>.

**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 good below 100 ft<sup>3</sup>/s and fair 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 ft<sup>3</sup>/s, Jan. 11, 2005, gage height, 14.64 ft, from rating curve extended above 21,900 ft<sup>3</sup>/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 ft<sup>3</sup>/s, Sept. 7, 8, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1927, 100,000 ft<sup>3</sup>/s, Mar. 2, 1938, on basis of slope-area measurement, at site 1.1 mi downstream. Flood of Jan. 22, 1862, 320,000 ft<sup>3</sup>/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 ft<sup>3</sup>/s and (or) maximum (\*), from rating curve extended as explained above:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr 20	2230	*1,320	*8.85

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

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	67	88	89	93	108	85	86	79	77	59	69	58
2	67	84	87	95	106	72	86	76	77	63	71	69
3	63	87	82	100	98	76	92	75	76	62	70	89
4	59	83	82	100	92	69	86	78	73	60	71	97
5	61	82	86	146	82	68	87	75	74	62	69	81
6	66	81	86	83	85	68	84	75	77	58	75	82
7	69	83	78	81	84	71	91	67	77	62	77	79
8	61	83	79	88	78	70	91	74	75	63	75	77
9	66	84	80	84	82	73	89	69	71	60	76	76
10	70	84	123	88	80	73	89	68	70	63	76	70
11	73	80	83	96	110	73	92	70	71	62	76	72
12	67	81	81	98	84	74	88	67	69	63	74	67
13	71	79	88	89	84	77	85	72	70	59	79	72
14	84	77	87	94	97	83	89	71	69	61	74	72
15	82	80	87	85	85	82	93	74	67	61	72	72
16	77	82	98	90	88	84	93	73	69	63	66	71
17	77	80	109	82	81	86	89	76	68	63	67	73
18	77	83	88	86	82	88	89	83	68	61	63	73
19	73	77	87	84	99	93	87	82	68	64	68	74
20	90	78	98	88	89	89	242	87	66	64	66	75
21	94	76	94	85	86	93	152	81	63	62	67	70
22	92	77	95	77	93	95	108	83	64	62	68	110
23	92	75	95	81	105	92	111	86	63	64	63	83
24	91	79	91	83	95	96	93	77	62	60	63	70
25	94	75	88	82	84	91	79	78	64	64	61	67
26	91	80	94	84	88	86	80	75	64	64	64	64
27	83	89	111	83	115	95	78	75	65	63	65	65
28	89	91	101	83	89	95	77	75	64	68	62	65
29	85	81	100	81	---	89	77	73	63	63	65	63
30	80	86	97	82	---	90	80	73	61	68	62	62
31	92	---	91	140	---	90	---	75	---	72	61	---
<b>Total</b>	2,403	2,445	2,835	2,811	2,549	2,566	2,863	2,342	2,065	1,943	2,135	2,218
<b>Mean</b>	77.5	81.5	91.5	90.7	91.0	82.8	95.4	75.5	68.8	62.7	68.9	73.9
<b>Max</b>	94	91	123	146	115	96	242	87	77	72	79	110
<b>Min</b>	59	75	78	77	78	68	77	67	61	58	61	58
<b>Ac-ft</b>	4,770	4,850	5,620	5,580	5,060	5,090	5,680	4,650	4,100	3,850	4,230	4,400

**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
<b>Mean</b>	59.5	78.3	103	238	293	326	148	121	79.2	52.9	52.5	53.8
<b>Max</b>	194	259	292	1,839	1,411	1,806	604	666	351	145	233	129
<b>(WY)</b>	(1988)	(1984)	(1984)	(1993)	(1980)	(1995)	(1983)	(1983)	(1983)	(1983)	(1983)	(1976)
<b>Min</b>	20.5	21.2	23.3	24.7	23.1	23.7	23.1	22.3	20.2	16.8	17.9	18.0
<b>(WY)</b>	(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 - 2007, BY WATER YEAR (WY)

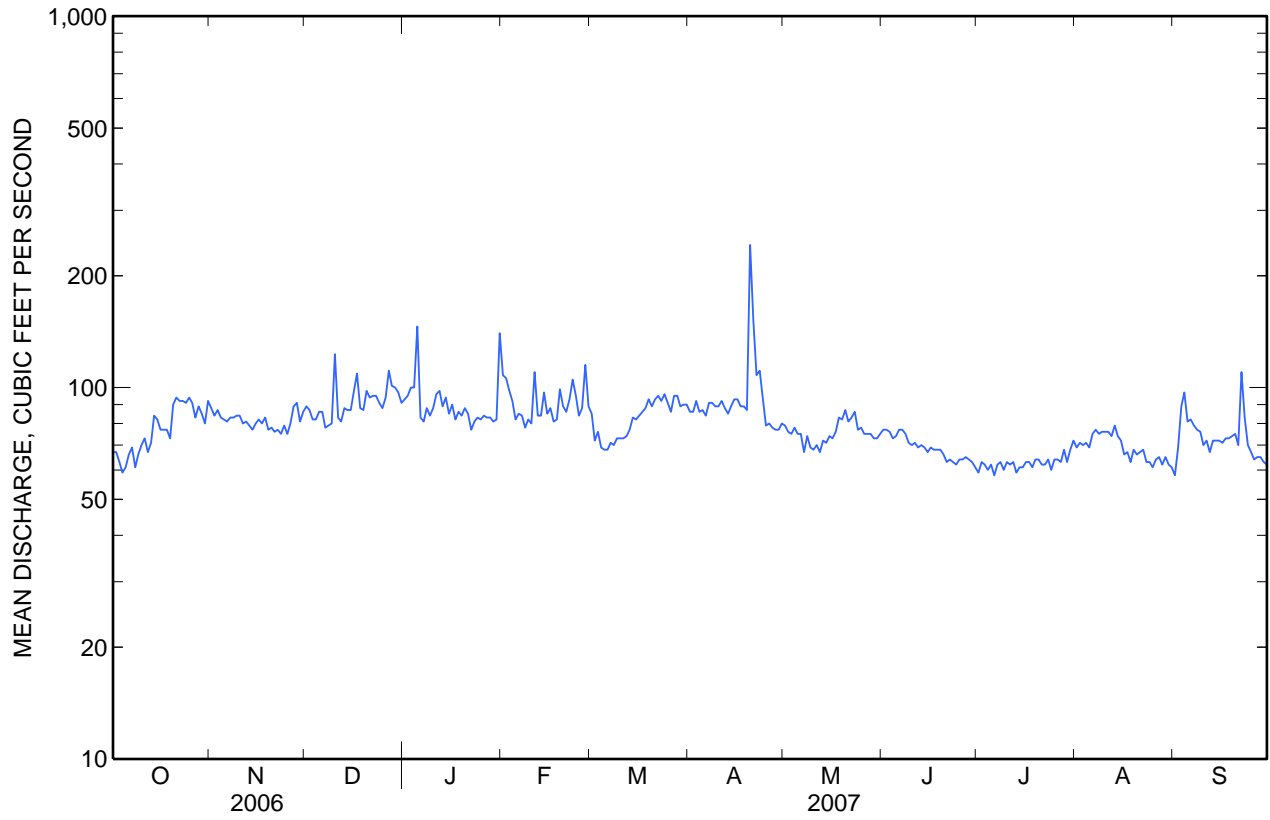
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	140	101	134	393	274	195	205	127	92.2	78.8	89.9	74.7
Max	498	141	255	2,350	755	498	500	314	192	137	201	86.6
(WY)	(2005)	(2003)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)
Min	72.5	81.5	85.9	82.1	87.9	82.8	83.8	70.9	66.9	60.1	62.5	63.6
(WY)	(2004)	(2000)	(2000)	(2003)	(2002)	(2007)	(2004)	(2004)	(2004)	(2006)	(2004)	(2004)

## SUMMARY STATISTICS

[e, estimated]

	Calendar Year 2006	Water Year 2007	Water Years 2000 - 2007
Annual total	53,306	29,175	
Annual mean	146	79.9	158
Highest annual mean			491 2005
Lowest annual mean			79.9 2007
Highest daily mean	4,700	Apr 5	242 Apr 20 °22,000 Jan 11, 2005
Lowest daily mean	49	Jul 22	58 Jul 6 49 Jul 22, 2006
Annual seven-day minimum	54	Jul 21	61 Jun 30 54 Jul 21, 2006
Maximum peak flow			1,320 Apr 20 47,800 Jan 11, 2005
Maximum peak stage		8.85 Apr 20	16.58 Oct 20, 2004
Annual runoff (ac-ft)	105,700	57,870	114,700
10 percent exceeds	219	94	194
50 percent exceeds	88	79	86
90 percent exceeds	65	63	68

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





**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 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

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

GAGE.--Water-stage recorder. 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 ft<sup>3</sup>/s, Jan. 11, 2005, gage height, 9.04 ft, current site and datum, from rating curve extended above 5,930 ft<sup>3</sup>/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 ft<sup>3</sup>/s and (or) maximum (\*), from rating curve extended as explained above:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb 13	2115	1,040	4.55
Apr 20	1615	*1,200	*4.67

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

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.65	0.07	0.82	1.4	27	10	0.00	0.00	0.00	0.00	0.00	9.5
2	0.46	0.07	0.99	2.1	37	31	0.00	e2.9	0.00	0.00	0.00	26
3	0.29	0.00	0.88	1.2	25	24	0.00	e4.6	0.00	0.00	0.00	46
4	0.01	0.04	1.9	9.5	14	31	2.6	e2.5	0.00	0.00	0.00	18
5	0.16	0.00	1.9	45	16	31	0.00	e2.0	0.00	0.00	0.00	13
6	0.75	0.31	1.6	4.0	37	10	0.00	e1.1	0.00	0.00	0.00	12
7	0.80	0.00	2.1	8.9	30	10	0.00	0.00	0.00	0.00	0.00	17
8	0.34	0.00	1.6	5.7	9.8	8.9	0.00	0.00	0.00	0.00	0.00	11
9	0.00	0.00	1.8	2.2	22	5.7	0.00	0.00	0.00	0.00	0.00	9.4
10	0.00	0.00	65	7.3	31	1.7	0.00	0.00	0.00	0.00	0.00	8.9
11	0.00	0.00	12	3.5	38	2.5	0.00	0.00	0.00	0.00	0.00	9.7
12	0.00	0.00	0.64	6.8	6.2	2.6	0.00	0.00	0.00	0.00	0.00	8.7
13	0.00	0.00	1.1	3.4	70	3.8	0.00	0.00	0.00	0.00	0.00	8.2
14	75	0.86	1.6	1.4	36	5.0	0.00	0.00	0.00	0.00	0.00	6.9
15	3.0	0.60	1.7	5.3	14	17	4.7	0.00	0.00	0.00	0.00	0.46
16	1.6	0.00	8.5	5.1	23	7.3	9.7	0.00	0.00	0.00	0.00	4.8
17	3.7	0.00	22	3.8	29	12	3.5	0.00	0.00	0.00	0.00	2.2
18	0.41	0.00	1.9	3.7	19	12	1.4	0.00	0.00	0.00	0.00	1.7
19	2.1	0.00	0.80	3.4	68	12	7.6	0.00	0.00	0.00	0.00	0.18
20	0.26	0.00	0.41	3.7	27	17	146	0.00	0.00	0.00	0.00	1.6
21	0.14	0.17	0.27	2.2	4.4	22	27	0.09	0.00	0.00	0.00	1.6
22	0.00	2.5	0.26	7.5	8.3	8.7	11	6.1	0.00	0.00	0.00	5.3
23	0.00	0.00	2.0	4.5	33	10	11	0.00	0.00	0.00	0.00	5.7
24	0.00	0.00	2.1	1.4	12	28	11	0.00	0.00	0.00	0.00	0.10
25	0.00	0.96	2.7	2.1	28	32	7.3	0.00	0.00	0.00	0.00	0.00
26	0.00	5.9	2.7	6.3	17	38	1.4	0.00	0.00	0.00	0.00	0.00
27	0.00	4.0	56	15	24	15	6.3	0.00	0.00	0.00	0.00	0.00
28	0.00	3.7	27	2.6	40	6.2	1.7	0.00	0.00	0.00	0.00	0.00
29	0.00	2.0	2.5	6.6	---	2.4	0.00	0.00	0.00	0.00	0.00	e0.21
30	0.00	1.3	0.86	16	---	0.00	0.00	0.00	0.00	0.00	0.00	e0.00
31	0.00	---	1.5	123	---	0.00	---	0.00	---	0.00	0.00	---
<b>Total</b>	89.67	22.48	227.13	314.6	745.7	416.80	252.20	19.29	0.00	0.00	0.00	228.15
<b>Mean</b>	2.89	0.75	7.33	10.1	26.6	13.4	8.41	0.62	0.00	0.00	0.00	7.61
<b>Max</b>	75	5.9	65	123	70	38	146	6.1	0.00	0.00	0.00	46
<b>Min</b>	0.00	0.00	0.26	1.2	4.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Ac-ft</b>	178	45	451	624	1,480	827	500	38	0.00	0.00	0.00	453

**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
<b>Mean</b>	.88	3.47	20.9	23.7	20.6	37.4	27.2	11.3	2.39	.93	.87	.63
<b>Max</b>	3.35	21.3	117	109	72.2	183	237	145	31.2	9.87	8.37	6.32
<b>(WY)</b>	(1942)	(1945)	(1946)	(1943)	(1945)	(1943)	(1941)	(1941)	(1941)	(1940)	(1940)	(1939)
<b>Min</b>	.000	.007	.000	1.90	2.41	1.70	1.14	.14	.000	.000	.000	.000
<b>(WY)</b>	(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	

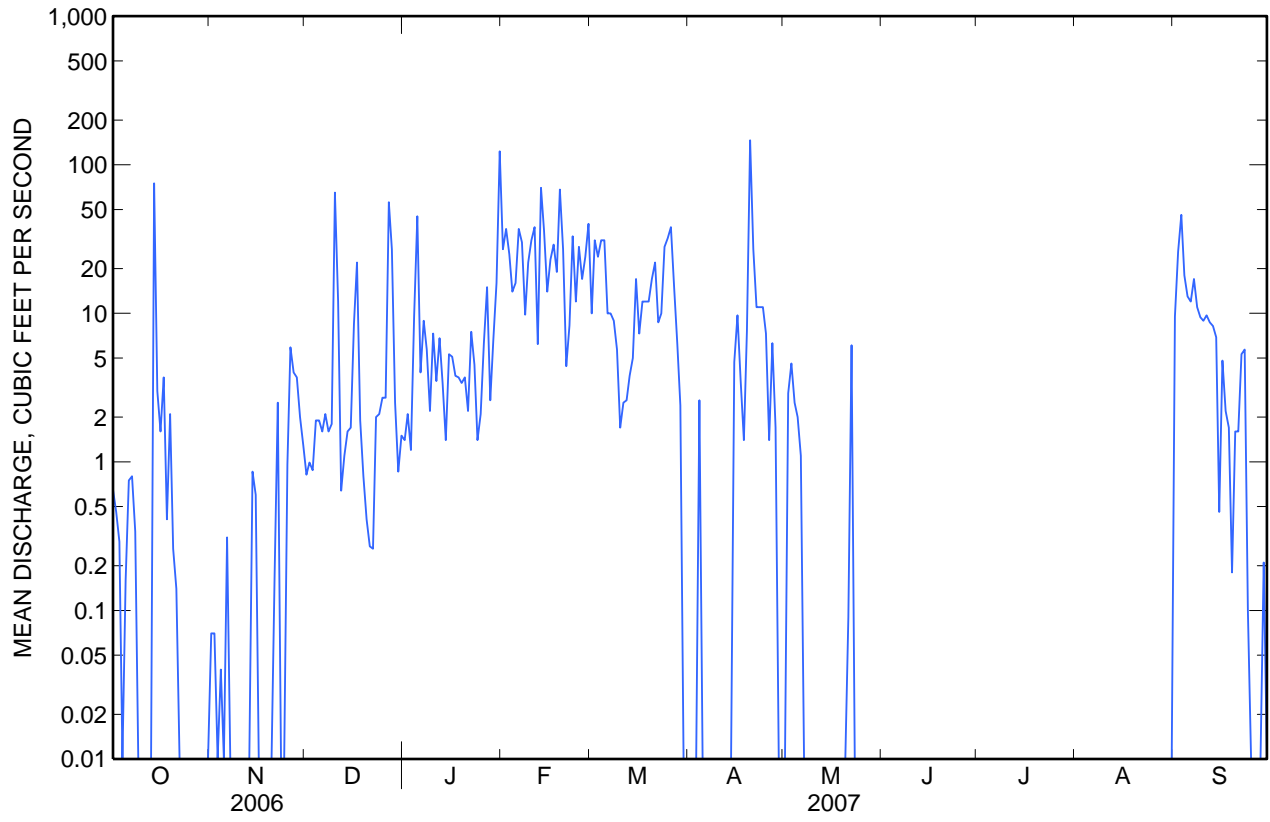
## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	32.1	9.82	25.1	160	103	79.9	87.9	44.4	14.2	7.06	13.3	6.74
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	4.13	0.04	0.00	0.00	0.00	0.00	0.00
(WY)	(2003)	(2001)	(2001)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

## SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 2000 - 2007	
Annual total	15,774.79		2,316.02			
Annual mean	43.2		6.35		48.4	
Highest annual mean					265	2005
Lowest annual mean					1.70	2002
Highest daily mean	1,590	Apr 5	146	Apr 20	12,500	Jan 11, 2005
Lowest daily mean	0.00	May 28	0.00	Oct 9	0.00	May 14, 2000
Annual seven-day minimum	0.00	May 28	0.00	Oct 22	0.00	Sep 11, 2000
Maximum peak flow			1,200	Apr 20	35,700	Jan 11, 2005
Maximum peak stage			4.67	Apr 20	9.04	Jan 11, 2005
Annual runoff (ac-ft)	31,290		4,590		35,090	
10 percent exceeds	129		22		83	
50 percent exceeds	3.7		0.27		0.95	
90 percent exceeds	0.00		0.00		0.00	

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



Water-Data Report 2007

**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 mi<sup>2</sup>, excludes 768 mi<sup>2</sup> 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 ft<sup>3</sup>/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 ft<sup>3</sup>/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 ft<sup>3</sup>/s, Sept. 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 8,850 ft<sup>3</sup>/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 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	4.6	32	36	55	59	53	44	12	8.5	4.6	4.8	8.6
2	5.1	32	26	53	57	56	46	13	10	3.9	4.6	7.1
3	6.4	35	21	56	51	60	48	12	8.4	4.1	4.7	12
4	7.9	37	25	54	48	57	47	10	5.6	4.7	5.0	6.5
5	5.8	36	32	50	46	60	42	9.9	6.5	4.6	5.2	5.6
6	6.1	36	35	47	41	63	37	8.0	9.7	5.2	5.5	5.4
7	6.8	35	39	50	40	66	35	e8.7	5.3	4.8	4.8	7.4
8	6.7	35	39	49	40	65	33	e7.9	5.3	4.2	5.6	4.1
9	8.7	39	51	40	38	65	30	5.8	5.5	5.0	7.6	5.0
10	9.6	41	e81	32	39	68	25	7.1	6.4	4.4	4.9	5.0
11	8.1	45	e57	38	92	67	21	8.5	4.9	5.6	4.7	5.1
12	9.0	43	e52	50	65	64	20	14	4.2	4.1	5.1	4.3
13	9.9	44	48	53	91	61	15	17	4.7	5.4	5.3	3.8
14	17	44	48	56	62	48	15	25	5.4	5.1	5.5	5.1
15	11	43	48	53	60	35	18	18	5.3	5.4	8.7	5.4
16	11	46	59	52	49	25	15	16	4.9	5.1	6.2	6.8
17	11	57	47	51	45	18	11	12	5.2	6.9	6.5	7.2
18	10	70	46	45	40	16	8.1	10	8.1	6.2	5.5	6.6
19	7.1	74	51	48	78	15	7.2	9.4	6.7	6.3	5.2	6.5
20	7.0	76	48	59	23	22	89	8.4	4.9	5.0	5.7	17
21	7.7	79	52	54	20	34	24	3.3	4.4	4.5	7.5	7.3
22	5.7	74	53	56	21	31	20	8.6	4.1	6.6	7.2	30
23	5.3	74	35	61	16	30	25	7.8	4.3	6.7	12	6.7
24	4.7	78	38	57	16	30	29	8.0	4.0	7.3	9.3	6.7
25	5.4	81	51	56	27	31	27	5.4	4.3	5.1	9.4	5.9
26	5.0	72	55	54	41	31	18	6.4	4.2	5.6	9.3	4.2
27	6.5	62	109	56	70	39	14	9.3	6.2	4.4	9.1	3.1
28	7.1	48	49	55	52	28	9.0	9.0	4.2	4.0	8.6	4.0
29	6.8	48	47	57	---	33	9.8	8.0	4.4	4.6	7.0	7.0
30	12	44	52	59	---	34	10	5.3	3.7	7.6	10	4.0
31	28	---	53	60	---	37	---	5.4	---	5.6	11	---
<b>Total</b>	263.0	1,560	1,483	1,616	1,327	1,342	792.1	309.2	169.3	162.6	211.5	213.4
<b>Mean</b>	8.48	52.0	47.8	52.1	47.4	43.3	26.4	9.97	5.64	5.25	6.82	7.11
<b>Max</b>	28	81	109	61	92	68	89	25	10	7.6	12	30
<b>Min</b>	4.6	32	21	32	16	15	7.2	3.3	3.7	3.9	4.6	3.1
<b>Ac-ft</b>	522	3,090	2,940	3,210	2,630	2,660	1,570	613	336	323	420	423

**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
<b>Mean</b>	7.62	15.1	23.8	23.0	14.5	40.9	13.1	12.0	9.35	7.15	6.45	6.99
<b>Max</b>	16.1	55.9	126	116	25.5	237	39.3	43.7	30.0	10.9	13.4	11.3
<b>(WY)</b>	(1986)	(1981)	(1981)	(1981)	(1981)	(1983)	(1983)	(1983)	(1983)	(1985)	(1990)	(1985)
<b>Min</b>	2.36	4.67	2.53	7.01	7.42	6.26	4.02	3.77	1.12	1.20	1.79	1.09
<b>(WY)</b>	(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 - 2007, BY WATER YEAR (WY)

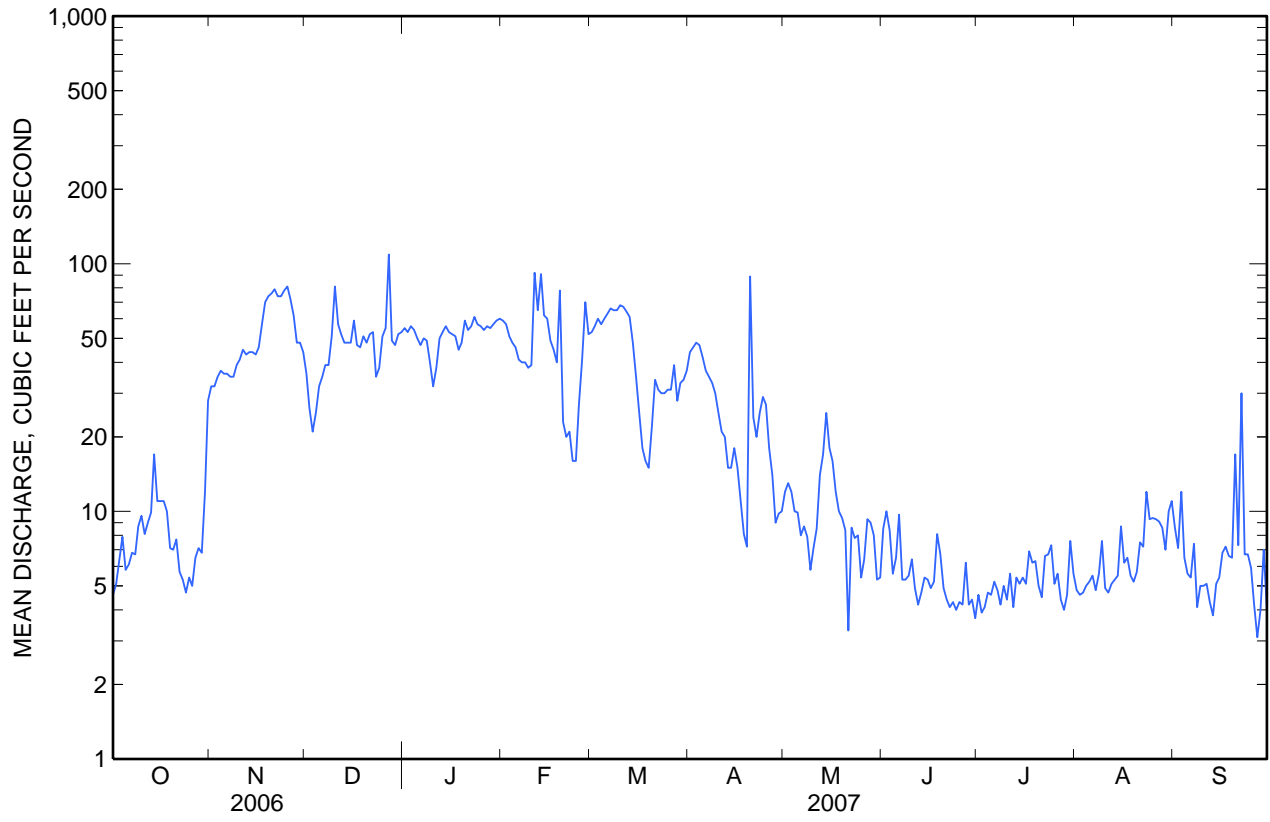
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	16.7	19.2	22.1	57.3	97.8	65.9	42.0	23.7	13.9	12.0	11.7	12.4
Max	52.5	58.2	66.5	335	400	349	190	100	34.3	24.9	20.7	30.4
(WY)	(2005)	(2006)	(2005)	(2005)	(2005)	(1995)	(1995)	(1995)	(1995)	(1993)	(2005)	(2005)
Min	6.22	5.55	9.35	10.7	10.5	5.19	2.89	3.24	3.25	3.56	4.20	3.04
(WY)	(1996)	(1996)	(1999)	(2003)	(2002)	(2001)	(1991)	(1992)	(2003)	(1994)	(2004)	(2004)

## SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1991 - 2007	
Annual total	15,429.0		9,449.1			
Annual mean	42.3		25.9		32.5	
Highest annual mean					104 2005	
Lowest annual mean					12.5 2004	
Highest daily mean	641	Apr 5	109	Dec 27	2,090	Feb 24, 1998
Lowest daily mean	4.0	Sep 30	3.1	Sep 27	0.34	Jul 3, 1992
Annual seven-day minimum	4.5	Sep 26	4.2	Jun 28	0.89	Jan 13, 1992
Maximum peak flow			1,330	Feb 19	4,030	Jan 9, 2005
Maximum peak stage			5.00	Feb 19	6.72	Jan 9, 2005
Annual runoff (ac-ft)	30,600		18,740		23,550	
10 percent exceeds	81		58		61	
50 percent exceeds	32		14		13	
90 percent exceeds	5.5		4.8		4.6	



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



Water-Data Report 2007

**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 mi<sup>2</sup>.

**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 fair. 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 ft<sup>3</sup>/s, Oct. 20, 2004, gage height, 6.58 ft, from rating curve extended above 617 ft<sup>3</sup>/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 ft<sup>3</sup>/s, June 6, 1987.

## 11073495 Cucamonga Creek near Mira Loma, CA—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	46	39	43	46	45	54	70	43	54	49	47	42
2	53	41	51	39	50	50	70	54	55	34	38	45
3	45	40	48	39	45	49	69	60	57	47	30	38
4	43	40	46	58	46	60	70	59	50	44	34	49
5	49	41	49	47	52	57	65	60	51	36	41	45
6	49	42	50	34	42	52	64	65	41	44	35	50
7	49	41	50	34	42	43	68	64	37	48	34	e39
8	53	42	51	37	46	37	68	57	42	48	27	e35
9	52	41	86	38	45	42	68	55	40	40	30	e32
10	52	40	111	40	46	45	68	58	47	42	33	e29
11	51	39	53	42	231	59	68	50	42	33	39	35
12	54	38	50	47	54	56	68	52	38	27	50	27
13	e52	38	53	31	77	55	66	53	38	28	32	31
14	e54	37	56	37	48	54	60	45	31	31	29	29
15	e52	36	59	36	51	62	61	42	35	34	24	39
16	e52	36	94	37	57	50	61	44	40	38	25	45
17	54	35	58	36	57	67	49	45	44	39	35	43
18	49	41	54	38	63	62	44	44	44	36	38	39
19	49	38	57	39	292	59	51	43	41	24	47	36
20	48	34	61	44	60	52	354	50	39	37	37	45
21	45	32	59	43	55	61	97	54	39	45	35	40
22	46	32	50	40	116	49	75	60	40	49	40	64
23	46	33	49	41	77	51	68	64	39	41	43	52
24	46	33	58	44	57	55	54	62	45	42	39	44
25	46	33	60	43	62	58	51	56	38	50	37	43
26	45	37	57	48	68	61	43	61	41	49	50	46
27	44	67	86	48	227	62	44	58	42	47	41	43
28	45	49	48	54	57	58	47	51	42	50	34	41
29	47	49	47	53	---	63	59	51	44	50	40	41
30	42	47	45	51	---	65	48	62	44	45	32	49
31	37	---	48	69	---	67	---	61	---	41	38	---
<b>Total</b>	1,495	1,191	1,787	1,333	2,168	1,715	2,148	1,683	1,280	1,268	1,134	1,236
<b>Mean</b>	48.2	39.7	57.6	43.0	77.4	55.3	71.6	54.3	42.7	40.9	36.6	41.2
<b>Max</b>	54	67	111	69	292	67	354	65	57	50	50	64
<b>Min</b>	37	32	43	31	42	37	43	42	31	24	24	27
<b>Ac-ft</b>	2,970	2,360	3,540	2,640	4,300	3,400	4,260	3,340	2,540	2,520	2,250	2,450

**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
<b>Mean</b>	.021	1.15	1.55	18.2	4.65	1.91	1.35	.065	.001	.000	.000	.11
<b>Max</b>	.19	6.07	7.91	149	30.7	7.94	13.1	.54	.007	.000	.000	1.03
<b>(WY)</b>	(1972)	(1971)	(1972)	(1969)	(1969)	(1969)	(1969)	(1977)	(1969)	(1968)	(1968)	(1976)
<b>Min</b>	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
<b>(WY)</b>	(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	

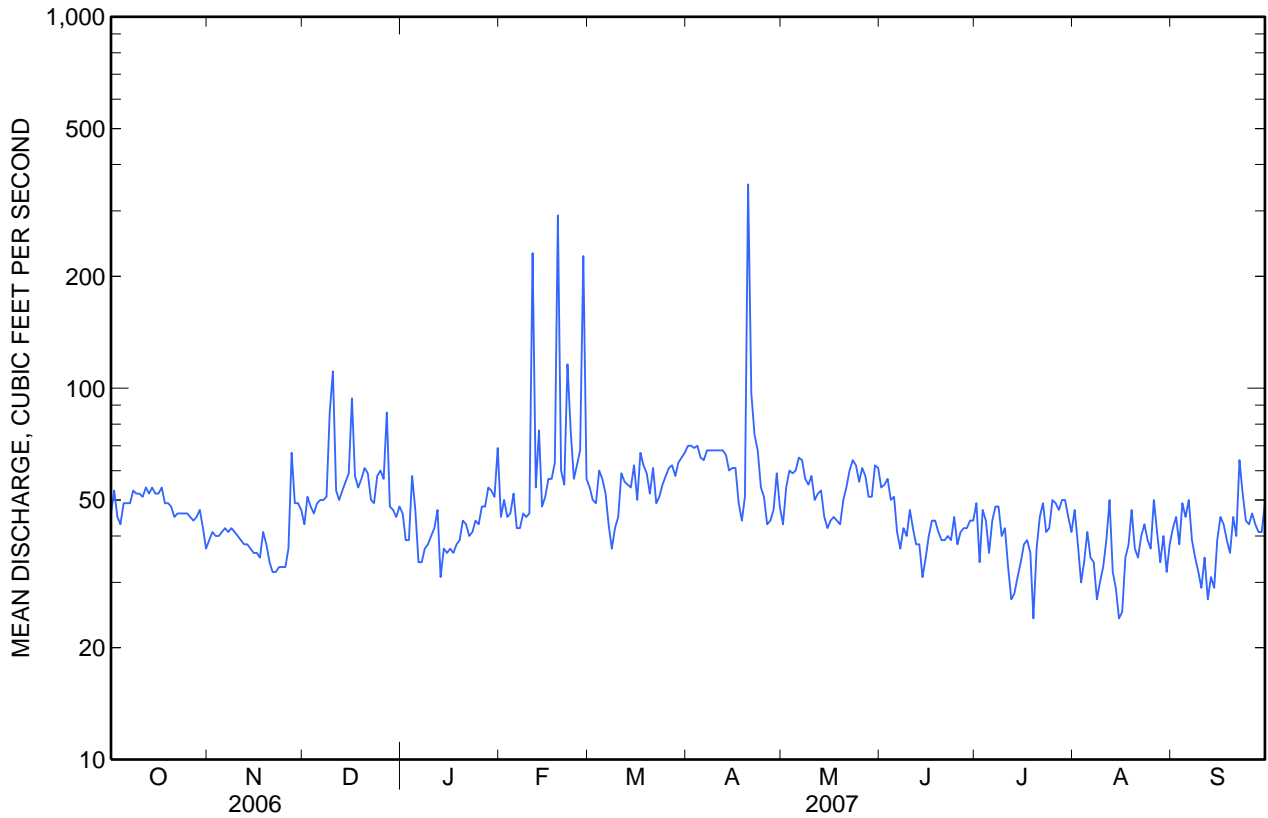
## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	48.0	45.1	53.2	90.0	111	70.3	51.4	39.3	37.2	35.3	34.6	38.5
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	19.3	18.5	16.4
(WY)	(1987)	(1989)	(1987)	(1989)	(1989)	(1988)	(1987)	(1988)	(1988)	(1987)	(1987)	(1988)

11073495 Cucamonga Creek near Mira Loma, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1986 - 2007	
Annual total	23,384		18,438			
Annual mean	64.1		50.5		54.2	
Highest annual mean					137	2005
Lowest annual mean					26.6	1987
Highest daily mean	903	Feb 28	354	Apr 20	5,200	Jan 9, 2005
Lowest daily mean	20	Jul 30	24	Jul 19	2.5	Jun 6, 1987
Annual seven-day minimum	25	Aug 23	31	Sep 8	12	Aug 25, 1988
Maximum peak flow			3,150	Feb 19	17,300	Oct 20, 2004
Maximum peak stage			3.68	Feb 19	6.58	Oct 20, 2004
Annual runoff (ac-ft)	46,380		36,570		39,280	
10 percent exceeds	67		64		62	
50 percent exceeds	49		46		37	
90 percent exceeds	35		35		21	



Water-Data Report 2007

## 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 mi<sup>2</sup>.

### 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(M). 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 fair except for estimated daily discharges, which are poor. 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 ft<sup>3</sup>/s, Feb. 27, 1983, gage height, 10.32 ft, from rating curve extended above 560 ft<sup>3</sup>/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 ft<sup>3</sup>/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 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1.9	2.0	1.6	1.2	3.6	3.0	1.4	1.00	0.71	1.2	1.3	2.0
2	2.0	1.5	1.3	1.2	3.7	3.0	1.4	0.93	0.68	1.3	1.4	1.6
3	2.1	1.8	1.2	1.2	1.8	2.3	1.4	0.90	0.75	1.2	1.4	1.9
4	1.9	1.5	1.3	8.4	2.3	1.8	1.5	0.95	0.81	1.3	1.4	2.2
5	2.1	1.5	1.4	2.8	2.0	1.6	1.6	0.88	0.74	1.3	3.0	1.4
6	1.8	1.7	1.4	1.1	1.9	1.8	1.7	0.82	0.81	1.4	2.1	1.2
7	1.8	1.4	1.3	1.2	2.0	1.9	1.6	0.81	0.77	1.3	1.2	1.3
8	1.8	1.4	1.4	1.5	2.0	1.9	1.6	0.83	0.88	1.1	1.6	1.3
9	2.0	1.5	11	1.5	2.0	1.9	1.6	0.79	0.74	1.2	1.4	1.1
10	1.9	1.7	27	1.4	1.9	2.0	1.6	0.76	0.77	1.2	1.4	1.2
11	2.4	1.3	2.0	1.2	100	2.1	1.6	0.77	0.85	1.2	1.3	1.2
12	2.1	1.3	2.0	1.2	2.6	2.0	1.4	0.75	0.89	1.3	1.2	1.2
13	1.7	1.3	1.6	1.2	25	1.8	1.5	0.75	1.2	1.3	1.3	1.3
14	3.7	1.4	1.5	1.9	2.7	1.9	1.5	0.76	0.85	1.6	1.2	1.3
15	3.8	1.4	1.6	2.5	2.3	1.8	5.7	0.78	0.92	1.7	1.8	1.2
16	3.4	1.3	16	1.9	2.1	2.1	1.5	0.85	1.0	1.2	1.4	1.5
17	1.6	1.4	2.8	1.6	2.2	2.0	1.6	0.78	0.79	1.2	1.7	1.3
18	1.5	1.4	1.7	1.6	2.4	1.9	1.5	0.85	0.86	1.4	1.4	1.3
19	1.5	1.3	1.5	1.3	53	1.9	1.5	1.0	0.82	1.8	1.4	1.6
20	1.5	1.4	2.0	1.4	2.6	1.9	100	0.75	0.94	1.0	1.4	3.6
21	1.5	1.4	1.2	1.2	2.6	13	1.9	0.74	0.84	1.1	1.3	2.0
22	1.4	1.4	1.8	1.5	14	1.8	2.9	0.65	0.90	1.1	1.6	36
23	1.5	1.5	1.3	1.3	3.2	1.7	4.7	0.76	1.0	1.3	1.4	2.3
24	1.5	1.4	1.2	1.4	2.3	1.6	1.1	0.69	0.89	1.2	1.8	1.7
25	2.0	1.4	1.2	1.5	2.2	1.6	1.2	0.94	0.93	1.2	1.9	e1.9
26	1.8	1.4	1.4	1.3	2.4	1.9	1.0	0.71	0.94	1.1	2.2	e2.0
27	1.4	9.6	15	1.3	17	1.8	1.4	0.76	0.99	1.2	2.0	e1.9
28	1.4	2.3	1.3	1.3	2.5	1.6	1.2	0.71	1.1	1.1	1.7	e1.8
29	1.4	1.7	1.1	1.4	---	1.5	1.0	0.76	1.2	1.0	1.8	e1.7
30	1.6	1.4	1.1	19	---	1.5	1.1	0.66	1.1	1.5	1.7	e1.8
31	1.6	---	1.1	26	---	1.4	---	0.69	---	1.5	1.7	---
<b>Total</b>	59.6	53.0	109.3	94.5	264.3	70.0	150.7	24.78	26.67	39.5	49.4	83.8
<b>Mean</b>	1.92	1.77	3.53	3.05	9.44	2.26	5.02	0.80	0.89	1.27	1.59	2.79
<b>Max</b>	3.8	9.6	27	26	100	13	100	1.0	1.2	1.8	3.0	36
<b>Min</b>	1.4	1.3	1.1	1.1	1.8	1.4	1.0	0.65	0.68	1.0	1.2	1.1
<b>Ac-ft</b>	118	105	217	187	524	139	299	49	53	78	98	166

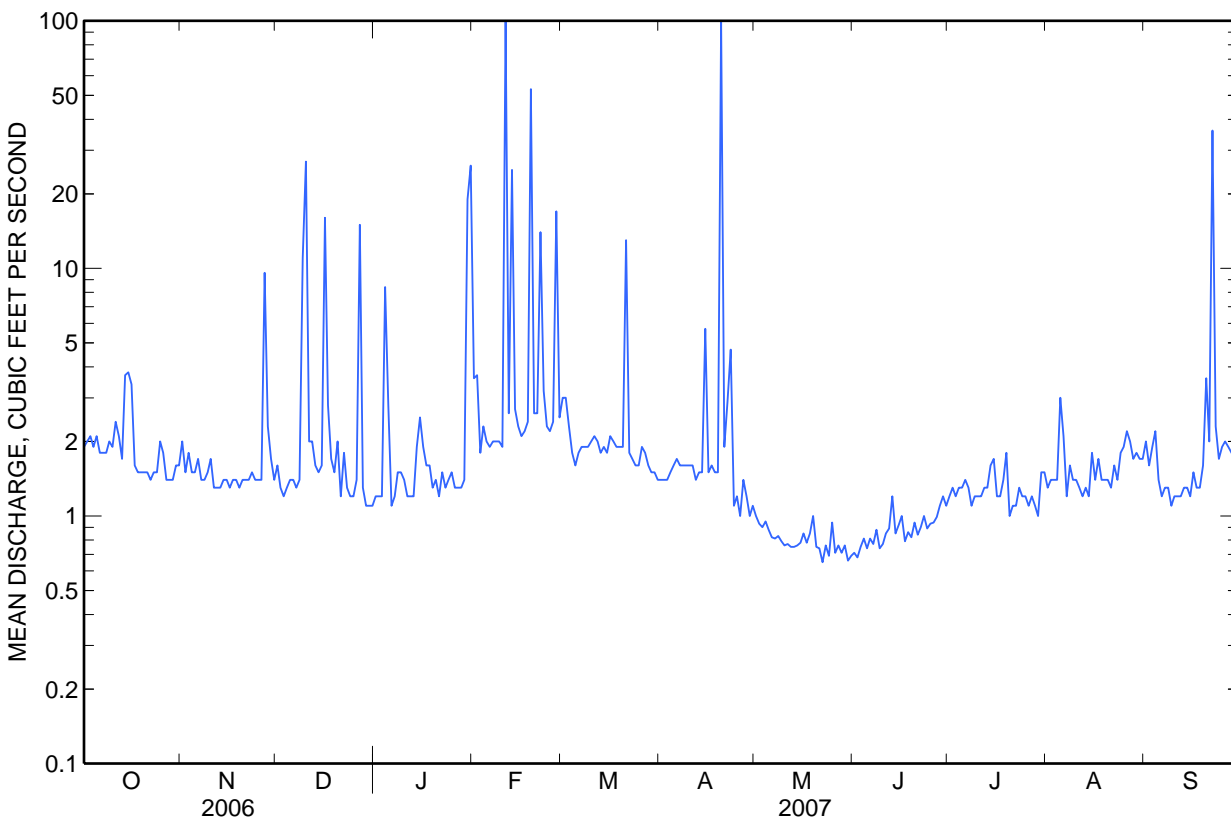
**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	17.8	16.1	25.0	35.7	39.6	27.5	10.0	12.6	17.1	17.5	15.4	13.8
<b>Max</b>	126	113	189	221	193	257	68.6	104	184	176	191	198
<b>(WY)</b>	(1979)	(1976)	(1976)	(2005)	(1980)	(1978)	(1974)	(1997)	(1976)	(1974)	(1974)	(1997)
<b>Min</b>	0.06	0.23	0.53	0.55	0.33	0.30	0.14	0.22	0.06	0.07	0.14	0.13
<b>(WY)</b>	(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 2006		Water Year 2007		Water Years 1970 - 2007	
Annual total	2,861.7		1,025.55			
Annual mean	7.84		2.81		20.6	
Highest annual mean					92.4	1974
Lowest annual mean					2.81	2007
Highest daily mean	337	Mar 28	100	Feb 11	2,060	Mar 1, 1978
Lowest daily mean	1.1	Dec 29	0.65	May 22	0.00	May 21, 1977
Annual seven-day minimum	1.2	Jun 29	0.71	May 28	0.02	Oct 28, 1977
Maximum peak flow			905	Apr 20	12,700	Feb 27, 1983
Maximum peak stage			5.54	Apr 20	10.32	Feb 27, 1983
Annual runoff (ac-ft)	5,680		2,030		14,930	
10 percent exceeds	3.7		2.5		71	
50 percent exceeds	1.9		1.4		1.4	
90 percent exceeds	1.4		0.85		0.40	





**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 records rated poor. Water temperature records rated excellent, except for June 13-15 and July 14-20, which are rated good, June 16, 17, which are rated fair, and June 18-21, which are rated poor. 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.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,830 microsiemens, Apr. 30, 1971; minimum recorded, 220 microsiemens, Feb. 20, 1978.

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, 1,280 microsiemens, June 23; minimum recorded, 433 microsiemens, Feb. 19.

WATER TEMPERATURE: Maximum recorded, 28.7°C, July 3; minimum recorded, 7.2°C, Jan. 14.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Date	Time	Instan- taneous dis- charge, cfs (00061)	Specif- ic conduc- tance, wat unf μS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Residue on evap. at 180degC wat flt mg/L (70300)
<b>Oct</b>						
02...	1125	202	1,000	27.0	22.0	623
13...	0915	188	960	20.0	18.8	595
<b>Nov</b>						
09...	1005	193	960	21.5	18.6	605
30...	0930	238	1,010	16.0	10.0	637
<b>Dec</b>						
08...	1205	96	1,110	25.0	13.6	704
21...	0900	446	950	9.5	10.9	580
<b>Jan</b>						
08...	1200	277	1,080	26.5	13.2	665
19...	0915	298	1,060	16.0	10.5	647
<b>Feb</b>						
06...	1130	277	1,060	25.0	14.2	647
16...	0940	298	1,010	25.5	14.6	625
<b>Mar</b>						
08...	1025	241	1,090	23.5	15.7	674
26...	1020	223	1,040	15.5	17.0	692
<b>Apr</b>						
03...	1000	213	1,040	18.5	16.9	661
23...	1115	366	920	20.0	17.9	586
<b>May</b>						
01...	1220	299	970	22.5	21.3	596
21...	1000	210	1,000	27.0	19.2	623
<b>Jun</b>						
04...	0945	185	1,040	24.0	20.7	634
21...	0915	169	1,020	24.0	21.9	600
<b>Jul</b>						
02...	1230	160	1,020	34.0	25.9	627
20...	0915	142	1,040	22.5	22.2	611
<b>Aug</b>						
07...	0915	164	970	21.0	21.8	600
27...	1145	158	970	33.0	23.8	593
<b>Sep</b>						
07...	1135	131	960	28.0	22.6	592
14...	1215	140	1,050	31.0	22.0	641

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 8

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

Date	Time	Instan- taneous dis- charge, cfs (00061)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicar- bonate, wat flt incrm. titr., field, mg/L (00453)	Carbon- ate, wat flt incrm. titr., field, mg/L (00452)	Chlor- ide, water, fltrd, mg/L (00940)
<b>Oct</b>													
25...	1545	185	747	9.6	109	8.3	976	23.0	20.5	203	241	3	107
<b>Nov</b>													
16...	1445	205	746	10.2	109	8.2	981	26.0	17.5	198	240	1	106
<b>Dec</b>													
18...	1515	403	753	10.6	103	8.1	1,010	--	13.5	213	260	--	109
<b>Jan</b>													
10...	1000	267	750	10.7	104	8.1	1,060	15.0	13.0	204	248	--	124
25...	1330	244	752	11.3	110	8.2	1,100	25.0	13.5	209	251	2	132
<b>Feb</b>													
06...	1030	273	753	10.9	106	8.1	1,040	20.0	13.5	205	250	--	124
21...	1400	407	751	9.7	98	8.1	902	21.0	15.0	180	219	--	101
<b>Mar</b>													
08...	1345	227	750	9.7	107	8.1	1,130	23.5	19.0	214	261	--	134
29...	1600	224	751	10.1	112	8.2	1,050	23.5	19.5	205	241	4	122
<b>Apr</b>													
10...	1145	224	750	9.8	108	8.0	1,040	22.5	19.0	210	248	4	125
25...	1330	295	750	9.3	102	8.1	953	26.0	19.0	203	247	--	104
<b>May</b>													
16...	1000	191	750	10.2	111	8.3	1,010	17.0	18.5	212	254	2	118
30...	1115	180	752	11.4	128	8.2	1,010	26.0	20.0	211	252	3	118
<b>Jun</b>													
15...	1100	158	747	10.8	128	8.2	1,050	30.0	22.5	209	245	5	123
28...	1115	160	748	9.0	107	8.2	1,030	30.0	23.0	208	246	4	122
<b>Jul</b>													
16...	1445	144	746	8.3	106	8.1	1,030	30.5	26.5	213	255	2	120
<b>Aug</b>													
23...	1200	148	744	9.2	112	8.2	1,000	27.0	24.0	199	241	1	121
<b>Sep</b>													
06...	1430	144	748	8.7	108	8.2	966	28.5	25.0	194	232	2	113

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 8

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

Date	Sulfate water, fltrd, mg/L (00945)	Ammoni	Nitrite	Nitrite water, fltrd, mg/L (00613)	Total nitro- gen, wat unf by anal ysis, mg/L (62855)	Ortho-	Phos- phorus, water, unfltrd mg/L (00665)	1-Naph- thol, water, fltrd 0.7u GF µg/L (49295)	2,6-Di-	2Chloro	CIAT, water, fltrd, µg/L (04040)	2-Ethyl	3,4-Di-
		a	+ nitrate			phos- phate,			ethyl- aniline	-2',6'- diethyl		-6- methyl- aniline	chloro- aniline
		water, fltrd, mg/L as N (00608)	water fltrd, mg/L as N (00631)			water, fltrd, mg/L as P (00671)			water, fltrd µg/L (82660)	acet- anilide wat flt µg/L (61618)		water, fltrd, µg/L (61620)	water, fltrd, µg/L (61625)
<b>Oct</b>													
25...	104	<.020	5.63	.028	6.82	.812	1.20	<.09	<.006	<.006	E.008	<.010	E.012
<b>Nov</b>													
16...	103	.048	5.71	.019	7.29	.856	1.22	<.09	<.006	<.006	<.014	<.010	E.014
<b>Dec</b>													
18...	125	.059	4.30	.096	5.26	1.03	1.21	<.09	<.006	<.006	<.014	<.010	<.004
<b>Jan</b>													
10...	119	.098	5.83	.035	7.00	1.03	1.27	<.09	<.006	<.006	<.014	<.010	E.016
25...	126	.066	6.15	.025	7.50	.968	1.21	<.09	<.006	<.006	<.014	<.010	E.015
<b>Feb</b>													
06...	115	.063	5.38	.024	6.69	.826	1.03	<.09	<.006	<.006	<.014	<.010	E.012
21...	96.9	.163	4.71	.146	5.46	.741	.83	<.09	<.006	<.006	<.014	<.010	E.021
<b>Mar</b>													
08...	135	.198	5.82	.040	7.48	.825	1.49	<.09	<.006	<.006	E.009	<.010	E.019
29...	111	.032	7.17	.037	8.01	.926	1.20	<.09	<.006	<.006	E.009	<.010	E.012
<b>Apr</b>													
10...	115	<.020	4.89	.039	5.90	.800	1.07	<.09	<.006	<.006	E.009	<.010	E.012
25...	104	.064	4.54	.070	5.37	.883	1.05	<.09	<.006	<.006	E.010	<.010	E.019
<b>May</b>													
16...	104	<.020	5.25	.070	6.22	.862	1.09	<.09	<.006	<.006	<.014	<.010	E.016
30...	101	<.020	5.25	.052	6.18	1.01	1.21	<.09	<.006	<.006	E.008	<.010	E.014
<b>Jun</b>													
15...	108	.042	5.74	.076	6.51	.999	1.15	<.09	<.006	<.006	E.008	<.010	E.012
28...	103	<.020	5.03	.067	5.91	1.10	1.25	<.09	<.006	<.006	<.014	<.010	E.011
<b>Jul</b>													
16...	102	<.020	5.12	.046	5.75	.995	1.25	<.09	<.006	<.006	E.009	<.010	E.010
<b>Aug</b>													
23...	94.8	.045	5.37	.046	6.18	1.13	1.29	<.09	<.006	<.006	E.009	<.010	E.011
<b>Sep</b>													
06...	94.6	E.011	4.48	.050	5.51	.817	1.10	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 8

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

Date	3,5-Di- chloro- aniline water, fltrd, µg/L (61627)	4- Chloro- 2methyl phenol, water, fltrd, 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 0.7u GF µg/L (82686)	Ben- flur- alin, water, fltrd 0.7u GF µg/L (82673)	Car- baryl, water, fltrd 0.7u GF µg/L (82680)	Carbo- furan, water, fltrd 0.7u GF µg/L (82674)	Chlor- pyrifos oxon, water, fltrd, µg/L (61636)	Chlor- pyrifos water, fltrd, µg/L (38933)
<b>Oct</b>													
25...	<.012	<.005	<.009	<.009	<.011	E.006	<.04	<.080	<.010	<.060	<.020	<.06	<.005
<b>Nov</b>													
16...	<.012	<.005	<.006	<.005	<.011	.008	<.04	<.080	<.010	<.060	<.020	<.06	<.005
<b>Dec</b>													
18...	<.012	<.005	<.006	<.005	<.011	<.007	<.04	<.080	<.010	E.013	<.020	<.06	<.005
<b>Jan</b>													
10...	<.012	<.005	<.006	<.005	<.011	<.007	<.04	<.080	<.010	<.060	<.020	<.06	<.005
25...	<.012	<.005	<.006	<.005	<.011	.008	<.04	<.080	<.010	E.017	<.020	<.06	<.005
<b>Feb</b>													
06...	<.012	<.005	<.006	<.005	<.011	E.007	<.04	<.080	<.010	<.060	<.020	<.06	<.005
21...	<.012	<.005	<.006	<.011	<.011	E.007	<.04	<.080	<.010	E.012	<.020	<.06	<.005
<b>Mar</b>													
08...	<.012	<.005	<.006	<.010	<.011	E.007	<.04	<.080	<.010	<.060	<.020	<.06	<.005
29...	<.012	<.005	<.006	<.012	<.011	E.007	<.04	<.080	<.010	E.010	<.020	<.06	<.005
<b>Apr</b>													
10...	<.012	<.005	<.006	<.015	<.011	E.007	<.04	<.080	<.010	<.060	<.020	<.06	<.005
25...	<.012	<.005	<.006	<.005	<.011	E.007	<.04	<.080	<.010	E.015	<.020	<.06	<.005
<b>May</b>													
16...	<.012	<.005	<.006	<.015	<.011	.008	<.04	<.080	<.010	<.060	<.020	<.06	<.005
30...	<.012	<.005	<.006	<.012	<.011	E.007	<.04	<.080	<.010	<.060	<.020	<.06	<.005
<b>Jun</b>													
15...	<.012	<.005	<.006	<.005	<.011	E.007	<.04	<.080	<.010	<.060	<.020	<.06	<.005
28...	<.012	<.005	<.006	<.005	<.011	.008	<.04	<.080	<.010	<.060	<.020	<.06	<.005
<b>Jul</b>													
16...	<.012	<.005	<.006	<.010	<.011	E.006	<.04	<.080	<.010	<.060	<.020	<.06	<.005
<b>Aug</b>													
23...	<.012	<.005	<.006	<.010	<.011	E.008	<.04	<.080	<.010	<.060	<.020	<.06	<.005
<b>Sep</b>													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 8

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

Date	cis-Permethrin water fltrd 0.7u GF (82687)	cis-Propiconazole, water, fltrd, (79846)	Cyanazine, water, fltrd, (04041)	Cyfluthrin, water, fltrd, (61585)	lambda-Cyhalothrin, water, fltrd, (61595)	Cypermethrin, water, fltrd, (61586)	DCPA, water, fltrd 0.7u GF (82682)	Desulfinyl-fipronil, water, fltrd, (62170)	Diazinon, water, fltrd, (39572)	Dicrotophos, water, fltrd, (38454)	Dieldrin, water, fltrd, (39381)	Dimethoate, water, fltrd 0.7u GF (82662)	Disulfoton sulfone water, fltrd, (61640)
<b>Oct</b>													
25...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.006	<.005	<.08	<.009	<.006	<.01
<b>Nov</b>													
16...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.006	<.005	<.08	<.009	<.006	<.01
<b>Dec</b>													
18...	<.010	<.013	<.018	<.053	<.014	<.046	E.003	E.007	<.005	<.08	<.009	<.006	<.01
<b>Jan</b>													
10...	<.010	<.013	<.018	<.053	<.014	<.046	E.006	E.005	<.005	<.08	<.009	<.006	<.01
25...	<.010	<.013	<.018	<.053	<.014	<.046	E.003	E.005	<.005	<.08	<.009	<.006	<.01
<b>Feb</b>													
06...	<.010	<.013	<.018	<.053	<.014	<.046	E.008	E.005	<.005	<.08	<.009	<.006	<.01
21...	<.010	<.013	<.018	<.053	<.014	<.046	E.006	E.008	<.006	<.08	<.009	<.006	<.01
<b>Mar</b>													
08...	<.010	<.013	<.018	<.053	<.014	<.046	E.003	E.007	<.005	<.08	<.009	<.006	<.01
29...	<.010	<.013	<.018	<.053	<.014	<.046	E.004	E.007	<.005	<.08	<.009	<.006	<.01
<b>Apr</b>													
10...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.006	<.005	<.08	<.009	<.006	<.01
25...	<.010	<.013	<.018	<.053	<.014	<.046	.010	E.008	<.005	<.08	<.009	<.006	<.01
<b>May</b>													
16...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.007	<.005	<.08	<.009	<.006	<.01
30...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.007	<.005	<.08	<.009	<.006	<.01
<b>Jun</b>													
15...	<.010	<.013	<.018	<.053	<.014	<.046	E.003	E.007	<.005	<.08	<.009	<.006	<.01
28...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.005	<.005	<.08	<.009	<.006	<.01
<b>Jul</b>													
16...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.007	<.005	<.08	<.009	<.006	<.01
<b>Aug</b>													
23...	<.010	<.013	<.018	<.053	<.014	<.046	<.003	E.008	<.005	<.08	<.009	<.006	<.01
<b>Sep</b>													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 5 of 8

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

Date	Disulfoton, water, fltrd 0.7u GF µg/L (82677)	Endosulfan sulfate water, fltrd, µg/L (61590)	EPTC, water, fltrd 0.7u GF µg/L (82668)	Ethion monoxon water, fltrd, µg/L (61644)	Ethion, water, fltrd, µg/L (82346)	Etho-prop, water, fltrd 0.7u GF µg/L (82672)	Fenamiphos sulfone water, fltrd, µg/L (61645)	Fenamiphos sulf-oxide, water, fltrd, µg/L (61646)	Fenamiphos, water, fltrd, µg/L (61591)	Desulf- inyl- fipro- nil amide, wat flt µg/L (62169)	Fipro- nil sulfide water, fltrd, µg/L (62167)	Fipro- nil sulfone water, fltrd, µg/L (62168)	Fipro- nil, water, fltrd, µg/L (62166)
<b>Oct</b>													
25...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.008	<.024	E.007
<b>Nov</b>													
16...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.007	<.024	<.016
<b>Dec</b>													
18...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	<.013	<.024	E.016
<b>Jan</b>													
10...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	E.006	E.005	<.024	E.008
25...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	E.007	E.006	<.024	E.009
<b>Feb</b>													
06...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	E.007	E.006	<.024	E.008
21...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.009	<.024	E.008
<b>Mar</b>													
08...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.008	<.024	E.007
29...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.008	<.024	E.006
<b>Apr</b>													
10...	<.02	<.022	<.004	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.008	<.024	E.006
25...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.009	<.024	E.008
<b>May</b>													
16...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.008	<.024	E.006
30...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.008	<.024	E.004
<b>Jun</b>													
15...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	<.013	<.024	<.016
28...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	E.007	E.005	<.024	<.016
<b>Jul</b>													
16...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	<.013	<.024	E.005
<b>Aug</b>													
23...	<.02	<.022	<.002	<.02	<.016	<.012	<.053	<.04	<.03	<.029	E.009	<.024	E.005
<b>Sep</b>													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 6 of 8

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

Date	Fonofos water, fltrd, µg/L (04095)	Hexa- zinone, water, fltrd, µg/L (04025)	Ipro- dione, water, fltrd, µg/L (61593)	Isofen- phos, water, fltrd, µg/L (61594)	Mala- oxon, water, fltrd, µg/L (61652)	Mala- thion, water, fltrd, µg/L (39532)	Meta- laxyl, water, fltrd, µg/L (61596)	Methi- althion water, fltrd, µg/L (61598)	Methyl para- oxon, water, fltrd, µg/L (61664)	Methyl para- thion, water, fltrd 0.7u GF µg/L (82667)	Metola- chlor, water, fltrd, µg/L (39415)	Metri- buzin, water, fltrd, µg/L (82630)	Moli- nate, water, fltrd 0.7u GF µg/L (82671)
<b>Oct</b>													
25...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Nov</b>													
16...	<.006	<.026	<.026	<.011	<.039	<.016	.307	<.009	<.02	<.008	<.010	<.012	<.003
<b>Dec</b>													
18...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Jan</b>													
10...	<.006	E.010	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
25...	<.006	E.010	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Feb</b>													
06...	<.006	E.009	<.026	<.011	<.039	<.016	<.022	<.009	<.02	<.008	<.010	<.012	<.003
21...	<.006	<.026	<.026	<.011	<.039	.032	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Mar</b>													
08...	<.006	<.026	<.026	<.011	<.039	<.016	<.016	<.009	<.02	<.008	<.010	<.012	<.003
29...	<.006	E.011	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	E.009	<.012	<.003
<b>Apr</b>													
10...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
25...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>May</b>													
16...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
30...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Jun</b>													
15...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
28...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Jul</b>													
16...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Aug</b>													
23...	<.006	<.026	<.026	<.011	<.039	<.016	<.007	<.009	<.02	<.008	<.010	<.012	<.003
<b>Sep</b>													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.



## 11074000 Santa Ana River below Prado Dam, CA—Continued

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 7 of 8

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

Date	Myclo- butanil water, fltrd, µg/L (61599)	Oxy- fluor- fen, water, fltrd, µg/L (61600)	Pendi- meth- alin, water, fltrd 0.7u GF µg/L (82683)	Phorate oxon, water, fltrd, µg/L (61666)	Phorate water, fltrd 0.7u GF µg/L (82664)	Phosmet oxon, water, fltrd, µg/L (61668)	Phosmet water, fltrd, µg/L (61601)	Prome- ton, water, fltrd, µg/L (04037)	Prome- tryn, water, fltrd, µg/L (04036)	Propy- zamide, water, fltrd 0.7u GF µg/L (82676)	Pro- panil, water, fltrd 0.7u GF µg/L (82679)	Propar- gite, water, fltrd 0.7u GF µg/L (82685)	Sima- zine, water, fltrd, µg/L (04035)
<b>Oct</b>													
25...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.045
<b>Nov</b>													
16...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.119
<b>Dec</b>													
18...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	<.01	<.006	<.004	<.011	<.02	.445
<b>Jan</b>													
10...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	E.01	<.006	<.007	<.011	<.02	.061
25...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	<.01	<.006	<.004	<.011	<.02	.068
<b>Feb</b>													
06...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	<.01	<.006	<.004	<.011	<.02	.045
21...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.02	<.006	<.004	<.011	<.02	.408
<b>Mar</b>													
08...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	<.01	<.006	<.004	<.011	<.02	.051
29...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.038
<b>Apr</b>													
10...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	<.01	<.006	<.004	<.011	<.02	.035
25...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.02	<.006	<.004	<.011	<.02	.147
<b>May</b>													
16...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.045
30...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.032
<b>Jun</b>													
15...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.044
28...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	<.01	<.006	<.004	<.011	<.02	.044
<b>Jul</b>													
16...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.01	<.006	<.004	<.011	<.02	.049
<b>Aug</b>													
23...	<.033	<.017	<.020	<.03	<.020	<.05	<.008	.02	<.006	<.004	<.011	<.02	.030
<b>Sep</b>													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 8 of 8

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

Date	Tebu- thiuron water, fltrd 0.7u GF µg/L (82670)	Teflu- thrin, water, fltrd, µg/L (61606)	Ter- bufos sulfone water, fltrd, µg/L (61674)	Terbu- fos, water, fltrd 0.7u GF µg/L (82675)	Ter- buthyl- azine, water, fltrd, µg/L (04022)	Thio- bencarb water, fltrd 0.7u 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 0.7u GF µg/L (82661)	Di- chlor- vos, water, fltrd, µg/L (38775)
<b>Oct</b>										
25...	<.02	<.006	<.04	<.01	<.01	<.010	<.03	<.060	<.009	<.01
<b>Nov</b>										
16...	<.02	<.003	<.04	<.01	<.01	<.010	<.03	<.241	<.009	<.01
<b>Dec</b>										
18...	<.02	<.003	<.04	<.01	<.01	<.010	<.03	<.008	<.009	<.01
<b>Jan</b>										
10...	.02	<.003	<.07	<.01	<.01	<.010	<.03	<.035	<.009	<.01
25...	<.02	<.003	<.06	<.01	<.01	<.010	<.03	<.191	<.009	<.01
<b>Feb</b>										
06...	<.02	<.003	<.05	<.01	<.01	<.010	<.03	<.035	<.009	<.01
21...	<.02	<.003	<.04	<.01	<.01	<.010	<.03	<.220	<.009	<.01
<b>Mar</b>										
08...	<.02	<.006	<.04	<.01	<.01	<.010	<.03	<.230	<.009	<.01
29...	<.02	<.007	<.04	<.01	<.01	<.010	<.03	<.280	<.009	<.01
<b>Apr</b>										
10...	<.02	<.007	<.04	<.01	<.01	<.010	<.03	<.300	<.009	<.01
25...	<.02	<.006	<.04	<.01	<.01	<.010	<.03	<.100	<.009	<.01
<b>May</b>										
16...	<.02	<.003	<.04	<.01	<.01	<.010	<.03	<.300	<.009	<.01
30...	<.02	<.006	<.04	<.01	<.01	<.010	<.03	<.280	<.009	<.01
<b>Jun</b>										
15...	<.04	<.003	<.04	<.01	<.01	<.010	<.03	<.300	<.009	<.01
28...	<.02	<.003	<.04	<.01	<.01	<.010	<.03	<.233	<.009	<.01
<b>Jul</b>										
16...	<.02	<.006	<.04	<.01	<.01	<.010	<.03	<.300	<.009	<.01
<b>Aug</b>										
23...	<.02	<.006	<.04	<.01	<.01	<.010	<.03	<.300	<.009	<.01
<b>Sep</b>										
06...	--	--	--	--	--	--	--	--	--	--

Note: Data collected as part of the National Water-Quality Assessment (NAWQA) Program.

## 11074000 Santa Ana River below Prado Dam, CA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

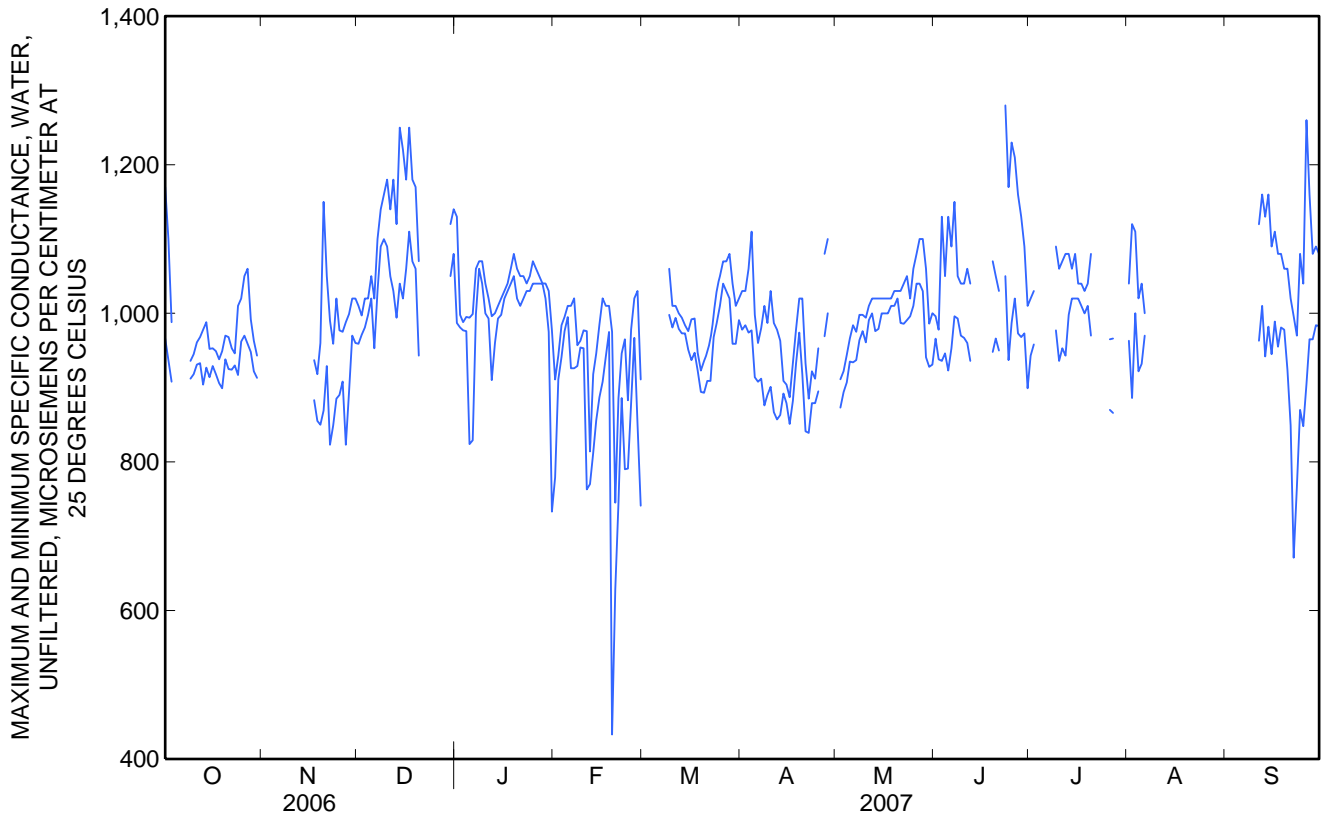
Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	October		November		December		January		February		March	
1	1,170	966	---	---	1,010	959	1,130	987	911	779	---	---
2	1,100	937	---	---	997	971	998	981	943	911	---	---
3	988	908	---	---	1,020	981	988	977	984	941	---	---
4	---	---	---	---	1,020	998	995	976	995	976	---	---
5	---	---	---	---	1,050	1,020	994	824	1,010	995	---	---
6	---	---	---	---	1,020	953	999	829	1,010	926	---	---
7	---	---	---	---	1,100	1,030	1,060	999	1,020	926	---	---
8	---	---	---	---	1,140	1,090	1,070	1,060	957	929	---	---
9	936	912	---	---	1,160	1,100	1,070	1,040	963	954	1,060	998
10	945	918	---	---	1,180	1,090	1,040	1,000	977	953	1,010	981
11	961	931	---	---	1,140	1,050	1,020	993	976	763	1,010	994
12	968	933	---	---	1,180	1,030	996	910	814	770	1,000	979
13	978	904	---	---	1,120	994	1,000	960	918	812	994	973
14	988	927	---	---	1,250	1,040	1,010	993	946	856	984	973
15	952	914	---	---	1,220	1,020	1,020	998	985	887	976	951
16	953	929	---	---	1,180	1,060	1,030	1,020	1,020	908	992	937
17	949	918	937	883	1,250	1,110	1,040	1,030	1,010	942	993	947
18	938	906	918	855	1,180	1,070	1,060	1,040	1,010	975	947	923
19	949	899	960	850	1,170	1,060	1,080	1,050	975	433	923	894
20	970	938	1,150	869	1,070	943	1,060	1,020	745	628	936	893
21	968	925	1,050	929	---	---	1,050	1,010	886	745	947	909
22	953	924	990	823	---	---	1,050	1,020	946	886	968	909
23	946	930	959	849	---	---	1,040	1,030	965	790	997	968
24	1,010	917	1,020	885	---	---	1,050	1,030	883	791	1,030	987
25	1,020	962	977	890	---	---	1,070	1,040	978	879	1,050	1,010
26	1,050	970	975	908	---	---	1,060	1,040	1,020	967	1,070	1,040
27	1,060	959	988	823	---	---	1,050	1,040	1,030	851	1,070	1,030
28	992	948	999	894	---	---	1,040	1,040	911	741	1,080	1,020
29	963	922	1,020	970	---	---	1,040	1,020	---	---	1,040	959
30	943	913	1,020	960	1,120	1,050	1,030	975	---	---	1,010	959
31	---	---	---	---	1,140	1,080	977	733	---	---	1,020	991
Month	---	---	---	---	---	---	1,130	733	1,030	433	---	---

## 11074000 Santa Ana River below Prado Dam, CA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	April		May		June		July		August		September	
1	1,030	978	---	---	996	966	1,020	943	1,040	963	---	---
2	1,030	984	911	873	978	938	1,030	958	1,120	886	---	---
3	1,060	974	922	894	1,130	936	---	---	1,110	1,000	---	---
4	1,110	977	944	907	1,050	946	---	---	1,020	922	---	---
5	998	914	966	935	1,130	923	---	---	1,040	932	---	---
6	960	908	984	934	1,090	953	---	---	1,000	970	---	---
7	980	912	975	937	1,150	996	---	---	---	---	---	---
8	1,010	876	998	964	1,050	993	---	---	---	---	---	---
9	987	890	998	976	1,040	970	1,090	977	---	---	---	---
10	1,030	901	994	961	1,040	967	1,060	936	---	---	---	---
11	987	867	1,010	991	1,060	960	1,070	953	---	---	1,120	963
12	978	857	1,020	1,000	1,040	936	1,080	943	---	---	1,160	1,010
13	963	863	1,020	976	---	---	1,080	998	---	---	1,130	942
14	909	892	1,020	979	---	---	1,060	1,020	---	---	1,160	982
15	904	879	1,020	1,000	---	---	1,080	1,020	---	---	1,090	945
16	887	851	1,020	1,000	---	---	1,040	1,020	---	---	1,110	989
17	933	882	1,020	1,000	---	---	1,040	1,010	---	---	1,080	955
18	979	933	1,020	1,010	---	---	1,030	1,000	---	---	1,080	981
19	1,020	974	1,030	1,010	1,070	948	1,040	1,010	---	---	1,060	978
20	1,020	918	1,030	1,020	1,050	966	1,080	970	---	---	1,060	924
21	933	841	1,030	987	1,030	950	---	---	---	---	1,020	849
22	885	839	1,040	986	---	---	---	---	---	---	996	671
23	922	879	1,050	991	1,280	1,050	---	---	---	---	970	766
24	912	879	1,020	996	1,170	937	---	---	---	---	1,080	870
25	953	895	1,060	1,010	1,230	987	---	---	---	---	1,040	848
26	---	---	1,080	1,040	1,210	1,020	965	870	---	---	1,260	905
27	1,080	969	1,100	1,040	1,160	973	966	866	---	---	1,160	965
28	1,100	1,000	1,100	1,030	1,130	968	---	---	---	---	1,080	965
29	---	---	1,060	941	1,090	973	---	---	---	---	1,090	984
30	---	---	986	928	1,010	899	---	---	---	---	1,080	983
31	---	---	1,000	931	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

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 2006 TO SEPTEMBER 2007**

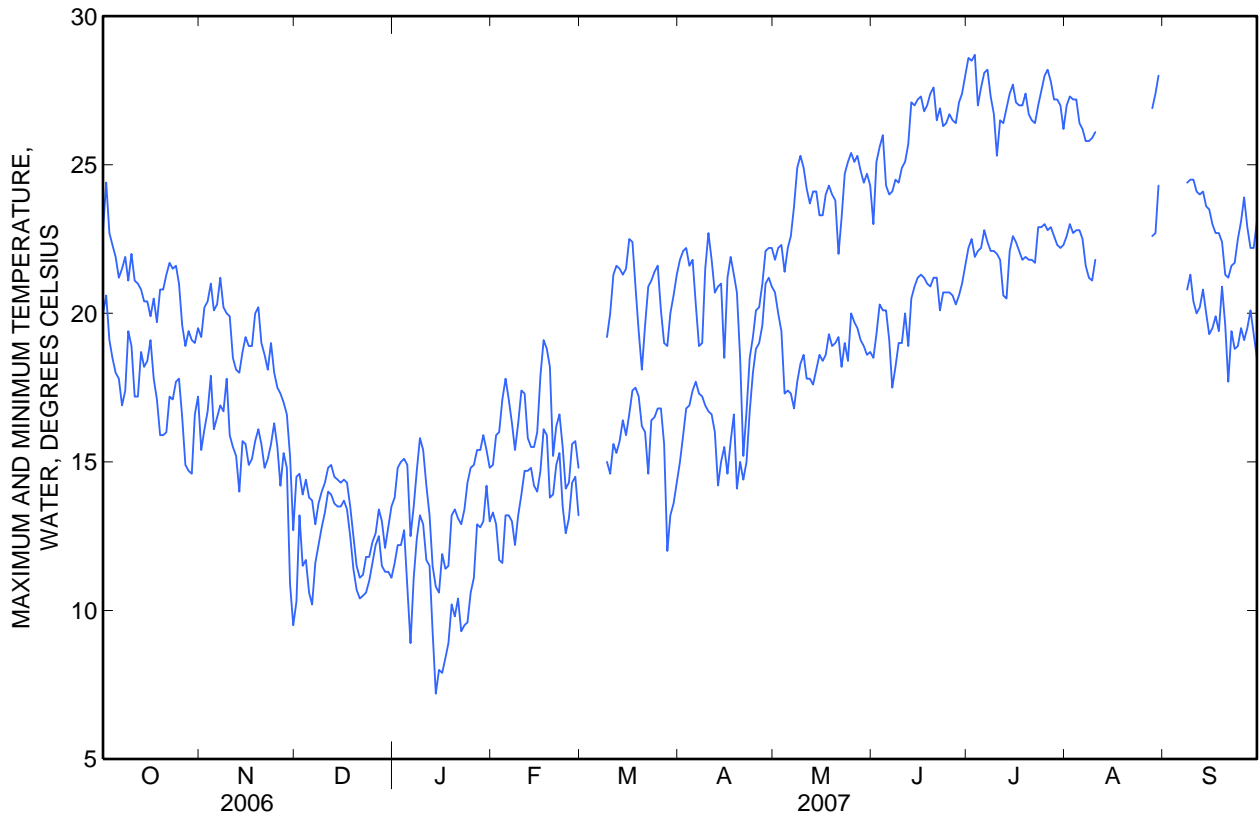
<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>
	<b>October</b>		<b>November</b>		<b>December</b>		<b>January</b>		<b>February</b>		<b>March</b>	
<b>1</b>	22.8	20.0	19.2	15.4	14.5	10.3	13.8	11.6	14.9	13.3	---	---
<b>2</b>	24.4	20.6	20.2	16.1	14.6	13.2	14.8	12.2	15.9	12.9	---	---
<b>3</b>	22.7	19.1	20.4	16.7	13.9	11.5	15.0	12.2	16.0	11.7	---	---
<b>4</b>	22.3	18.5	21.0	17.9	14.4	11.7	15.1	12.7	17.1	11.6	---	---
<b>5</b>	21.9	18.0	20.1	16.1	13.8	10.6	14.9	10.8	17.8	13.2	---	---
<b>6</b>	21.2	17.8	20.3	16.5	13.7	10.2	12.5	8.9	17.1	13.2	---	---
<b>7</b>	21.5	16.9	21.2	16.9	12.9	11.6	13.5	11.1	16.3	13.0	---	---
<b>8</b>	21.9	17.4	20.2	16.7	13.6	12.2	14.7	12.4	15.4	12.2	---	---
<b>9</b>	21.1	19.4	20.0	17.8	14.0	12.8	15.8	13.2	16.3	13.2	19.2	15.0
<b>10</b>	22.0	18.9	19.9	15.9	14.3	13.3	15.4	12.9	17.4	13.9	20.0	14.6
<b>11</b>	21.1	17.2	18.5	15.5	14.8	14.0	14.2	11.7	17.3	14.7	21.3	15.6
<b>12</b>	21.0	17.2	18.1	15.2	14.9	13.9	13.2	11.5	15.8	14.7	21.6	15.3
<b>13</b>	20.8	18.7	18.0	14.0	14.5	13.6	11.5	9.3	15.5	14.8	21.5	15.7
<b>14</b>	20.4	18.2	18.7	15.7	14.4	13.5	10.8	7.2	15.5	14.2	21.3	16.4
<b>15</b>	20.4	18.4	19.2	15.6	14.3	13.5	10.6	8.0	16.0	14.0	21.5	15.9
<b>16</b>	19.9	19.1	18.9	14.9	14.4	13.7	11.9	7.9	17.9	14.7	22.5	16.6
<b>17</b>	20.5	17.8	18.9	15.1	14.3	13.4	11.4	8.4	19.1	16.1	22.4	17.4
<b>18</b>	19.7	17.1	20.0	15.7	13.5	12.5	11.5	8.9	18.8	15.9	20.9	17.5
<b>19</b>	20.8	15.9	20.2	16.1	12.5	11.4	13.2	10.2	18.2	13.8	19.4	17.2
<b>20</b>	20.8	15.9	19.0	15.6	11.5	10.7	13.4	9.8	15.2	13.9	18.1	16.2
<b>21</b>	21.3	16.0	18.6	14.8	11.1	10.4	13.1	10.4	16.2	14.9	19.6	16.0
<b>22</b>	21.7	17.2	18.1	15.1	11.2	10.5	12.9	9.3	16.6	15.3	20.9	14.6
<b>23</b>	21.5	17.1	19.0	15.6	11.8	10.6	13.4	9.5	15.5	13.5	21.1	16.4
<b>24</b>	21.6	17.7	18.0	16.3	11.8	11.0	14.3	9.6	14.1	12.6	21.4	16.5
<b>25</b>	21.0	17.8	17.5	15.5	12.3	11.6	14.8	10.6	14.3	13.1	21.6	16.8
<b>26</b>	19.6	16.5	17.3	14.2	12.6	12.2	14.9	11.1	15.6	14.3	20.1	16.8
<b>27</b>	18.9	14.9	17.0	15.3	13.4	12.5	15.4	12.9	15.7	14.5	19.0	15.6
<b>28</b>	19.4	14.7	16.6	14.8	13.0	11.5	15.4	12.8	14.8	13.2	18.9	12.0
<b>29</b>	19.1	14.6	15.2	10.9	12.1	11.3	15.9	13.0	---	---	20.0	13.2
<b>30</b>	19.0	16.6	12.7	9.5	12.8	11.3	15.4	14.2	---	---	20.6	13.6
<b>31</b>	19.5	17.2	---	---	13.5	11.1	14.8	13.0	---	---	21.3	14.3
<b>Month</b>	24.4	14.6	21.2	9.5	14.9	10.2	15.9	7.2	19.1	11.6	---	---

## 11074000 Santa Ana River below Prado Dam, CA—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	April		May		June		July		August		September	
1	21.8	15.0	21.8	20.7	23.0	18.5	28.6	22.2	27.0	22.6	---	---
2	22.1	15.9	22.2	20.0	25.1	19.3	28.5	22.5	27.3	23.0	---	---
3	22.2	16.8	22.3	19.4	25.6	20.3	28.7	21.9	27.2	22.7	---	---
4	21.6	16.9	21.4	17.3	26.0	20.1	27.0	22.1	27.2	22.8	---	---
5	21.8	17.4	22.2	17.4	24.3	20.1	27.6	22.2	26.4	22.8	---	---
6	20.3	17.7	22.6	17.3	24.0	19.1	28.1	22.8	26.2	22.5	---	---
7	18.9	17.3	23.6	16.8	24.1	17.5	28.2	22.4	25.8	21.6	---	---
8	19.0	17.2	24.9	17.7	24.5	18.2	27.3	22.1	25.8	21.2	24.4	20.8
9	21.5	16.9	25.3	18.3	24.4	19.0	26.7	22.1	25.9	21.1	24.5	21.3
10	22.7	16.7	24.9	18.6	24.9	19.0	25.3	22.0	26.1	21.8	24.5	20.4
11	21.8	16.6	24.2	17.8	25.1	20.0	26.5	21.8	---	---	24.1	20.0
12	20.7	16.0	23.7	17.8	25.7	18.9	26.4	20.6	---	---	24.0	20.2
13	20.9	14.2	24.1	17.6	27.1	20.5	26.9	20.5	---	---	24.1	20.8
14	21.0	15.0	24.1	18.1	27.0	20.9	27.4	22.1	---	---	23.6	20.0
15	18.5	15.5	23.3	18.6	27.2	21.2	27.7	22.6	---	---	23.5	19.3
16	21.2	14.6	23.3	18.4	27.3	21.3	27.1	22.4	---	---	23.0	19.5
17	21.9	15.7	24.0	18.6	26.8	21.2	27.0	22.1	---	---	22.7	19.9
18	21.3	16.6	24.3	19.3	27.0	21.0	27.0	21.8	---	---	22.7	19.4
19	20.7	14.1	24.0	18.9	27.4	20.9	27.4	21.9	---	---	22.4	20.9
20	18.5	15.0	23.8	19.0	27.6	21.2	26.7	21.8	---	---	21.3	19.6
21	15.2	14.4	22.0	19.2	26.5	21.2	26.5	21.8	---	---	21.2	17.7
22	16.7	15.0	23.2	18.2	26.9	20.1	26.4	21.7	---	---	21.6	19.4
23	18.5	16.7	24.7	19.0	26.3	20.7	27.0	22.9	---	---	21.7	18.8
24	19.2	18.0	25.1	18.4	26.4	20.7	27.5	22.9	---	---	22.5	18.9
25	20.1	18.8	25.4	20.0	26.7	20.7	28.0	23.0	---	---	23.1	19.5
26	20.2	19.0	25.1	19.7	26.5	20.6	28.2	22.8	---	---	23.9	19.1
27	21.0	19.6	25.3	19.5	26.4	20.3	27.8	22.9	---	---	22.9	19.5
28	22.1	21.0	24.8	19.1	27.1	20.6	27.2	22.6	26.9	22.6	22.2	20.1
29	22.2	21.2	24.4	18.9	27.4	21.0	27.2	22.3	27.4	22.7	22.2	19.3
30	22.2	20.9	24.7	18.6	28.0	21.6	27.0	22.2	28.0	24.3	23.1	18.5
31	---	---	24.3	18.7	---	---	26.2	22.3	---	---	---	---
<b>Month</b>	22.7	14.1	25.4	16.8	28.0	17.5	28.7	20.5	---	---	---	---

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 2006 TO SEPTEMBER 2007**

Date	Time	Instan- taneous dis- charge, cfs (00061)	Temper- ature, water, deg C (00010)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
<b>Oct</b>						
25...SS	1545	185	20.5	44	249	124
<b>Nov</b>						
16...SS	1445	205	17.5	70	150	83
<b>Dec</b>						
18...SS	1515	403	13.5	38	65	71
<b>Jan</b>						
10...SS	1000	267	13.0	94	106	76
25...SS	1330	244	13.5	98	105	69
<b>Feb</b>						
06...SS	1030	273	13.5	93	79	58
21...SS	1400	407	15.0	78	43	47
<b>Mar</b>						
08...SS	1345	227	19.0	90	358	219
29...SS	1600	224	19.5	77	132	80
<b>Apr</b>						
10...SS	1145	224	19.0	70	145	88
25...SS	1330	295	19.0	23	108	86
<b>May</b>						
16...SS	1000	191	18.5	66	123	63
30...SS	1115	180	20.0	68	85	41
<b>Jun</b>						
15...SS	1100	158	22.5	74	92	39
28...SS	1115	160	23.0	74	87	38
<b>Jul</b>						
16...SS	1445	144	26.5	68	103	40
<b>Aug</b>						
23...SS	1200	148	24.0	67	71	28
<b>Sep</b>						
06...SS	1430	144	25.0	55	188	73

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 2006 TO SEPTEMBER 2007**

Date	Time	Stream width, feet (00004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf 25 degC $\mu$ S/cm (00095)	Temper-ature, deg C (00010)	Loca-tion in X-sect. dwnstrm ft from l bank (00009)
<b>Jan</b>							
08...	1131	59.0	--	--	1,080	12.9	11.0
08...	1132	59.0	--	--	1,080	12.9	17.0
08...	1134	59.0	--	--	1,080	13.0	23.0
08...	1135	59.0	--	--	1,080	12.9	29.0
08...	1136	59.0	--	--	1,080	12.9	35.0
08...	1137	59.0	--	--	1,080	13.0	41.0
08...	1138	59.0	--	--	1,080	13.1	47.0
08...	1139	59.0	--	--	1,080	13.4	53.0
25...	1340	70.0	11.8	8.1	1,100	13.5	63.0
25...	1341	70.0	11.5	8.1	1,100	13.5	49.0
25...	1342	70.0	11.3	8.1	1,100	13.5	35.0
25...	1343	70.0	11.2	8.1	1,100	13.5	21.0
25...	1344	70.0	11.2	8.1	1,100	13.5	7.00
<b>May</b>							
21...	1057	66.0	--	--	1,010	19.4	50.0
21...	1059	66.0	--	--	1,010	19.4	39.0
21...	1101	66.0	--	--	1,010	19.3	28.0
21...	1103	66.0	--	--	1,010	19.3	17.0
21...	1105	66.0	--	--	1,010	19.4	6.00

Note: Instantaneous discharge at the mean time of cross-sectional measurements: Jan. 8, 280 ft<sup>3</sup>/s; Jan. 25, 249 ft<sup>3</sup>/s; May 21, 205 ft<sup>3</sup>/s.



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Water-Data Report 2007

**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.

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

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER**  
**2007**

<b>Date</b>	<b>Time</b>	<b>Instan- taneous dis- charge, cfs (00061)</b>	<b>Specif- ic conduc- tance, wat unf μS/cm 25 degC (00095)</b>	<b>Temper- ature, water, deg C (00010)</b>	<b>Residue on evap. at 180degC wat flt mg/L (70300)</b>
<b>Oct</b>					
03...	1050	63	957	21.0	610
24...	1140	89	870	20.0	544
<b>Nov</b>					
02...	1430	78	909	22.0	564
21...	1255	80	900	20.0	560
<b>Dec</b>					
05...	0950	85	910	11.5	571
13...	0955	82	906	14.0	568
<b>Jan</b>					
10...	1115	81	932	15.5	596
29...	1015	83	919	15.5	587
<b>Feb</b>					
08...	1330	81	994	18.0	640
22...	1025	88	919	15.5	595
<b>Mar</b>					
05...	1030	66	943	18.0	597
21...	1150	91	905	18.7	588
<b>Apr</b>					
04...	1140	89	955	22.0	603
26...	1050	80	932	19.5	600
<b>May</b>					
07...	1110	68	949	22.0	598
21...	1030	86	945	19.0	588
<b>Jun</b>					
06...	1100	73	988	22.2	636
22...	0920	62	954	22.9	603
<b>Jul</b>					
10...	0925	64	964	21.4	610
23...	1115	64	951	23.5	603
<b>Aug</b>					
10...	1025	80	954	21.7	600
27...	1050	65	1,000	25.4	612
<b>Sep</b>					
11...	1150	71	922	25.7	576
28...	1045	64	961	20.8	616

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

**CROSS SECTION ANALYSES**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER**  
**2007**

Date	Time	Stream width, feet (00004)	Specific	Temper-	Loca-
			conduc-	ature,	tion in
			wat unf	water,	X-sect.
			25 degC	deg C	looking
			(00095)	(00010)	ft from
					l bank
					(00009)
<b>Jan</b>					
29...	1015	134	1,050	15.2	16.0
29...	1017	134	1,020	15.4	30.0
29...	1019	134	1,040	15.5	40.0
29...	1021	134	999	15.6	60.0
29...	1023	134	949	15.6	80.0
29...	1025	134	904	15.6	100
29...	1027	134	836	15.6	120
29...	1030	134	859	15.3	150

Note: Instantaneous discharge at the mean time of cross-sectional measurements: Jan. 29, 81 ft<sup>3</sup>/s.

APPENDIX B

DAILY PRECIPITATION DATA  
FOR SAN BERNARDINO

WATER YEAR 2006-07

TABLE B-1

DAILY PRECIPITATION  
 STN 2146 AT SAN BERNARDINO COUNTY HOSPITAL SITE OCT-1 THROUGH DEC-21;  
 USGS GILBERT STREET PRECIPITATION GAGE AT SAN BERNARDINO  
 NEAR FORMER COUNTY HOSPITAL SITE THEREAFTER  
 (inches)

Day	2006			2007								
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	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	0	0	0	0	0	0	0	0
4	0	0	0	0.36	0	0	0	0	0	0	0	0
5	0	0	0	0.06	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0.16	0	0	0	0	0	0	0	0	0
10	0	0	0.05	0	0	0	0	0	0	0	0	0
11	0	0	0	0.05	0.27	0	0	0	0	0	0	0
12	0	0	0	0.14	0.03	0	0	0	0	0	0	0
13	0.02	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0.27	0	0	0	0	0
16	0	0	0.29	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0.40	0	0	0	0	0	0	0.03
20	0	0	0	0	0	0.06	0.89	0	0	0	0	0.01
21	0	0	0	0	0	0.08	0	0	0	0	0	0
22	0	0	0	0	0.27	0	0	0	0	0	0	0.17
23	0	0	0	0	0	0	0.03	0	0	0.01	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0.24	0.16	0	0.23	0.03	0.00	0	0	0	0	0
28	0	0.01	0	0	0	0	0.00	0	0	0	0	0
29	0	0	0	0		0	0	0	0	0	0	0
30	0	0	0	0.07		0	0	0	0	0	0.01	0
31	0		0	0.09		0		0		0		
Total	0.13	0.25	0.67	0.77	1.20	0.17	1.19	0.00	0.00	0.01	0.01	0.21

Total Rainfall = 4.61 Inches

26% of average of 17.98 inches per year

APPENDIX C

SANTA ANA RIVER WATERMASTER  
STATEMENT OF ASSETS AND LIABILITIES  
REVIEWED BY  
ORANGE COUNTY WATER DISTRICT  
ACCOUNTING MANAGER

WATER YEAR 2006-07



DIRECTORS

CLAUDIA C. ALVAREZ, ESQ.  
PHILIP L. ANTHONY  
WES BANNISTER  
KATHRYN L. BARR  
DENIS R. BILODEAU, P.E.  
JAN DEBAY  
SHAWN NELSON, ESQ.  
IRV PICKLER  
STEPHEN R. SHELDON  
ROGER C. YOH, P.E.



OFFICERS

President  
STEPHEN R. SHELDON  
  
First Vice President  
WES BANNISTER  
  
Second Vice President  
DENIS R. BILODEAU, P.E.  
  
General Manager  
MICHAEL R. MARKUS, P.E.

**ORANGE COUNTY WATER DISTRICT**  
ORANGE COUNTY'S GROUNDWATER AUTHORITY

April 21, 2008

Santa Ana River Watermaster  
C/O SBVMWD  
P.O. Box 5906  
San Bernardino, CA 92412-5906

Subject: Review of Fiscal Year 2006-2007 Financial Transactions

Gentlemen:

I have reviewed the transactions and prepared the attached Statement of Assets and Liabilities comprised of cash transactions for the Santa Ana River Watermaster, and the related Statement of Revenue, Expenses and Changes in Fund Balance for the year ended June 30, 2007. This review includes examining supporting documentation that supports the amounts and disclosures in the financial statements. We have reviewed minutes of meetings, annual budgets as well as Bank of America Checking and Savings Accounts' transactions and statements, and have concluded that all transactions were properly recorded.

Best Regards,

**ORANGE COUNTY WATER DISTRICT**

Kevin Greene  
Accounting Manager

CC: S. Deshmukh

# SANTA ANA RIVER WATERMASTER

## FINANCIAL STATEMENTS

JUNE 30, 2007

SANTA ANA RIVER WATERMASTER

STATEMENT OF ASSETS AND LIABILITIES ARISING FROM  
CASH TRANSACTIONS

JUNE 30, 2007

ASSETS

Cash in savings account	<u>\$ 3,867</u>
-------------------------	-----------------

FUND BALANCE

Fund Balance	<u><u>\$ 3,867</u></u>
--------------	------------------------

# SANTA ANA RIVER WATERMASTER

## STATEMENT OF REVENUE AND EXPENSES ARISING FROM CASH TRANSACTIONS

FOR THE PERIOD JULY 1, 2006 - JUNE 30, 2007

	<u>Actual</u>	<u>Budget</u>	<u>Variance - Favorable (Unfavorable)</u>
<b>REVENUE COLLECTED:</b>			
Water District Contributions			
Orange County Water District	\$ 10,400	\$ 5,600	4,800
Chino Basin Municipal Water District	5,200	2,800	2,400
Western Municipal Water District	5,200	2,800	2,400
San Bernardino Valley Municipal Water District	5,200	2,800	2,400
Interest From Savings Account ( Net of bank fees)	(5)	0	(5)
<b>TOTAL REVENUE COLLECTED</b>	<b>\$ 25,995</b>	<b>\$ 14,000</b>	<b>\$ 11,995</b>
 <b>EXPENSES PAID:</b>			
Professional Engineering Services	\$ 27,631	\$ 13,000	(14,631)
Administrative Expenses:			
Auditing Services			
Reproduction of Annual Report	1,964	1,000	(964)
Reimburse SBVMWD 2004-2005 Services	14,104	0	(14,104)
	<b>\$ 43,699</b>	<b>\$ 14,000</b>	<b>\$ (29,699)</b>
<b>EXCESS OF REVENUE COLLECTED OVER (UNDER) EXPENSES PAID</b>	<b>(17,704)</b>		
 <b>FUND BALANCE AT JUNE 30, 2006</b>	<b>21,571</b>		
 <b>FUND BALANCE AT JUNE 30, 2007</b>	<b>3,867</b>		

**SANTA ANA RIVER WATERMASTER**

**NOTES TO FINANCIAL STATEMENTS**

**JUNE 30, 2007**

**1. SIGNIFICANT ACCOUNTING POLICIES:**

Basis of Accounting:

The Santa Ana River Watermaster's ("Watermaster") policy is to prepare its financial statements on the cash basis of accounting consequently, certain revenues are recognized when received rather than when earned, and certain expenses are recognized when cash is disbursed rather than when the obligation is incurred.

**2. ORGANIZATION AND HISTORY:**

The Santa Ana River Watermaster is composed of a committee of five representatives from four water districts. Two representatives serve from Orange County Water District and one representative each serves from the Inland Empire Utilities Agency, Western Municipal Water District and San Bernardino Valley Municipal Water District. The committee was established on April 23, 1969, by order of the Superior Court of California in Orange County as part of a judgment resulting from a lawsuit by the Orange County Water District as plaintiff vs. City of Chino, et al, as defendants.

Costs and expenses incurred by the individual representatives are reimbursed directly from the water districts. Collective Watermaster costs and expenses are budgeted and paid for by the Watermaster after receiving contributions from the water districts. Water districts contributions are made in the following ratios:

Orange County Water District	40%
Inland Empire Utilities Agency	20%
Western Municipal Water District	20%
San Bernardino Valley Municipal Water District	<u>20%</u>
Total	<u>100%</u>

The Water master issues a report each year to satisfy its obligation to monitor and test water flows from the Upper Area to the Lower Area of the Santa Ana River.

**SANTA ANA RIVER WATERMASTER**  
**NOTES TO FINANCIAL STATEMENTS**  
**(CONTINUED)**

**JUNE 30, 2007**

**3. CASH IN BANK:**

The following disclosures are made in accordance with Statement No. 3 of the Governmental Accounting Standards Board (GASB 3):

Cash at June 30, 2007 consisted of the following:

Bank of America:	\$3,867
------------------	---------

All cash is fully insured by the FDIC.

APPENDIX D

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

WATER YEAR 2006-07

There was no discharge of HGMP water to Santa Ana River in the Bunker Hill area during the 2006-07 Water Year.



APPENDIX E

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

WATER YEAR 2006-07

There was no discharge water from OC-59 by MWDSC for OCWD to the San Antonio Creek near Upland during the 2006-07 Water Year.

APPENDIX F

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

WATER YEAR 2006-07

TABLE F-1

SUMMARY OF DISCHARGE AND WEIGHTED TDS  
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN  
WATER YEAR 2006-07

MAY 2007

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L) <sup>1</sup>	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	1.56	3.1	536	314	489
12	2.45	4.9	551	322	790
13	2.87	5.7	536	313	900
14	6.11	12.1	589	345	2,104
15	3.01	6.0	641	375	1,129
16	5.86	11.6	585	342	2,006
17	4.67	9.3	584	342	1,597
18	4.89	9.7	593	347	1,695
19	4.82	9.6	627	367	1,767
20	3.66	7.3	648	379	1,387
21	3.45	6.8	663	388	1,338
22	6.18	12.3	572	335	2,068
23	5.27	10.4	572	334	1,761
24	4.95	9.8	588	344	1,700
25	2.90	5.8	625	366	1,062
26	3.68	7.3	589	345	1,268
27	5.46	10.8	542	317	1,730
28	5.46	10.8	541	316	1,726
29	4.05	8.0	574	336	1,360
30	2.33	4.6	591	345	805
31	3.78	7.5	576	337	1,273
Total	87.4	173			29,956
	Monthly Flow Weighted TDS			343	

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 2006-07

JUNE 2007

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L) <sup>1</sup>	Outflow X TDS
1	6.07	12.0	592	346	2,101
2	5.89	11.7	584	341	2,012
3	3.14	6.2	604	353	1,110
4	0.69	1.4	624	365	250
5	1.25	2.5	575	336	419
6	4.23	8.4	532	311	1,317
7	1.37	2.7	623	365	500
8	1.37	2.7	624	365	499
9	1.04	2.1	684	400	416
10	1.32	2.6	631	369	487
11	0.08	0.1	1,633	955	72
12	0.23	0.4	427	250	57
13	0.00	0.0	0	0	0
14	0.06	0.1	631	369	22
15	0.33	0.6	828	484	159
16	0.24	0.5	984	575	136
17	0.35	0.7	810	474	165
18	1.59	3.1	553	324	514
19	1.43	2.8	625	366	522
20	0.52	1.0	681	398	209
21	0.34	0.7	819	479	162
22	0.64	1.3	1,008	590	375
23	0.33	0.7	1,749	1,023	340
24	0.91	1.8	692	405	367
25	0.78	1.5	743	434	339
26	1.25	2.5	684	400	501
27	2.54	5.0	622	364	924
28	0.00	0.0	0	0	0
29	0.00	0.0	0	0	0
30	0.38	0.7	463	271	103
Total	38.34	76			14,077
	Monthly Flow Weighted TDS			367	

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 2006-07

JULY 2007

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L) <sup>1</sup>	Outflow X TDS
1	0.78	1.6	452	264	207
2	0.45	0.9	474	277	125
3	0.61	1.2	442	258	157
4	0.88	1.7	438	256	226
5	0.38	0.8	482	282	107
6	0.92	1.8	443	259	238
7	0.38	0.7	483	282	107
8	0.15	0.3	585	342	53
9	0.96	1.9	450	263	253
10	0.25	0.5	533	312	79
11	0.70	1.4	457	267	186
12	0.22	0.4	558	326	71
13	1.14	2.3	448	262	298
14	1.04	2.1	441	258	268
15	0.40	0.8	481	282	111
16	0.55	1.1	461	270	149
17	1.71	3.4	425	249	425
18	1.19	2.4	433	253	300
19	1.17	2.3	436	255	298
20	0.52	1.0	462	270	141
21	0.30	0.6	590	345	103
22	1.90	3.8	570	333	634
23	1.60	3.2	620	362	581
24	2.43	4.8	547	320	779
25	0.69	1.4	896	524	363
26	0.71	1.4	627	367	262
27	1.03	2.0	739	432	446
28	0.71	1.4	890	520	368
29	0.65	1.3	924	541	350
30	2.32	4.6	518	303	703
31	0.60	1.2	636	372	222
Total	27.3	54			8,609
	Monthly Flow Weighted TDS			315	

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 2006-07

AUGUST 2007

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L) <sup>1</sup>	Outflow X TDS
1	0.61	1.20	633	370	224
2	0.66	1.30	617	361	237
3	0.66	1.31	617	361	238
4	0.43	0.86	729	427	186
5	0.64	1.27	622	364	232
6	0.77	1.52	585	342	262
7	0.36	0.72	782	457	166
8	0.85	1.69	573	335	286
9	1.20	2.37	526	307	368
10	0.38	0.75	749	438	166
11	0.42	0.84	722	423	179
12	0.48	0.95	694	406	194
13	0.40	0.80	833	487	197
14	0.83	1.65	660	386	322
15	0.60	1.19	630	369	222
16	0.86	1.71	489	286	246
17	1.00	1.99	617	361	362
18	0.37	0.74	884	517	193
19	0.42	0.84	821	480	203
20	0.70	1.39	662	387	271
21	0.95	1.89	600	351	334
22	0.83	1.64	558	326	271
23	2.95	5.85	532	311	919
24	2.59	5.14	541	317	821
25	2.54	5.03	524	307	778
26	2.47	4.90	514	301	742
27	2.26	4.48	520	304	686
28	1.49	2.95	492	287	428
29	0.83	1.64	660	386	320
30	2.03	4.02	559	327	663
31	2.35	4.67	623	364	857
Total	33.9	67			11,571
	Monthly Flow Weighted TDS			341	

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 2006-07

SEPTEMBER 2007

Day	Arlington Discharge (cfs)	Arlington Discharge (acre-feet)	Daily Mean EC (microsiemens/cm)	Computed TDS (mg/L) <sup>1</sup>	Outflow X TDS
1	1.59	3.2	696	407	648
2	0.71	1.4	979	573	405
3	1.52	3.0	706	413	628
4	1.58	3.1	732	428	676
5	1.27	2.5	833	487	617
6	1.75	3.5	663	388	678
7	2.82	5.6	625	365	1,032
8	0.87	1.7	984	575	501
9	0.93	1.8	919	537	500
10	1.26	2.5	806	471	595
11	1.30	2.6	795	465	604
12	0.97	1.9	852	498	483
13	0.90	1.8	953	558	503
14	1.12	2.2	827	484	542
15	0.78	1.5	947	554	433
16	1.20	2.4	829	485	581
17	1.07	2.1	870	509	547
18	1.84	3.7	692	405	746
19	1.49	3.0	749	438	654
20	2.92	5.8	600	351	1,026
21	3.55	7.1	571	334	1,187
22	3.64	7.2	567	332	1,207
23	2.76	5.5	597	349	964
24	3.47	6.9	575	336	1,166
25	3.34	6.6	580	339	1,132
26	1.67	3.3	722	422	706
27	1.07	2.1	878	513	548
28	1.87	3.7	694	406	759
29	3.80	7.5	577	337	1,280
30	1.06	2.1	859	502	534
Total	54.1	108			21,881
	Monthly Flow Weighted TDS			404	

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 2006-07

Month	Discharge (acre-feet)	TDS (mg/L) <sup>1</sup>	Discharge X TDS
<u>2006</u>			
October	0	---	---
November	0	---	---
December	0	---	---
<u>2007</u>			
January	0	---	---
February	0	---	---
March	0	---	---
April	0	---	---
May	173	343	59,294
June	76	367	27,903
July	54	315	17,005
August	67	341	22,847
September	108	404	43,659
Total	478		170,708
	Flow-weighted TDS =	357	

APPENDIX G

WATER QUALITY AND DISCHARGE  
FROM THE SAN JACINTO WATERSHED

WATER YEAR 2006-07

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
OCTOBER 2006

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
Day							
1	5	5	0	0	0	0	0
2	5	5	0	0	0	0	0
3	6	6	0	0	0	0	0
4	8	8	0	0	0	0	0
5	6	6	0	0	0	0	0
6	6	6	0	0	0	0	0
7	7	7	0	0	0	0	0
8	7	7	0	0	0	0	0
9	9	9	0	0	0	0	0
10	10	10	0	0	0	0	0
11	8	8	0	0	0	0	0
12	9	9	0	21	0	0	0
13	10	10	0	18	0	0	0
14	17	9	8	16	0	0	0
15	11	11	0	18	0	0	0
16	11	11	0	14	0	0	0
17	11	11	0	12	0	0	0
18	10	10	0	5	0	0	0
19	7	7	0	12	0	0	0
20	7	7	0	41	0	0	0
21	8	8	0	49	0	0	0
22	6	6	0	51	0	0	0
23	5	5	0	42	0	0	0
24	5	5	0	4	0	0	0
25	5	5	0	0	0	0	0
26	5	5	0	0	0	0	0
27	7	7	0	0	0	0	0
28	7	7	0	39	0	0	0
29	7	7	0	44	0	0	0
30	12	8	0	45	4	0	4
31	28	8	0	38	20	0	20
Total (cfs)	263	231	8	470	24	0	24
(acre-feet)	522	458	16	932	48	0	48

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
NOVEMBER 2006

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
Day							
1	32	8	0	45	24	0	24
2	32	8	0	41	24	0	24
3	35	8	0	35	27	0	27
4	37	8	0	33	29	0	29
5	36	8	0	31	28	0	28
6	36	8	0	44	28	0	28
7	35	8	0	37	27	0	27
8	35	8	0	32	27	0	27
9	39	8	0	31	31	0	31
10	41	8	0	20	33	0	33
11	45	8	0	16	37	0	37
12	43	8	0	15	35	0	35
13	44	8	0	19	36	0	36
14	44	8	0	5	36	0	36
15	43	8	0	39	35	0	35
16	46	10	0	42	36	0	36
17	57	21	0	64	36	0	36
18	70	34	0	14	36	0	36
19	74	34	0	41	40	0	40
20	76	36	0	39	40	0	40
21	79	39	0	42	40	0	40
22	74	34	0	51	40	0	40
23	74	31	0	44	43	0	43
24	78	34	0	47	44	0	44
25	81	36	0	40	45	0	45
26	72	27	0	39	45	0	45
27	62	17	0	42	45	0	45
28	48	8	0	55	40	0	40
29	48	8	0	0	40	0	40
30	44	8	0	0	36	0	36
Total (cfs)	1,560	497	0	1,003	1,063	0	1,063
(acre-feet)	3,094	986	0	1,989	2,108	0	2,108

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
DECEMBER 2006

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	36	8	0	0	28	0	28
2	26	9	0	23	17	0	17
3	21	9	0	44	12	0	12
4	25	9	0	45	16	0	16
5	32	9	0	35	23	0	23
6	35	9	0	38	26	0	26
7	39	9	0	39	30	0	30
8	39	9	0	44	30	0	30
9	51	9	0	43	42	0	42
10	81	9	30	45	42	0	42
11	57	9	6	57	42	0	42
12	52	9	0	41	43	0	43
13	48	9	0	50	39	0	39
14	48	9	0	58	39	0	39
15	48	9	0	43	39	0	39
16	59	9	11	97	39	0	39
17	47	9	0	2	38	0	38
18	46	9	0	49	37	0	37
19	51	9	0	49	42	0	42
20	48	9	0	45	39	0	39
21	52	9	0	10	43	0	43
22	53	9	0	40	44	0	44
23	35	9	0	59	26	0	26
24	38	9	0	57	29	0	29
25	51	9	10	50	32	0	32
26	55	9	5	61	41	0	41
27	109	9	59	47	41	0	41
28	49	9	20	64	20	0	20
29	47	9	6	52	32	0	32
30	52	9	0	56	43	0	43
31	53	9	0	54	44	0	44
Total (cfs)	1,483	278	147	1,398	1,058	0	1,058
(acre-feet)	2,941	551	292	2,773	2,098	0	2,099

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
JANUARY 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	55	9	0	52	46	0	46
2	53	9	0	53	44	0	44
3	56	9	0	28	47	0	47
4	54	9	0	36	45	0	45
5	50	9	0	47	41	0	41
6	47	9	0	45	38	0	38
7	50	9	0	29	41	0	41
8	49	9	0	15	40	0	40
9	40	9	0	31	31	0	31
10	32	9	0	62	23	0	23
11	38	9	0	51	29	0	29
12	50	9	0	56	41	0	41
13	53	9	0	52	44	0	44
14	56	9	0	53	47	0	47
15	53	9	0	45	44	0	44
16	52	9	0	42	43	0	43
17	51	9	0	34	42	0	42
18	45	9	0	60	36	0	36
19	48	9	0	54	39	0	39
20	59	9	0	50	50	0	50
21	54	9	0	55	45	0	45
22	56	9	0	55	47	0	47
23	61	9	0	47	52	0	52
24	57	9	0	50	48	0	48
25	56	9	0	44	47	0	47
26	54	9	0	37	45	0	45
27	56	9	0	43	47	0	47
28	55	9	0	42	46	0	46
29	57	9	0	44	48	0	48
30	59	9	0	46	50	0	50
31	60	9	0	53	51	0	51
Total (cfs)	1,616	279	0	1,413	1,337	0	1,337
(acre-feet)	3,205	553	0	2,802	2,652	0	2,652

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
FEBRUARY 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	59	10	0	37	49	0	49
2	57	10	0	39	47	0	47
3	51	10	0	40	41	0	41
4	48	10	0	35	38	0	38
5	46	10	0	40	36	0	36
6	41	10	0	40	31	0	31
7	40	10	0	34	30	0	30
8	40	10	0	46	30	0	30
9	38	10	0	30	28	0	28
10	39	10	0	44	29	0	29
11	92	10	37	61	45	12	33
12	65	10	10	15	45	0	45
13	91	10	36	39	45	0	45
14	62	10	7	23	45	0	45
15	60	11	5	25	44	0	44
16	49	11	0	1	38	0	38
17	45	11	0	0	34	0	34
18	40	11	0	0	29	0	29
19	78	11	45	0	22	0	22
20	23	11	10	0	2	0	2
21	20	11	5	14	4	0	4
22	21	11	7	11	3	0	3
23	16	11	3	40	2	0	2
24	16	11	0	48	5	0	5
25	27	11	0	48	16	0	16
26	41	11	0	42	30	0	30
27	70	11	30	41	29	3	26
28	52	11	25	44	16	0	16
Total (cfs)	1,327	294	220	836	813	15	798
(acre-feet)	2,632	583	436	1,659	1,613	30	1,583

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
MARCH 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	53	12	8	60	33	0	33
2	56	12	0	51	44	0	44
3	60	12	0	49	48	0	48
4	57	12	0	43	45	0	45
5	60	12	0	51	48	0	48
6	63	12	0	49	51	0	51
7	66	12	0	45	54	0	54
8	65	12	0	44	53	0	53
9	65	12	0	96	53	0	53
10	68	13	0	35	55	0	55
11	67	13	0	20	54	0	54
12	64	13	0	0	51	0	51
13	61	13	0	0	48	0	48
14	48	13	0	0	35	0	35
15	35	13	0	0	22	0	22
16	25	13	0	0	12	0	12
17	18	13	0	16	5	0	5
18	16	13	0	15	3	0	3
19	15	13	0	17	2	0	2
20	22	14	0	20	8	0	8
21	34	14	12	20	8	0	8
22	31	14	9	16	8	0	8
23	30	14	8	16	8	0	8
24	30	14	0	12	16	0	16
25	31	14	0	5	17	0	17
26	31	14	0	35	17	0	17
27	39	14	8	34	17	0	17
28	28	14	0	29	14	0	14
29	33	14	0	29	19	0	19
30	34	14	0	38	20	0	20
31	37	14	0	42	23	0	23
Total (cfs)	1,342	406	45	886	891	0	891
(acre-feet)	2,662	805	89	1,758	1,767	0	1,767



TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
APRIL 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	44	13	0	37	31	0	31
2	46	13	0	101	33	0	33
3	48	13	0	26	35	0	35
4	47	12	0	24	35	0	35
5	42	12	0	24	30	0	30
6	37	11	0	24	26	0	26
7	35	11	0	15	24	0	24
8	33	11	0	15	22	0	22
9	30	10	0	16	20	0	20
10	25	10	0	33	15	0	15
11	21	10	0	0	11	0	11
12	20	9	0	15	11	0	11
13	15	9	0	16	6	0	6
14	15	9	0	9	6	0	6
15	18	9	3	0.0	6	0	6
16	15	8	0	15	7	0	7
17	11	8	0	18	3	0	3
18	8	7	0	19	1	0	1
19	7	7	0	16	0	0	0
20	89	7	82	17	0	39	0
21	24	7	17	21	0	0	0
22	20	7	13	38	0	0	0
23	25	7	18	29	0	0	0
24	29	7	7	0	15	0	15
25	27	7	4	0	16	0	16
26	18	6	0	12	12	0	12
27	14	6	0	17	8	0	8
28	9	6	0	2	3	0	3
29	10	6	0	19	4	0	4
30	10	7	0	18	3	0	3
Total (cfs)	792	265	144	597	383	39	383
(acre-feet)	1,571	526	285	1,183	760	77	760

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
MAY 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	12	7	0	4	5	0	5
2	13	7	0	0	6	0	6
3	12	7	0	0	5	0	5
4	10	7	0	0	3	0	3
5	10	7	0	0	3	0	3
6	8	7	0	0	1	0	1
7	9	9	0	0	0	0	0
8	8	8	0	0	0	0	0
9	6	6	0	0	0	0	0
10	7	7	0	0	0	0	0
11	7	7	0	0	0	0	0
12	12	12	0	0	0	0	0
13	14	14	0	0	0	0	0
14	19	19	0	0	0	0	0
15	15	15	0	0	0	0	0
16	10	10	0	0	0	0	0
17	7	7	0	0	0	0	0
18	5	5	0	0	0	0	0
19	5	4	0	0	0	0	0
20	5	4	0	0	0	0	0
21	(0)	2	0	0	0	0	0
22	2	2	0	0	0	0	0
23	3	3	0	0	0	0	0
24	3	3	0	0	0	0	0
25	2	3	0	0	0	0	0
26	3	3	0	0	0	0	0
27	4	4	0	0	0	0	0
28	4	4	0	0	0	0	0
29	4	4	0	0	0	0	0
30	3	3	0	0	0	0	0
31	2	2	0	0	0	0	0
Total (cfs)	222	199	0	5	23	0	23
(acre-feet)	440	394	0	9	46	0	46

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
JUNE 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	2	2	0	0	0	0	0
2	4	4	0	0	0	0	0
3	5	5	0	0	0	0	0
4	5	5	0	0	0	0	0
5	5	5	0	0	0	0	0
6	5	5	0	0	0	0	0
7	4	4	0	0	0	0	0
8	4	4	0	0	0	0	0
9	4	4	0	0	0	0	0
10	5	5	0	0	0	0	0
11	5	5	0	0	0	0	0
12	4	4	0	0	0	0	0
13	5	5	0	0	0	0	0
14	5	5	0	0	0	0	0
15	5	5	0	0	0	0	0
16	5	5	0	0	0	0	0
17	5	5	0	0	0	0	0
18	7	7	0	0	0	0	0
19	5	5	0	0	0	0	0
20	4	4	0	0	0	0	0
21	4	4	0	0	0	0	0
22	3	3	0	0	0	0	0
23	4	4	0	0	0	0	0
24	3	3	0	0	0	0	0
25	4	4	0	0	0	0	0
26	3	3	0	0	0	0	0
27	4	4	0	0	0	0	0
28	4	4	0	0	0	0	0
29	4	4	0	0	0	0	0
30	3	3	0	0	0	0	0
Total (cfs)	131	131	0	0	0	0	0
(acre-feet)	260	260	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
JULY 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	4	4	0	0	0	0	0
2	3	3	0	0	0	0	0
3	3	3	0	0	0	0	0
4	4	4	0	0	0	0	0
5	4	4	0	0	0	0	0
6	4	4	0	0	0	0	0
7	4	4	0	0	0	0	0
8	4	4	0	0	0	0	0
9	4	4	0	0	0	0	0
10	4	4	0	0	0	0	0
11	5	5	0	0	0	0	0
12	4	4	0	0	0	0	0
13	4	4	0	0	0	0	0
14	4	4	0	0	0	0	0
15	5	5	0	0	0	0	0
16	5	5	0	0	0	0	0
17	5	5	0	0	0	0	0
18	5	5	0	0	0	0	0
19	5	5	0	0	0	0	0
20	4	4	0	0	0	0	0
21	4	4	0	0	0	0	0
22	5	5	0	0	0	0	0
23	5	5	0	0	0	0	0
24	5	5	0	0	0	0	0
25	4	4	0	0	0	0	0
26	5	5	0	0	0	0	0
27	3	3	0	0	0	0	0
28	3	3	0	0	0	0	0
29	4	4	0	0	0	0	0
30	5	5	0	0	0	0	0
31	5	5	0	0	0	0	0
Total (cfs)	135	135	0	0	0	0	0
(acre-feet)	268	268	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
AUGUST 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	0 Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	4	4	0	0	0	0	0
2	4	4	0	0	0	0	0
3	4	4	0	0	0	0	0
4	5	5	0	0	0	0	0
5	5	5	0	0	0	0	0
6	5	5	0	0	0	0	0
7	4	4	0	0	0	0	0
8	5	5	0	0	0	0	0
9	6	6	0	0	0	0	0
10	5	5	0	0	0	0	0
11	4	4	0	0	0	0	0
12	5	5	0	0	0	0	0
13	5	5	0	0	0	0	0
14	5	5	0	0	0	0	0
15	8	8	0	0	0	0	0
16	5	5	0	0	0	0	0
17	5	6	0	0	0	0	0
18	5	5	0	0	0	0	0
19	5	5	0	0	0	0	0
20	5	5	0	0	0	0	0
21	7	7	0	0	0	0	0
22	6	6	0	0	0	0	0
23	9	9	0	0	0	0	0
24	7	7	0	0	0	0	0
25	7	7	0	0	0	0	0
26	7	7	0	0	0	0	0
27	7	7	0	0	0	0	0
28	7	7	0	0	0	0	0
29	6	6	0	0	0	0	0
30	8	8	0	0	0	0	0
31	9	7	0	0	0	0	0
Total (cfs)	178	176	0	0	0	0	0
(acre-feet)	352	348	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07  
SEPTEMBER 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Day	0 Temescal Creek Flow	Temescal Creek Base Flow	Scalped Storm Flow	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
1	7	6	0	0	0	0	0
2	6	6	0	0	0	0	0
3	10	5	0	0	0	0	0
4	5	5	0	0	0	0	0
5	4	4	0	0	0	0	0
6	4	4	0	0	0	0	0
7	5	5	0	0	0	0	0
8	3	3	0	0	0	0	0
9	4	4	0	0	0	0	0
10	4	4	0	0	0	0	0
11	4	4	0	0	0	0	0
12	3	3	0	0	0	0	0
13	3	3	0	0	0	0	0
14	4	4	0	0	0	0	0
15	5	5	0	0	0	0	0
16	6	6	0	0	0	0	0
17	6	6	0	0	0	0	0
18	5	5	0	0	0	0	0
19	5	5	0	0	0	0	0
20	14	4	0	0	0	0	0
21	4	3	0	0	0	0	0
22	26	3	0	0	0	0	0
23	4	4	0	0	0	0	0
24	3	3	0	0	0	0	0
25	3	3	0	0	0	0	0
26	3	3	0	0	0	0	0
27	2	2	0	0	0	0	0
28	2	2	0	0	0	0	0
29	3	3	0	0	0	0	0
30	3	3	0	0	0	0	0
Total (cfs)	159	119	0	0	0	0	0
(acre-feet)	316	237	0	0	0	0	0

TABLE G-1 (continued)

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS  
WATER YEAR 2006-07

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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.
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TABLE G-2

SUMMARY OF SAN JACINTO WATERSHED DISCHARGE  
WATER YEAR 2006-07

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
<u>2006</u>				
October	470	24	0	24
November	1,003	1,063	0	1,063
December	1,398	1,058	0	1,058
<u>2007</u>				
January	1,413	1,337	0	1,337
February	836	813	15	798
March	886	891	0	891
April	597	383	39	383
May	5	23	0	23
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
<hr/>				
Total (cfs)	6,607	5,592	54	5,577
(acre-feet)	13,105	11,092	107	11,062



TABLE G-3

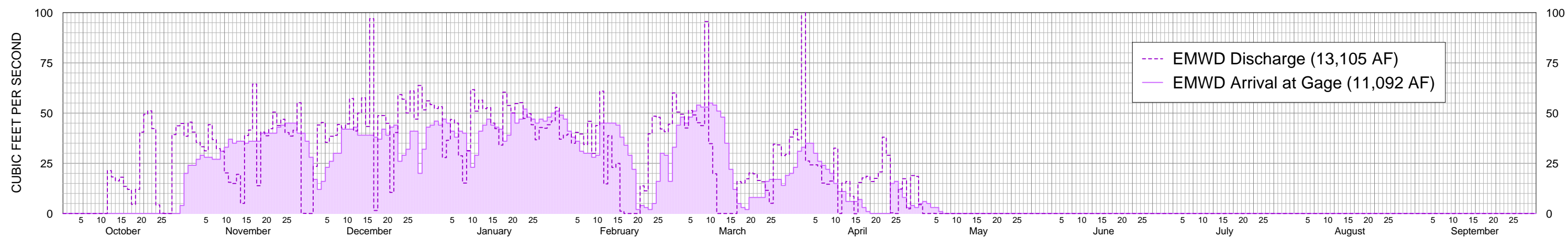
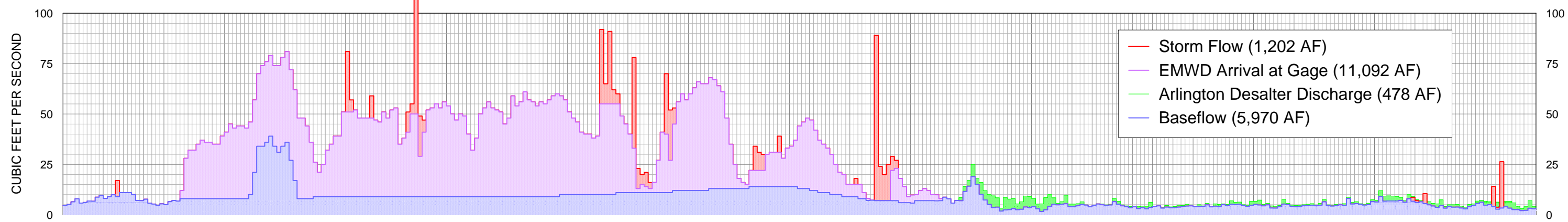
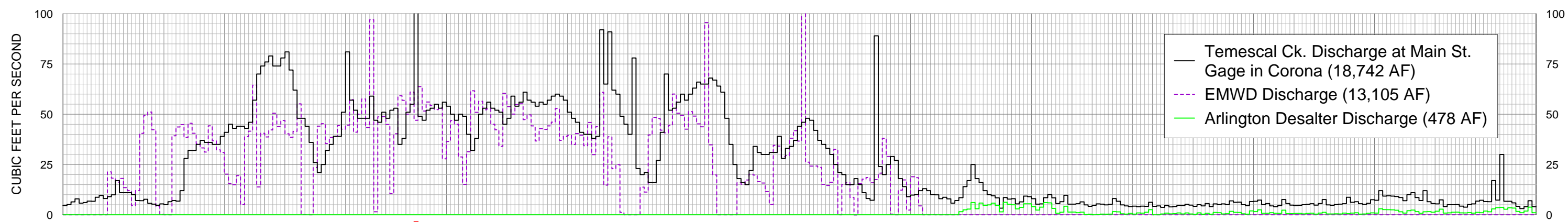
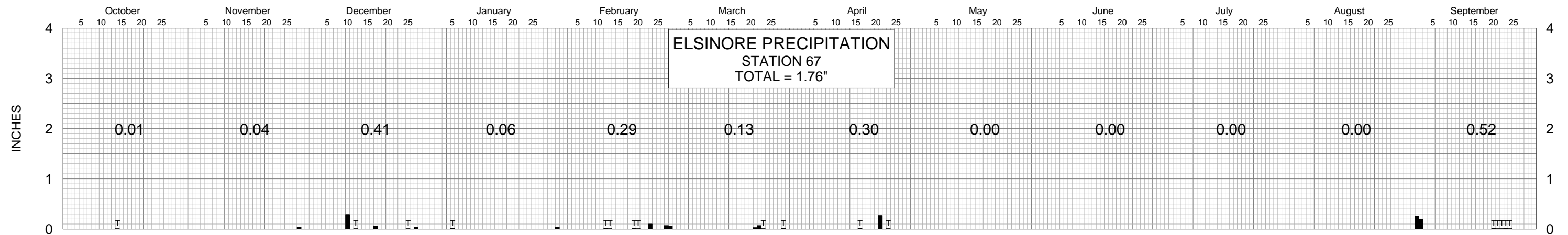
SUMMARY OF FLOW-WEIGHTED AVERAGE TDS  
OF SAN JACINTO WATERSHED DISCHARGE  
CALCULATED TO REACH PRADO RESERVOIR  
WATER YEAR 2006-07

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
<u>2006</u>				
October	932	720	885	671,078
November	1,989	560	1,889	1,113,709
December	2,773	590	2,634	1,636,099
<u>2007</u>				
January	2,802	570	2,662	1,597,156
February	1,659	750	1,576	1,244,231
March	1,758	700	1,670	1,230,523
April	1,183	770	1,124	911,125
May	9	770 [4]	8	6,873
June	0	---	0	0
July	0	---	0	0
August	0	---	0	0
September	0	---	0	0
Total	13,105		12,450	8,410,793

Flow-weighted TDS at Discharge [5] = 642 mg/L

Flow-weighted TDS of Discharge with 5% Evaporation [6] = 676 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) No TDS data; previous month used.  
(5) Water quality for EMWD discharge at Wasson Canyon =  
(Sum of Monthly Discharge Volume X Discharge TDS)/Total Discharge Volume.  
(6) 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 2006-07**

## APPENDIX H

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

WATER YEAR 2006-07

TABLE H-1

WATER QUALITY SAMPLES BELOW PRADO DAM  
WATER YEAR 2006-07

Date	EC (microsiemens/cm)	TDS (mg/L)	Source
10/02/06	1,000	623	USGS
10/13/06	960	595	USGS
10/17/06	988	628	OCWD
11/09/06	960	605	USGS
11/21/06	1,060	648	OCWD
11/30/06	1,010	637	USGS
12/08/06	1,110	704	USGS
12/19/06	1,030	614	OCWD
12/21/06	950	580	USGS
01/08/07	1,080	665	USGS
01/16/07	1,090	636	OCWD
01/19/07	1,060	647	USGS
02/06/07	1,060	647	USGS
02/13/07	911	562	OCWD
02/16/07	1,010	625	USGS
03/08/07	1,090	674	USGS
03/13/07	1,100	724	OCWD
03/26/07	1,040	692	USGS
04/03/07	1,040	661	USGS
04/11/07	1,060	648	OCWD
04/23/07	920	586	USGS
05/01/07	970	596	USGS
05/08/07	1,060	636	OCWD
05/21/07	1,000	623	USGS
06/04/07	1,040	634	USGS
06/05/07	1,030	640	OCWD
06/21/07	1,020	600	USGS
07/02/07	1,020	627	USGS
07/10/07	1,050	628	OCWD
07/20/07	1,040	611	USGS
08/07/07	978	638	OCWD
08/07/07	970	600	USGS
08/14/07	1,040	664	OCWD
08/21/07	1,030	628	OCWD
08/27/07	970	593	USGS
08/28/07	1,010	578	OCWD
09/07/07	960	592	USGS
09/11/07	1,040	602	OCWD
09/14/07	1,050	641	USGS

TABLE H-2

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

OCTOBER 2006

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	185	1,040	644	119,073
2	195	1,000	619	120,682
3	176	958	593	104,349
4	163	0 <sup>(2)</sup>	0	0
5	170	0 <sup>(2)</sup>	0	0
6	168	0 <sup>(2)</sup>	0	0
7	164	0 <sup>(2)</sup>	0	0
8	175	0 <sup>(2)</sup>	0	0
9	178	926	573	102,009
10	179	935	579	103,579
11	171	942	583	99,691
12	178	950	588	104,653
13	188	945	585	109,951
14	194	949	587	113,940
15	201	930	576	115,688
16	218	943	584	127,226
17	206	937	580	119,458
18	206	919	569	117,163
19	200	919	569	113,751
20	201	954	590	118,673
21	202	948	587	118,514
22	201	936	579	116,434
23	190	939	581	110,415
24	182	945	585	106,442
25	190	990	613	116,412
26	191	1,010	625	119,389
27	178	1,010	625	111,263
28	176	971	601	105,765
29	192	943	584	112,052
30	193	928	574	110,844
31	186	0 <sup>(2)</sup>	0	0
Total	4,771 <sup>(3)</sup>			2,817,414
		Monthly Flow Weighted TDS <sup>(3)</sup> =	591 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 10/2-10/8 and 10/31/06.

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

NOVEMBER 2006

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	193	0 <sup>(2)</sup>	0	0
2	201	0 <sup>(2)</sup>	0	0
3	217	0 <sup>(2)</sup>	0	0
4	209	0 <sup>(2)</sup>	0	0
5	203	0 <sup>(2)</sup>	0	0
6	208	0 <sup>(2)</sup>	0	0
7	199	0 <sup>(2)</sup>	0	0
8	212	0 <sup>(2)</sup>	0	0
9	210	0 <sup>(2)</sup>	0	0
10	206	0 <sup>(2)</sup>	0	0
11	200	0 <sup>(2)</sup>	0	0
12	206	0 <sup>(2)</sup>	0	0
13	205	0 <sup>(2)</sup>	0	0
14	207	0 <sup>(2)</sup>	0	0
15	206	0 <sup>(2)</sup>	0	0
16	205	0 <sup>(2)</sup>	0	0
17	206	0 <sup>(2)</sup>	0	0
18	208	0 <sup>(2)</sup>	0	0
19	212	0 <sup>(2)</sup>	0	0
20	214	0 <sup>(2)</sup>	0	0
21	218	0 <sup>(2)</sup>	0	0
22	225	918	568	127,830
23	227	914	566	128,405
24	233	945	585	136,269
25	230	924	572	131,525
26	245	945	585	143,287
27	282	915	566	159,690
28	273	949	587	160,338
29	239	995	616	147,173
30	223	1,010	625	139,391
Total	2,177 <sup>(3)</sup>			1,273,908
		Monthly Flow Weighted TDS <sup>(3)</sup> =	585 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 11/1-11/21/06

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

DECEMBER 2006

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	219	984	609	133,367
2	217	987	611	132,552
3	207	1,000	619	128,109
4	202	1,000	619	125,014
5	167	1,030	637	106,454
6	93	1,020	631	58,707
7	95	1,070	662	62,909
8	95	1,120	693	65,849
9	97	1,130	699	67,836
10	101	1,130	699	70,633
11	133	1,080	668	88,896
12	153	1,090	675	103,211
13	155	1,060	656	101,682
14	189	1,100	681	128,666
15	249	1,090	675	167,971
16	251	1,110	687	172,427
17	256	1,160	718	183,783
18	353	1,130	699	246,866
19	394	1,110	687	270,662
20	425	976	604	256,713
21	442	0 <sup>(2)</sup>	0	0
22	417	0 <sup>(2)</sup>	0	0
23	403	0 <sup>(2)</sup>	0	0
24	398	0 <sup>(2)</sup>	0	0
25	392	0 <sup>(2)</sup>	0	0
26	375	0 <sup>(2)</sup>	0	0
27	372	0 <sup>(2)</sup>	0	0
28	410	0 <sup>(2)</sup>	0	0
29	417	0 <sup>(2)</sup>	0	0
30	384	1,080	668	256,663
31	337	1,110	687	231,505
Total	4,772 <sup>(3)</sup>			3,160,476
		Monthly Flow Weighted TDS <sup>(3)</sup> =	662 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 12/21-12/29/06

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

JANUARY 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	296	1,070	662	196,013
2	284	988	611	173,654
3	275	984	609	167,470
4	272	986	610	165,979
5	327	875	542	177,078
6	321	926	573	183,960
7	302	1,030	637	192,510
8	274	1,060	656	179,748
9	263	1,060	656	172,532
10	260	1,030	637	165,737
11	258	1,010	625	161,268
12	271	964	597	161,679
13	276	983	608	167,908
14	278	998	618	171,705
15	290	1,010	625	181,271
16	283	1,020	631	178,647
17	284	1,030	637	181,036
18	273	1,050	650	177,403
19	290	1,060	656	190,245
20	278	1,040	644	178,931
21	275	1,030	637	175,298
22	274	1,030	637	174,661
23	277	1,030	637	176,573
24	264	1,040	644	169,920
25	259	1,060	656	169,908
26	259	1,050	650	168,305
27	258	1,050	650	167,655
28	265	1,040	644	170,564
29	263	1,030	637	167,649
30	265	1,010	625	165,644
31	333	810	501	166,931
Total	8,647			5,397,882
Monthly Flow Weighted TDS =			624	mg/L

1. TDS = EC x 0.618883



TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

FEBRUARY 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	340	856	530	180,120
2	294	929	575	169,033
3	279	965	597	166,625
4	273	986	610	166,590
5	273	1,000	619	168,955
6	267	991	613	163,754
7	255	948	587	149,609
8	247	939	581	143,539
9	239	959	594	141,849
10	247	964	597	147,361
11	293	862	533	156,309
12	343	790	489	167,699
13	385	878	543	209,201
14	402	895	554	222,668
15	354	941	582	206,158
16	299	980	607	181,345
17	285	973	602	171,619
18	272	995	616	167,494
19	315	695	430	135,489
20	402	700	433	174,154
21	413	829	513	211,891
22	313	925	572	179,182
23	264	873	540	142,635
24	268	846	524	140,318
25	268	948	587	157,236
26	270	992	614	165,762
27	277	961	595	164,745
28	377	822	509	191,788

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Total	8,514			4,743,126
		Monthly Flow Weighted TDS =	557	mg/L

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1. TDS = EC x 0.618883

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

MARCH 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	436	0 <sup>(2)</sup>	0	0
2	413	0 <sup>(2)</sup>	0	0
3	381	0 <sup>(2)</sup>	0	0
4	325	0 <sup>(2)</sup>	0	0
5	315	0 <sup>(2)</sup>	0	0
6	261	0 <sup>(2)</sup>	0	0
7	250	0 <sup>(2)</sup>	0	0
8	236	0 <sup>(2)</sup>	0	0
9	234	1,030	637	149,163
10	239	996	616	147,321
11	246	1,000	619	152,245
12	246	990	613	150,723
13	236	981	607	143,281
14	238	977	605	143,906
15	238	961	595	141,550
16	228	958	593	135,179
17	234	973	602	140,908
18	236	936	579	136,709
19	238	913	565	134,479
20	230	919	569	130,813
21	255	930	576	146,768
22	243	944	584	141,967
23	221	985	610	134,721
24	221	1,010	625	138,141
25	225	1,030	637	143,426
26	232	1,050	650	150,760
27	232	1,040	644	149,324
28	221	1,060	656	144,979
29	224	986	610	136,689
30	211	989	612	129,148
31	206	1,010	625	128,765
Total	5,334 <sup>(3)</sup>			3,250,966
		Monthly Flow Weighted TDS <sup>(3)</sup> =	609 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 2/1-2/8/07

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

APRIL 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	220	1,010	625	137,516
2	230	1,010	625	143,766
3	213	1,030	637	135,777
4	225	1,030	637	143,426
5	214	948	587	125,554
6	209	931	576	120,422
7	221	952	589	130,208
8	234	948	587	137,288
9	226	934	578	130,636
10	219	975	603	132,147
11	218	935	579	126,147
12	202	927	574	115,888
13	198	910	563	111,510
14	198	900	557	110,285
15	216	893	553	119,375
16	250	872	540	134,916
17	217	912	564	122,479
18	214	960	594	127,143
19	215	1,000	619	133,060
20	241	988	611	147,361
21	298	888	550	163,771
22	300	862	533	160,043
23	332	899	556	184,717
24	324	900	557	180,466
25	296	932	577	170,732
26	272	0 <sup>(2)</sup>	0	0
27	250	0 <sup>(2)</sup>	0	0
28	257	0 <sup>(2)</sup>	0	0
29	259	0 <sup>(2)</sup>	0	0
30	257	0 <sup>(2)</sup>	0	0
Total	5,930			3,444,634
		Monthly Flow Weighted TDS <sup>(3)</sup> =	581 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 4/26-4/30/07

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

MAY 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	277	0 <sup>(2)</sup>	0	0
2	273	893	553	150,877
3	239	907	561	134,157
4	216	927	574	123,920
5	204	950	588	119,939
6	200	955	591	118,207
7	200	955	591	118,207
8	201	980	607	121,907
9	170	988	611	103,948
10	185	982	608	112,432
11	182	1,000	619	112,637
12	184	1,010	625	115,013
13	194	992	614	119,103
14	189	1,000	619	116,969
15	191	1,010	625	119,389
16	190	1,010	625	118,764
17	191	1,010	625	119,389
18	199	1,010	625	124,389
19	197	1,020	631	124,358
20	200	1,020	631	126,252
21	208	1,010	625	130,015
22	222	1,020	631	140,140
23	221	1,020	631	139,509
24	215	1,010	625	134,390
25	187	1,040	644	120,360
26	181	1,060	656	118,739
27	172	1,080	668	114,964
28	166	1,060	656	108,899
29	180	993	615	110,619
30	188	953	590	110,881
31	182	966	598	108,807
Total	5,927 <sup>(2)</sup>			3,637,178
		Monthly Flow Weighted TDS <sup>(3)</sup> =	614 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 5/1/07

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

JUNE 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	168	981	607	101,997
2	177	964	597	105,599
3	179	1,010	625	111,888
4	186	1,010	625	116,263
5	180	1,060	656	118,083
6	182	1,030	637	116,016
7	171	1,070	662	113,237
8	185	1,020	631	116,783
9	188	999	618	116,234
10	190	1,000	619	117,588
11	189	1,010	625	118,139
12	170	1,000	619	105,210
13	168	0 <sup>(2)</sup>	0	0
14	157	0 <sup>(2)</sup>	0	0
15	154	0 <sup>(2)</sup>	0	0
16	153	0 <sup>(2)</sup>	0	0
17	160	0 <sup>(2)</sup>	0	0
18	157	0 <sup>(2)</sup>	0	0
19	158	1,000	619	97,783
20	159	1,010	625	99,386
21	166	996	616	102,324
22	165	1,140	706	116,412
23	171	1,160	718	122,762
24	181	1,010	625	113,138
25	169	1,130	699	118,188
26	164	1,140	706	115,706
27	164	1,050	650	106,572
28	161	1,040	644	103,626
29	160	1,030	637	101,992
30	161	959	594	95,555
Total	4,144 <sup>(3)</sup>			2,650,478
		Monthly Flow Weighted TDS <sup>(3)</sup> =	640 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 6/13-6/18/07

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

JULY 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	166	984	609	101,091
2	158	990	613	96,806
3	156	0 <sup>(2)</sup>	0	0
4	155	0 <sup>(2)</sup>	0	0
5	151	0 <sup>(2)</sup>	0	0
6	153	0 <sup>(2)</sup>	0	0
7	159	0 <sup>(2)</sup>	0	0
8	159	0 <sup>(2)</sup>	0	0
9	154	1,030	637	98,167
10	157	1,010	625	98,136
11	153	1,020	631	96,583
12	148	1,020	631	93,427
13	147	1,030	637	93,705
14	149	1,040	644	95,902
15	151	1,050	650	98,124
16	153	1,030	637	97,530
17	157	1,020	631	99,108
18	156	1,020	631	98,477
19	144	1,020	631	90,901
20	146	1,030	637	93,068
21	154	0 <sup>(2)</sup>	0	0
22	150	0 <sup>(2)</sup>	0	0
23	149	0 <sup>(2)</sup>	0	0
24	147	0 <sup>(2)</sup>	0	0
25	152	0 <sup>(2)</sup>	0	0
26	150	922	571	85,591
27	141	938	581	81,852
28	154	0 <sup>(2)</sup>	0	0
29	164	0 <sup>(2)</sup>	0	0
30	149	0 <sup>(2)</sup>	0	0
31	143	0 <sup>(2)</sup>	0	0
Total	2,430 <sup>(3)</sup>			1,518,467
		Monthly Flow Weighted TDS <sup>(3)</sup> =	625 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 7/3-8/07, 7/21-25/07, and 7/28-31/07

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

AUGUST 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	150	994	615	92,275
2	148	977	605	89,488
3	146	1,050	650	94,875
4	148	992	614	90,862
5	154	988	611	94,164
6	160	983	608	97,338
7	157	0 <sup>(2)</sup>	0	0
8	154	0 <sup>(2)</sup>	0	0
9	155	0 <sup>(2)</sup>	0	0
10	155	0 <sup>(2)</sup>	0	0
11	156	0 <sup>(2)</sup>	0	0
12	160	0 <sup>(2)</sup>	0	0
13	156	0 <sup>(2)</sup>	0	0
14	153	0 <sup>(2)</sup>	0	0
15	151	0 <sup>(2)</sup>	0	0
16	140	0 <sup>(2)</sup>	0	0
17	143	0 <sup>(2)</sup>	0	0
18	150	0 <sup>(2)</sup>	0	0
19	153	0 <sup>(2)</sup>	0	0
20	152	0 <sup>(2)</sup>	0	0
21	146	0 <sup>(2)</sup>	0	0
22	152	0 <sup>(2)</sup>	0	0
23	152	0 <sup>(2)</sup>	0	0
24	154	0 <sup>(2)</sup>	0	0
25	147	0 <sup>(2)</sup>	0	0
26	159	0 <sup>(2)</sup>	0	0
27	163	0 <sup>(2)</sup>	0	0
28	151	0 <sup>(2)</sup>	0	0
29	153	0 <sup>(2)</sup>	0	0
30	146	0 <sup>(2)</sup>	0	0
31	147	0 <sup>(2)</sup>	0	0
Total	906 <sup>(3)</sup>			559,002
		Monthly Flow Weighted TDS <sup>(3)</sup> =	617 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 8/7-31/07

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

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM  
WATER YEAR 2006-07

SEPTEMBER 2007

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS <sup>(1)</sup>	Outflow X TDS
1	150	0 <sup>(2)</sup>	0	0
2	147	0 <sup>(2)</sup>	0	0
3	142	0 <sup>(2)</sup>	0	0
4	168	0 <sup>(2)</sup>	0	0
5	162	0 <sup>(2)</sup>	0	0
6	152	0 <sup>(2)</sup>	0	0
7	146	0 <sup>(2)</sup>	0	0
8	155	0 <sup>(2)</sup>	0	0
9	157	0 <sup>(2)</sup>	0	0
10	159	0 <sup>(2)</sup>	0	0
11	147	1,010	625	91,886
12	142	1,100	681	96,669
13	141	1,020	631	89,008
14	141	1,040	644	90,753
15	145	1,020	631	91,533
16	151	1,040	644	97,189
17	155	1,030	637	98,805
18	150	1,030	637	95,617
19	156	1,030	637	99,442
20	180	1,000	619	111,399
21	174	943	584	101,547
22	194	839	519	100,733
23	268	867	537	143,801
24	229	979	606	138,748
25	190	970	600	114,060
26	171	1,050	650	111,120
27	163	1,040	644	104,913
28	168	1,020	631	106,052
29	165	1,030	637	105,179
30	169	1,010	625	105,637
Total	3,399 <sup>(3)</sup>			2,094,091
		Monthly Flow Weighted TDS <sup>(3)</sup> =	616 mg/L	

1. TDS = EC x 0.618883

2. EC data missing 9/1-11/07

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



TABLE H-3

## ANNUAL SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM

WATER YEAR 2006-07

Month	Monthly Flow <sup>(1)</sup> (cfs-days)	Monthly Weighted TDS <sup>(1)</sup> (mg/L)	Monthly Flow x TDS
<u>2006</u>			
October	4,771	591	2,817,414
November	2,177	585	1,273,908
December	4,772	662	3,160,476
<u>2007</u>			
January	8,647	624	5,397,882
February	8,514	557	4,743,126
March	5,334	609	3,250,966
April	5,930	581	3,444,634
May	5,927	614	3,637,178
June	4,144	640	2,650,478
July	2,430	625	1,518,467
August	906	617	559,002
September	3,399	616	2,094,091
Total	56,951 <sup>(1)</sup>		34,547,622
Yearly Flow-weighted TDS <sup>(1)</sup> =		607	

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 2006-07

TABLE I-1

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

WATER YEAR 2006-07

MONTH	Discharge (acre -feet)	TDS (mg/L)	Discharge xTDS
<u>2006</u>			
October	260	640	166,400
November	238	690	164,220
December	246	685	168,510
<u>2007</u>			
January	249	662	164,838
February	242	668	161,656
March	266	698	185,668
April	245	674	165,130
May	236	685	161,660
June	214	666	142,524
July	261	672	175,392
August	260	654	170,040
September	250	670	167,500
Total	2,967		1,993,538

$$\text{Flow weighted TDS} = \frac{1,993,538}{2,967} = 672 \text{ mg/L}$$

APPENDIX J

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

WATER YEAR 2006-07

TABLE J-1

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS  
WATER YEAR 2006-07

	Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average
<u>2006</u>	10/03/06	957	610	USGS	0.64	
	10/04/06	1092	680	CofR	0.62	
	10/09/06	1080	680	CofR	0.63	
	10/18/06	1092	648	CofR	0.59	
	10/23/06	996	584	CofR	0.59	
	10/24/06	870	544	USGS	0.63	624
	11/01/06	1004	592	CofR	0.59	
	11/02/06	909	564	USGS	0.62	
	11/15/06	1007	600	CofR	0.60	
	11/20/06	968	604	CofR	0.62	
	11/21/06	900	560	USGS	0.62	
	11/29/06	986	508	CofR	* 0.52	584
	12/04/06	1014	620	CofR	0.61	
	12/05/06	910	571	USGS	0.63	
	12/13/06	986	588	CofR	0.60	
	12/13/06	906	568	USGS	0.63	
	12/18/06	1028	664	CofR	0.65	
	12/27/06	858	504	CofR	* 0.59	602
<u>2007</u>	01/01/07	1057	584	CofR	* 0.55	
	01/10/07	1062	620	CofR	0.58	
	01/10/07	932	596	USGS	0.64	
	01/15/07	1065	692	CofR	0.65	
	01/24/07	1060	608	CofR	0.57	
	01/29/07	1081	600	CofR	0.56	
	01/29/08	919	587	USGS	0.64	617

\* 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 2006-07

Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average	
02/07/07	1083	672	CofR	0.62		
02/08/07	994	640	USGS	0.64		
02/12/07	1060	652	CofR	*	0.62	
02/21/07	1080	652	CofR	*	0.60	
02/22/07	919	595	USGS	*	0.65	
02/26/07	1042	692	CofR	*	0.66	656
03/05/07	943	597	USGS	0.63		
03/07/07	1004	592	CofR	0.59		
03/12/07	1007	600	CofR	0.60		
03/21/07	968	604	CofR	*	0.62	
03/21/07	905	588	USGS	*	0.65	
03/26/07	986	508	CofR	*	0.52	596
04/04/07	1075	676	CofR	0.63		
04/04/07	955	603	USGS	0.63		
04/09/07	1098	600	CofR	0.55		
04/18/07	1070	676	CofR	0.63		
04/23/07	895	512	CofR	*	0.57	
04/26/07	932	600	USGS	0.64	631	
05/02/07	1101	717	CofR	0.65		
05/07/07	1127	696	CofR	0.62		
05/07/07	949	598	USGS	0.63		
05/16/07	1118	700	CofR	0.63		
05/21/07	1077	668	CofR	0.62		
05/21/07	945	588	USGS	0.62		
05/30/07	1083	676	CofR	0.62	663	

\* 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 2006-07

Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average
06/04/07	1096	708	CofR	0.65	
06/06/07	988	636	USGS	0.64	
06/13/07	1084	672	CofR	0.62	
06/18/07	1060	692	CofR	0.65	
06/22/07	954	603	USGS	0.63	
06/27/07	1080	700	CofR	0.65	669
07/06/07	1161	788	CofR	0.68	
07/10/07	964	610	USGS	0.63	
07/12/07	1169	732	CofR	0.63	
07/16/07	1123	732	CofR	0.65	
07/23/07	951	603	USGS	0.63	
07/25/07	1089	668	CofR	0.61	
07/30/07	1107	680	CofR	0.61	688
08/08/07	1057	660	CofR	0.62	
08/10/07	954	600	USGS	0.63	
08/13/07	1044	660	CofR	0.63	
08/22/07	1096	684	CofR	0.62	
08/27/07	1081	712	CofR	0.66	
08/27/07	1000	612	USGS	0.61	655
09/05/07	1037	652	CofR	* 0.63	
09/10/07	1061	648	CofR	* 0.61	
09/11/07	922	576	USGS	* 0.62	
09/17/07	1100	684	CofR	0.62	
09/26/07	1074	676	CofR	0.63	
09/28/07	961	616	USGS	0.64	659

\* 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 2006-07

Month	Stream Flow <sup>1</sup> (acre-feet)	Monthly Average TDS <sup>2</sup> (mg/L)	Monthly Flow x TDS
<u>2006</u> October	4,744	624	2,961,837
November	4,810	584	2,809,040
December	5,183	602	3,121,203
<u>2007</u> January	5,139	617	3,171,620
February	4,540	656	2,978,240
March	4,772	596	2,845,703
April	5,077	631	3,203,587
May	4,645	663	3,080,962
June	4,096	669	2,738,176
July	3,854	688	2,649,900
August	4,235	655	2,772,513
September	3,907	659	2,573,411
Total Stream Flow	55,002		34,906,192
Flow-weighted TDS = $\frac{34,906,192}{55,002}$ = 635 mg/L			

(1) USGS measured flow minus storm flow.

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



APPENDIX K

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

WATER YEAR 2006-07

TABLE K-1

WMWD-OCWD TRANSFER PROGRAM WATER  
DISCHARGED TO THE SANTA ANA RIVER ABOVE RIVERSIDE NARROWS  
WATER YEAR 2006-07  
(acre-feet)

Month	Discharge Above Riverside Narrows <sup>1</sup>	Flow Arriving At Riverside Narrows <sup>1</sup>	Flow Arriving At Prado Dam <sup>1</sup>
<u>2006</u>			
October	0	0	0
November	0	0	0
December	0	0	0
<u>2007</u>			
January	0	0	0
February	0	0	0
March	0	0	0
April	157	157	157
May	415	415	415
June	447	447	447
July	413	413	413
August	383	383	383
September	31	31	31
Total	1,846	1,846	1,846

(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 2006-07  
APRIL 2007

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows <sup>1</sup> (cfs)	Flow Arriving At Prado Dam <sup>1</sup> (cfs)
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.2	0.2	0.2
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	3.5	3.5	3.5
14	0.0	0.0	0.0
15	0.0	0.0	0.0
16	13.4	13.4	13.4
17	4.6	4.6	4.6
18	4.2	4.2	4.2
19	4.7	4.7	4.7
20	4.3	4.3	4.3
21	0.0	0.0	0.0
22	13.4	13.4	13.4
23	4.5	4.5	4.5
24	4.8	4.8	4.8
25	4.2	4.2	4.2
26	4.9	4.9	4.9
27	0.0	0.0	0.0
28	0.0	0.0	0.0
29	0.0	0.0	0.0
30	12.6	12.6	12.6
Total in cfs-days	79.3	79.3	79.3
Total in AF	157	157	157

(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 2006-07  
MAY 2007

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows <sup>1</sup> (cfs)	Flow Arriving At Prado Dam <sup>1</sup> (cfs)
1	4.8	4.8	4.8
2	4.6	4.6	4.6
3	4.0	4.0	4.0
4	4.5	4.5	4.5
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	13.2	13.2	13.2
8	4.5	4.5	4.5
9	0.0	0.0	0.0
10	9.2	9.2	9.2
11	0.0	0.0	0.0
12	0.0	0.0	0.0
13	0.0	0.0	0.0
14	11.1	11.1	11.1
15	3.0	3.0	3.0
16	0.0	0.0	0.0
17	14.5	14.5	14.5
18	9.6	9.6	9.6
19	10.2	10.2	10.2
20	0.0	0.0	0.0
21	20.4	20.4	20.4
22	6.7	6.7	6.7
23	11.3	11.3	11.3
24	8.2	8.2	8.2
25	10.4	10.4	10.4
26	7.9	7.9	7.9
27	0.0	0.0	0.0
28	17.1	17.1	17.1
29	17.1	17.1	17.1
30	6.9	6.9	6.9
31	9.9	9.9	9.9
Total in cfs-days	209.1	209.1	209.1
Total in AF	415	415	415

(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 2006-07  
JUNE 2007

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows <sup>1</sup> (cfs)	Flow Arriving At Prado Dam <sup>1</sup> (cfs)
1	9.5	9.5	9.5
2	9.2	9.2	9.2
3	10.4	10.4	10.4
4	0.0	0.0	0.0
5	19.2	19.2	19.2
6	8.9	8.9	8.9
7	9.1	9.1	9.1
8	9.4	9.4	9.4
9	8.5	8.5	8.5
10	9.2	9.2	9.2
11	9.5	9.5	9.5
12	8.3	8.3	8.3
13	8.8	8.8	8.8
14	9.4	9.4	9.4
15	8.8	8.8	8.8
16	6.3	6.3	6.3
17	9.1	9.1	9.1
18	0.0	0.0	0.0
19	9.9	9.9	9.9
20	10.3	10.3	10.3
21	4.5	4.5	4.5
22	5.1	5.1	5.1
23	0.0	0.0	0.0
24	10.0	10.0	10.0
25	5.2	5.2	5.2
26	5.1	5.1	5.1
27	4.5	4.5	4.5
28	5.9	5.9	5.9
29	0.0	0.0	0.0
30	11.2	11.2	11.2
Total in cfs-days	225.3	225.3	225.3
Total in AF	447	447	447

(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 2006-07  
JULY 2007

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows <sup>1</sup> (cfs)	Flow Arriving At Prado Dam <sup>1</sup> (cfs)
1	5.5	5.5	5.5
2	5.7	5.7	5.7
3	5.8	5.8	5.8
4	3.2	3.2	3.2
5	3.3	3.3	3.3
6	3.3	3.3	3.3
7	3.0	3.0	3.0
8	3.2	3.2	3.2
9	3.4	3.4	3.4
10	3.2	3.2	3.2
11	3.4	3.4	3.4
12	2.8	2.8	2.8
13	3.5	3.5	3.5
14	6.7	6.7	6.7
15	7.9	7.9	7.9
16	8.2	8.2	8.2
17	7.9	7.9	7.9
18	4.3	4.3	4.3
19	9.8	9.8	9.8
20	9.4	9.4	9.4
21	9.0	9.0	9.0
22	10.2	10.2	10.2
23	10.2	10.2	10.2
24	9.5	9.5	9.5
25	10.8	10.8	10.8
26	4.2	4.2	4.2
27	13.8	13.8	13.8
28	9.7	9.7	9.7
29	7.3	7.3	7.3
30	9.8	9.8	9.8
31	10.4	10.4	10.4
Total in cfs-days	208.4	208.4	208.4
Total in AF	413	413	413

(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 2006-07  
AUGUST 2007

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows <sup>1</sup> (cfs)	Flow Arriving At Prado Dam <sup>1</sup> (cfs)
1	7.1	7.1	7.1
2	0.0	0.0	0.0
3	14.7	14.7	14.7
4	7.5	7.5	7.5
5	4.7	4.7	4.7
6	11.0	11.0	11.0
7	7.8	7.8	7.8
8	0.0	0.0	0.0
9	15.4	15.4	15.4
10	0.0	0.0	0.0
11	0.0	0.0	0.0
12	21.9	21.9	21.9
13	7.9	7.9	7.9
14	0.0	0.0	0.0
15	13.1	13.1	13.1
16	5.1	5.1	5.1
17	6.9	6.9	6.9
18	3.8	3.8	3.8
19	5.3	5.3	5.3
20	5.8	5.8	5.8
21	5.5	5.5	5.5
22	5.0	5.0	5.0
23	5.4	5.4	5.4
24	0.0	0.0	0.0
25	10.8	10.8	10.8
26	5.9	5.9	5.9
27	0.0	0.0	0.0
28	0.0	0.0	0.0
29	15.6	15.6	15.6
30	0.0	0.0	0.0
31	6.9	6.9	6.9
Total in cfs-days	193.1	193.1	193.1
Total in AF	383	383	383

(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 2006-07  
SEPTEMBER 2007

Day	Discharge Above Riverside Narrows (cfs)	Flow Arriving At Riverside Narrows <sup>1</sup> (cfs)	Flow Arriving At Prado Dam <sup>1</sup> (cfs)
1	2.6	2.6	2.6
2	2.9	2.9	2.9
3	6.0	6.0	6.0
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	0.0	0.0	0.0
26	0.0	0.0	0.0
27	0.0	0.0	0.0
28	4.1	4.1	4.1
29	0.0	0.0	0.0
30	0.0	0.0	0.0
Total in cfs-days	15.6	15.6	15.6
Total in AF	31	31	31

(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 2006-07

Month	WMWD Transfer Program Discharge (acre-feet)	TDS <sup>1</sup> (mg/L)	Discharge x TDS
<u>2006</u>			
October	0	---	0
November	0	---	0
December	0	---	0
<u>2007</u>			
January	0	---	0
February	0	---	0
March	0	---	0
April	157	540	84,780
May	415	540	224,100
June	447	530	236,910
July	413	540	223,020
August	383	273	104,561
September	31	326	10,106
<b>Total</b>	<b>1,846</b>		<b>883,477</b>

Flow-weighted TDS of pumped groundwater releases to the Santa Ana River:<sup>2</sup>

$$\text{TDS} = \frac{883,477}{1,846} = 479 \text{ mg/L}$$

(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.