SANTA ANA RIVER WATERMASTER

FOR

ORANGE COUNTY WATER DISTRICT

VS. CITY OF CHINO et al.

CASE NO. 117628 - COUNTY OF ORANGE

THIRTY-FIFTH

ANNUAL REPORT

OF THE

SANTA ANA RIVER WATERMASTER

FOR WATER YEAR

OCTOBER 1, 2004 - SEPTEMBER 30, 2005

APRIL 30, 2006

SANTA ANA RIVER WATERMASTER

ORANGE COUNTY WATER DISTRICT VS. CITY OF CHINO ET AL.
CASE NO. 117628--COUNTY OF ORANGE

WATERMASTER
Richard W. Atwater
Bill B. Dendy
Virginia Grebbien
Robert L. Reiter
John V. Rossi

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

April 30, 2006

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

Re: Watermaster Report for Water Year October 1, 2004 - September 30, 2005

Ladies and Gentlemen:

We have the honor of submitting herewith the Thirty-fifth 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 2004-05 are as follows:

		At Prado	
1	Measured Outflow at Prado	638,513	acre-feet
2	Base Flow at Prado	154,307	acre-feet
3	Annual Weighted TDS in Base and Storm Flows	348	mg/L
4	Annual Adjusted Base Flow	199,570	acre-feet
5	Cumulative Adjusted Base Flow	4,217,573	acre-feet
6	Other Credits (Debits)	2,366	acre-feet
7	Cumulative Entitlement of OCWD	1,470,000	acre-feet
8	Cumulative Credit	2,768,844	acre-feet
9	One-Third of Cumulative Debit	0	acre-feet
10	Minimum Required Base Flow in 2005-06	34,000	acre-feet

At Riverside Narrows

1	Base Flow at Riverside Narrows	65,760 acre-feet
2	Annual Weighted TDS in Base Flow	616 mg/L
3	Annual Adjusted Base Flow	65,760 acre-feet
4	Cumulative Adjusted Base Flow	1,537,281 acre-feet
5	Cumulative Entitlement of IEUA and WMWD	533,750 acre-feet
6	Cumulative Credit	1,003,531 acre-feet
7	One-Third of Cumulative Debit	0 acre-feet
8	Minimum Required Base Flow in 2004-05	12,420 acre-feet

Based on these findings, the Watermaster concludes that there was full compliance with the provisions of the Stipulated Judgment in 2004-05.

At the end of the 2004-05 water year, Inland Empire Utilities Agency (formerly Chino Basin Municipal Water District) and Western Municipal Water District have a cumulative credit of 2,768,844 acre-feet to their Base Flow obligation at Prado Dam.
San Bernardino Valley Municipal Water District has a cumulative credit of 1,003,531 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

Virginia Grebbien

Robert L. Reiter

John V. Rossi

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CHAPTER I

WATERMASTER ACTIVITIES AND WATER CONDITIONS

Introduction

This Thirty-fifth Annual Report of the Santa Ana River Watermaster covers Water Year 2004-05. The annual report is required by the Stipulated Judgment (Judgment) in the case of Orange County Water District vs. City of Chino et al., entered by the court on April 17, 1969 (Case No. 117628-County of Orange). The Judgment became effective on October 1, 1970. It contains a declaration of rights of the water users and other entities in the Lower Area of the Santa Ana River Basin downstream of Prado Dam as against those in the Upper Area tributary to Prado Dam, and provides a physical solution to satisfy those rights. Chapter IV presents a history of the litigation and a summary of the Judgment.

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

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

The court appoints a five-member Watermaster Committee to administer the provisions of the Judgment. The Watermaster's duty is to maintain a continuous accounting of each of the items listed in the letter of transmittal hereof 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 2004-05 Water Year the Watermaster Committee consisted of Robert L. Reiter, Bill B. Dendy, Richard W. Atwater, Virginia L. Grebbien, and John V. Rossi. Mr. Reiter served as Chairman/Treasurer and Mr. Dendy served as Secretary. 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 flow and quality for the Santa Ana River (River) at Prado Dam and at Riverside Narrows as well as stream flows 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 2004-05 the United States Geological Survey (USGS) provided flow 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 flow data at both stations consist of computed mean daily 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 (μs/cm) based on a continuous recording, and twice-monthly measured values for total dissolved solids (TDS), expressed in milligrams per liter (mg/L). The water quality data at Riverside Narrows consist of twice-monthly values for both EC and TDS. The USGS also provided discharge data for other gaging stations for streams tributary to Prado, including, among others, the Santa Ana River at E Street in San Bernardino, Chino Creek at Schaefer Avenue, Cucamonga Creek near Mira Loma, and Temescal Creek in the City of Corona (see Appendix A).

The 2004-05 daily mean discharge record at Prado is considered by the USGS to be "good" for flows below 500 cfs and "fair" above. 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, 11,400 cfs on January 14, 15, and 16, 2005, and 155 cfs on October 6, 2004. In the "Extremes for Period of Record" the USGS reports a maximum discharge of 13,200 cfs on January 15, 2005. The previous maximum discharge had been 7,440 cfs on February 21, 1980. The maximum and minimum daily mean EC values reported by the USGS at Prado were 1090 μs/cm on September 3, 2005, and 278 μs/cm on January 10, 2005. The corresponding calculated TDS concentrations were 690 and 174 mg/L, respectively.

The 2004-05 daily mean discharge record at Riverside Narrows was rated by the USGS to be "poor" due to a continuing trend of channel scour, lateral stream movement away from the gage's sensor and deposition of sediments near the sensor. The record for the entire year is considered to be "estimated". The maximum and minimum daily mean discharge values during the year were 22,000 cfs on January 11, 2005, and 70 cfs on October 7, 2004. The maximum and minimum daily mean EC values reported by the USGS were 997 μs/cm on September 27, 2005, and 343 μs/cm on March 29,

2005. The corresponding measured TDS concentrations were 638 and 212 mg/L, respectively.

To assist in making its determinations each year the Watermaster refers to the rainfall records of many precipitation stations located in or near the Santa Ana River watershed. The record for National Weather Service Station 2146, located at the San Bernardino County Hospital, was used to define the hydrologic base period upon which the physical solution in the Judgment was based, and until Water Year 2000-01 the annual reports of the Watermaster presented the daily and total annual rainfall 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 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, annually estimated the precipitation at the location of the former Station 2146, and the Watermaster accepted their estimates.

A new Station 2146-A was established very near the site of the former Station 2146 and the intent of the Watermaster has been 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. 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 total rainfall recorded at Station 2146-A for water year 2004-05 was 29.89 inches, or 166% of the average of 17.98 inches per year 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 2004-05.

The USGS established a precipitation gage network during the 2003-2004 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 and 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 Gage, at the same location as National Weather Service Station 2146-A. The Gilbert Street Gage was placed into operation in October 2005.

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 2004-05 there were two sources of non-storm flow in the river at Prado that the Watermaster has included in neither Base Flow nor in the calculation of Cumulative Credits: imported water and Arlington Desalter product water. 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 583 acre-feet of Nontributary Flow attributable to imported State Water Project water, purchased by OCWD and released at the OC-59 turnout from MWDSC's Foothill Feeder into San Antonio Creek, was calculated to have reached Prado with an estimated average TDS concentration of 217 mg/L.

- At its Arlington Desalter in Riverside the Santa Ana Watershed Project Authority (SAWPA) produced and delivered to a channel tributary to the Santa Ana River between Riverside Narrows and Prado 381 acre-feet of water having an average TDS concentration of 280 mg/L.

- Eastern Municipal Water District (EMWD) reported that it discharged 15,195 acre-feet of municipal wastewater to Temescal Creek, with a flow-weighted average TDS of 728 mg/L, which 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 13,476 acre-feet of the EMWD wastewater, with an average TDS concentration of 766 mg/L, reached Prado Reservoir and that 4,732 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 2004-05 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 the period 1970-71 through 2004-05 is presented in Table 1. Note that the Base Flow obligations set forth in the Judgment at both Prado and Riverside Narrows have been met and cumulative credits have accrued to the Upper Area.

TABLE 1

SUMMARY OF FINDINGS AT PRADO

Water Year	Rainfall (in)[1]	Total Flow (ac-ft)[2]	Base Flow (ac-ft)[3]	Weighted TDS (mg/L)[4]	Adjusted Base Flow (ac-ft)	Cumulative Credit (ac-ft)[5]
1970-71	11.97	51,864	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

TABLE 1 (Continued)

SUMMARY OF FINDINGS AT RIVERSIDE NARROWS

Water Year	Rainfall (in)[1]	Total Flow (ac-ft)[2]	Base Flow (ac-ft)[3]	Weighted TDS (mg/L)[4]	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

TABLE 1 (Continued)

(1) Measured at National Weather Service 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 NWS Station 2146-A for Water Year 2004-05.
(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.

Upper Area Wastewater Discharges and Salt Exports

Although not used directly in the Watermaster's analyses and determinations, 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.

Similarly, while data on the amounts of high salinity water exported from the Upper Area for ocean disposal through SAWPA's Santa Ana Regional Interceptor (SARI) and IEUA's Non-Reclaimable Wastewater System (NRWS) are not used directly by the Watermaster, 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.

Plate 2 is a map showing the locations of wastewater treatment plants and the SARI and NRWS pipelines.

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 animal habitat. *Arundo* also consumes water at the rate of about 5.6 acre-feet per acre per year compared to only about 1.9 acre-feet per acre per year 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 treatment. Through June 2004 about 2,940 acres had been removed.

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

Water Year	Wastewater discharges upstream from Colton that generally do not flow continuously to Santa Ana River above E Street				Wastewater discharges to Santa Ana River and its tributaries that have hydraulic continuity to the Santa Ana River above Riverside Narrows					Wastewater discharges to Santa Ana River between Riverside Narrows and Prado Dam								Wastewater discharges to Temescal Creek or its tributaries which have hydraulic continuity to the Santa Ana River					Total Discharge to Surface Flow of the Santa Ana River	Total Wastewater Discharged in Watershed
	Redlands	Beaumont	Yucaipa	Subtotal (A)	San Bernardino	Colton	Rialto	RIX[1]	Subtotal (B)	Riverside	Corona	IEUA #1[2]	IEUA #2	IEUA #5	IEUA CCWRF[3]	WRCR[4]	Subtotal (C)	Lee Lake WRP	Elsinore Valley MWD[5]	Eastern MWD	Subtotal (D)	Est. Arriving at Prado Subtotal (E)	(B + C +E)	(A + B + C + D)
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	--	--	--	--	--	163,410	175,284
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	--	--	--	--	--	160,625	172,952
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	--	--	--	--	--	168,605	180,706
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	352	--	--	352	--	157,919	170,385
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	444	--	--	444	--	165,585	178,601
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	549	--	4,345	4,894	1,140	160,799	176,869
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	653	--	15,195	15,848	13,746	180,598	196,282

1. RIX = Rapid Infiltration and Extraction Facility for San Bernadino and Colton, including over-extraction of groundwater
2. Beginning in 1997-98, includes IEUA Plant #4 flows.
3. CCWRF = Carbon Canyon Water Reclamation Facility
4. WRCR = Western Riverside County Regional Wastewater Treatment Plant
5. Elsinore Valley MWD flow information is not yet available.

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

TABLE 3

HIGH SALINITY WATER EXPORTED FROM THE SANTA ANA RIVER WATERSHED

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

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 2004-05 fiscal year as well as the budget adopted for the 2005-06 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, 2004 to June 30, 2005 Budget	July 1, 2004 to June 30, 2005 Expenses[1]	July 1, 2005 to June 30, 2006 Budget
Support Services	$9,500.00	$12,344.05	$13,000.00
Reproduction of Annual Report	2,500.00	620.47	1,000.00
TOTAL	$12,000.00	$12,964.52	$14,000.00

(1) Expenses for 2003-04 were paid in 2004-05.

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 National Weather Service. The costs of the cooperative monitoring program for the 2004-05 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, 2004 to September 30, 2005

	Total Cost	USGS Share	Parties' Share
USGS PRECIPITATION GAGING STATIONS			
Gilbert Street Gage at San Bernardino	$6,150	$0	$6,150
Gilbert Street Gage Installation	6,950	0	6,950
"E" Street Gage	6,150	0	6,150
Middle Fork Lytle Creek Gage	6,150	0	6,150
Ridge Top Gage near Devore	6,150	0	6,150
USGS FLOW AND WATER QUALITY GAGING			
Santa Ana River at MWD Crossing (Riverside			
Surface Water Gage	24,700	12,350	12,350
Water Quality Monitoring/TDS Sampling	10,200	5,100	5,100
Chino Creek at Schaefer	17,600	8,800	8,800
Cucamonga Creek at Mira Loma	17,600	8,800	8,800
Santa Ana River below Prado Dam			
Surface Water Gage	17,600	8,800	8,800
Water Quality Monitoring/TDS Sampling	19,450	9,725	9,725
Water Quality Conductance Program	1,950	0	1,950
TOTAL COST AND SHARES	$140,650	$53,575	$87,075
COST DISTRIBUTION AMONG PARTIES			
Inland Empire Utilities Agency	20%		$17,415
Orange County Water District	40%		$34,830
San Bernardino Valley Municipal Water District	20%		$17,415
Western Municipal Water District	20%		$17,415

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 2004-05 Water Year, the flow of the Santa Ana River as measured at the USGS gaging station below Prado Dam amounted to 638,513 acre-feet. There was no water in storage behind the dam at the beginning of the water year. Nineteen acre-feet of water remained in storage at the end of the water year. Inflow to the reservoir included 154,307 acre-feet of Base Flow and 469,515 acre-feet of Storm Flow, based on an adjusted Prado Reservoir storage-elevation curve described in the following section. Nontributary flows consisted of State Water Project water and Arlington Desalter discharges. Water discharged from San Jacinto Watershed was also excluded from Base Flow but was partially credited to Cumulative Credit at Prado. Of the nontributary flow due to State Water Project water released to San Antonio Creek at turnout OC-59, 583 acre-feet was calculated to have reached Prado Reservoir during 2004-05. Arlington Desalter flow at Prado was 381 acre-feet. Discharge from the San Jacinto Watershed calculated to have reached Prado Reservoir was 13,746 acre-feet. The monthly components of flow of the Santa Ana River at Prado Dam for 2004-05 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 2004-05 are presented on Plate 5.

Prado Reservoir Storage-Elevation Curve Adjustment

The Watermaster calculates inflow to Prado Reservoir by adjusting outflow data using change in reservoir storage. Reservoir storage is based on a storage-elevation curve last updated by the U.S. Army Corps of Engineers (ACOE) in 1988. The ACOE reports that sedimentation averaged about 200 acre-feet per year between 1969 and 1979. Such sedimentation affects the accuracy of the storage-elevation curve when the storage in the reservoir is low. This inaccuracy results in anomalies in the calculated inflow near the end of each period of reservoir storage.

In 1997, the Watermaster adjusted the Prado Reservoir storage-elevation curve to improve the calculated Santa Ana River inflow hydrograph from which Base Flow and Storm Flow are determined. Assuming an average sedimentation rate of 200 acre-feet per year from 1988 through 1996, the portion of the ACOE storage-elevation curve below elevation 520 feet was adjusted to include a 1,600 acre-foot reservoir storage loss. Elevation 520 feet represents the approximate maximum flood storage elevation

TABLE 6

COMPONENTS OF FLOW AT PRADO DAM
WATER YEAR 2004-05
(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
2004									
October	55,940	11,303	67,243	0	0	0	182	55,906	11,155
November	18,825	(428)	18,397	97	0	0	199	6,402	11,699
December	33,253	704	33,957	1,222	0	0	0	19,931	12,804
2005									
January	206,888	(1,041)	205,847	2,706	0	0	0	189,252	13,889
February	108,851	10,863	119,714	3,167	0	0	0	103,854	12,693
March	58,721	(183)	58,538	2,693	0	0	0	42,302	13,543
April	42,512	(225)	42,287	1,831	0	0	0	25,494	14,962
May	28,257	(615)	27,641	1,368	0	0	0	11,444	14,829
June	24,452	(5,528)	18,924	228	0	0	0	4,947	13,749
July	20,939	(5,779)	15,160	0	0	0	0	2,458	12,702
August	24,748	(7,686)	17,062	0	0	0	0	5,329	11,733
September	15,128	(1,366)	13,762	434	0	583	0	2,196	10,549
Total	638,513	19	638,532	13,746	0	583	381	469,515	154,307

(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) No WMWD Transfer Program water pumped from the Bunker Hill, Riverside, and Colton basins and discharged to the Santa Ana River above the Riverside Narrows was delivered this year.

(4) State Water Project water released into San Antonio Creek from turnout OC-59 and calculated to have reached Prado Dam in the 2004-05 Water Year.

attained behind Prado Dam in the past several years when most sedimentation would likely have occurred. The new storage-elevation curve was developed by distributing the 1,600 acre-foot storage loss until the curve produced inflow values without significant anomalies.

For Water Year 2004-05, with eight more years of sediment accumulation in the reservoir, the storage-elevation curve was again found to be in need of adjustment. The curve was lowered in a similar method to the 1997 adjustment by 2,645 acre-feet from the 1988 ACOE storage curve volume between elevation 475 and 500 (the range of elevations at which anomalously low inflows were calculated during periods when the reservoir was emptying).

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 2004-05 Water Year it included State Water Project water imported by OCWD and released to San Antonio Creek and water discharged to the river from the Arlington Desalter. 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 2004-05 Water Year.

Releases to San Antonio Creek

Since May 1973, OCWD has from time to time purchased State Water Project water for the replenishment of the groundwater basin in Orange County. The water has been released at two locations: Santa Ana River above Riverside Narrows (1972-73 only) and San Antonio Creek near the City of Upland.

During the 2004-05 Water Year, 663 acre-feet of State Water Project water was released into San Antonio Creek from the Foothill Feeder at turnout OC-59 near Upland. Total monthly deliveries and daily flow rates were provided by the MWDSC. Water loss between OC-59 and Prado Dam was calculated per the procedures set forth in the Twelfth Annual Report (1981-82), Appendix C. It was determined that of the OC-59 water released, a total of 583 acre-feet reached Prado Dam, 29 acre-feet (4.74%) were lost to evapotranspiration, and 50 acre-feet were still in transit at the end of the 2004-05 Water Year due to the 12-hour delay from the time of release until the water reaches Prado Dam. A monthly summary of Nontributary Flow released from OC-59 into San Antonio Creek is contained in Appendix E.

Arlington Desalter

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 operations 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 2004-05 Water Year, 381 acre-feet of water discharged from the Arlington Desalter were determined to have reached Prado Dam. SAWPA provided daily discharge rates and electrical conductance of water discharged. A summary of Arlington Desalter discharges is contained in Appendix F.

WMWD Transfer Program

During the 2004-05 Water Year, no WMWD Transfer Program deliveries were made.

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 2004-05 Water Year, EMWD discharged 15,195 acre-feet of wastewater to Temescal Wash, and 13,746 acre-feet of that discharge was estimated to have reached Prado Reservoir. The Watermaster previously determined that to the extent such discharges occur and are captured by OCWD, fifty percent of such captured water will be added as Cumulative Credit at Prado. OCWD captured 4,732 acre-feet of the San Jacinto Watershed discharge.

Storm Flow

Portions of storm flows are retained behind Prado Dam for flow regulation and for water conservation purposes. The 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 with a buffer pool elevation of 494 feet until March 1 of each year. In 1994 an agreement was signed by OCWD, ACOE, and the U.S. Fish and Wildlife Service, which provides that between March 1 and August 30 the pool would be raised, given sufficient flows, to elevation 497 feet. This elevation would be increased year by year, as additional biological habitat mitigation by OCWD comes on line, to a maximum elevation of 505 feet. On April 12, 1995, the ACOE, the U.S. Fish and Wildlife Service, and OCWD reached an agreement to accelerate immediately the raising of the seasonal water conservation pool to elevation 505 feet, 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*. Storm flows captured within the reservoir for conservation are released following the storm to downstream groundwater recharge facilities. Monthly and annual quantities of Storm Flow are shown in Table 6.

During the 2004-05 Water Year, the maximum volume of water stored in Prado Reservoir reached 97,185 acre-feet on January 11, 2005. The maximum daily mean flow released from Prado Dam to the Santa Ana River was 11,400 cfs on January 14, 15, and 16, 2005.

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 2004-05 included releases to San Antonio Creek, Arlington Desalter discharges, and discharges from the San Jacinto Watershed. The general procedure used by the Watermaster to separate the 2004-05 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 Nontributary Flow released to San Antonio Creek, Arlington Desalter discharge, and San Jacinto Watershed discharge, was found to be 357 milligrams per liter (mg/L). This determination was based on records from a continuous monitoring device operated by the USGS for EC of the Santa Ana River flow below Prado Dam. This record was supplemented by twenty-four (24) grab samples for EC collected by the USGS and analyzed for TDS.

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

$$TDS = EC \times 0.626582$$

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

Using the daily EC data, flow-weighted average daily values for TDS were calculated using the above equation. The plot of TDS on Plate 6 shows the daily average TDS concentration of the Santa Ana River flow passing Prado Dam. A summary of daily TDS and EC of the Santa Ana River below Prado Dam is contained in Appendix H. At Prado Dam, the flow-weighted average annual TDS value of 357 mg/L represents the quality of the total flow including releases to San Antonio Creek, discharge from the Arlington Desalter, 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 2004-05 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 2004-05 Water Year, 583 acre-feet of water released from OC-59 to San Antonio Creek were calculated to have reached Prado Dam. A flow-weighted average TDS of 217 mg/L was calculated for State Water Project water reaching Prado Dam. A summary of these calculations is contained in Appendix E.

Adjustment for Arlington Desalter Discharge

The amount of product water discharged to the Santa Ana River during the 2004-05 Water Year totaled 381 acre-feet. Daily EC data is no longer available, so the TDS of grab samples collected from the Arlington channel by WMWD and analyzed for EC and TDS by an independent laboratory, was used to calculate the flow-weighted average TDS. Using monthly TDS and flow rates, a flow-weighted average TDS of 280 mg/L was calculated. A summary of these calculations is contained in Appendix F.

Adjustment for WMWD Transfer Program Discharge

During the 2004-05 Water Year, no WMWD Transfer Program water was delivered. Therefore, no water quality adjustment was necessary.

Adjustment for San Jacinto Watershed Discharge

Discharge from the San Jacinto Watershed during the 2004-05 Water Year reaching Prado Reservoir was determined to be 13,746 acre-feet. Using EMWD discharge data, the TDS data for the discharge, and monthly volume of the discharge determined to have reached Prado reservoir, a flow-weighted average TDS of 766 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	638,513	357	227,949,141
2. Less High Groundwater Mitigation Project	0	---	---
3. Less Nontributary Flow San Antonio Creek	(583)	217	(126,511)
4. Less Arlington Desalter	(381)	280	(106,680)
5. Less WMWD Transfer Program	0	---	---
6. Less San Jacinto Watershed Discharge	(13,746)	766	(10,529,436)
7. Measured Outflow less lines 2 through 6	623,803		217,186,514
Average TDS in total Base and Storm Flow	217,186,514 ÷ 623,803 = 348 mg/L		

After adjusting for Nontributary Flow of OC-59 water to San Antonio Creek, Arlington Desalter discharges, and San Jacinto Watershed discharge, the weighted average annual TDS of Storm Flow and Base Flow for 2004-05 is 348 mg/L, as shown above.

Adjusted Base Flow at Prado

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

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

Where: Q = Base Flow actually received.

The weighted average annual TDS of 348 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:

$$(154{,}307 \text{ acre-feet}) + \frac{35}{42{,}000} (154{,}307 \text{ acre-feet}) (700 - 348) = 199{,}570 \text{ acre-feet}$$

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 the amount of any such outflows recharging the groundwater basin in Orange County to CBMWD (IEUA) and WMWD.

Of the 13,746 acre-feet of San Jacinto Watershed outflows reaching Prado Reservoir in 2004-05, 9,014 acre-feet flowed past OCWD's groundwater recharge facilities and was considered as lost to the ocean. Therefore, a net amount of 4,732 acre-feet of San Jacinto Watershed outflow recharged the Orange County groundwater basin in

2004-05. One-half of that amount has been considered a credit against the Upper Area Base Flow obligation at Prado Dam. Thus, an additional 2,366 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 2004-05 required under the Stipulated Judgment are as follows:

1.	Measured Outflow at Prado	638,513 acre-feet
2.	Base Flow at Prado	154,307 acre-feet
3.	Annual Weighted TDS of Base and Storm Flow	348 mg/L
4.	Annual Adjusted Base Flow	199,570 acre-feet
5.	Cumulative Adjusted Base Flow	4,217,573 acre-feet
6.	Other Credits (Debits) [1]	2,366 acre-feet
7.	Cumulative Entitlement of OCWD	1,470,000 acre-feet
8.	Cumulative Credit [2]	2,768,844 acre-feet
9.	One-Third of Cumulative Debit	0 acre-feet
10.	Minimum Required Base Flow in 2005-06	34,000 acre-feet

1. Other Credits (Debits) are comprised of San Jacinto Watershed outflow.
2. Cumulative Credit includes 21,271 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)[1]	Cumulative Entitlement of OCWD	Cumulative Credit[2]
1970-71	38,402	38,402	38,402	0	42,000	(3,598)
1971-72	40,416	40,416	78,818	0	84,000	(5,182)
1972-73	48,999	51,531	130,349	0	126,000	4,349
1973-74	43,106	45,513	175,862	0	168,000	7,862
1974-75	50,176	51,263	227,125	0	210,000	17,125
1975-76	45,627	48,098	275,223	0	252,000	23,223
1976-77	48,387	50,000	325,223	0	294,000	31,223
1977-78	58,501	73,955	399,178	0	336,000	63,178
1978-79	71,863	79,049	478,227	0	378,000	100,227
1979-80	82,509	106,505	584,732	0	420,000	164,732
1980-81	74,875	74,875	659,607	8,045	462,000	205,652
1981-82	81,548	89,431	749,038	0	504,000	253,083
1982-83	111,692	138,591	887,629	3,362	546,000	353,036
1983-84	109,231	115,876	1,003,505	4,602	588,000	431,514
1984-85	125,023	133,670	1,137,175	0	630,000	523,184
1985-86	127,215	141,315	1,278,490	0	672,000	622,499
1986-87	119,848	127,638	1,406,128	0	714,000	708,137
1987-88	124,104	136,308	1,542,436	0	756,000	802,445
1988-89	119,572	131,230	1,673,666	0	798,000	891,675
1989-90	119,149	127,986	1,801,652	0	840,000	977,661
1990-91	111,515	128,379	1,930,031	0	882,000	1,064,040
1991-92	106,948	124,869	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

1. Other Credits (Debits) are comprised of San Jacinto Watershed outflow.
2. Cumulative Credit includes 21,271 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 355,503 acre-feet, measured at the USGS gaging station near the MWD Crossing. Separated into its components, Base Flow was 65,760 acre-feet and Storm Flow was 292,119 acre-feet. Included in Base Flow are 2,376 acre-feet of wastewater from Rubidoux Community Services District that now bypasses the USGS gaging station. The Storm and Base Flow components of the flow of the Santa Ana River at Riverside Narrows for each month in the 2004-05 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 2004-05 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 2004-05 Water Year there were no releases of nontributary water in the upper watershed.

High Groundwater Mitigation Project

No High Groundwater Mitigation Project water was discharged to the Santa Ana River during the 2004-05 Water Year.

WMWD 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 2004-05 Water Year, WMWD did not make any deliveries to the Santa Ana River upstream of Riverside Narrows and Prado Dam.

TABLE 7

COMPONENTS OF FLOW AT RIVERSIDE NARROWS
WATER YEAR 2004-05
(acre-feet)

	Month	USGS Measured Flow	Storm Flow	SBVMWD HGMP Water[1]	WMWD Transfer Program[2]	Rubidoux Waste-water	Base Flow[3]
2004	October	30,591	26,160	0	0	209	4,640
	November	5,677	1,392	0	0	196	4,481
	December	15,699	11,279	0	0	199	4,619
2005	January	144,506	139,654	0	0	191	5,043
	February	41,956	37,062	0	0	185	5,079
	March	30,627	24,694	0	0	203	6,136
	April	29,780	23,702	0	0	192	6,270
	May	19,333	13,060	0	0	203	6,476
	June	11,405	5,533	0	0	195	6,067
	July	8,437	2,650	0	0	203	5,990
	August	12,337	6,933	0	0	203	5,607
	September	5,155	0	0	0	197	5,352
Total		355,503	292,119	0	0	2,376	65,760

(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 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 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 2004-05, in the amount of 2,376 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 2004-05, no water quality adjustment was required.

Adjustment for WMWD Transfer Program Discharge

Since there were no WMWD Transfer Program deliveries during the 2004-05 Water Year, no water quality adjustment was required.

Adjustment for Wastewater Discharges from the Rubidoux Community Services District

The flow-weighted quality of wastewater from Rubidoux was 719 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 616 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	63,384	612	38,791,008
2. Less Nontributary Flow HGMP Pumped Water	0	---	---
3. Less WMWD Transfer Flow	0	---	---
4. Plus Rubidoux Wastewater	2,376	719	1,708,344
5. Base Flow (line 1 less lines 2 and 3 plus line 4)	65,760		40,499,352
Average TDS of Base Flow		40,499,352 ÷ 65,760 = 616 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 2004-05 was 616 mg/L. Therefore, no adjustment is necessary, and the Adjusted Base Flow for 2004-05 is 65,760 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 2004-05 required under the Stipulated Judgment are as follows:

1.	Base Flow at Riverside Narrows	65,760 acre-feet
2.	Annual Weighted TDS of Base Flow	616 mg/L
3.	Annual Adjusted Base Flow	65,760 acre-feet
4.	Cumulative Adjusted Base Flow	1,537,281 acre-feet
5.	Cumulative Entitlement of CBMWD and WMWD	533,750 acre-feet
6.	Cumulative Credit	1,003,531 acre-feet
7.	One-Third of Cumulative Debit	0 acre-feet
8.	Minimum Required Base Flow in 2004-05	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 2004-05	Robert L. Reiter, Chairman/Treasurer	Richard W. Atwater	John V. Rossi	Bill B. Dendy, Secretary	Virginia L. Grebbien

Santa Ana River Watershed

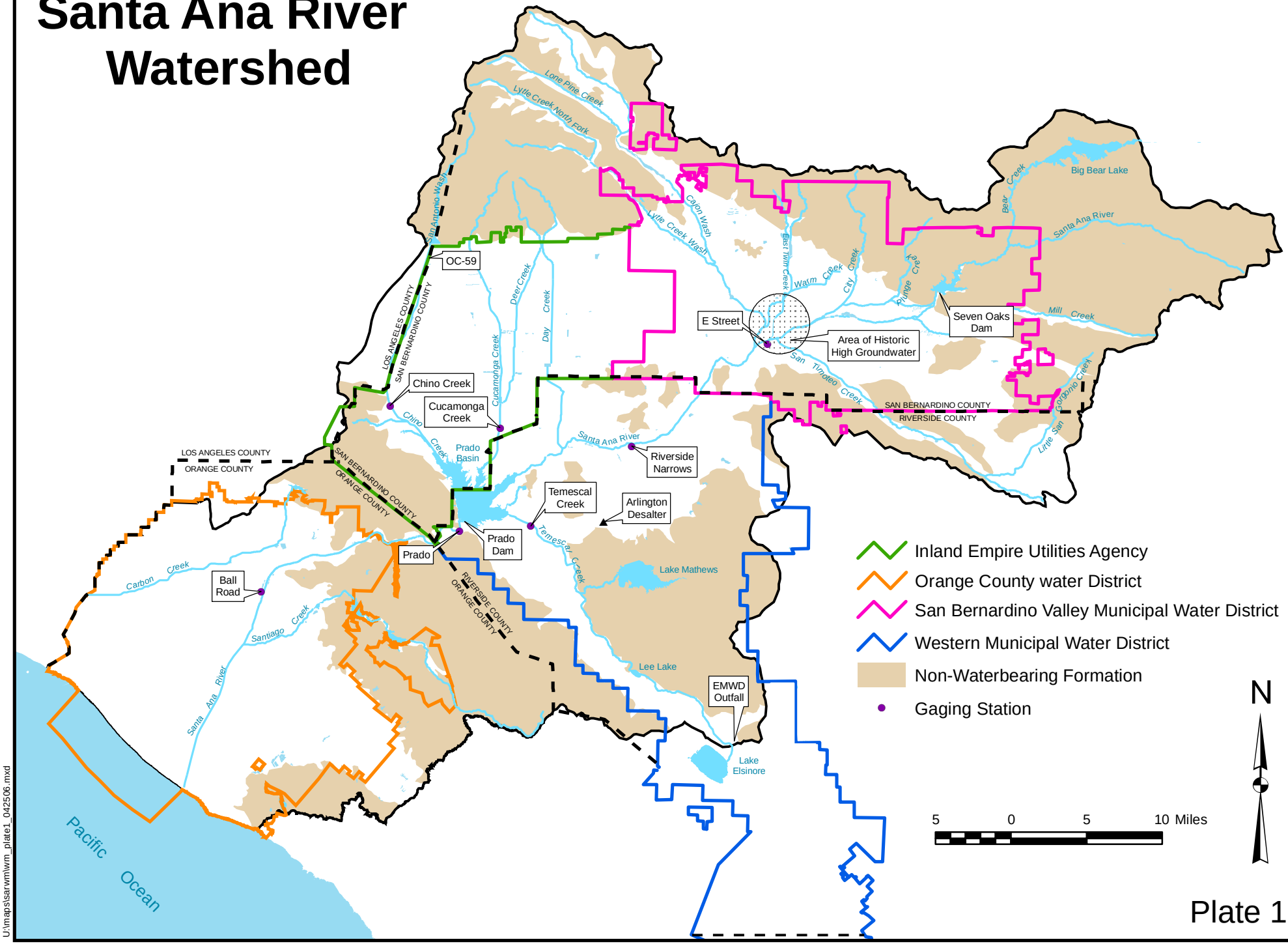

Plate 1

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Santa Ana River Watershed Wastewater Treatment Plants and Salt Export Pipelines

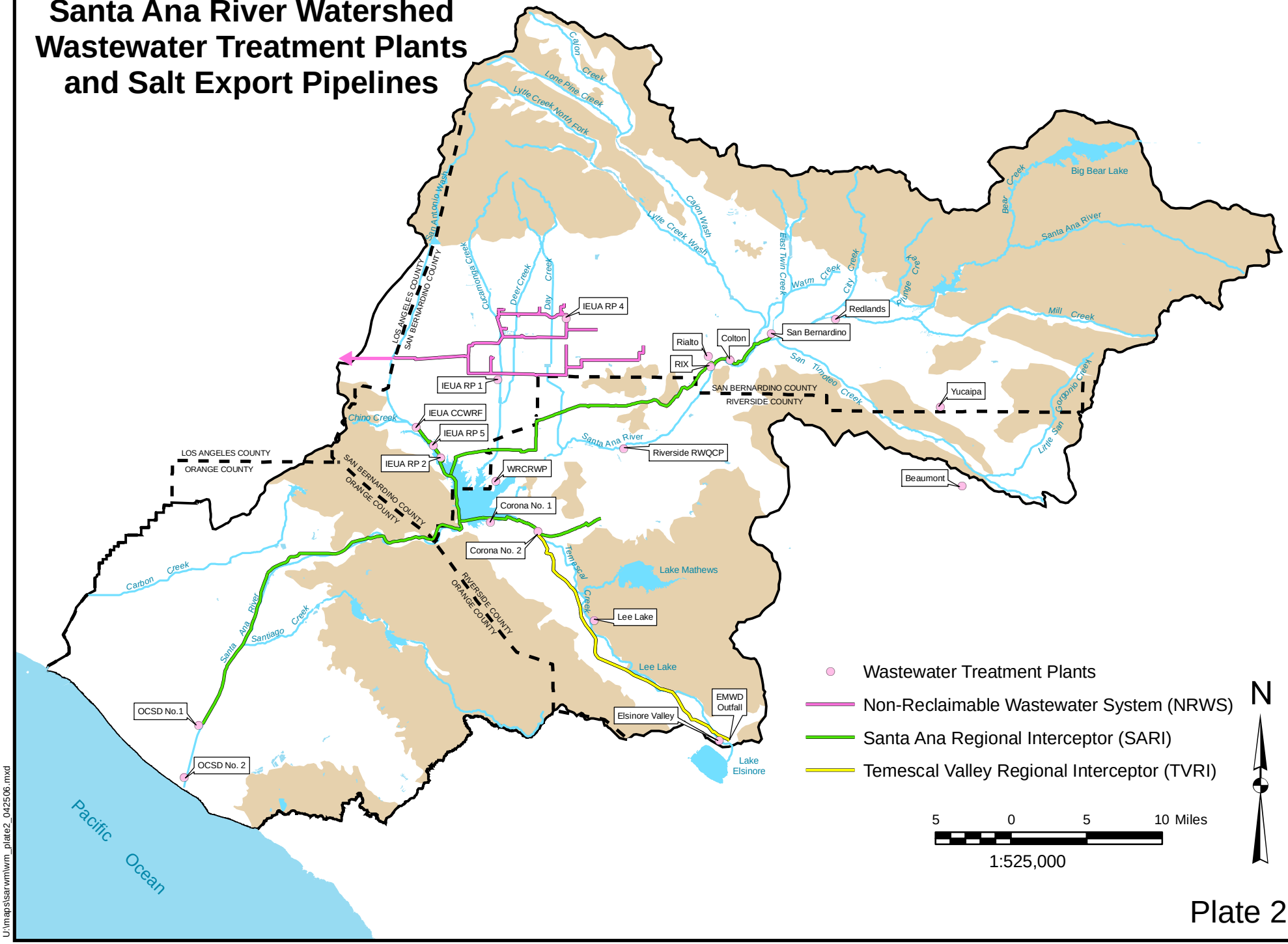

Plate 2

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PRECIPITATION AT SAN BERNARDINO STARTING WITH 1934-35

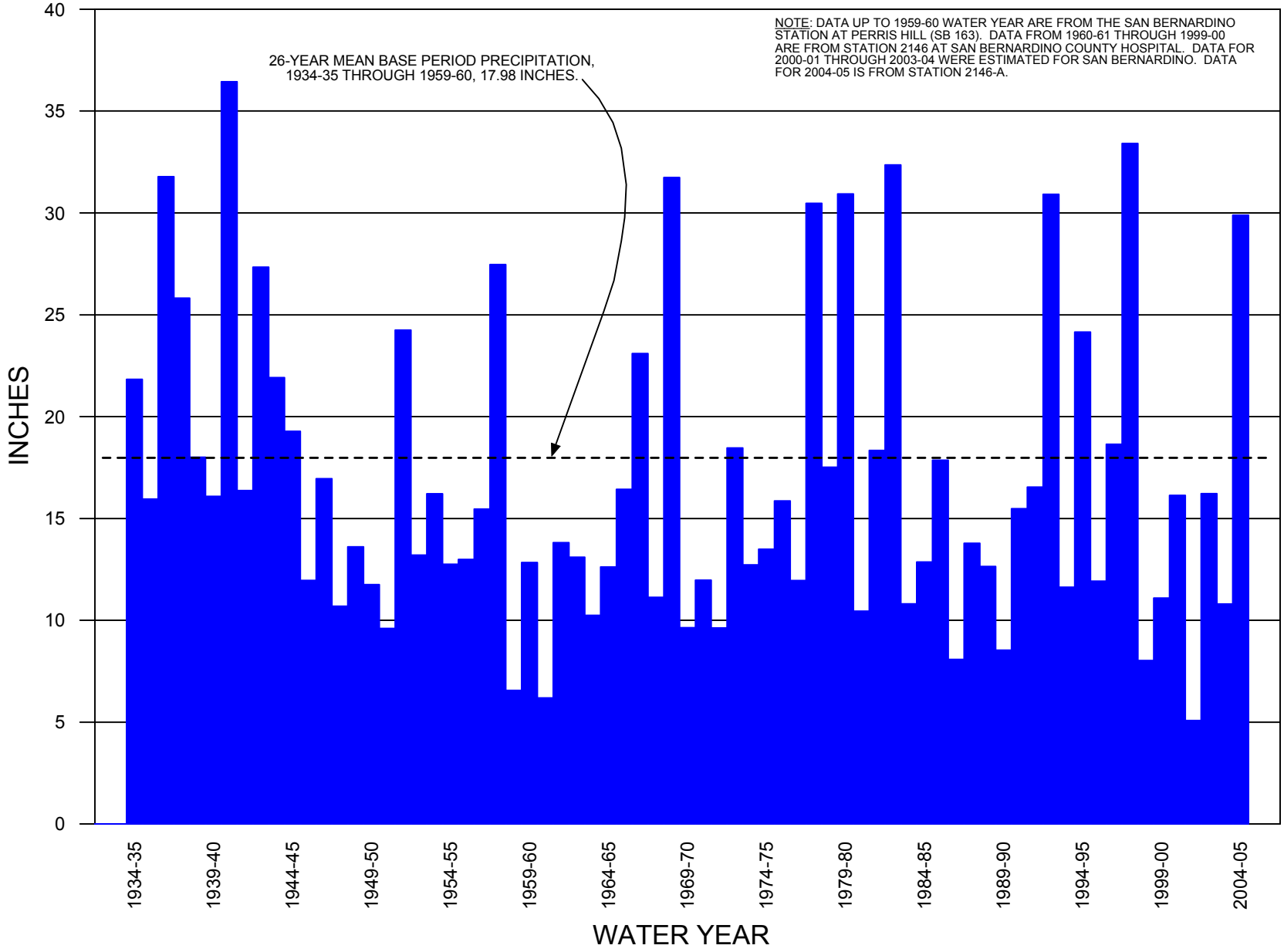
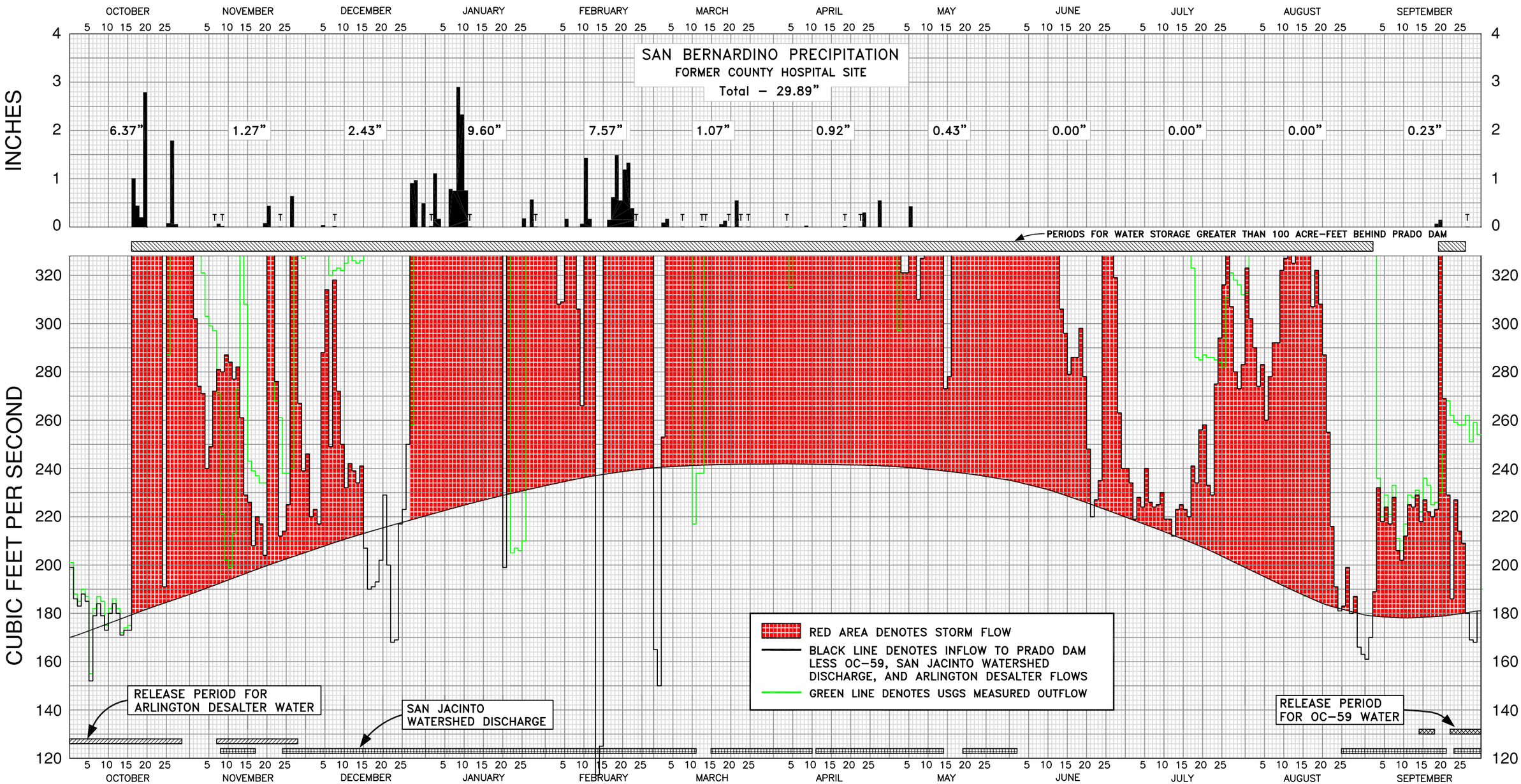


PLATE 3



DISCHARGE OF SANTA ANA RIVER AT PRADO DAM & SAN BERNARDINO PRECIPITATION
WATER YEAR 2004-05

Plate 4

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

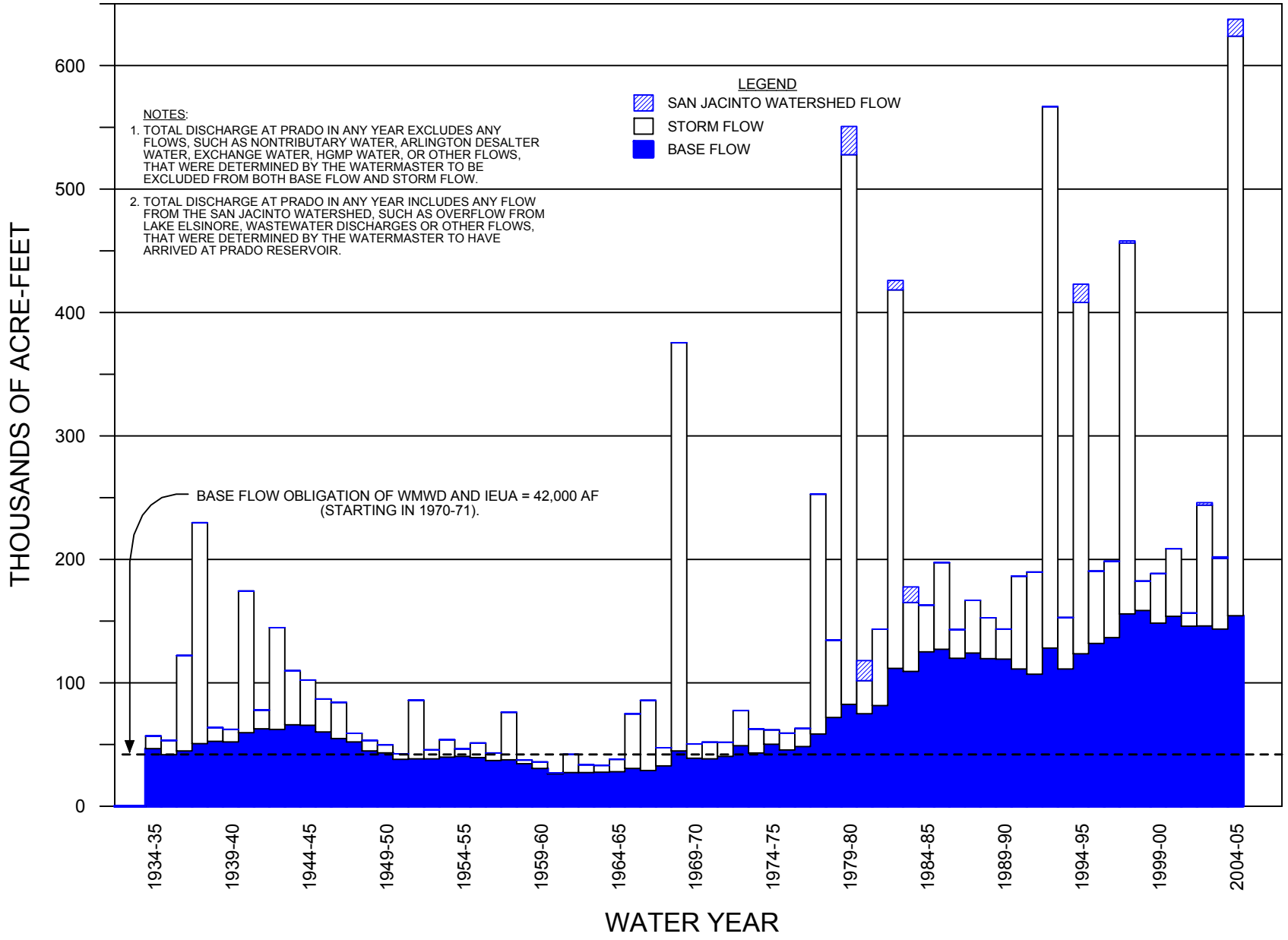
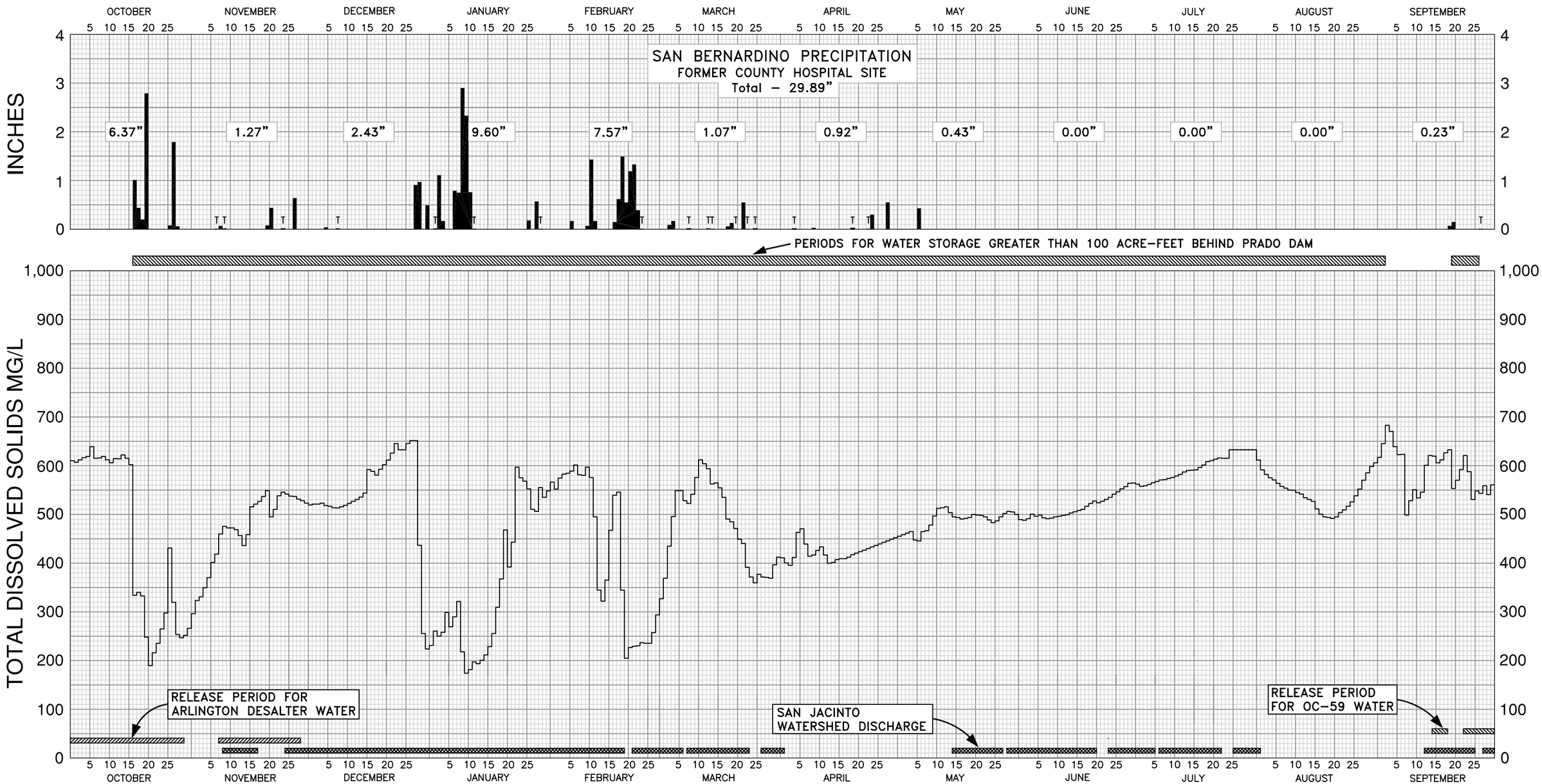
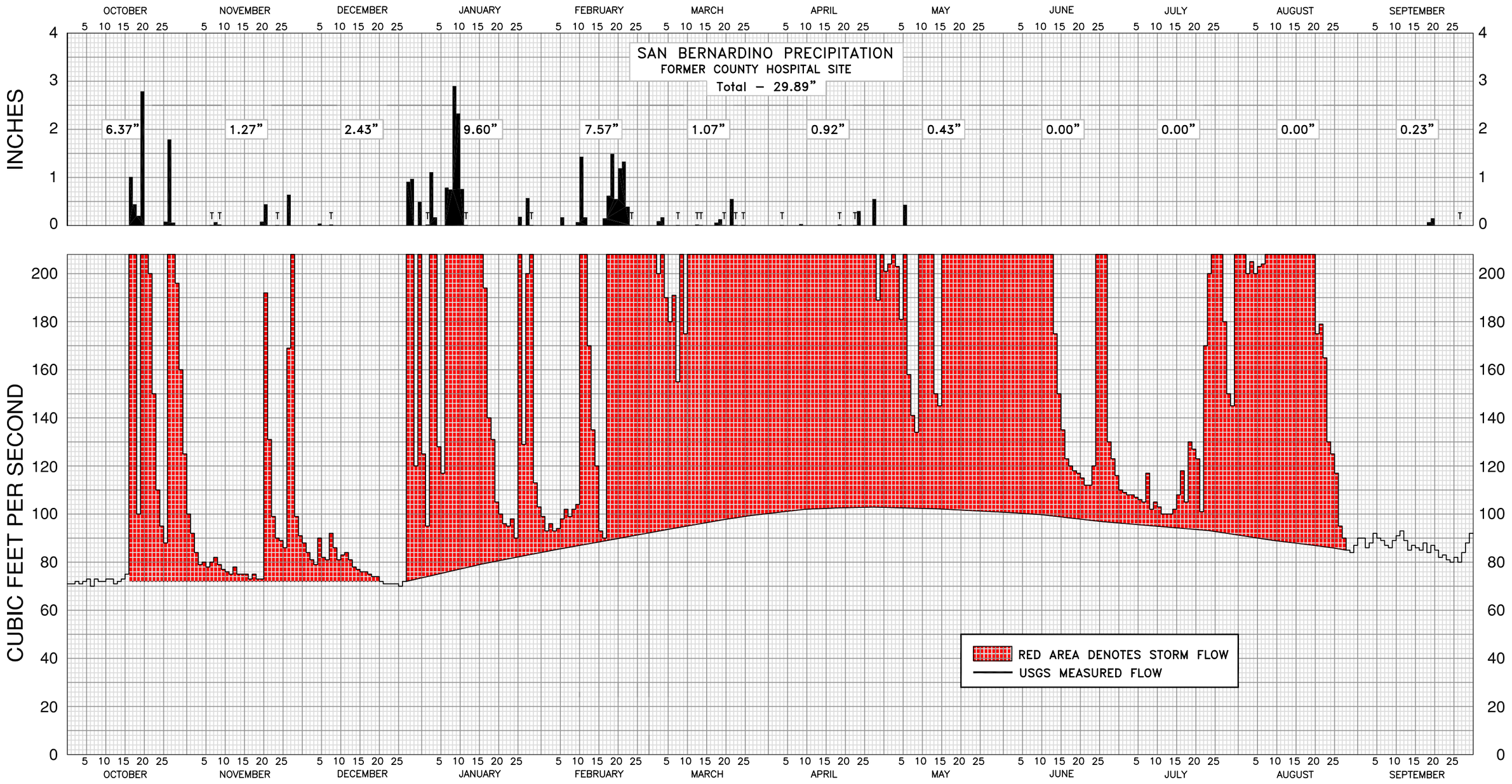


PLATE 5



DISSOLVED SOLIDS IN SANTA ANA RIVER BELOW PRADO DAM
WATER YEAR 2004-05

Plate 6



DISCHARGE OF SANTA ANA RIVER AT RIVERSIDE NARROWS & SAN BERNARDINO PRECIPITATION
WATER YEAR 2004-05

Plate 7

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

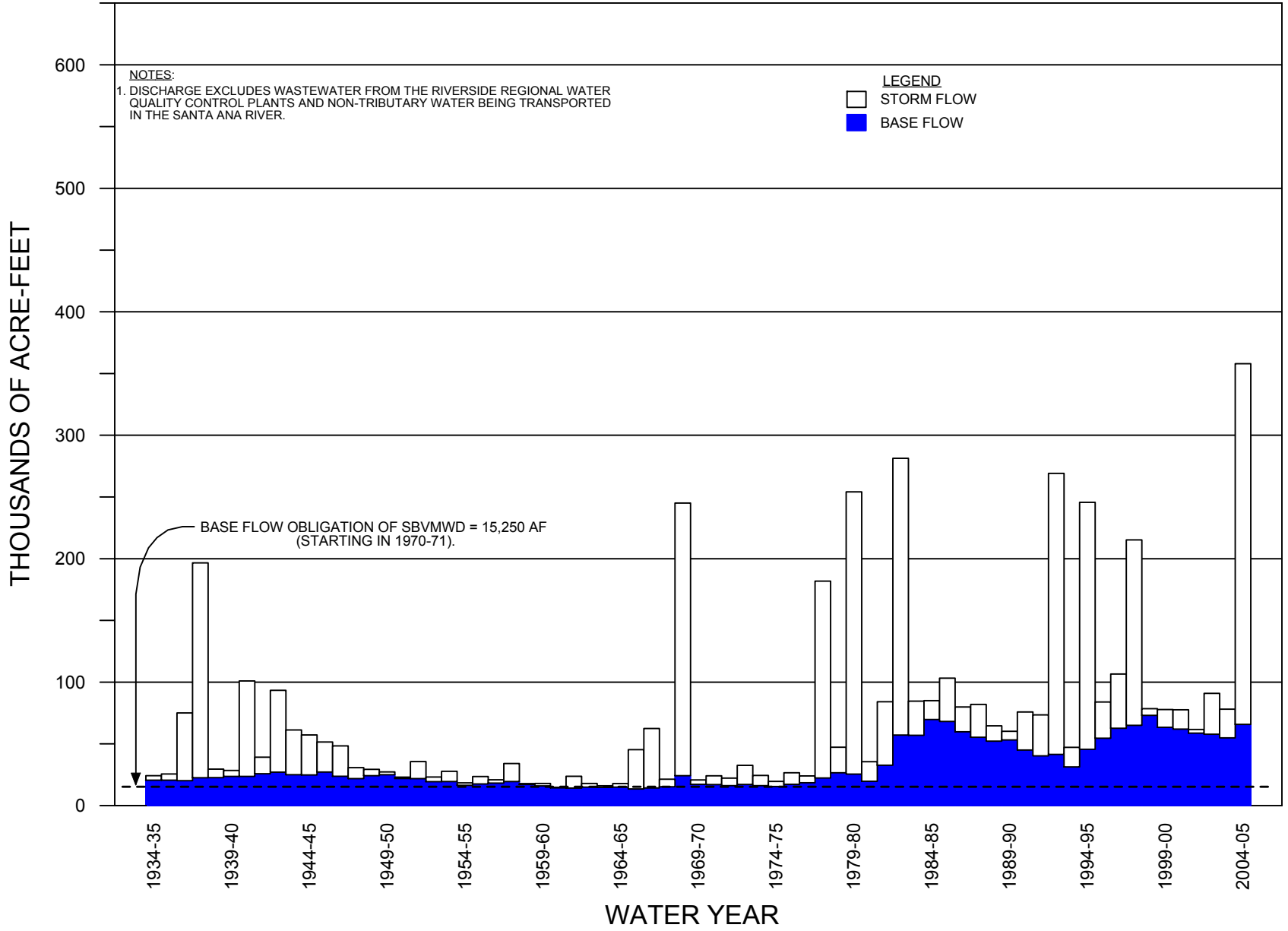


PLATE 8

SANTA ANA RIVER WATERMASTER

FOR

ORANGE COUNTY WATER DISTRICT

VS. CITY OF CHINO et al.

CASE NO. 117628 - COUNTY OF ORANGE

BASIC DATA

FOR THE

THIRTY-FIFTH ANNUAL REPORT

OF THE

SANTA ANA RIVER WATERMASTER

FOR WATER YEAR

OCTOBER 1, 2004 - SEPTEMBER 30, 2005

APRIL 30, 2006

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 2004-05

USGS
science for a changing world

Water-Data Report CA-2005

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, Hydrologic Unit 18070203, in La Sierra Grant, on left bank of outlet channel, 2,500 ft downstream from axis of Prado Dam, and 4.5 mi west of Corona.

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

WATER-DISCHARGE 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 since August 1944 and through Apr. 25, 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. Since Apr. 26, 2005, gage is located on the right bank of a temporary bypass (diversion) channel, in use during the construction of an improved outlet channel from Prado Dam. The temporary gage is at a different datum.

REMARKS.--Records good below 500 ft³/s and fair above, 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, the California Water Project released 662 acre-ft to the basin. See schematic diagram of Santa Ana River Basin.

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

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

11074000 SANTA ANA RIVER BELOW PRADO DAM, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	201	366	371	1,350	479	2,620	1,090	e625	438	380	313	453
2	188	375	358	596	461	2,640	1,100	e375	439	382	340	422
3	185	362	348	1,460	461	2,090	1,090	e297	439	381	347	342
4	190	321	349	1,780	460	1,170	595	562	443	382	346	236
5	187	303	346	840	461	564	315	549	442	377	344	220
6	155	299	337	1,750	461	564	385	605	441	379	343	229
7	182	297	320	1,280	458	688	596	692	441	379	345	221
8	187	271	322	2,730	631	813	820	686	441	378	359	233
9	185	221	323	4,830	735	720	751	526	440	378	375	211
10	175	202	322	7,540	727	362	756	441	442	376	383	206
11	182	199	325	10,700	1,380	217	770	434	444	373	382	217
12	186	213	328	9,330	1,860	238	972	429	443	372	380	229
13	182	273	326	5,710	1,810	238	1,080	429	414	368	380	228
14	172	336	325	11,400	1,770	413	836	428	399	368	382	231
15	174	308	326	11,400	1,460	545	655	427	398	370	386	222
16	175	243	378	11,400	502	555	613	423	399	368	385	236
17	384	239	434	7,870	403	567	614	421	397	364	408	233
18	441	237	459	3,830	1,040	577	596	421	397	323	433	225
19	464	234	459	1,390	2,240	582	584	420	395	286	458	226
20	1,370	234	476	e662	2,890	588	585	420	393	285	457	230
21	2,750	1,130	495	1,750	2,980	786	365	420	390	287	456	246
22	2,620	378	498	835	3,440	1,190	432	419	388	286	453	268
23	2,540	268	493	205	4,810	3,220	509	415	387	286	448	262
24	2,460	261	491	207	4,670	1,170	507	414	386	285	445	259
25	2,460	238	489	206	4,690	980	e380	416	384	284	455	258
26	287	238	486	210	4,750	977	e570	415	384	282	458	258
27	2,490	240	333	378	4,650	979	e665	421	383	311	451	262
28	2,610	443	258	700	4,200	978	e1,660	424	381	321	437	251
29	2,550	435	1,730	701	---	918	e852	427	380	318	445	259
30	1,520	327	2,490	699	---	825	e690	431	380	316	437	254
31	351	---	1,770	567	---	831	---	434	---	312	446	---
Total	28,203	9,491	16,765	104,306	54,879	29,605	21,433	14,246	12,328	10,557	12,477	7,627
Mean	910	316	541	3,365	1,960	955	714	460	411	341	402	254
Max	2,750	1,130	2,490	11,400	4,810	3,220	1,660	692	444	382	458	453
Min	155	199	258	205	403	217	315	297	380	282	313	206
Ac-ft	55,940	18,830	33,250	206,900	108,900	58,720	42,510	28,260	24,450	20,940	24,750	15,130

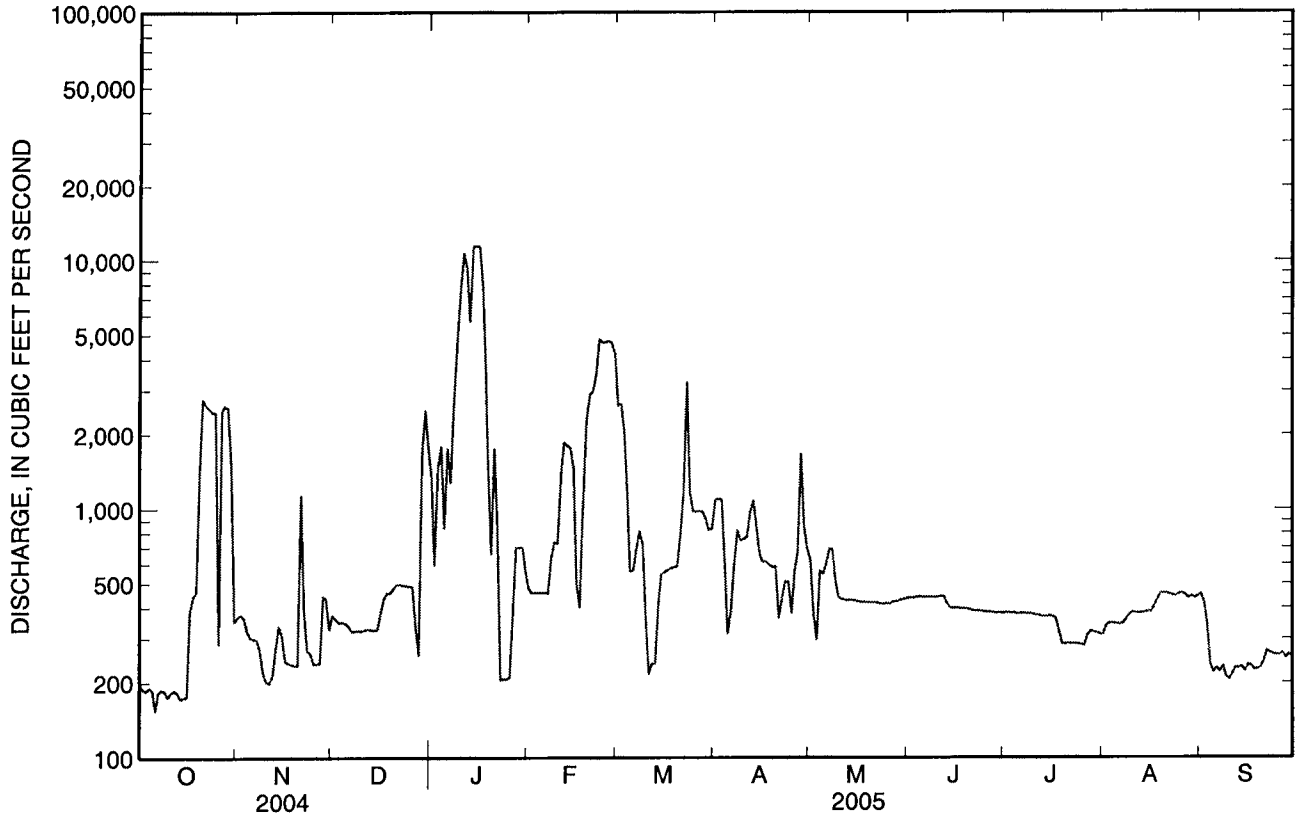
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2005, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	126	146	213	366	442	403	259	188	154	127	106	100
Max	910	322	709	3,543	2,733	2,556	1,101	915	736	446	402	372
(WY)	(2005)	(1997)	(1967)	(1993)	(1998)	(1980)	(1980)	(1998)	(1983)	(1998)	(2005)	(1997)
Min	22.4	33.5	39.5	49.2	49.8	54.3	43.3	35.2	29.0	17.7	14.8	16.2
(WY)	(1962)	(1963)	(1963)	(1963)	(1961)	(1961)	(1961)	(1961)	(1961)	(1960)	(1960)	(1960)

11074000 SANTA ANA RIVER BELOW PRADO DAM, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2004		Water Year 2005		Water Years 1941 - 2005	
Annual total	139,398		321,917			
Annual mean	381		882		218	
Highest annual mean					882	2005
Lowest annual mean					36.4	1961
Highest daily mean	4,430	Feb 26	11,400	Jan 14	11,400	Jan 14, 2005
Lowest daily mean	118	Aug 11	155	Oct 6	2.4	Jul 29, 1978
Annual seven-day minimum	147	Aug 8	178	Oct 10	3.0	Sep 24, 1973
Maximum peak flow			13,200	Jan 15	13,200	Jan 15, 2005
Maximum peak stage			8.73	Jan 15	8.73	Jan 15, 2005
Annual runoff (ac-ft)	276,500		638,500		158,100	
10 percent exceeds	486		1,790		380	
50 percent exceeds	246		420		132	
90 percent exceeds	168		230		40	



U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 11074000 SANTA ANA R BL PRADO DAM CA SOURCE AGENCY USGS STATE 06 COUNTY 065
LATITUDE 335300 LONGITUDE 1173840 NAD27 DRAINAGE AREA 2258 CONTRIBUTING DRAINAGE AREA 1490 DATUM 449 NGVD29
Date Processed: 2006-01-04 17:12 By jaagajan
APPROVED
DD #1
Temperature, water, degrees Celsius
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	24.0	20.0	15.5	14.5	12.5	12.0	12.5	12.5	15.0	14.0	15.0	14.5
2	24.0	20.0	15.5	14.5	12.5	11.5	12.5	12.0	14.5	14.0	16.0	15.0
3	24.5	20.5	15.0	14.5	12.0	11.5	12.5	12.0	14.5	14.0	16.5	16.0
4	24.0	20.5	15.0	14.5	11.5	11.0	12.0	12.0	14.5	14.0	17.0	16.5
5	24.0	20.5	15.0	14.5	11.5	11.0	12.0	11.5	14.0	13.5	16.5	16.0
6	24.0	20.0	15.0	14.5	11.0	11.0	11.5	11.0	14.0	13.5	16.5	16.0
7	25.0	21.0	15.0	14.5	11.0	11.0	11.5	11.0	14.0	13.5	16.5	16.0
8	24.5	20.5	15.5	14.5	11.0	11.0	11.5	11.0	14.0	13.5	17.0	16.5
9	23.5	20.5	15.0	14.5	11.5	10.5	12.0	11.5	14.0	13.5	17.0	16.5
10	23.0	21.0	15.5	14.5	11.5	11.0	13.5	12.0	14.0	13.5	17.5	16.5
11	23.0	19.5	15.5	14.5	11.5	11.0	13.5	13.5	14.5	14.0	18.0	16.5
12	23.5	20.0	15.5	14.5	11.5	11.0	14.0	13.5	15.0	14.5	18.0	16.5
13	24.0	21.5	15.5	14.5	11.5	11.0	14.0	13.5	15.0	14.5	17.5	17.0
14	23.5	20.0	15.5	14.5	12.0	11.5	14.0	13.5	15.5	15.0	18.5	17.0
15	23.0	20.5	15.5	14.5	12.5	12.0	13.5	13.0	15.5	15.0	18.5	17.5
16	22.0	20.5	15.5	15.0	13.5	12.5	13.0	13.0	15.5	15.0	18.0	17.0
17	21.0	18.0	15.5	15.0	13.5	12.5	13.0	12.5	16.5	15.0	17.5	17.0
18	20.0	19.0	15.5	15.0	13.5	12.5	13.5	13.0	16.0	15.5	17.0	16.5
19	20.0	19.5	15.5	15.0	13.5	12.5	14.5	13.5	16.0	14.0	16.5	16.0
20	19.5	17.5	16.0	15.5	13.0	13.0	15.0	13.5	14.0	13.5	16.5	15.5
21	17.5	17.0	15.5	14.5	13.5	13.0	15.0	14.0	14.0	13.5	16.5	16.0
22	17.0	16.5	15.0	14.5	13.5	13.0	15.5	14.0	13.5	13.5	16.5	16.0
23	17.0	16.5	15.0	14.5	13.0	12.5	15.5	14.5	13.5	13.5	16.5	16.0
24	17.0	16.5	14.5	14.0	12.5	12.0	15.5	14.5	13.5	13.5	16.5	16.0
25	17.5	17.0	14.5	14.0	12.5	12.0	15.0	14.5	13.5	13.5	16.0	15.5
26	18.0	17.0	14.0	13.5	12.5	12.0	15.0	14.5	13.5	13.5	16.0	15.5
27	17.5	16.5	14.0	13.5	12.5	12.0	15.0	14.5	14.0	13.5	16.0	15.5
28	16.5	15.0	14.0	13.0	12.5	12.0	15.0	14.5	15.0	14.0	16.0	15.5
29	15.5	14.5	13.0	13.0	13.0	12.0	15.0	15.0	---	---	16.0	15.5
30	15.0	14.5	13.0	12.5	13.0	13.0	15.0	14.5	---	---	16.5	16.0
31	15.0	14.5	---	---	13.0	12.5	15.0	14.5	---	---	17.0	16.0
MONTH	25.0	14.5	16.0	12.5	13.5	10.5	15.5	11.0	16.5	13.5	18.5	14.5

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 11074000 SANTA ANA R BL PRADO DAM CA SOURCE AGENCY USGS STATE 06 COUNTY 065
LATITUDE 335300 LONGITUDE 1173840 NAD27 DRAINAGE AREA 2258 CONTRIBUTING DRAINAGE AREA 1490 DATUM 449 NGVD29
Date Processed: 2006-01-04 17:12 By jaagajan
APPROVED
DD #1
Temperature, water, degrees Celsius
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	17.0	16.0	---	---	22.0	22.0	21.5	21.0	25.0	25.0	25.0	24.0
2	16.5	16.0	---	---	22.0	22.0	21.5	21.5	25.0	24.5	25.0	23.0
3	16.5	16.0	---	---	22.0	22.0	21.5	21.5	25.0	24.5	26.5	21.0
4	16.5	16.0	19.0	19.0	22.0	22.0	22.0	21.5	25.0	24.5	26.5	19.5
5	17.5	16.0	19.0	19.0	22.0	22.0	22.0	21.5	25.0	24.5	26.0	19.0
6	17.0	16.5	19.5	19.0	22.0	22.0	22.0	21.5	25.0	24.5	26.5	19.0
7	17.0	16.5	19.5	19.5	22.0	21.5	22.0	21.5	25.0	24.5	27.0	19.0
8	17.0	16.5	19.5	19.5	22.0	21.5	22.0	22.0	25.0	24.5	27.0	20.0
9	17.5	16.5	19.5	19.5	22.0	21.5	22.5	22.0	25.0	24.5	24.5	19.5
10	17.5	17.0	19.5	19.5	22.0	21.5	22.5	22.0	25.0	24.5	25.5	20.0
11	17.5	17.5	19.5	19.5	21.5	21.5	22.5	22.0	25.0	24.5	25.5	20.0
12	18.0	17.5	20.0	19.5	22.0	21.5	22.5	22.0	25.0	24.5	25.5	19.0
13	18.0	17.5	19.5	19.5	22.0	21.5	22.5	22.5	24.5	24.0	24.5	18.5
14	18.0	17.5	20.0	19.5	22.0	21.5	23.0	22.5	24.5	24.0	25.0	19.0
15	18.0	17.5	20.0	19.5	22.0	21.5	23.0	22.5	24.0	23.5	25.0	18.5
16	18.5	18.0	20.0	19.5	22.0	22.0	23.0	23.0	23.5	23.0	25.5	20.5
17	18.5	18.0	20.0	20.0	22.0	22.0	23.5	23.0	23.0	23.0	25.0	19.0
18	18.5	18.0	20.0	20.0	22.0	22.0	23.5	23.0	23.0	22.5	25.5	19.0
19	19.0	18.0	20.5	20.0	22.0	21.5	23.5	23.0	23.0	22.5	25.5	19.5
20	---	---	20.5	20.0	22.0	21.5	24.0	23.5	23.0	22.5	24.0	22.0
21	---	---	20.5	20.5	22.0	21.5	24.0	23.5	23.0	22.5	24.5	21.5
22	---	---	20.5	20.5	22.0	21.5	24.0	23.5	23.0	22.5	24.5	21.0
23	---	---	21.0	20.5	22.0	21.5	24.0	24.0	23.0	23.0	24.5	21.5
24	---	---	21.0	21.0	22.0	21.5	24.5	24.0	23.0	23.0	24.5	21.0
25	---	---	21.5	21.0	22.0	21.5	24.5	24.0	23.5	23.0	23.5	19.5
26	---	---	21.5	21.0	22.0	21.5	24.5	24.0	23.5	23.0	24.0	20.0
27	---	---	22.0	21.5	22.0	21.5	25.0	24.5	24.0	23.5	24.0	21.0
28	---	---	22.0	21.5	22.0	21.5	25.0	24.5	24.5	24.0	23.5	19.0
29	---	---	22.0	22.0	21.5	21.0	25.0	24.5	25.0	24.5	25.0	20.0
30	---	---	22.0	22.0	21.5	21.0	25.0	24.5	25.0	24.5	24.0	19.5
31	---	---	22.0	22.0	---	---	25.0	25.0	25.0	24.5	---	---
MONTH	19.0	16.0	22.0	19.0	22.0	21.0	25.0	21.0	25.0	22.5	27.0	18.5
YEAR	27.0	10.5										

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 11074000 SANTA ANA R BL PRADO DAM CA SOURCE AGENCY USGS STATE 06 COUNTY 065
LATITUDE 335300 LONGITUDE 1173840 NAD27 DRAINAGE AREA 2258 CONTRIBUTING DRAINAGE AREA 1490 DATUM 449 NGVD29
Date Processed: 2006-01-04 17:12 By jaagajan
APPROVED
DD #4

Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1000	935	529	402	841	815	440	340	963	861	561	477
2	998	939	556	488	845	818	431	408	945	832	636	526
3	989	958	563	509	840	820	438	382	953	863	770	631
4	1010	955	592	511	842	829	448	395	947	915	904	717
5	1020	962	626	571	833	822	505	448	946	927	898	861
6	1070	979	691	613	832	820	498	411	953	925	913	858
7	999	956	691	648	822	816	563	419	977	950	861	815
8	995	967	773	691	822	817	540	474	970	912	869	814
9	1000	973	778	737	833	818	531	270	950	906	915	826
10	992	950	773	745	833	822	302	267	1030	916	960	879
11	980	955	774	737	841	827	311	269	975	841	1000	955
12	995	966	769	714	847	834	323	306	898	678	981	948
13	994	963	760	709	855	842	323	299	678	484	961	928
14	1010	981	742	641	864	846	333	306	560	464	955	835
15	1010	950	819	659	881	856	351	329	751	517	922	876
16	981	945	862	801	986	876	374	348	800	701	901	854
17	953	325	876	810	965	922	453	372	1010	717	867	807
18	600	486	887	812	945	913	541	452	941	844	810	753
19	657	495	897	839	972	926	824	528	844	359	805	737
20	629	344	921	840	991	946	883	582	359	308	813	714
21	347	264	877	769	987	967	935	586	414	310	761	679
22	357	316	860	799	1030	979	1000	645	389	348	729	669
23	406	338	873	845	1040	1010	996	920	392	352	688	533
24	445	382	881	858	1040	996	970	896	399	352	631	523
25	519	429	878	856	1020	1000	926	864	391	362	586	557
26	824	495	863	852	1050	1020	900	864	395	359	625	578
27	660	459	864	843	1060	1020	898	762	440	376	603	578
28	517	347	852	841	1070	967	893	766	506	420	608	562
29	412	363	848	835	1030	485	902	868	---	---	614	566
30	477	376	844	814	485	359	878	839	---	---	676	602
31	459	377	---	---	440	337	921	829	---	---	773	584
MONTH	1070	264	921	402	1070	337	1000	267	1030	308	1000	477

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 11074000 SANTA ANA R BL PRADO DAM CA SOURCE AGENCY USGS STATE 06 COUNTY 065
LATITUDE 335300 LONGITUDE 1173840 NAD27 DRAINAGE AREA 2258 CONTRIBUTING DRAINAGE AREA 1490 DATUM 449 NGVD29
Date Processed: 2006-01-04 17:12 By jaagajan
APPROVED
DD #4

Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	695	626	---	---	806	759	909	886	1010	940	997	970
2	658	618	---	---	792	765	896	887	955	930	1070	996
3	641	620	---	---	796	774	897	886	938	917	1130	1060
4	765	615	778	710	821	776	901	889	934	908	1110	1020
5	810	707	791	695	812	780	908	893	929	899	1060	976
6	809	723	735	699	812	790	910	902	910	887	1030	940
7	795	645	780	714	799	778	917	907	899	883	1050	843
8	686	647	760	732	794	774	918	907	899	870	843	764
9	676	649	805	736	795	781	920	911	893	868	856	821
10	691	665	813	779	797	784	923	914	889	870	908	856
11	703	680	844	798	805	786	929	906	886	864	869	832
12	694	641	840	806	803	786	934	921	876	851	929	820
13	658	614	835	807	806	788	940	930	862	842	1020	885
14	684	616	827	787	814	788	948	937	859	836	1010	968
15	673	623	804	781	812	801	955	935	848	828	1010	970
16	681	637	799	778	820	805	950	936	828	795	997	915
17	679	636	794	772	825	810	957	943	815	782	1010	936
18	686	638	800	768	833	819	966	950	803	772	1030	965
19	688	648	810	760	847	823	977	960	802	774	1030	994
20	---	---	817	780	849	837	981	965	798	771	1030	632
21	---	---	816	780	842	829	987	969	803	775	953	866
22	---	---	813	768	851	836	990	974	823	792	979	926
23	---	---	812	778	852	843	995	957	831	802	1020	970
24	---	---	796	771	859	849	1020	957	846	811	1010	867
25	---	---	780	764	870	859	1020	1000	860	825	872	813
26	---	---	790	761	878	867	1020	1000	881	844	902	815
27	---	---	806	775	886	878	1020	1000	902	852	889	848
28	---	---	822	782	896	881	1020	1010	928	888	927	855
29	---	---	825	776	905	893	1020	1000	947	915	890	838
30	---	---	827	781	906	896	1020	1010	967	944	927	837
31	---	---	823	766	---	---	1020	995	979	954	---	---
MONTH	810	614	844	695	906	759	1020	886	1010	771	1130	632
YEAR	1130	264										

DISTRICT CODE 06 UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 1-04-06
11074000 -- SANTA ANA R BL PRADO DAM CA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Instantaneous discharge, cfs (00061)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Residue on evap. at 180degC wat flt mg/L (70300)
OCT					
01...	1145	200	980	21.5	608
15...	1150	169	1000	21.5	641
NOV					
05...	1420	299	587	15.0	359
19...	0845	234	847	15.0	527
DEC					
06...	1420	346	845	11.5	503
17...	0935	412	935	12.5	558
JAN					
20...	1410	128	896	15.0	552
31...	0930	500	886	14.5	539
FEB					
10...	1000	719	943	14.0	584
25...	1010	4720	372	13.5	225
MAR					
11...	1110	188	1000	17.0	630
28...	1230	981	623	15.5	374
APR					
05...	1200	187	813	17.0	487
15...	1115	612	651	18.0	400
MAY					
05...	1310	683	709	19.0	432
20...	1010	410	818	20.5	499
JUN					
06...	0915	453	801	22.0	496
22...	1045	384	873	22.0	521
JUL					
01...	0915	390	910	21.5	540
15...	0845	371	965	23.0	580
AUG					
01...	1000	315	980	25.5	576
12...	0905	378	890	24.5	516
SEP					
07...	1030	226	1060	20.5	665
21...	0945	256	885	22.0	573

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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, Hydrologic Unit 18070203, near center of Metropolitan Water District pipeline crossing, 0.8 mi downstream from Union Pacific Railroad Bridge, 1.1 mi upstream from bridge on Van Buren Boulevard, and 3.3 mi north of Arlington.

DRAINAGE AREA.--852 mi².

WATER-DISCHARGE 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 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 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.

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

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct 20	1115	25,500	*16.58
Oct 27	0645	16,900	11.88
Dec 29	0915	9,340	11.02
Jan 3	1330	4,710	9.83
Jan 11	0930	*47,800	14.64
Feb 11	unk	e4,500	unk
Feb 19	unk	e12,500	unk
Mar 23	0215	1,930	8.95

[e, estimated]

11066460 SANTA ANA RIVER AT METROPOLITAN WATER DISTRICT CROSSING, NEAR ARLINGTON, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	e71	e100	e88	e125	e99	e240	e590	e201	e245	e110	e240	e90
2	e71	e92	e84	e95	e93	e220	e580	e204	e250	e109	e215	e90
3	e72	e84	e81	e985	e96	e200	e605	e209	e248	e108	e200	e86
4	e71	e79	e79	e210	e93	e215	e610	e203	e245	e108	e205	e88
5	e72	e80	e90	e128	e94	e190	e615	e181	e240	e107	e200	e92
6	e73	e78	e82	e117	e98	e180	e615	e400	e245	e106	e203	e90
7	e70	e80	e81	e766	e102	e191	e620	e158	e250	e105	e204	e89
8	e73	e82	e92	e3,900	e99	e155	e625	e141	e245	e117	e208	e87
9	e72	e79	e86	e17,100	e102	e270	e630	e134	e240	e102	e240	e86
10	e72	e77	e81	e21,100	e104	e175	e635	e280	e235	e105	e265	e89
11	e73	e76	e83	e22,000	e1,700	e490	e630	e700	e231	e103	e280	e91
12	e73	e75	e84	e2,500	e800	e630	e620	e500	e225	e100	e275	e93
13	e71	e78	e81	e750	e170	e600	e638	e400	e215	e100	e265	e89
14	e72	e75	e78	e450	e135	e625	e645	e150	e175	e100	e260	e85
15	e73	e75	e77	e310	e120	e560	e536	e145	e150	e102	e275	e87
16	e75	e75	e76	e220	e93	e540	e620	e380	e135	e108	e268	e86
17	e438	e73	e76	e194	e90	e550	e600	e600	e123	e118	e283	e85
18	e342	e75	e75	e140	e1,750	e575	e560	e500	e120	e105	e288	e88
19	e100	e73	e74	e131	e4,000	e610	e550	e700	e118	e130	e290	e84
20	e6,040	e73	e74	e105	e1,500	e605	e540	e425	e117	e127	e224	e87
21	e750	e192	e72	e100	e3,200	e615	e350	e260	e115	e123	e175	e85
22	e200	e131	e71	e96	e2,300	e900	e310	e300	e112	e101	e179	e82
23	e150	e99	e71	e95	e1,700	e890	e308	e315	e112	e170	e165	e83
24	e110	e90	e71	e98	e960	e800	e350	e329	e120	e200	e130	e81
25	e95	e89	e71	e90	e650	e740	e295	e316	e360	e225	e125	e80
26	e88	e86	e70	e230	e425	e650	e268	e300	e300	e300	e117	e82
27	e4,940	e169	e72	e129	e310	e640	e283	e285	e210	e260	e95	e80
28	e535	e237	e1,500	e200	e270	e635	e386	e270	e130	e180	e90	e84
29	e196	e99	e3,800	e275	---	e600	e189	e256	e123	e150	e85	e88
30	e160	e91	e120	e113	---	e580	e211	e255	e116	e145	e84	e92
31	e125	---	e375	e103	---	e570	---	e250	---	e230	e87	---
Total	15,423	2,862	7,915	72,855	21,153	15,441	15,014	9,747	5,750	4,254	6,220	2,599
Mean	498	95.4	255	2,350	755	498	500	645	700	360	300	290	93
Max	6,040	237	3,800	22,000	4,000	900	155	189	134	112	100	84	80
Min	70	73	70	90	90	155	189	134	112	100	84	80
Ac-ft	30,590	5,680	15,700	144,500	41,960	30,630	29,780	19,330	11,410	8,440	12,340	5,160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2005, BY WATER YEAR (WY)

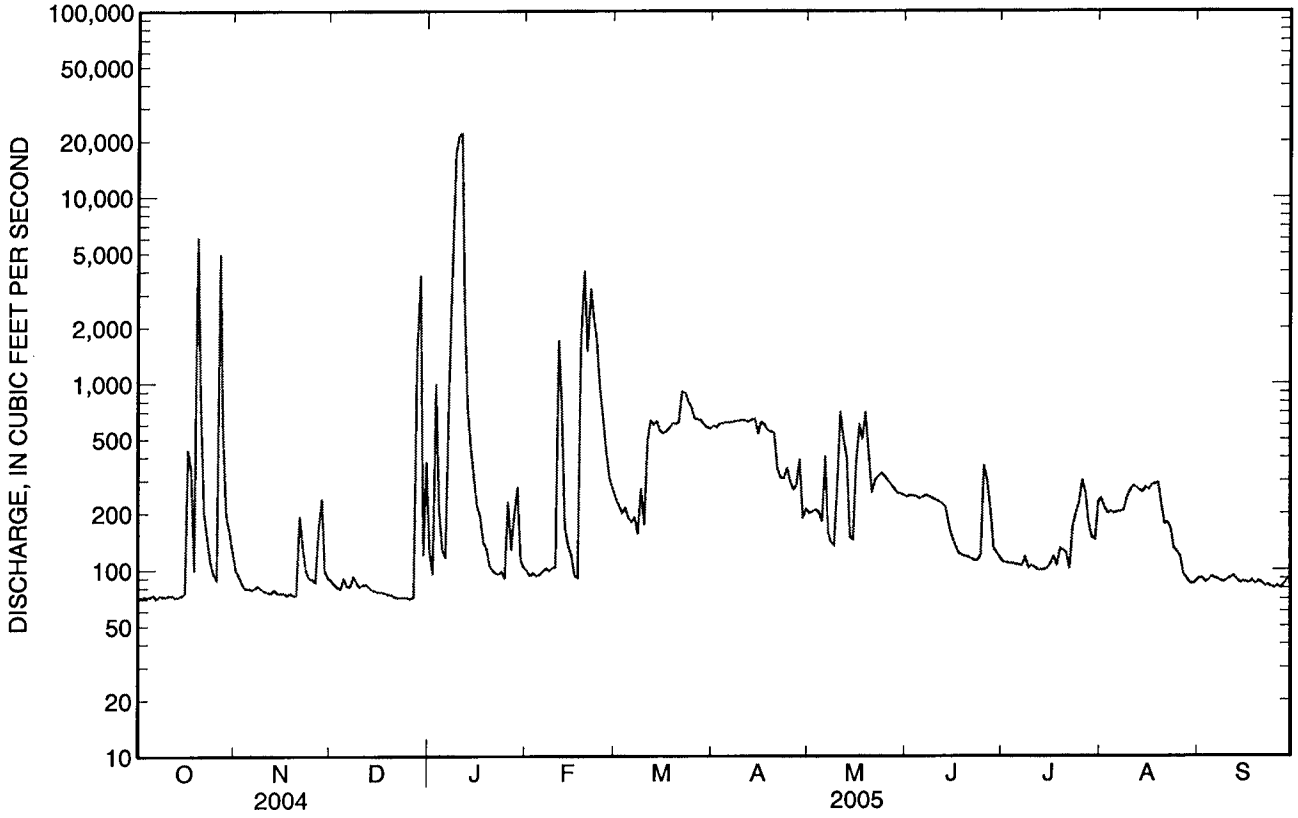
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	75.1	83.0	110	281	296	307	153	121	82.5	58.2	59.4	57.5
Max	498	259	292	2,350	1,411	1,806	604	666	351	145	233	129
(WY)	(2005)	(1984)	(1984)	(2005)	(1980)	(1995)	(1983)	(1983)	(1983)	(1983)	(1983)	(1976)
Min	20.5	21.2	23.3	24.7	23.1	23.7	23.1	22.3	20.2	16.8	17.9	18.0
(WY)	(1974)	(1975)	(1974)	(1972)	(1972)	(1972)	(1971)	(1972)	(1981)	(1981)	(1981)	(1974)

11066460 SANTA ANA RIVER AT METROPOLITAN WATER DISTRICT CROSSING, NEAR ARLINGTON, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2004		Water Year 2005		Water Years 1970 - 2005	
Annual total	54,963		179,233			
Annual mean	150		491		141	
Highest annual mean					491	2005
Lowest annual mean					29.0	1975
Highest daily mean	6,040	Oct 20	e22,000	Jan 11	e22,000	Jan 11, 2005
Lowest daily mean	56	Jul 19	e70	Oct 7	15	Sep 7, 1980
Annual seven-day minimum	57	Jul 19	71	Dec 21	16	Jul 1, 1981
Maximum peak flow			47,800	Jan 11	47,800	Jan 11, 2005
Maximum peak stage			16.58	Oct 20	20.23	Mar 4, 1978
Annual runoff (ac-ft)	109,000		355,500		101,800	
10 percent exceeds	141		630		207	
50 percent exceeds	73		150		72	
90 percent exceeds	61		76		24	

e Estimated.



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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.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Instantaneous discharge, cfs (00061)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Residue on evap. at 180degC wat flt mg/L (70300)
Oct					
05...	1200	72	940	22.0	607
19...	1115	84	888	21.0	563
Nov					
03...	1245	84	974	21.0	638
22...	1240	134	800	15.5	511
Dec					
06...	1245	82	943	13.5	600
21...	1200	73	956	18.0	618
Jan					
27...	1430	136	870	20.0	575
Feb					
08...	1300	98	978	22.0	640
16...	1400	93	973	16.5	629
Mar					
08...	1340	155	828	23.0	504
29...	0945	600	343	15.0	212
Apr					
14...	1245	648	365	19.0	285
25...	1250	295	649	19.0	389
May					
09...	1400	134	854	22.0	528
24...	1210	333	566	27.0	342
Jun					
07...	1130	251	640	25.5	382
21...	1345	115	708	30.5	423
Jul					
06...	1210	106	812	29.0	506
Aug					
17...	1245	283	644	27.0	397
29...	1315	86	920	30.0	572
Sep					
12...	1240	93	894	26.0	563
27...	1330	80	997	32.0	638

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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, Hydrologic Unit 18070203, in San Bernardino Grant, on left bank, 0.4 mi downstream from E Street Bridge, 0.4 mi upstream from Warm Creek, 1.2 mi downstream from San Timoteo Creek, 2.8 mi south of San Bernardino, and 26 mi downstream from Big Bear Lake.

DRAINAGE AREA.--541 mi².

WATER-DISCHARGE RECORDS

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

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

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.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct 20	unk	e7,500	unk
Oct 27	unk	e4,000	unk
Dec 29	0700	6,050	5.88
Jan 3	1130	4,910	5.70
Jan 11	0415	*35,700	*9.04
Jan 29	0315	3,400	5.40
Feb 11	1945	3,040	5.30
Feb 19	1345	8,890	6.29
Mar 9	1415	1,620	5.00
Mar 23	0045	1,920	5.09
Apr 28	0830	1,870	5.08
May 6	0645	1,400	4.92
May 11	1030	1,200	4.85
May 19	1230	1,280	4.88

[e, estimated]

11059300 SANTA ANA RIVER AT E STREET, NEAR SAN BERNARDINO, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	e0.00	e8.0	e6.5	91	46	189	477	126	162	35	170	43
2	e0.00	e5.0	e15	42	e42	165	423	100	174	9.6	107	42
3	e0.00	e3.0	12	958	e39	136	439	110	164	9.0	102	40
4	e0.00	e2.7	5.7	276	e36	167	444	103	146	8.3	101	40
5	e0.00	e2.5	4.2	77	e33	120	469	66	139	17	100	31
6	e0.00	e2.5	3.6	40	e45	99	470	313	165	12	97	31
7	e0.00	e2.7	3.4	474	e21	146	437	117	179	11	94	25
8	e0.00	e5.0	4.1	1,120	e15	283	471	69	142	10	99	31
9	e0.00	e4.6	3.9	4,860	e9.0	205	493	105	139	9.5	133	33
10	e0.00	e4.1	3.8	12,100	7.3	71	433	223	129	9.9	186	32
11	e0.00	e3.7	3.7	12,500	1,170	411	442	643	123	16	223	31
12	e0.00	e3.5	3.6	1,230	629	550	434	446	125	11	218	39
13	e0.00	e3.1	3.9	673	139	487	434	336	106	7.7	205	50
14	e0.00	e3.0	4.2	390	93	540	354	73	81	4.4	194	55
15	e0.00	e2.7	4.0	292	73	473	276	82	62	6.1	183	58
16	e0.00	e2.6	3.7	170	39	439	411	302	59	6.0	167	46
17	e250	e2.5	3.6	107	37	444	474	546	45	5.2	130	50
18	e140	e2.4	3.5	76	623	460	459	416	50	17	141	46
19	e75	e2.4	3.5	56	2,240	509	459	678	49	42	178	42
20	e2,900	e2.5	3.5	49	769	503	444	367	50	44	112	47
21	e350	e65	3.6	e42	1,240	482	268	184	50	29	58	67
22	e90	e80	3.5	e37	1,060	622	126	223	43	4.4	54	52
23	e40	e18	3.2	e33	809	764	129	245	33	69	27	46
24	e10	e9.0	3.8	e31	325	643	215	254	79	117	3.0	45
25	e8.2	e6.0	3.6	e25	334	622	155	240	328	149	3.7	44
26	e6.8	e3.8	4.0	e100	271	549	189	242	250	241	2.9	34
27	e2,000	e30	4.2	e55	202	481	179	250	150	209	2.4	26
28	e200	e19	651	e90	187	460	306	204	84	139	2.5	31
29	e95	e8.0	1,800	608	---	455	69	211	25	100	14	32
30	e18	e7.0	97	84	---	434	143	199	15	103	27	30
31	e11	---	330	45	---	426	---	178	---	188	30	---
Total	6,194.00	314.3	3,003.3	36,731	10,533.3	12,335	10,522	7,651	3,346	1,639.1	3,164.5	1,219
Mean	200	10.5	96.9	1,185	376	398	351	247	112	52.9	102	40.6
Max	2,900	80	1,800	12,500	2,240	764	493	678	328	241	223	67
Min	0.00	2.4	3.2	25	7.3	71	69	66	15	4.4	2.4	25
Ac-ft	12,290	623	5,960	72,860	20,890	24,470	20,870	15,180	6,640	3,250	6,280	2,420

11059300 SANTA ANA RIVER AT E STREET, NEAR SAN BERNARDINO, CA—Continued

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

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

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
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	

11059300 SANTA ANA RIVER AT E STREET, NEAR SAN BERNARDINO, CA—Continued

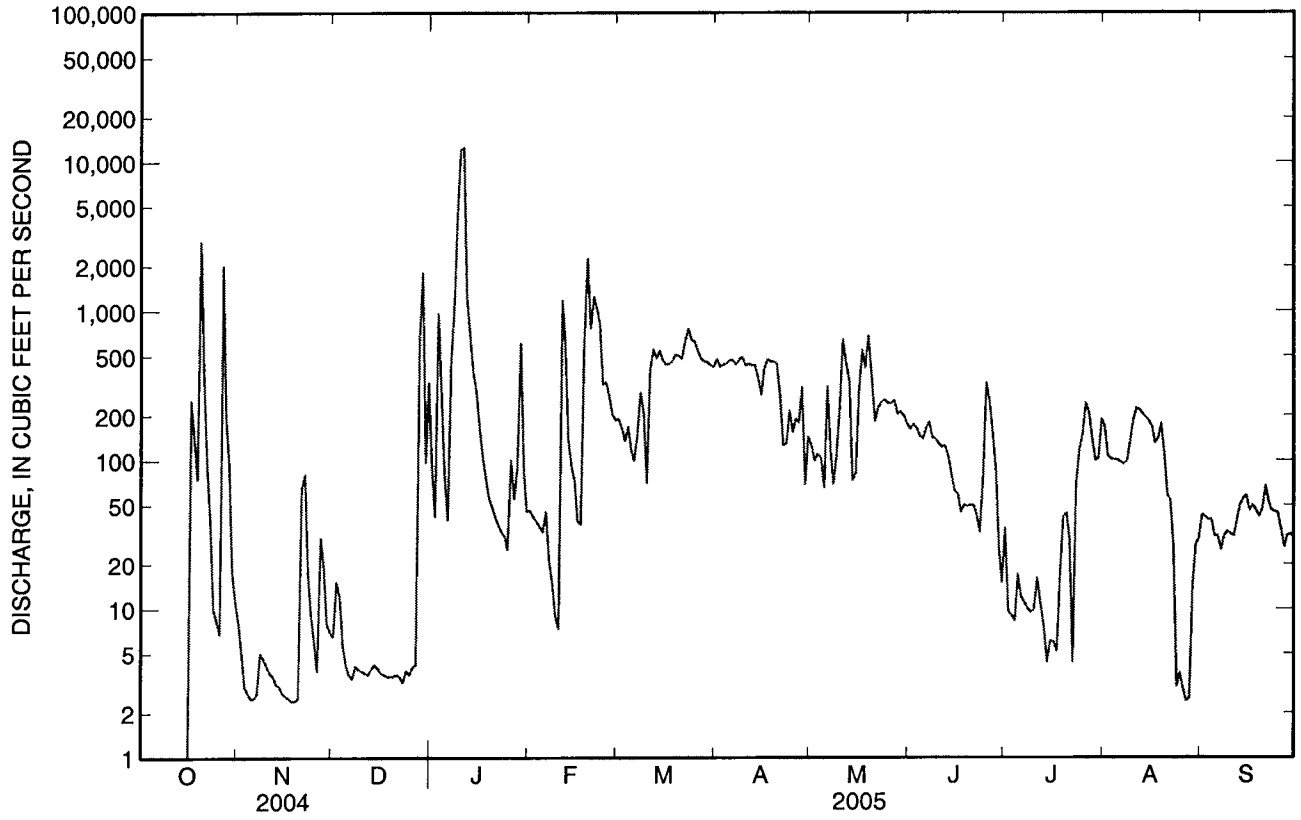
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2005, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	28.0	20.0	30.6	164	176	74.6	67.1	69.1	23.9	9.13	17.7	13.2
Max	200	56.2	96.9	1,185	729	398	351	430	116	52.9	102	75.8
(WY)	(2005)	(1997)	(2005)	(2005)	(1998)	(2005)	(2005)	(1998)	(1998)	(2005)	(2005)	(1998)
Min	0.00	0.67	1.16	0.00	0.82	0.10	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(2003)	(2001)	(2001)	(2003)	(2002)	(1997)	(1997)	(1996)	(1996)	(1996)	(1996)	(1996)

SUMMARY STATISTICS

	Calendar Year 2004		Water Year 2005		Water Years 1996 - 2005	
Annual total	13,517.90		96,652.50			
Annual mean	36.9		265		57.2	
Highest annual mean					265	2005
Lowest annual mean					1.70	2002
Highest daily mean	2,900	Oct 20	12,500	Jan 11	12,500	Jan 11, 2005
Lowest daily mean	0.00	May 2	0.00	Oct 1	0.00	Mar 22, 1996
Annual seven-day minimum	0.00	Jul 28	0.00	Oct 1	0.00	Mar 22, 1996
Maximum peak flow			35,700	Jan 11	35,700	Jan 11, 2005
Maximum peak stage			9.04	Jan 11	9.04	Jan 11, 2005
Annual runoff (ac-ft)	26,810		191,700		41,420	
10 percent exceeds	30		479		106	
50 percent exceeds	1.2		75		1.3	
90 percent exceeds	0.00		3.5		0.00	

e Estimated.



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Water-Data Report CA-2005

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, 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^2.

WATER-DISCHARGE 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 above 200 ft^3/s and poor below. 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,300 ft^3/s, Oct. 20, 2004, gage height, 6.58 ft, from rating curve extended above 617 ft^3/s on basis of step-backwater computations; prior to operation of Plant No. 1, no flow for most of some years, minimum daily since 1985, 2.5 ft^3/s, June 6, 1987.

11073495 CUCAMONGA CREEK NEAR MIRA LOMA, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	50	57	61	88	68	84	68	62	53	53	46	49
2	51	57	57	63	e70	82	69	60	54	53	44	50
3	53	51	53	250	e69	90	71	60	54	54	45	52
4	54	47	55	93	e68	297	73	63	56	51	42	51
5	58	51	70	70	e70	163	74	75	55	55	43	50
6	38	53	50	68	e66	109	75	268	50	55	40	51
7	58	56	50	271	e71	e98	78	78	49	54	38	54
8	51	53	58	1,350	e68	e115	78	71	49	55	39	56
9	54	50	55	5,200	e62	e98	77	67	51	54	39	53
10	53	49	56	e2,900	e57	e90	77	61	53	54	40	49
11	53	51	56	e1,400	579	e85	76	55	51	53	39	48
12	58	53	56	e280	283	e82	74	52	49	49	41	50
13	60	54	55	175	124	e83	74	53	41	46	40	49
14	57	52	55	127	84	e89	74	50	39	47	41	49
15	60	55	56	102	75	e75	74	49	45	46	205	50
16	57	55	56	86	71	e91	72	42	44	46	50	50
17	316	56	53	71	139	e82	73	46	51	45	41	49
18	218	56	54	79	613	e105	72	47	55	45	40	51
19	158	57	55	63	1,820	e157	72	42	58	46	40	51
20	2,740	119	56	59	666	73	73	46	54	50	43	87
21	248	309	54	61	2,160	68	71	49	50	52	44	48
22	84	57	51	61	1,060	578	71	53	48	49	44	46
23	67	64	53	59	811	e132	73	51	50	50	44	46
24	62	62	50	67	190	e117	97	51	55	53	44	47
25	58	69	51	64	148	e130	73	51	54	42	45	48
26	82	71	49	103	122	e109	70	54	48	43	42	49
27	1,670	99	52	110	99	e82	69	57	46	44	44	48
28	125	74	603	143	94	e71	483	55	47	44	44	48
29	76	62	920	92	---	68	56	56	47	43	48	45
30	72	63	138	74	---	68	57	55	48	45	47	41
31	62	---	359	69	---	67	---	56	---	48	47	---
Total	6,903	2,062	3,497	13,698	9,807	3,638	2,594	1,935	1,504	1,524	1,489	1,515
Mean	223	68.7	113	442	350	117	86.5	62.4	50.1	49.2	48.0	50.5
Max	2,740	309	920	5,200	2,160	578	483	268	58	55	205	87
Min	38	47	49	59	57	67	56	42	39	42	38	41
Ac-ft	13,690	4,090	6,940	27,170	19,450	7,220	5,150	3,840	2,980	3,020	2,950	3,010

11073495 CUCAMONGA CREEK NEAR MIRA LOMA, CA—Continued

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

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

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	

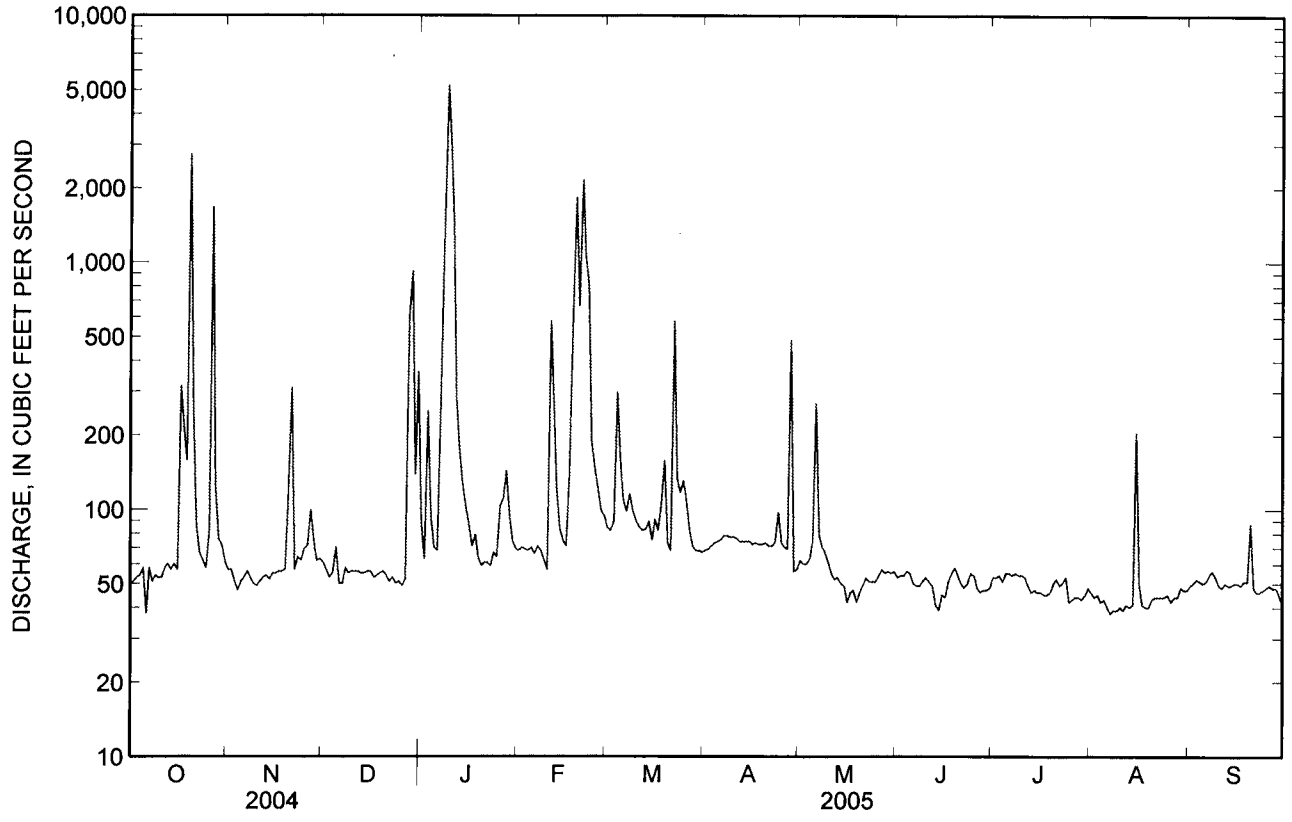
11073495 CUCAMONGA CREEK NEAR MIRA LOMA, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2005, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	46.9	45.3	52.9	93.5	114	68.9	47.2	37.5	36.3	34.7	34.5	38.2
Max	223	102	113	442	350	198	96.7	69.4	57.1	53.4	51.8	52.0
(WY)	(2005)	(2003)	(2005)	(2005)	(2005)	(1995)	(2003)	(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)

SUMMARY STATISTICS

	Calendar Year 2004		Water Year 2005		Water Years 1986 - 2005	
Annual total	31,616		50,166			
Annual mean	86.4		137		53.8	
Highest annual mean					137	2005
Lowest annual mean					26.6	1987
Highest daily mean	2,740	Oct 20	5,200	Jan 9	5,200	Jan 9, 2005
Lowest daily mean	25	Aug 3	38	Oct 6	2.5	Jun 6, 1987
Annual seven-day minimum	44	Aug 9	39	Aug 6	12	Aug 25, 1988
Maximum peak flow			17,300	Oct 20	17,300	Oct 20, 2004
Maximum peak stage			6.58	Oct 20	6.58	Oct 20, 2004
Annual runoff (ac-ft)	62,710		99,500		38,980	
10 percent exceeds	73		141		61	
50 percent exceeds	53		56		36	
90 percent exceeds	47		45		21	



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Water-Data Report CA-2005

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, 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^2.

WATER-DISCHARGE 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. 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, 662 acre-ft was released. See schematic diagram of Santa Ana River Basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft^3/s, Feb. 27, 1983, gage height, 10.32 ft, from rating curve extended above 560 ft^3/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^3/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 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1.00	1.7	1.6	11	2.1	76	2.3	2.5	1.9	1.8	2.8	1.7
2	1.00	1.4	1.3	9.3	2.1	22	2.4	2.6	2.4	1.7	1.9	1.4
3	0.84	1.4	1.2	144	1.9	32	2.4	2.7	17	1.6	3.6	1.4
4	1.1	1.7	1.1	24	2.1	64	2.3	2.7	23	1.6	2.1	1.4
5	1.2	1.6	27	7.7	2.0	95	2.4	13	60	1.7	1.9	1.3
6	1.2	1.4	1.8	5.7	3.6	103	2.4	12	52	1.9	2.2	1.5
7	1.3	1.3	1.7	245	2.1	118	2.4	3.0	17	3.2	2.3	3.1
8	1.2	23	8.8	313	2.0	54	2.5	2.8	13	3.3	2.9	2.5
9	1.1	1.8	1.3	1,560	1.9	16	2.2	3.4	9.9	1.4	5.6	4.0
10	1.1	1.4	1.3	604	2.2	5.7	2.1	2.4	20	1.5	5.6	1.6
11	1.2	1.3	1.2	379	501	5.1	2.1	2.4	23	3.4	8.8	1.6
12	1.3	1.4	1.2	555	79	4.9	2.3	2.7	20	2.8	5.1	1.6
13	1.4	1.3	1.1	849	4.8	4.9	2.2	2.1	11	1.3	1.7	1.5
14	1.3	1.3	1.2	51	4.4	4.8	2.2	2.0	1.9	1.4	1.8	2.2
15	1.3	1.3	1.1	79	4.7	4.0	2.2	2.0	1.8	1.7	5.1	6.5
16	1.4	1.4	1.0	72	3.9	4.0	2.3	2.2	1.8	1.6	8.2	14
17	189	1.5	1.2	154	23	4.0	2.3	3.4	1.9	1.7	5.9	13
18	139	1.4	1.1	1,240	121	17	2.5	4.5	1.7	1.7	1.6	1.5
19	51	1.4	1.0	438	862	18	2.5	4.5	1.7	3.3	1.6	1.6
20	865	44	1.1	40	287	7.1	2.3	4.1	1.6	2.2	1.6	24
21	13	199	1.2	4.5	731	4.1	2.3	2.7	1.7	3.0	1.6	1.9
22	16	3.0	1.1	2.6	542	343	2.4	2.8	2.1	2.1	1.9	1.5
23	13	2.1	1.1	2.5	278	18	2.4	2.4	2.9	1.7	1.5	14
24	8.5	2.1	1.0	2.6	55	6.4	6.2	2.2	1.7	2.5	1.6	39
25	6.1	1.9	1.0	2.5	34	4.0	2.4	2.1	1.7	3.7	1.6	40
26	118	2.0	1.1	24	21	3.6	2.4	2.2	1.7	6.5	1.6	37
27	655	68	1.2	2.6	26	3.5	2.5	2.1	2.0	1.6	1.5	32
28	15	3.4	461	28	56	3.4	195	2.1	2.4	1.8	1.6	36
29	2.2	2.1	297	2.7	---	2.5	3.6	2.5	1.8	1.8	1.6	49
30	1.9	1.5	5.1	2.7	---	2.6	2.5	2.3	1.8	1.8	1.6	45
31	1.5	---	255	2.1	---	2.4	---	2.1	---	1.9	1.7	---
Total	2,113.14	378.1	1,084.1	6,857.5	3,655.8	1,053.0	268.0	102.5	302.4	69.2	90.1	382.8
Mean	68.2	12.6	35.0	221	131	34.0	8.93	3.31	10.1	2.23	2.91	12.8
Max	865	199	461	1,560	862	343	195	13	60	6.5	8.8	49
Min	0.84	1.3	1.0	2.1	1.9	2.4	2.1	2.0	1.6	1.3	1.5	1.3
Ac-ft	4,190	750	2,150	13,600	7,250	2,090	532	203	600	137	179	759

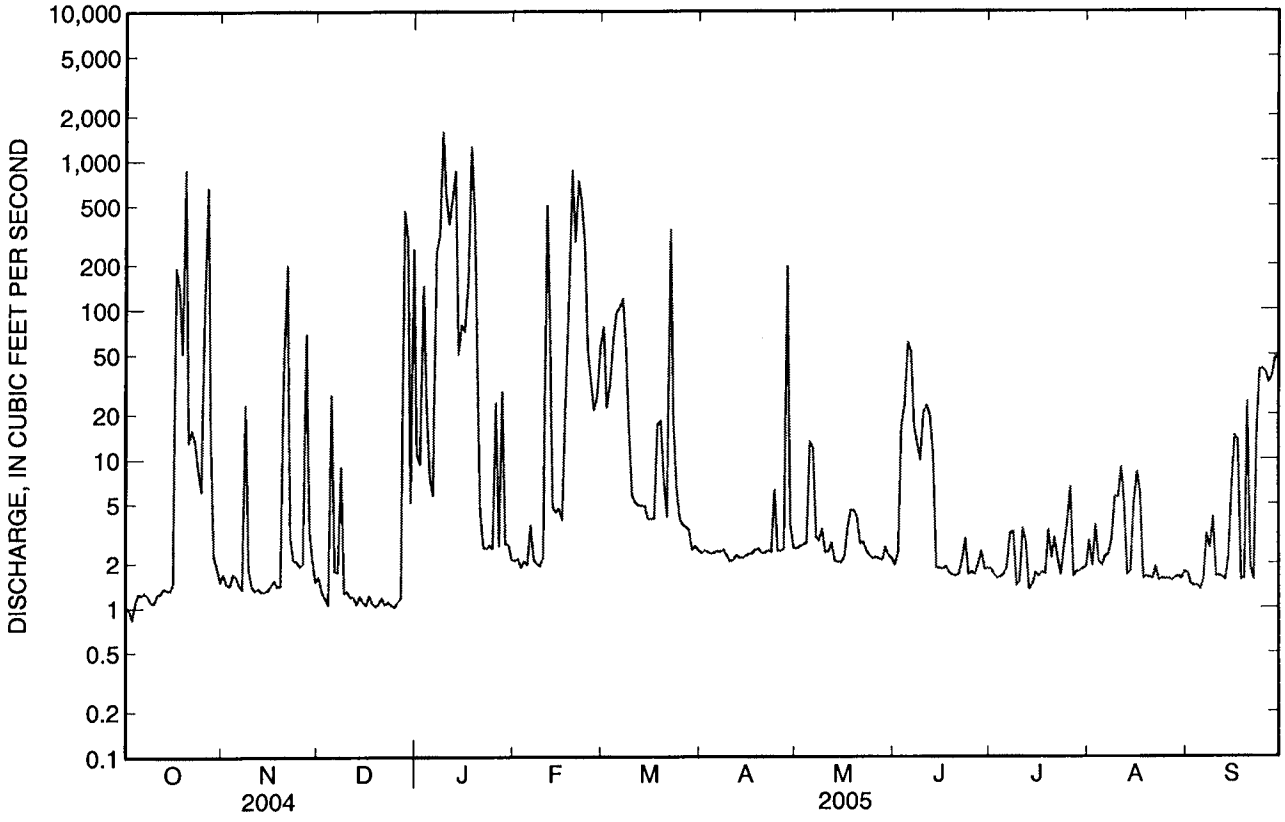
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2005, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	18.1	16.9	26.1	37.4	41.0	28.3	9.73	13.2	18.0	18.4	16.2	14.5
Max	126	113	189	221	193	257	68.6	104	184	176	191	198
(WY)	(1979)	(1976)	(1976)	(2005)	(1980)	(1978)	(1974)	(1997)	(1976)	(1974)	(1974)	(1997)
Min	0.06	0.23	0.53	0.55	0.33	0.30	0.14	0.22	0.06	0.07	0.14	0.13
(WY)	(1978)	(1978)	(1970)	(1972)	(1972)	(1972)	(1977)	(1973)	(1977)	(1977)	(1976)	(1977)

11073360 CHINO CREEK AT SCHAEFER AVENUE, NEAR CHINO, CA—Continued

SUMMARY STATISTICS

	Calendar Year 2004		Water Year 2005		Water Years 1970 - 2005	
Annual total	8,798.44		16,356.64			
Annual mean	24.0		44.8		21.4	
Highest annual mean					92.4	1974
Lowest annual mean					3.24	1970
Highest daily mean	865	Oct 20	1,560	Jan 9	2,060	Mar 1, 1978
Lowest daily mean	0.84	Oct 3	0.84	Oct 3	0.00	May 21, 1977
Annual seven-day minimum	1.0	Sep 27	1.1	Dec 19	0.02	Oct 28, 1977
Maximum peak flow			4,720	Oct 20	12,700	Feb 27, 1983
Maximum peak stage			7.63	Oct 20	10.32	Feb 27, 1983
Annual runoff (ac-ft)	17,450		32,440		15,510	
10 percent exceeds	58		70		74	
50 percent exceeds	2.0		2.4		1.3	
90 percent exceeds	1.2		1.3		0.39	



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Water-Data Report CA-2005

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, 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^2, excludes 768 mi^2 above Lake Elsinore.

WATER-DISCHARGE 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^3/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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,720 ft^3/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^3/s, Sept. 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 8,850 ft^3/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 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	4.9	4.5	16	105	106	283	117	74	61	18	18	24
2	5.6	3.1	16	76	110	258	91	72	61	18	16	23
3	6.2	3.5	16	301	104	209	96	73	50	20	19	21
4	6.4	3.6	17	287	102	225	97	64	42	17	17	23
5	6.9	4.4	43	165	109	175	97	101	38	18	15	23
6	7.1	5.2	23	124	114	187	97	209	33	17	19	26
7	7.0	3.6	18	239	109	190	88	75	26	18	19	25
8	7.5	6.2	38	274	109	190	81	64	22	18	18	26
9	8.1	7.6	19	1,310	109	175	73	74	20	19	19	26
10	6.6	7.2	19	1,830	109	178	69	83	19	21	19	25
11	6.6	6.8	21	1,930	514	177	67	76	19	22	19	26
12	6.6	8.3	23	717	275	157	61	66	18	19	19	25
13	6.2	9.6	24	432	173	131	70	58	18	19	20	25
14	5.5	6.9	24	280	146	108	84	49	19	18	21	23
15	5.1	7.0	24	217	128	92	84	46	17	17	26	23
16	6.6	7.1	26	185	119	88	84	45	17	18	20	22
17	163	8.5	27	169	135	97	75	39	17	21	18	20
18	10	7.9	26	154	283	145	81	33	17	21	18	21
19	19	7.9	24	141	1,050	141	75	33	17	20	20	24
20	607	8.3	23	126	545	129	70	36	17	20	19	65
21	37	32	21	111	1,790	116	65	44	18	19	19	43
22	12	11	21	107	1,010	268	62	57	14	17	20	40
23	12	8.9	25	108	1,550	212	59	67	15	15	21	37
24	9.7	15	27	112	751	147	63	73	16	17	21	32
25	11	15	29	114	537	138	54	72	17	20	24	30
26	10	17	30	144	444	134	51	74	19	20	23	34
27	564	43	31	118	368	135	44	65	18	17	24	41
28	39	19	380	190	312	141	337	63	18	17	27	49
29	17	17	679	122	---	135	113	59	18	17	29	50
30	9.3	16	157	104	---	119	89	60	20	17	29	40
31	5.5	---	195	100	---	126	---	61	---	18	26	---
Total	1,628.4	321.1	2,062	10,392	11,211	5,006	2,594	2,065	721	573	642	912
Mean	52.5	10.7	66.5	335	400	161	86.5	66.6	24.0	18.5	20.7	30.4
Max	607	43	679	1,930	1,790	283	337	209	61	22	29	65
Min	4.9	3.1	16	76	102	88	44	33	14	15	15	20
Ac-ft	3,230	637	4,090	20,610	22,240	9,930	5,150	4,100	1,430	1,140	1,270	1,810

11072100 TEMESCAL CREEK ABOVE MAIN STREET, AT CORONA, CA—Continued

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

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

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	

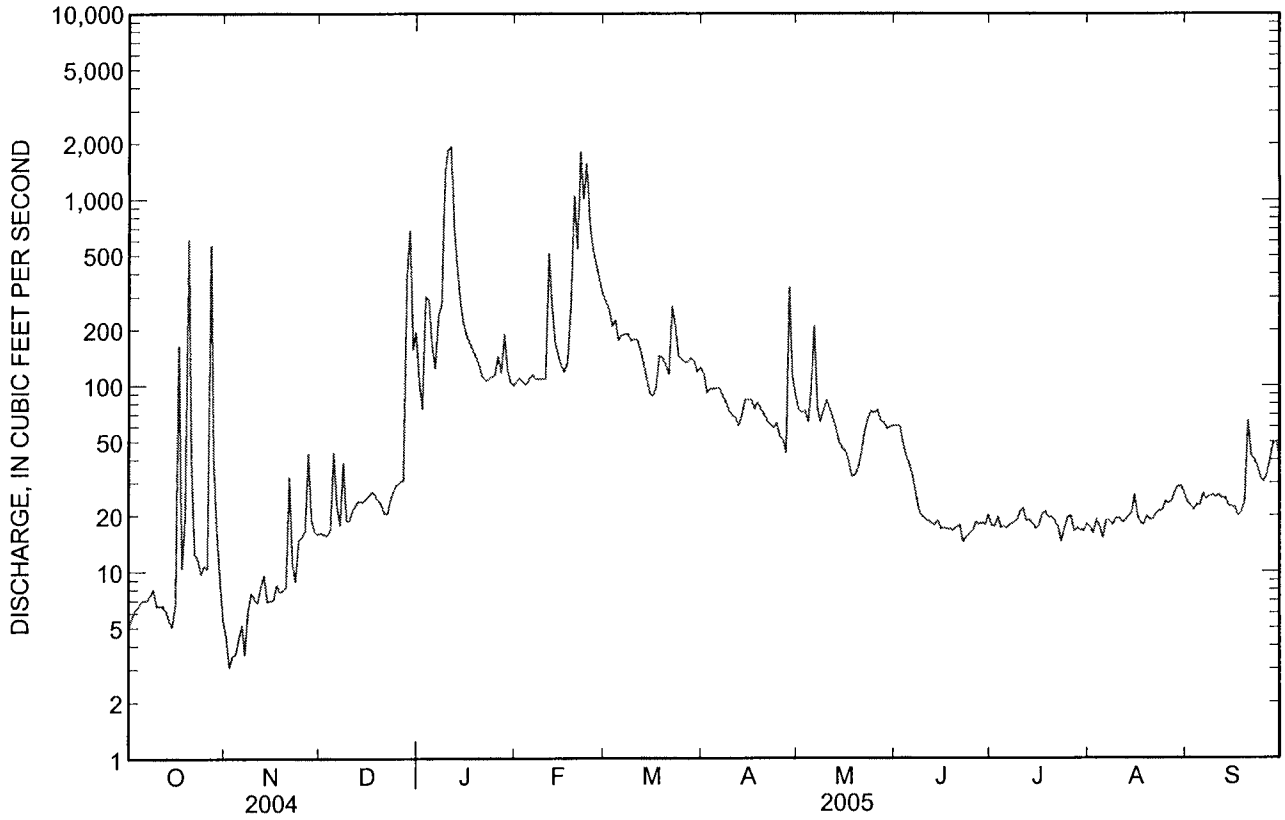
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2005, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	14.9	14.4	20.4	57.6	102	65.6	38.8	24.2	14.5	12.8	12.4	13.2
Max	52.5	24.3	66.5	335	400	349	190	100	34.3	24.9	20.7	30.4
(WY)	(2005)	(1994)	(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 2004		Water Year 2005		Water Years 1991 - 2005	
Annual total	7,202.5		38,127.5			
Annual mean	19.7		104		32.2	
Highest annual mean					104	2005
Lowest annual mean					12.5	2004
Highest daily mean	679	Dec 29	1,930	Jan 11	2,090	Feb 24, 1998
Lowest daily mean	1.6	Sep 11	3.1	Nov 2	0.34	Jul 3, 1992
Annual seven-day minimum	2.3	Sep 9	4.0	Nov 1	0.89	Jan 13, 1992
Maximum peak flow			4,030	Jan 9	4,030	Jan 9, 2005
Maximum peak stage			6.72	Jan 9	6.72	Jan 9, 2005
Annual runoff (ac-ft)	14,290		75,630		23,310	
10 percent exceeds	24		201		51	
50 percent exceeds	7.4		30		13	
90 percent exceeds	3.5		8.7		4.4	

11072100 TEMESCAL CREEK ABOVE MAIN STREET, AT CORONA, CA—Continued



APPENDIX B

DAILY PRECIPITATION DATA
FOR SAN BERNARDINO

WATER YEAR 2004-05

TABLE B-1

DAILY PRECIPITATION
STATION 2146-A AT FORMER SITE OF SAN BERNARDINO COUNTY HOSPITAL
(inches)

	2004			2005								
Day	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	0.02	0	0	0	0	0	0	0	0
3	0	0	0	1.11	0	0.09	0	0	0	0	0	0
4	0	0	0	0.17	0	0.17	0.01	0	0	0	0	0
5	0	0	0.04	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0.17	0	0	0.43	0	0	0	0
7	0	0.01	0	0.79	0	0	0	0	0	0	0	0
8	0	0.07	0.02	0.75	0	0.01	0	0	0	0	0	0
9	0	0.02	0	2.90	0	0	0.03	0	0	0	0	0
10	0	0	0	2.33	0.07	0	0	0	0	0	0	0
11	0	0	0	0.76	1.43	0	0	0	0	0	0	0
12	0	0	0	0.01	0.17	0	0	0	0	0	0	0
13	0	0	0	0	0	0.02	0	0	0	0	0	0
14	0	0	0	0	0	0.01	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	1.01	0	0	0	0.15	0	0	0	0	0	0	0
18	0.44	0	0	0	0.62	0.06	0	0	0	0	0	0
19	0.20	0	0	0	1.49	0.13	0.02	0	0	0	0	0.07
20	2.79	0.08	0	0	0.55	0.01	0	0	0	0	0	0.15
21	0	0.44	0	0	1.19	0	0	0	0	0	0	0
22	0	0	0	0	1.33	0.55	0	0	0	0	0	0
23	0	0	0	0	0.39	0.01	0.01	0	0	0	0	0
24	0	0.01	0	0	0.01	0	0.30	0	0	0	0	0
25	0	0	0	0	0	0.01	0	0	0	0	0	0
26	0.08	0	0	0.18	0	0	0	0	0	0	0	0
27	1.79	0.64	0	0	0	0	0	0	0	0	0	0.01
28	0.06	0	0.91	0.57	0	0	0.55	0	0	0	0	0
29	0	0	0.97	0.01		0	0	0	0	0	0	0
30	0	0	0	0		0	0	0	0	0	0	0
31	0		0.49	0		0		0		0	0	
Total	6.37	1.27	2.43	9.60	7.57	1.07	0.92	0.43	0.00	0.00	0.00	0.23

Total Rainfall = 29.89 Inches

166% of average of 17.98 inches per year

APPENDIX C

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

WATER YEAR 2004-05

ORANGE COUNTY WATER DISTRICT

Orange County's Groundwater Authority

April 26, 2006

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

Subject: Review of Fiscal Year 2004-2005 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, 2005. 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

P.O. Box 8300, Fountain Valley, CA 92728-8300 • 10500 Ellis Avenue, Fountain Valley, CA 92708
Telephone (714) 378-3200 Fax (714) 378-3373 Web Page www.ocwd.com

SANTA ANA RIVER WATERMASTER

FINANCIAL STATEMENTS

JUNE 30, 2005

SANTA ANA RIVER WATERMASTER

STATEMENT OF ASSETS AND LIABILITIES ARISING FROM CASH TRANSACTIONS

JUNE 30, 2005

ASSETS

Cash in checking account (Note 3)	$ 7,035
Cash in savings account (Note 3)	$ 2,473
	$ 9,508

FUND BALANCE

Fund Balance	$ 9,508

SANTA ANA RIVER WATERMASTER

STATEMENT OF ASSETS AND LIABILITIES ARISING FROM CASH TRANSACTIONS

FOR THE PERIOD JULY 1, 2004 - JUNE 30, 2005

	Actual	Budget	Variance - Favorable (Unfavorable)
REVENUE COLLECTED:			
Water District Contributions (Note 2)			
Orange County Water District	$ 4,800	$ 4,800	0
Inland Empire Utilities Agency	2,400	2,400	0
Western Municipal Water District	2,400	2,400	0
San Bernardino Valley Municipal Water District	2,400	2,400	0
Interest From Savings Account	8	0	8
TOTAL REVENUE COLLECTED	$ 12,008	$ 12,000	$ 8
EXPENSES PAID:			
Professional Engineering Services	$ 12,965	$ 9,000	(3,965)
Administrative Expenses:			0
Auditing Services			0
Reproduction of Annual Report	-	3,000	3,000
	$ 12,965	$ 12,000	$ (965)
EXCESS OF REVENUE COLLECTED OVER (UNDER) EXPENSES PAID	(957)		
FUND BALANCE AT JUNE 30, 2004	10,465		
FUND BALANCE AT JUNE 30, 2005	9,508		

See notes to the financial statements

SANTA ANA RIVER WATERMASTER

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2005

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	20%
Total	100%

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.

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, 2005 consisted of the following:

Bank of America:	
Checking account	$ 7,035.11
Savings account	2,472.81
	$9,507.92

All cash is fully insured by the FDIC.

Bank of America

H

Your Bank of America Business Checking Statement

0595 P
E 0-2

SANTA ANA RIVER WATERMASTER
C-O SBVMWD
P O BOX 5906
SN BERNARDINO CA 92412-5906

Statement Period:
June 23 through July 21, 2005

Account Number: 05957-11534

At Your Service
Call: 951.686.2590

Written Inquiries
Bank of America
Magnolia Center Branch
PO Box 37176
San Francisco, CA 94137-0001

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Our free Online Banking service allows you to check balances, track account activity, pay bills and more. **With Online Banking you can also view up to 18 months of this statement online.** Enroll at www.bankofamerica.com/smallbusiness.

❑ Summary of Your Business Checking Account

Beginning Balance on 06/23/05	$7,035.11
Ending Balance	$7,035.11

Number of 24 Hour Customer Service Calls	
Self-Service	0
Assisted	0

❑ Important Information About Your Account

Based on the minimum balance you've maintained in this account, your monthly service charge has been waived.

❑ Bank of America News

Have a conversation with ADP, and you may never have to have one with the IRS. Call 1.866.373.0087 for a free payroll consultation. Also receive 1 month free payroll processing plus no set-up fees when you sign up for payroll services by 8/31/2005. Make sure to mention Bank of America promotion code "Payroll 0705". Other terms and conditions may apply.

Bank of America

H

Your Bank of America Business Savings Statement

Statement Period:
April 1 through June 30, 2005
Account Number: 05958-50340

At Your Service
Call: 951-686-2590
Online: www.bankofamerica.com

Written Inquiries
Bank of America
Magnolia Center Branch
P.O. Box 37176
San Francisco, CA 94137-5176

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SANTA ANA RIVER WATERMASTER
C-O SBVMWD
P O BOX 5906
SAN BERNARDINO CA 92412-5906

Our free Online Banking service allows you to check balances, track account activity and more. Enroll at www.bankofamerica.com.

❑ Summary of Your Business Savings Account

Beginning Balance on 04/01/05	$2,469.73
Interest Paid	+ 3.08
Ending Balance	$2,472.81

Annual Percentage Yield earned this period	0.50%
Interest paid year-to-date	$4.71

❑ Bank of America News

Want to take advantage of rising rates? Open an Opt-Up CD and you could increase your rate one time during the term! Or, select from a range of CD terms that offer competitive interest rates. For details, visit your local banking center today or call the number on your statement.

❑ Savings Activity

Date	Description	Reference Number	Amount
	Interest Paid		
04/29	Interest Paid from 04/01/05 Through 04/30/05		$1.01
05/31	Interest Paid from 05/01/05 Through 05/31/05		1.05
06/30	Interest Paid from 06/01/05 Through 06/30/05		1.02
	Total Interest Paid		$3.08

Continued on next page

APPENDIX D

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

WATER YEAR 2004-05

There was no discharge of HGMP water to Santa Ana River in the Bunker Hill area during the 2004-05 water year.

APPENDIX E

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

WATER YEAR 2004-05

TABLE E-1

NONTRIBUTARY WATER FROM OC-59
MONTHLY TOTALS
WATER YEAR 2004-05
(acre-feet)

Month	Released at OC-59	12-Hour Delay [1]	Evaporation Losses [2]	Calculated Flow at Prado
2004				
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
2005				
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	663	612	29	583
Total	663	612	29	583

(1) Released nontributary water is delayed 12 hours to reflect the estimated travel time between OC-59 and Prado Dam.

(2) Monthly evapotranspiration losses calculated per the procedures referenced in the Twelfth Annual Watermaster Report, Appendix C and shown in Table E-3.

TABLE E-2

NONTRIBUTARY WATER FROM OC-59
SEPTEMBER 2005
(cfs)

Day	Released at OC-59	12-Hour Delay	Calculated Flow At Prado Dam [1]
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	4.8	2.4	2.3
16	11.6	8.2	7.8
17	10.6	11.1	10.6
18	0	5.3	5.0
19	0	0	0.0
20	0	0	0.0
21	0	0	0.0
22	0	0	0.0
23	11.9	6.0	5.7
24	38.2	25.1	23.9
25	40.4	39.3	37.4
26	37.9	39.2	37.3
27	34.0	36.0	34.2
28	39.8	36.9	35.2
29	54.2	47.0	44.8
30	50.7	52.5	50.0
Total (cfs-days)	334.1	309	294
(AF)	662.7	612	583

(1) Includes the monthly evapotranspiration loss listed in Table E-3.

TABLE E-3
EVAPOTRANSPIRATION LOSSES OF STATE PROJECT WATER FROM OC-59
WATER YEAR 2004-05
SUM OF ALL CHANNEL REACHES
(acre-feet)

Month	State Water Released with 12-hour delay	Rialto Pipeline to Los Serranos Road	Los Serranos to Prado Dam w/o vegetation	Los Serranos to Prado Dam w/ vegetation	Total Evapo-transpiration	Percent of Monthly Release
2004						
October	0	0	0	0	0	0%
November	0	0	0	0	0	0%
December	0	0	0	0	0	0%
2005						
January	0	0	0	0	0	0%
February	0	0	0	0	0	0%
March	0	0	0	0	0	0%
April	0	0	0	0	0	0%
May	0	0	0	0	0	0%
June	0	0	0	0	0	0%
July	0	0	0	0	0	0%
August	0	0	0	0	0	0%
September	612	9	19	1	29	4.74%
Total	612	9	19	1	29	

Percent of Annual Releases : 4.74%

TABLE E-3.1
EVAPOTRANSPIRATION LOSSES OF STATE PROJECT WATER FROM OC-59
WATER YEAR 2004-05
RIALTO PIPELINE TO LOS SERRANOS ROAD

Month	State Water Released with 12-hour delay (AF)	Days of Evaporation	Evapo-transpiration (in) [a]	Computed Evaporation Losses[b]	
				(AF)	(% of release)
[1]	[2]	[3]	[4]	[5]	[6]
2004					
October	0	0	---	0	0%
November	0	0	---	0	0%
December	0	0	---	0	0%
January	0	0	---	0	0%
February	0	0	---	0	0%
March	0	0	---	0	0%
April	0	0	---	0	0%
May	0	0	---	0	0%
June	0	0	---	0	0%
July	0	0	---	0	0%
August	0	0	---	0	0%
September	612	11	5.32	9	1.5%

(a) At UCR Evapotranspiration Station #44
(b) Evaporation losses=[4]/(days/month)x[3]x(Pan Factor of 1.0)x(area of 56.1 acres)x(1 foot/12 inches)

TABLE E-3.2
EVAPOTRANSPIRATION LOSSES OF STATE PROJECT WATER FROM OC-59
WATER YEAR 2004-05
LOS SERRANOS ROAD TO PRADO DAM (WITHOUT VEGETATION COVER)

Month	State Water Released with 12-hour delay (AF)	Days of Evaporation (+7 days)[a]	Evapo-transpiration (in)[b]	Average Wetted Area (acre)[c]	Computed Evaporation Losses[d]	
					(AF)	(% of release)
[1]	[2]	[3]	[4]	[5]	[6]	[7]
2004						
October	0	0	---	0	0	0%
November	0	0	---	0	0	0%
December	0	0	---	0	0	0%
2005						
January	0	0	---	0	0	0%
February	0	0	---	0	0	0%
March	0	0	---	0	0	0%
April	0	0	---	0	0	0%
May	0	0	---	0	0	0%
June	0	0	---	0	0	0%
July	0	0	---	0	0	0%
August	0	0	---	0	0	0%
September	612	18	5.32	72	19	3.1%

(a) Period of delivery plus 7 days after stoppage of delivery.
(b) At UCR Evapotranspiration Station #44.
(c) Equals 1/2 of 144 acres if the maximum flow rate of the month is less than 200 cfs and 1/2 of 369 acres if the maximum flow rate is greater or equal to 200 cfs.
(d) Evaporation losses=[3]x[4]/(days/month)x[5]x(1 foot/12 inches)

TABLE E-3.3
EVAPOTRANSPIRATION LOSSES OF STATE PROJECT WATER FROM OC-59
WATER YEAR 2004-05
LOS SERRANOS ROAD TO PRADO DAM (WITH VEGETATION COVER)

Month	State Water Released with 12-hour delay (AF)	Days of Evaporation[a]	Evapo-transpiration (in)[b]	Normal Evaporation (in)[c]	Average Wetted Area (acre)[d]	Computed Evaporation Losses[e]	
						(AF)	(% of release)
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
2004							
October	0	0	---	3.50	0	0	0%
November	0	0	---	2.80	0	0	0%
December	0	0	---	2.80	0	0	0%
2005							
January	0	0	---	2.80	0	0	0%
February	0	0	---	1.60	0	0	0%
March	0	0	---	3.60	0	0	0%
April	0	0	---	4.10	0	0	0%
May	0	0	---	4.90	0	0	0%
June	0	0	---	5.70	0	0	0%
July	0	0	---	6.40	0	0	0%
August	0	0	---	6.20	0	0	0%
September	612	18	5.32	4.80	72	1	0.2%

(a) Period of delivery plus 7 days after stoppage of delivery.
(b) At UCR Evapotranspiration Station #44.
(c) Referenced in the 1983 report "Nontributary Losses of State Water Released at OC-59 and Final Adjustments to Base Flows".
(d) Equals 1/2 of 144 acres if the maximum flow rate of the month is less than 200 cfs and 1/2 of 369 acres if the maximum flow rate is greater or equal to 200 cfs.
(e) Evaporation losses=[3]x([4]-[5])/(days/month)x[6]x(1 foot/12 inches)

TABLE E-4

CALCULATION OF WEIGHTED TDS OF
OC-59 RELEASES

WATER YEAR 2004-05

Month	OC-59 Discharge (acre-feet)	TDS at Release[1] (mg/L)	Discharge X TDS at Release	Calculated OC-59 Flow at Prado (acre-feet)
2004				
October	0	-	0	0
November	0	-	0	0
December	0	-	0	0
2005				
January	0	-	0	0
February	0	-	0	0
March	0	-	0	0
April	0	-	0	0
May	0	-	0	0
June	0	-	0	0
July	0	-	0	0
August	0	-	0	0
September	663	191	126,571	583
Total	663		126,571	583

At Discharge:
Flow-weighted TDS = $\frac{126,571}{663}$ = 191 mg/L

At Prado:
Flow-weighted TDS = $\frac{126,571}{583}$ = 217 mg/L

(1) TDS values from monthly analyses of State Water Project water for Silverwood Lake at Devil Canyon.

APPENDIX F

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

WATER YEAR 2004-05

TABLE F-1

DAILY DISCHARGE
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2004-05

OCTOBER 2004

Day	Arlington Desalter Discharge		
	Reported (mgd)	Calculated (cfs)	Calculated (acre-feet)
1	1.3	2.0	4.0
2	1.5	2.3	4.5
3	1.5	2.3	4.5
4	1.5	2.3	4.5
5	1.5	2.3	4.5
6	1.9	2.9	5.8
7	1.7	2.6	5.2
8	2.0	3.1	6.1
9	3.9	6.1	12.1
10	1.0	1.6	3.1
11	1.0	1.6	3.1
12	1.0	1.5	3.0
13	1.0	1.5	3.0
14	0.6	0.9	1.7
15	0.8	1.3	2.5
16	1.1	1.7	3.3
17	1.6	2.4	4.8
18	2.5	3.8	7.6
19	3.5	5.3	10.6
20	3.6	5.5	10.9
21	4.1	6.4	12.7
22	3.1	4.7	9.4
23	4.6	7.2	14.2
24	4.6	7.1	14.0
25	4.5	6.9	13.7
26	2.7	4.2	8.4
27	0.6	1.0	2.0
28	0.2	0.4	0.7
29	0.6	1.0	1.9
30	0.0	0.0	0.0
31	0.0	0.0	0.0
Total	59.2	91.6	181.8

TABLE F-1 (continued)

DAILY DISCHARGE
FROM THE ARLINGTON DESALTER TO THE ARLINGTON VALLEY DRAIN
WATER YEAR 2004-05

NOVEMBER 2004

Day	Arlington Desalter Discharge		
	Reported (mgd)	Calculated (cfs)	Calculated (acre-feet)
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	0.0	0.0	0.0
8	1.6	2.5	4.9
9	2.4	3.7	7.4
10	2.4	3.6	7.2
11	2.3	3.6	7.1
12	3.3	5.1	10.2
13	3.5	5.4	10.7
14	2.3	3.5	7.0
15	2.3	3.5	7.0
16	3.1	4.8	9.5
17	3.6	5.6	11.1
18	2.6	4.1	8.0
19	2.6	4.0	8.0
20	2.9	4.4	8.8
21	3.2	4.9	9.7
22	4.4	6.8	13.4
23	1.8	2.8	5.5
24	4.0	6.2	12.2
25	4.3	6.7	13.2
26	4.3	6.6	13.2
27	4.3	6.6	13.2
28	4.0	6.1	12.1
29	0.0	0.0	0.0
30	0.0	0.0	0.0
Total	64.9	100.5	199.4

TABLE F-2

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

WATER YEAR 2004-05

Month	Discharge (acre-feet)	TDS (mg/L)[1]	Discharge X TDS
2004			
October	182	280	50,960
November	199	280	55,720
December	0	---	---
2005			
January	0	---	---
February	0	---	---
March	0	---	---
April	0	---	---
May	0	---	---
June	0	---	---
July	0	---	---
August	0	---	---
September	0	---	---
Total	381		106,680
	Flow-weighted TDS =	280	

1. Daily average EC is no longer available.

APPENDIX G

WATER QUALITY AND DISCHARGE FROM THE SAN JACINTO WATERSHED

WATER YEAR 2004-05

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
OCTOBER 2004

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	2.9	2.9	0	0	0	0	0
2	3.3	3.3	0	0	0	0	0
3	3.9	3.9	0	0	0	0	0
4	4.1	4.1	0	0	0	0	0
5	4.6	4.6	1	0	0	0	0
6	4.2	4.2	0	0	0	0	0
7	4.4	4.4	0	0	0	0	0
8	4.4	4.4	0	0	0	0	0
9	2.0	2.0	0	0	0	0	0
10	5.0	5.0	0	0	0	0	0
11	5.0	5.0	0	0	0	0	0
12	5.1	5.1	0	0	0	0	0
13	4.7	4.7	0	0	0	0	0
14	4.6	4.7	0	0	0	0	0
15	3.8	3.9	0	0	0	0	0
16	4.9	4.9	0	0	0	0	0
17	160.6	3.9	157	0	0	771	0
18	6.2	3.9	2	0	0	0	0
19	13.7	3.9	10	0	0	289	0
20	601.5	3.9	598	0	0	3,155	0
21	30.6	3.9	27	0	0	2,855	0
22	7.3	3.9	3	0	0	2,715	0
23	4.8	3.9	1	0	0	2,515	0
24	2.6	2.6	0	0	0	2,395	0
25	4.1	3.9	0	0	0	2,305	0
26	5.8	3.9	2	0	0	711	0
27	563.0	3.9	559	0	0	3,555	0
28	38.6	3.9	35	0	0	2,585	0
29	16.0	3.9	12	0	0	2,075	0
30	9.3	3.9	5	0	0	1,305	0
31	5.5	3.9	2	0	0	241	0
Total (cfs)	1,537	124	1,413	0	0	27,472	0
(acre-feet)	3,048	247	2,802	0	0	54,490	0

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
NOVEMBER 2004

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	4.5	3.9	1	0	0	187	0
2	3.1	3.1	0	0	0	136	0
3	3.5	3.5	0	0	0	84	0
4	3.6	3.6	0	0	0	78	0
5	4.4	4.4	0	0	0	35	0
6	5.2	5.2	0	9	0	0	0
7	3.6	3.6	0	7	0	16	0
8	3.7	3.7	0	7	0	22	0
9	3.9	3.9	0	9	0	0	0
10	3.6	3.6	0	10	0	0	0
11	3.2	3.2	0	11	0	0	0
12	3.2	3.2	0	9	0	0	0
13	4.2	4.2	0	11	0	0	0
14	3.4	3.4	0	11	0	0	0
15	3.5	3.5	0	12	0	78	0
16	2.3	2.3	0	11	0	9	0
17	2.9	2.9	0	18	0	0	0
18	3.8	3.8	0	9	0	0	0
19	3.9	3.9	0	11	0	0	0
20	3.9	3.9	0	11	0	0	0
21	27.1	4.0	23	10	0	1,255	0
22	4.2	4.0	0	7	0	285	0
23	6.1	4.0	0	7	2	7	0
24	8.8	4.0	0	13	5	0	5
25	8.3	4.0	0	29	4	0	4
26	10.4	4.0	0	28	6	0	6
27	36.4	4.0	30	35	2	0	2
28	12.9	4.0	5	21	4	0	4
29	17.0	4.0	0	29	13	0	13
30	16.0	4.0	0	26	12	0	12
Total (cfs)	221	113	59	360	49	2,192	47
(acre-feet)	438	224	117	714	97	4,348	93

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
DECEMBER 2004

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	16	4.5	0	29	12	0	12
2	16	5	0	44	12	0	12
3	16	5	0	28	12	0	12
4	17	5	0	42	13	0	13
5	43	5	25	30	14	54	0
6	23	5	5	30	14	0	14
7	18	5	0	32	14	0	14
8	38	5	20	33	14	0	14
9	19	5	2	21	13	0	13
10	19	5	0	21	15	0	15
11	21	5	0	25	17	0	17
12	23	5	0	24	19	0	19
13	24	5	0	33	20	0	20
14	24	5	0	29	20	0	20
15	24	5	0	17	20	0	20
16	26	5	0	19	21	0	21
17	27	5	0	10	22	0	22
18	26	5	0	7	21	0	21
19	24	5	0	16	19	0	19
20	23	5	0	36	18	0	18
21	21	5	0	50	16	0	16
22	21	5	0	39	16	0	16
23	25	5	0	38	20	0	20
24	27	5	0	35	22	0	22
25	29	5	0	26	24	0	24
26	30	5	0	35	25	0	25
27	31	5	0	38	26	0	26
28	380	5	339	35	36	311	0
29	679	5	638	15	36	2,085	0
30	157	5	116	34	36	2,965	0
31	195	5	154	52	36	2,405	0
Total (cfs)	2,062	148	1,299	924	616	7,820	458
(acre-feet)	4,090	293	2,576	1,832	1,222	15,511	908

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
JANUARY 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	105	6	58	52	41	1,925	0
2	76	6	26	41	45	104	0
3	301	6	248	32	47	1,585	0
4	287	6	243	45	38	1,915	0
5	165	6	120	43	39	588	0
6	124	6	79	41	39	1,005	0
7	239	6	194	33	39	2,295	0
8	274	6	230	3	38	2,935	0
9	1,310	6	1,266	33	38	7,685	0
10	1,830	6	1,787	47	37	8,975	0
11	1,930	6	1,887	46	37	10,665	0
12	717	6	674	43	37	9,255	0
13	432	6	388	46	38	5,565	0
14	280	6	236	40	38	9,685	0
15	217	6	173	46	38	9,425	0
16	185	7	139	54	39	9,885	0
17	169	7	120	60	42	8,435	0
18	154	7	100	56	47	5,035	0
19	141	7	87	32	47	2,255	0
20	126	7	74	29	45	83	0
21	111	7	59	47	45	2,125	0
22	107	7	54	52	46	1,335	0
23	108	7	54	56	47	0	47
24	112	7	56	61	49	0	49
25	114	7	57	54	50	0	50
26	144	7	86	60	51	0	51
27	118	7	60	60	51	0	51
28	190	7	133	53	50	585	0
29	122	7	63	47	52	254	0
30	104	7	41	68	56	315	0
31	100	7	36	62	57	185	0
Total (cfs)	10,392	202	8,826	1,442	1,364	104,099	248
(acre-feet)	20,612	401	17,506	2,860	2,706	206,477	491

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
FEBRUARY 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	106	8	40	63	58	10	48
2	110	8	45	44	57	26	31
3	104	8	40	50	56	0	56
4	102	8	37	64	57	0	57
5	109	8	44	59	57	0	57
6	114	8	49	62	57	0	57
7	109	8	44	55	57	0	57
8	109	8	43	57	58	26	32
9	109	8	43	64	58	533	0
10	109	8	43	60	58	452	0
11	514	8	449	57	57	1,935	0
12	275	8	208	66	59	2,215	0
13	173	8	104	64	61	1,825	0
14	146	8	77	71	62	1,805	0
15	128	10	57	59	62	1,625	0
16	119	10	49	52	60	171	0
17	135	10	64	58	61	70	0
18	283	10	212	60	61	909	0
19	1,050	10	979	63	61	3,695	0
20	545	10	478	26	57	3,185	0
21	1,790	10	1,722	67	59	4,665	0
22	1,010	10	945	29	55	3,995	0
23	1,550	10	1,488	39	52	5,335	0
24	751	10	690	55	51	4,915	0
25	537	10	477	48	50	4,855	0
26	444	10	382	81	53	5,055	0
27	368	10	306	50	52	5,205	0
28	312	10	250	59	52	4,715	0
Total (cfs)	11,211	252	9,362	1,580	1,597	57,222	397
(acre-feet)	22,237	500	18,570	3,134	3,167	113,498	787

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
MARCH 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	283	12	219	68	52	2,735	0
2	258	12	196	5	50	2,815	0
3	209	12	153	7	44	2,615	0
4	225	12	170	24	44	1,895	0
5	175	12	117	62	46	510	0
6	187	12	129	58	46	635	0
7	190	12	130	63	48	605	0
8	190	12	135	39	44	795	0
9	175	12	120	48	43	765	0
10	178	12	124	52	43	455	0
11	177	12	123	63	42	0	42
12	157	12	104	0	42	0	42
13	131	12	78	0	41	0	41
14	108	12	58	0	39	0	39
15	92	12	48	0	32	235	0
16	88	13	46	30	29	295	0
17	97	13	55	57	29	305	0
18	145	13	101	57	31	325	0
19	141	13	97	55	31	345	0
20	129	13	84	59	32	358	0
21	116	13	72	57	32	497	0
22	268	13	218	58	37	1,005	0
23	212	13	157	51	42	3,275	0
24	147	13	85	63	49	1,175	0
25	138	13	71	52	54	743	0
26	134	13	64	65	57	676	0
27	135	13	64	65	58	733	0
28	141	13	71	48	57	715	0
29	135	13	66	40	56	648	0
30	119	13	50	60	56	501	0
31	126	13	60	29	53	369	0
Total (cfs)	5,006	388	3,260	1,334	1,358	26,025	163
(acre-feet)	9,929	770	6,467	2,646	2,693	51,620	323

TABLE G-1
SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
APRIL 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	117	14	52	34	51	792	0
2	91	14	27	44	50	715	0
3	96	14	34	47	49	756	0
4	97	14	35	44	48	547	0
5	97	14	38	43	46	72	0
6	97	14	42	26	42	79	0
7	88	14	35	23	39	181	0
8	81	14	31	5	36	554	0
9	73	14	28	11	31	438	0
10	69	14	27	3	28	371	0
11	67	14	28	0	25	365	0
12	61	14	24	30	23	503	0
13	70	14	35	23	21	677	0
14	84	14	52	19	18	552	0
15	84	14	54	24	16	313	0
16	84	15	53	26	16	258	0
17	75	15	43	28	17	252	0
18	81	15	47	32	20	233	0
19	75	15	39	30	21	205	0
20	70	15	33	9	22	187	0
21	65	15	24	45	27	104	0
22	62	15	21	27	26	0	26
23	59	15	17	31	27	0	27
24	63	15	19	41	29	0	29
25	54	15	8	44	31	0	31
26	51	15	3	40	33	0	33
27	44	15	0	32	29	0	29
28	337	15	289	36	33	1,635	0
29	113	15	63	41	35	763	0
30	89	15	37	32	37	0	37
Total (cfs)	2,594	435	1,236	869	923	10,552	212
(acre-feet)	5,145	863	2,451	1,723	1,831	20,930	421

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
MAY 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	74	16	0	42	37	0	37
2	72	16	0	41	38	0	38
3	73	16	0	25	37	0	37
4	64	16	0	27	36	0	36
5	101	16	0	23	34	134	0
6	209	16	0	30	33	423	0
7	75	16	0	33	33	60	0
8	64	16	0	37	33	72	0
9	74	16	0	38	33	27	6
10	83	16	0	33	33	0	33
11	76	16	0	19	31	0	31
12	66	16	0	1	27	0	27
13	58	16	0	1	24	0	24
14	49	16	0	1	22	0	22
15	46	16	0	0	19	0	19
16	45	17	0	0	16	0	16
17	39	17	0	0	13	0	13
18	33	17	0	0	9	0	9
19	33	17	0	0	5	0	5
20	36	17	0	23	5	0	5
21	44	17	0	23	5	0	5
22	57	17	0	23	7	0	7
23	67	17	0	33	10	0	10
24	73	17	0	23	13	0	13
25	72	17	0	24	15	0	15
26	74	17	0	22	17	0	17
27	65	17	0	18	19	0	19
28	63	17	0	16	21	0	21
29	59	17	0	21	23	0	23
30	60	17	0	1	21	0	21
31	61	17	0	48	23	0	23
Total (cfs)	2,065	512	0	627	690	716	530
(acre-feet)	4,096	1,016	0	1,243	1,368	1,420	1,051

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
JUNE 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	61	17	0	7	22	0	22
2	61	17	0	9	19	0	19
3	50	17	0	0	17	0	17
4	42	17	0	0	14	0	14
5	38	17	0	0	12	0	12
6	33	17	0	0	10	0	10
7	26	17	0	0	9	0	9
8	22	17	0	0	5	0	5
9	20	17	0	0	3	0	3
10	19	17	0	0	2	0	2
11	19	17	0	0	2	0	2
12	18	17	0	0	1	0	1
13	18	17	0	0	0	0	0
14	19	19	0	0	0	0	0
15	17	17	0	0	0	0	0
16	17	17	0	0	0	0	0
17	17	17	0	0	0	0	0
18	17	17	0	0	0	0	0
19	17	17	0	0	0	0	0
20	17	17	0	0	0	0	0
21	18	18	0	0	0	0	0
22	14	14	0	0	0	0	0
23	15	15	0	0	0	0	0
24	16	16	0	0	0	0	0
25	17	17	0	0	0	0	0
26	19	19	0	0	0	0	0
27	18	18	0	0	0	0	0
28	18	18	0	0	0	0	0
29	18	18	0	0	0	0	0
30	20	20	0	0	0	0	0
Total (cfs)	721	515	0	16	115	0	115
(acre-feet)	1,430	1,021	0	32	228	0	228

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
JULY 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	18	18	0	0	0	0	0
2	18	18	0	0	0	0	0
3	20	20	0	0	0	0	0
4	17	17	0	0	0	0	0
5	18	18	0	0	0	0	0
6	17	17	0	0	0	0	0
7	18	18	0	0	0	0	0
8	18	18	0	0	0	0	0
9	19	19	0	0	0	0	0
10	21	21	0	0	0	0	0
11	22	22	0	0	0	0	0
12	19	19	0	0	0	0	0
13	19	19	0	0	0	0	0
14	18	18	0	0	0	0	0
15	17	17	0	0	0	0	0
16	18	18	0	0	0	0	0
17	21	21	0	0	0	0	0
18	21	21	0	0	0	0	0
19	20	20	0	0	0	0	0
20	20	20	0	0	0	0	0
21	19	19	0	0	0	0	0
22	17	17	0	0	0	0	0
23	15	15	0	0	0	0	0
24	17	17	0	0	0	0	0
25	20	20	0	0	0	0	0
26	20	20	0	0	0	0	0
27	17	17	0	0	0	0	0
28	17	17	0	0	0	0	0
29	17	17	0	0	0	0	0
30	17	17	0	0	0	0	0
31	18	18	0	0	0	0	0
Total (cfs)	573	573	0	0	0	0	0
(acre-feet)	1,137	1,137	0	0	0	0	0

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
AUGUST 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	18	18	0	0	0	0	0
2	16	16	0	0	0	0	0
3	19	19	0	0	0	0	0
4	17	17	0	0	0	0	0
5	15	15	0	0	0	0	0
6	19	19	0	0	0	0	0
7	19	19	0	0	0	0	0
8	18	18	0	0	0	0	0
9	19	19	0	0	0	0	0
10	19	19	0	0	0	0	0
11	19	19	0	0	0	0	0
12	19	19	0	0	0	0	0
13	20	20	0	0	0	0	0
14	21	21	0	0	0	0	0
15	26	26	0	0	0	0	0
16	20	20	0	0	0	0	0
17	18	18	0	0	0	0	0
18	18	18	0	0	0	0	0
19	20	20	0	0	0	0	0
20	19	19	0	0	0	0	0
21	19	19	0	0	0	0	0
22	20	20	0	0	0	0	0
23	21	21	0	0	0	0	0
24	21	21	0	0	0	0	0
25	24	24	0	0	0	0	0
26	23	23	0	11	0	0	0
27	24	24	0	7	0	0	0
28	27	27	0	8	0	0	0
29	29	29	0	11	0	0	0
30	29	29	0	11	0	0	0
31	26	26	0	11	0	0	0
Total (cfs)	642	642	0	59	0	0	0
(acre-feet)	1,273	1,273	0	117	0	0	0

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05
SEPTEMBER 2005

Day	[1] Temescal Creek Flow - Arlington Desalter	[2] Temescal Creek Base Flow	[3] Scalped Storm Flow	[4] EMWD Discharge to Temescal Creek	[5] San Jacinto Watershed Outflow At Prado	[6] Santa Ana River Flow Lost to the Ocean	[7] San Jacinto Outflow Recharged by OCWD
1	24	24	0	13	0	0	0
2	23	23	0	13	0	0	0
3	21	21	0	25	0	0	0
4	23	21	0	24	2	0	2
5	23	21	0	23	2	0	2
6	26	21	0	25	5	0	5
7	25	21	0	15	4	0	4
8	26	21	0	16	5	0	5
9	26	21	0	11	5	0	5
10	25	21	0	10	4	0	4
11	26	21	0	17	5	0	5
12	25	21	0	6	4	0	4
13	25	21	0	11	4	0	4
14	23	21	0	10	2	0	2
15	23	21	0	9	2	0	2
16	22	21	0	10	1	0	1
17	20	20	0	14	0	0	0
18	21	21	0	13	0	0	0
19	24	21	0	12	3	0	3
20	65	21	0	8	3	6	0
21	43	21	0	17	11	0	11
22	40	21	0	0	14	0	14
23	37	21	0	0	14	0	14
24	32	21	0	22	11	0	11
25	30	21	0	33	9	0	9
26	34	21	0	39	13	0	13
27	41	21	0	40	20	0	20
28	49	21	0	11	28	0	28
29	50	21	0	4	29	0	29
30	40	21	0	3	19	0	19
Total (cfs)	912	634	0	451	219	6	216
(acre-feet)	1,809	1,258	0	895	434	12	428

TABLE G-1

SAN JACINTO WATERSHED DISCHARGE CALCULATIONS
WATER YEAR 2004-05

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1. USGS measured flow of Temescal Creek above Main St. at Corona minus discharge of the Arlington Desalter to the Arlington Valley Channel. Daily discharge Temescal Creek above Main St. at Corona and of the Arlington Desalter can be found in Appendix A and F, respectively.

2. At the beginning of the water year, Temescal base flow was assumed to be the average of the flow prior to flows other than base flow. When the storm period had ended, base flow was much higher than before, so the base flow was gradually ramped up during the storm flow period.

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 sink 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 differenced between the two.

TABLE G-2

SUMMARY OF SAN JACINTO WATERSHED DISCHARGE
WATER YEAR 2004-05

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
2004				
October	0	0	2,515	0
November	360	49	2,192	47
December	924	616	7,820	458
2005				
January	1,442	1,364	104,099	248
February	1,580	1,597	57,222	397
March	1,334	1,358	26,025	163
April	869	923	10,552	212
May	627	690	716	530
June	16	115	0	115
July	0	0	0	0
August	59	0	0	0
September	451	219	6	216
Total (cfs)	7,661	6,930	211,147	2,386
(acre-feet)	15,195	13,746	418,804	4,732

TABLE G-3

SUMMARY OF FLOW-WEIGHTED AVERAGE TDS
OF SAN JACINTO WATERSHED DISCHARGE
CALCULATED TO REACH PRADO RESERVOIR
WATER YEAR 2004-05

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
2004				
October	0	---	0	0
November	714	740	678	528,042
December	1,832	740	1,741	1,355,983
2005				
January	2,860	677	2,717	1,936,288
February	3,134	694	2,977	2,175,045
March	2,646	720	2,514	1,905,170
April	1,723	782	1,637	1,347,112
May	1,243	800	1,181	994,248
June	32	800	30	25,480
July	0	---	0	0
August	117	790	111	92,272
September	895	780	850	697,843
Total	15,195		14,435	11,057,483

Flow-weighted TDS at Discharge [4] = 728 mg/L

Flow-weighted TDS of Discharge with 5% Evaporation [5] = 766 mg/L

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

APPENDIX H

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

WATER YEAR 2004-05

TABLE H-1

WATER QUALITY SAMPLES BELOW PRADO DAM
WATER YEAR 2004-05

Date	EC (microsiemens/cm)	TDS (mg/L)	Source
10/1/2004	980	608	USGS
10/4/2004	1000	604	OCWD
10/15/2004	1000	641	USGS
11/5/2004	587	359	USGS
11/8/2004	770	458	OCWD
11/19/2004	847	527	USGS
11/30/2004	884	516	OCWD
12/6/2004	845	503	USGS
12/17/2004	935	558	USGS
1/19/2005	585	348	OCWD
1/20/2005	896	552	USGS
1/31/2005	886	539	USGS
2/7/2005	1000	594	OCWD
2/10/2005	943	584	USGS
2/25/2005	372	225	USGS
3/7/2005	853	510	OCWD
3/11/2005	1000	630	USGS
3/28/2005	623	374	USGS
4/4/2005	704	434	OCWD
4/5/2005	813	487	USGS
4/15/2005	651	400	USGS
5/2/2005	829	506	OCWD
5/5/2005	709	432	USGS
5/17/2005	796	478	OCWD
5/20/2005	818	499	USGS
6/6/2005	801	496	USGS
6/14/2005	829	502	OCWD
6/22/2005	873	521	USGS
7/1/2005	910	540	USGS
7/15/2005	965	580	USGS
7/25/2005	997	572	OCWD
8/1/2005	980	576	USGS
8/2/2005	952	558	OCWD
8/10/2005	881	528	OCWD
8/12/2005	890	516	USGS
8/16/2005	819	480	OCWD
8/24/2005	826	482	OCWD
8/30/2005	971	554	OCWD
9/7/2005	1060	665	USGS
9/21/2005	885	573	USGS
9/27/2005	947	546	OCWD

TABLE H-2

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

OCTOBER 2004

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	201	974	610	122,668
2	188	969	607	114,146
3	185	977	612	113,252
4	190	984	617	117,146
5	187	988	619	115,765
6	155	1020	639	99,063
7	182	982	615	111,985
8	187	983	616	115,179
9	185	988	619	114,527
10	175	977	612	107,130
11	182	967	606	110,275
12	186	981	615	114,330
13	182	980	614	111,757
14	172	993	622	107,018
15	174	982	615	107,063
16	175	961	602	105,375
17	384	533	334	128,244
18	441	543	340	150,043
19	464	531	333	154,380
20	1,370	396	248	339,933
21	2,750	303	190	522,099
22	2,620	345	216	566,367
23	2,540	376	236	598,411
24	2,460	423	265	652,008
25	2,460	475	298	732,161
26	287	688	431	123,722
27	2,490	510	320	795,696
28	2,610	405	254	662,328
29	2,550	394	247	629,527
30	1,520	402	252	382,867
31	351	425	266	93,470
Total	28,203			8,317,933

Monthly Flow Weighted TDS = 295 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

NOVEMBER 2004

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	366	473	296	108,473
2	375	516	323	121,244
3	362	528	331	119,762
4	321	558	350	112,232
5	303	591	370	112,204
6	299	641	402	120,090
7	297	668	419	124,311
8	271	734	460	124,636
9	221	759	476	105,102
10	202	754	472	95,433
11	199	754	472	94,016
12	213	748	469	99,830
13	273	729	457	124,700
14	336	696	436	146,530
15	308	732	459	141,267
16	243	823	516	125,309
17	239	832	521	124,595
18	237	841	527	124,888
19	234	857	537	125,653
20	234	876	549	128,439
21	1,130	790	495	559,350
22	378	815	511	193,031
23	268	859	538	144,247
24	261	871	546	142,441
25	238	865	542	128,994
26	238	858	538	127,951
27	240	857	537	128,875
28	443	848	531	235,384
29	435	843	528	229,771
30	327	835	523	171,085
Total	9,491			4,439,844
		Monthly Flow Weighted TDS =	468	mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

DECEMBER 2004

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	371	829	519	192,711
2	358	832	521	186,631
3	348	832	521	181,418
4	349	835	523	182,595
5	346	827	518	179,291
6	337	825	517	174,205
7	320	820	514	164,415
8	322	819	513	165,241
9	323	823	516	166,564
10	322	828	519	167,057
11	325	834	523	169,835
12	328	841	527	172,841
13	326	847	531	173,013
14	325	855	536	174,111
15	326	868	544	177,303
16	378	945	592	223,821
17	434	939	588	255,348
18	459	927	581	266,606
19	459	946	593	272,071
20	476	961	602	286,621
21	495	976	612	302,714
22	498	999	626	311,726
23	493	1030	645	318,172
24	491	1010	633	310,728
25	489	1010	633	309,462
26	486	1030	645	313,654
27	333	1040	652	216,998
28	258	1040	652	168,124
29	1,730	697	437	755,539
30	2,490	408	256	636,557
31	1,770	357	224	395,931
Total	16,765			7,971,304

Monthly Flow Weighted TDS = 475 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

JANUARY 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	1,350	369	231	312,132
2	596	416	261	155,352
3	1,460	399	250	365,009
4	1,780	412	258	459,510
5	840	477	299	251,059
6	1,750	430	269	471,503
7	1,280	463	290	371,337
8	2,730	513	321	877,521
9	4,830	348	218	1,053,184
10	7,540	278	174	1,313,391
11	10,700	290	182	1,944,283
12	9,330	315	197	1,841,492
13	5,710	309	194	1,105,535
14	11,400	320	201	2,285,770
15	11,400	338	212	2,414,345
16	11,400	365	229	2,607,207
17	7,870	408	256	2,011,929
18	3,830	494	310	1,185,505
19	1,390	587	368	511,247
20	662	747	468	309,853
21	1,750	626	392	686,420
22	835	707	443	369,899
23	205	953	597	122,412
24	207	918	575	119,067
25	206	907	568	117,072
26	210	882	553	116,055
27	378	815	511	193,031
28	700	808	506	354,395
29	701	886	555	389,161
30	699	854	535	374,035
31	567	875	548	310,863
Total	104,306			24,999,575

Monthly Flow Weighted TDS = 240 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

FEBRUARY 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	479	904	566	271,320
2	461	881	552	254,481
3	461	917	575	264,879
4	460	930	583	268,052
5	461	933	585	269,501
6	461	940	589	271,523
7	458	960	602	275,495
8	631	928	581	366,906
9	735	926	580	426,458
10	727	953	597	434,115
11	1,380	919	576	794,644
12	1,860	790	495	920,699
13	1,810	550	345	623,762
14	1,770	514	322	570,052
15	1,460	583	365	533,334
16	502	746	467	234,650
17	403	861	539	217,413
18	1,040	871	546	567,583
19	2,240	550	345	771,949
20	2,890	327	205	592,139
21	2,980	362	227	675,931
22	3,440	366	229	788,891
23	4,810	368	231	1,109,100
24	4,670	378	237	1,106,080
25	4,690	376	236	1,104,939
26	4,750	376	236	1,119,075
27	4,650	411	258	1,197,492
28	4,200	469	294	1,234,241
Total	54,879			17,264,703

Monthly Flow Weighted TDS = 315 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

MARCH 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	2,620	522	327	856,938
2	2,640	589	369	974,310
3	2,090	694	435	908,832
4	1,170	791	496	579,883
5	564	876	549	309,571
6	564	876	549	309,571
7	688	843	528	363,407
8	813	834	523	424,849
9	720	864	541	389,784
10	362	919	576	208,450
11	217	977	612	132,841
12	238	964	604	143,758
13	238	948	594	141,372
14	413	898	563	232,383
15	545	901	565	307,680
16	555	885	555	307,761
17	567	854	535	303,402
18	577	783	491	283,084
19	582	774	485	282,255
20	588	752	471	277,059
21	786	717	449	353,118
22	1,190	703	440	524,179
23	3,220	625	392	1,260,996
24	1,170	593	372	434,729
25	980	574	360	352,465
26	977	602	377	368,527
27	979	593	372	363,760
28	978	592	371	362,776
29	918	589	369	338,794
30	825	633	397	327,217
31	831	658	412	342,614
Total	29,605			12,766,364

Monthly Flow Weighted TDS = 431 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

APRIL 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	1,090	656	411	448,031
2	1,100	639	400	440,424
3	1,090	631	395	430,957
4	595	657	412	244,940
5	315	739	463	145,859
6	385	751	471	181,167
7	596	701	439	261,783
8	820	661	414	339,620
9	751	665	417	312,924
10	756	680	426	322,113
11	770	692	434	333,868
12	972	665	417	405,010
13	1,080	638	400	431,740
14	836	641	402	335,770
15	655	650	407	266,767
16	613	653	409	250,814
17	614	653	409	251,223
18	596	658	412	245,725
19	584	666	417	243,705
20	585 [2]	---	---	---
21	365	---	---	---
22	432	---	---	---
23	509	---	---	---
24	507	---	---	---
25	380	---	---	---
26	570	---	---	---
27	665	---	---	---
28	1,660	---	---	---
29	852	---	---	---
30	690	---	---	---
Total	14,218			5,892,441

Monthly Flow Weighted TDS = 414 mg/L

1. TDS = EC x 0.626582 2. Calculation excludes 4/20-4/30 when EC data was missing.

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

MAY 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	625 [2]	---	---	---
2	375	---	---	---
3	297	---	---	---
4	562	742	465	261,287
5	549	714	447	245,611
6	605	711	445	269,527
7	692	742	465	321,727
8	686	745	467	320,227
9	526	763	478	251,471
10	441	793	497	219,124
11	434	818	513	222,444
12	429	820	514	220,419
13	429	823	516	221,225
14	428	804	504	215,614
15	427	790	495	211,365
16	423	788	494	208,855
17	421	783	491	206,548
18	421	785	492	207,076
19	420	788	494	207,373
20	420	798	500	210,005
21	420	796	499	209,479
22	419	795	498	208,718
23	415	790	495	205,425
24	414	780	489	202,336
25	416	771	483	200,967
26	415	777	487	202,044
27	421	790	495	208,395
28	424	801	502	212,802
29	427	808	506	216,181
30	431	806	505	217,666
31	434	798	500	217,005
Total	12,949			6,320,917

Monthly Flow Weighted TDS = 488 mg/L

1. TDS = EC x 0.626582 2. Calculation excludes 5/1-5/3 when EC was missing.

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

JUNE 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	438	781	489	214,340
2	439	779	488	214,279
3	439	784	491	215,654
4	443	799	501	221,783
5	442	792	496	219,344
6	441	796	499	219,953
7	441	787	493	217,466
8	441	784	491	216,637
9	440	786	492	216,697
10	442	790	495	218,790
11	444	792	496	220,336
12	443	795	498	220,673
13	414	797	499	206,746
14	399	803	503	200,755
15	398	807	506	201,249
16	399	811	508	202,755
17	397	815	511	202,734
18	397	825	517	205,221
19	395	834	523	206,415
20	393	842	528	207,340
21	390	836	524	204,291
22	388	841	527	204,459
23	387	847	531	205,387
24	386	854	535	206,549
25	384	864	541	207,885
26	384	872	546	209,810
27	383	882	553	211,663
28	381	889	557	212,229
29	380	900	564	214,291
30	380	901	565	214,529
Total	12,328			6,340,257

Monthly Flow Weighted TDS = 514 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

JULY 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	380	897	562	213,577
2	382	890	558	213,025
3	381	892	559	212,945
4	382	896	561	214,461
5	377	902	565	213,072
6	379	906	568	215,152
7	379	911	571	216,339
8	378	912	571	216,005
9	378	916	574	216,953
10	376	919	576	216,512
11	373	924	579	215,953
12	372	929	582	216,539
13	368	937	587	216,055
14	368	942	590	217,208
15	370	943	591	218,621
16	368	944	591	217,669
17	364	952	597	217,128
18	323	960	602	194,290
19	286	971	608	174,006
20	285	974	610	173,933
21	287	979	613	176,053
22	286	983	616	176,156
23	286	982	615	175,977
24	285	982	615	175,361
25	284	1010	633	179,729
26	282	1010	633	178,463
27	311	1010	633	196,816
28	321	1010	633	203,144
29	318	1010	633	201,246
30	316	1010	633	199,980
31	312	1010	633	197,448
Total	10,557			6,269,815
		Monthly Flow Weighted TDS =	594	mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

AUGUST 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	313	976	612	191,413
2	340	944	591	201,108
3	347	929	582	201,987
4	346	918	575	199,020
5	344	911	571	196,361
6	343	900	564	193,426
7	345	890	558	192,392
8	359	884	554	198,849
9	375	878	550	206,302
10	383	877	550	210,463
11	382	870	545	208,238
12	380	865	542	205,957
13	380	853	534	203,100
14	382	847	531	202,733
15	386	841	527	203,405
16	385	816	511	196,847
17	408	799	501	204,261
18	433	790	495	214,335
19	458	788	494	226,136
20	457	785	492	224,783
21	456	790	495	225,720
22	453	804	504	228,209
23	448	813	509	228,216
24	445	825	517	230,034
25	455	839	526	239,194
26	458	859	538	246,511
27	451	881	552	248,960
28	437	910	570	249,173
29	445	934	585	260,426
30	437	955	598	261,494
31	446	967	606	270,233
Total	12,095			6,769,287

Monthly Flow Weighted TDS = 560 mg/L

1. TDS = EC x 0.626582

TABLE H-2 (continued)

SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM
WATER YEAR 2004-05

SEPTEMBER 2005

Day	Prado Outflow (cfs)	Daily Mean EC (microsiemens/cm)	Computed TDS[1]	Outflow X TDS
1	453	985	617	279,584
2	422	1030	645	272,350
3	342	1090	683	233,577
4	236	1070	670	158,224
5	220	1020	639	140,605
6	229	994	623	142,626
7	221	995	623	137,782
8	233	796	499	116,211
9	211	843	528	111,452
10	206	879	551	113,458
11	217	852	534	115,845
12	229	871	546	124,977
13	228	959	601	137,003
14	231	991	621	143,438
15	222	989	620	137,571
16	236	967	606	142,993
17	233	977	612	142,636
18	225	1000	627	140,981
19	226	1010	633	143,024
20	230	883	553	127,252
21	246	910	570	140,267
22	268	945	592	158,688
23	262	991	621	162,687
24	259	938	588	152,223
25	258	847	531	136,924
26	258	875	548	141,451
27	262	867	543	142,331
28	251	892	559	140,287
29	259	863	541	140,052
30	254	895	561	142,441
Total	7,627			4,518,940

Monthly Flow Weighted TDS = 592 mg/L

1. TDS = EC x 0.626582

TABLE H-3

ANNUAL SUMMARY OF FLOW WEIGHTED TDS BELOW PRADO DAM

WATER YEAR 2004-05

Month	Monthly Flow (cfs-days)	Monthly Weighted TDS [1] (mg/L)	Monthly Flow x TDS
2004			
October	28,203	295	8,317,933
November	9,491	468	4,439,844
December	16,765	475	7,971,304
2005			
January	104,306	240	24,999,575
February	54,879	315	17,264,703
March	29,605	431	12,766,364
April	14,218	414	5,892,441
May	12,949	488	6,320,917
June	12,328	514	6,340,257
July	10,557	594	6,269,815
August	12,095	560	6,769,287
September	7,627	592	4,518,940
Total	313,023		111,871,379
Yearly Flow-weighted TDS =		357	

1. Calulation excludes 4/20 through 5/3 when no water quality data was collected.

APPENDIX I

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

WATER YEAR 2004-05

PREPARED BY

JOHN V. ROSSI

TABLE I-1

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

WATER YEAR 2004-05

MONTH	Discharge (acre -feet)	TDS (mg/L)	Discharge xTDS
2004			
October	209	728	152,152
November	196	716	140,336
December	199	704	140,096
2005			
January	191	656	125,296
February	185	640	118,400
March	203	744	151,032
April	192	716	137,472
May	203	776	157,528
June	195	720	140,400
July	203	720	146,160
August	203	760	154,280
September	197	732	144,204
Total	2,376		1,707,356

Flow weighted TDS = $\frac{1,707,356}{2,376}$ = 719 mg/L

APPENDIX J

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

WATER YEAR 2004-05

PREPARED BY

JOHN V. ROSSI

TABLE J-1

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS
WATER YEAR 2004-05

	Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average
2004	10/01/04	1025	624	C of R	0.61	
	10/04/04	940	607	USGS	0.65	
	10/08/04	1032	664	C of R	0.64	
	10/15/04	1036	656	C of R	0.63	
	10/19/04	888	563 *	USGS	0.63	
	10/22/04	809	532 *	C of R	0.66	
	10/29/04	716	568 *	C of R	0.79	638
	11/03/04	974	638	USGS	0.66	
	11/09/04	1059	636	C of R	0.60	
	11/12/04	1081	712 *	C of R	0.66	
	11/17/04	1066	696	C of R	0.65	
	11/22/04	800	511 *	USGS	0.64	
	11/26/04	1026	584 *	C of R	0.57	657
	12/01/04	1020	620	C of R	0.61	
	12/06/04	943	600	USGS	0.64	
	12/10/04	1050	632	C of R	0.60	
	12/18/04	1055	640	C of R	0.61	
	12/21/04	956	618	USGS	0.65	
	12/24/04	1042	640	C of R	0.61	
	12/29/04	263	276 *	C of R	1.05	625
2005	01/07/05	928	592 *	C of R	0.64	
	01/14/05	476	400 *	C of R	0.84	
	01/21/05	969	620	C of R	0.64	
	01/26/05	1019	620	C of R	0.61	
	01/27/05	870	575 *	USGS	0.66	620

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

TABLE J-1

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS
WATER YEAR 2004-05

Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average
02/04/05	1019	636	C of R	0.62	
02/08/05	978	640	USGS	0.65	
02/09/05	1045	636	C of R	0.61	
02/16/05	973	629	USGS	0.65	
02/18/05	206	188 *	C of R	0.91	
02/23/05	186	136 *	C of R	0.73	635
03/04/05	784	496 *	C of R	0.63	
03/08/05	828	504 *	USGS	0.61	
03/09/05	768	516 *	C of R	0.67	
03/18/05	360	292 *	C of R	0.81	
03/23/05	283	364 *	C of R	1.29	
03/29/05	343	212 *	USGS	0.62	*625*
04/09/05	366	248 *	C of R	0.68	
04/14/05	365	285 *	USGS	0.78	
04/15/05	429	268 *	C of R	0.62	
04/20/05	438	296 *	C of R	0.68	
04/25/05	649	389 *	USGS	0.60	
04/29/05	742	496 *	C of R	0.67	*615*
05/09/05	854	528 *	USGS	0.62	
05/13/05	475	272 *	C of R	0.57	
05/14/05	758	468 *	C of R	0.62	
05/18/05	440	284 *	C of R	0.65	
05/24/05	566	342 *	USGS	0.60	
05/27/05	567	380 *	C of R	0.67	*605*

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

TABLE J-1

WATER QUALITY SAMPLES AT RIVERSIDE NARROWS
WATER YEAR 2004-05

Date Sampled	EC (microsiemens/cm)	TDS (mg/L)	Source of Data	Ratio	Average
06/01/05	676	440 *	C of R	0.65	
06/07/05	640	382 *	USGS	0.60	
06/10/05	743	412 *	C of R	0.55	
06/15/05	815	484 *	C of R	0.59	
06/21/05	708	423 *	USGS	0.60	
06/24/05	972	580 *	C of R	0.60	
06/29/05	889	576 *	C of R	0.65	*595*
07/06/05	812	506 *	USGS	0.62	
07/08/05	986	568 *	C of R	0.58	
07/13/05	1013	636 *	C of R	0.63	
07/22/05	1072	656 *	C of R	0.61	
07/27/05	675	384 *	C of R	0.57	*585*
08/05/05	749	492 *	C of R	0.66	
08/10/05	666	452 *	C of R	0.68	
08/17/05	644	397 *	USGS	0.62	
08/19/05	699	424 *	C of R	0.61	
08/24/05	900	564 *	C of R	0.63	
08/29/05	920	572	USGS	0.62	572
09/02/05	957	600	C of R	0.63	
09/07/05	979	588	C of R	0.60	
09/12/05	894	563	USGS	0.63	
09/16/05	962	572	C of R	0.59	
09/23/05	994	612	C of R	0.62	
09/27/05	997	638	USGS	0.64	
09/30/05	968	552 *	C of R	0.57	596

* 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 2004-05

	Month	Stream Flow [1] (acre-feet)	Monthly Average TDS (mg/L)	Monthly Flow x TDS
2004	October	4,431	638	2,825,879
	November	4,285	657	2,813,817
	December	4,420	625	2,762,500
2005	January	4,852	620	3,008,240
	February	4,894	635	3,108,914
	March	5,933	625	3,708,112
	April	6,078	615	3,737,970
	May	6,273	605	3,795,165
	June	5,872	595	3,493,812
	July	5,787	585	3,385,395
	August	5,404	572	3,091,088
	September	5,155	596	3,069,825
	Total	63,384		38,800,717

$$\text{Flow-weighted TDS} = \frac{38{,}800{,}717}{63{,}384} = 612 \text{ mg/L}$$

(1) USGS measured flow minus storm flow.
(2) TDS based on water quality data from Table J-1.

APPENDIX K

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

WATER YEAR 2004-05

There was no discharge of WMWD Transfer Program water to the Santa Ana River during the 2004-05 water year.