

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

Santa Ana River Basin

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

DRAINAGE AREA.--541 mi².

SURFACE-WATER RECORDS

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

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

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 20	1500	1,620	4.78
Dec 19	2200	6,620	5.95
Dec 20	2115	18,300	7.41
Dec 22	0800	*27,800	*8.35
Jan 30	2115	1,400	4.69
Feb 15	1530	4,040	5.50
Feb 19	0230	1,120	4.51
Feb 26	0715	2,960	5.21
Mar 1	1415	6,470	5.91
Mar 21	0100	2,700	4.99
Mar 23	2215	3,120	5.13
Mar 29	1330	1,220	4.50

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	e0.00	e0.38	e1.6	15	4.4	2,300	785	65	e0.00	e0.00	e0.00	e0.00
2	e0.00	e0.56	e1.2	21	3.7	96	822	61	e0.00	e0.00	e0.00	e0.00
3	e0.00	e0.32	1.5	78	3.8	e49	976	27	e0.00	e0.00	e0.00	e0.00
4	e0.00	e0.13	1.8	15	3.7	e40	443	22	e0.00	e0.00	e0.00	e0.00
5	e0.00	0.00	8.2	12	3.7	e38	256	19	e0.00	e0.00	e0.00	e0.00
6	0.05	0.00	74	9.4	3.8	e37	96	17	e0.00	e0.00	e0.00	e0.00
7	e0.00	e0.51	3.0	8.7	3.4	e50	23	16	e0.00	e0.00	e0.00	e0.00
8	e0.00	19	1.5	8.6	3.2	24	23	18	e0.00	e0.00	e0.00	e0.00
9	e0.00	e1.1	1.5	7.1	2.7	18	39	21	e0.00	e0.00	e0.00	e0.00
10	e0.00	e0.90	1.3	5.8	3.3	17	19	21	e0.00	e0.00	e0.00	e0.00
11	e0.00	e0.59	1.3	4.0	3.8	16	17	18	e0.00	e0.00	e0.00	e0.00
12	e0.00	e1.2	1.4	4.0	4.1	12	14	12	e0.00	e0.00	e0.00	e0.00
13	e0.00	e2.1	1.6	4.2	4.5	10	15	11	e0.00	e0.00	e0.00	e0.00
14	e0.00	e3.2	1.8	4.1	16	8.6	18	14	e0.00	e0.00	e0.00	e0.00
15	e0.00	e0.95	1.3	3.3	1,030	8.7	12	15	e0.00	e0.00	e0.00	e0.00
16	e0.00	e1.4	10	3.6	110	8.4	13	14	e0.00	e0.00	e0.00	e0.00
17	e0.00	e1.1	6.6	3.2	86	7.7	9.5	2.6	e0.00	e0.00	e0.00	e0.00
18	e0.00	e0.90	42	3.2	81	7.5	16	36	e0.00	e0.00	e0.00	e0.00
19	1.0	e0.70	1,260	3.7	454	9.0	43	19	e0.00	e0.00	e0.00	e0.00
20	0.21	146	4,930	3.2	265	80	56	2.2	e0.00	e0.00	e0.00	e0.00
21	0.13	88	4,640	3.3	18	812	64	9.3	e0.00	e0.00	e0.00	e0.00
22	e0.05	8.1	10,100	3.0	11	100	86	5.9	e0.00	e0.00	e0.00	e0.00
23	0.00	1.5	1,130	2.8	9.6	265	99	12	e0.00	e0.00	e0.00	e0.00
24	0.00	2.4	430	2.8	9.3	134	112	14	e0.00	e0.00	e0.00	e0.00
25	1.0	1.3	235	2.5	9.1	168	112	7.9	e0.00	e0.00	e0.00	e0.00
26	e0.80	1.3	302	2.8	1,120	87	104	0.64	e0.00	e0.00	e0.00	e0.00
27	e0.70	1.3	82	2.6	62	68	92	e0.00	e0.00	e0.00	e0.00	e0.00
28	e0.60	16	42	2.7	56	155	81	e0.00	e0.00	e0.00	e0.00	e0.00
29	e0.55	4.2	264	2.7	---	628	75	e0.00	e0.00	e0.00	e0.00	e0.00
30	e0.50	2.3	79	154	---	793	67	e0.00	e0.00	e0.00	e0.00	e0.00
31	e0.45	---	23	83	---	842	---	e0.00	---	e0.00	e0.00	---
Total	6.04	307.44	23,678.6	479.3	3,385.1	6,888.9	4,587.5	480.54	0.00	0.00	0.00	0.00
Mean	0.19	10.2	764	15.5	121	222	153	15.5	0.00	0.00	0.00	0.00
Max	1.0	146	10,100	154	1,120	2,300	976	65	0.00	0.00	0.00	0.00
Min	0.00	0.00	1.2	2.5	2.7	7.5	9.5	0.00	0.00	0.00	0.00	0.00
Ac-ft	12	610	46,970	951	6,710	13,660	9,100	953	0.00	0.00	0.00	0.00

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

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

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SUMMARY STATISTICS

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

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

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

SUMMARY STATISTICS

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

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

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

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SUMMARY STATISTICS

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

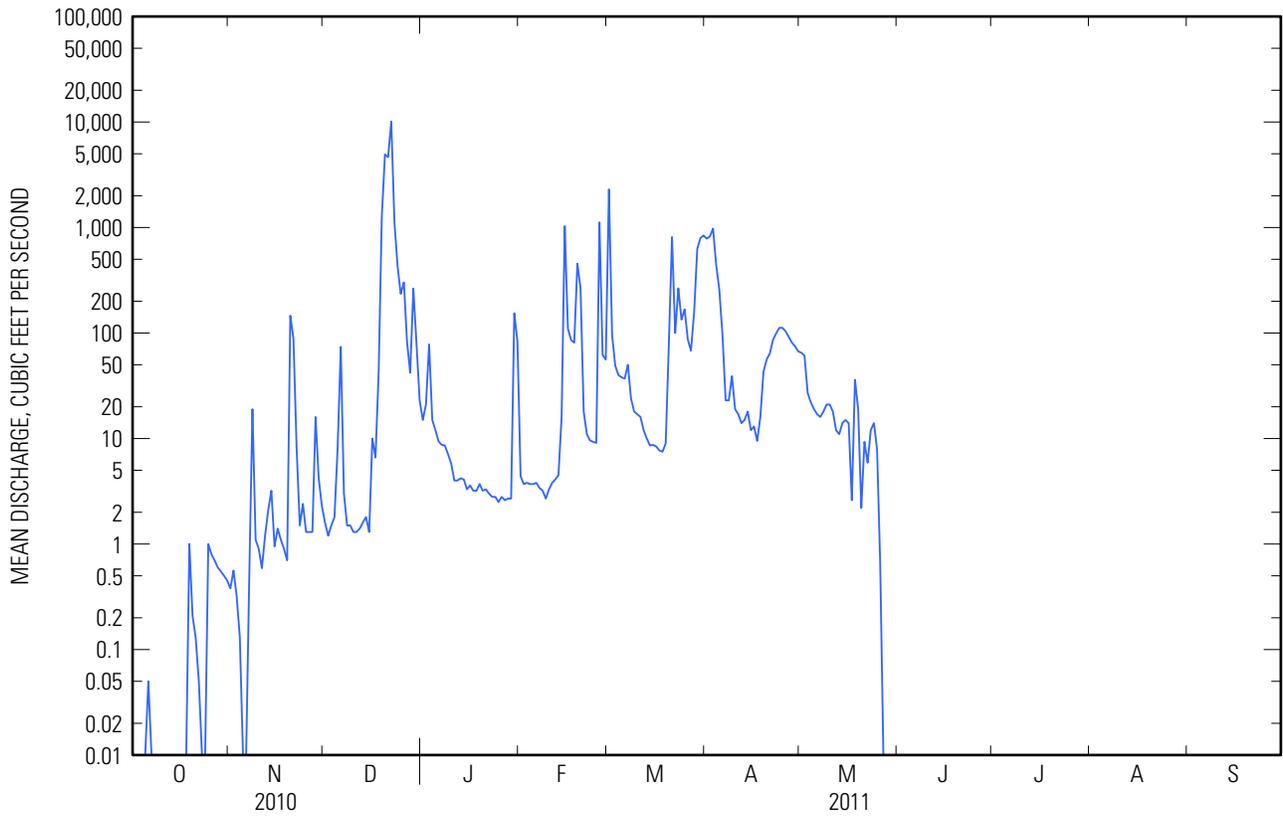
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2011, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	21.8	12.3	96.4	143	106	74.4	73.4	32.5	9.65	7.34	8.90	4.50
Max	200	39.7	764	1,185	376	398	351	247	112	52.9	102	40.6
(WY)	(2005)	(2003)	(2011)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)
Min	0.00	0.67	1.16	0.00	0.82	4.10	0.04	0.00	0.00	0.00	0.00	0.00
(WY)	(2003)	(2001)	(2001)	(2003)	(2002)	(2008)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

SUMMARY STATISTICS

	Calendar Year 2010	Water Year 2011	Water Years 2000 - 2011
Annual total	38,497.31	39,813.42	
Annual mean	105	109	49.1
Highest annual mean			265 2005
Lowest annual mean			1.70 2002
Highest daily mean	10,100 Dec 22	10,100 Dec 22	12,500 Jan 11, 2005
Lowest daily mean	0.00 May 4	0.00 Oct 1	0.00 May 14, 2000
Annual seven-day minimum	0.00 May 4	0.00 Oct 7	0.00 Sep 11, 2000
Maximum peak flow		27,800 Dec 22	35,700 Jan 11, 2005
Maximum peak stage		8.35 Dec 22	9.04 Jan 11, 2005
Annual runoff (ac-ft)	76,360	78,970	35,550
10 percent exceeds	65	96	69
50 percent exceeds	0.60	1.4	1.2
90 percent exceeds	0.00	0.00	0.00

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968-72, 1983-86, 1988 to current year.

CHEMICAL ANALYSES: Water years 1969 (partial-record station), 1970-72.

SPECIFIC CONDUCTANCE: Water years 1968-72.

WATER TEMPERATURE: Water years 1968, 1983.

SEDIMENT DATA: Water years 1983-86, 1988 to current year.

PERIOD OF DAILY RECORD.--October 1982 to September 1983.

WATER TEMPERATURE: November 1982 to September 1983.

SUSPENDED-SEDIMENT DISCHARGE: October 1982 to September 1983.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 1 of 2

[ft³/s, cubic feet per second; mg/L, milligrams per liter; mm, millimeters; °C, degrees Celsius; A, average]

Sample date-time	Discharge, instantaneous, ft ³ /s (00061)	Temperature, water, °C (00010)	Suspended sediment, fall diameter (deionized water), percent smaller than 0.002 mm (70337)	Suspended sediment, fall diameter (deionized water), percent smaller than 0.004 mm (70338)	Suspended sediment, fall diameter (deionized water), percent smaller than 0.008 mm (70339)	Suspended sediment, fall diameter (deionized water), percent smaller than 0.016 mm (70340)	Suspended sediment, fall diameter (deionized water), percent smaller than 0.031 mm (70341)	Suspended sediment, sieve diameter, percent smaller than 0.0625 mm (70331)	Suspended sediment, sieve diameter, percent smaller than 0.125 mm (70332)
12-03-2010 0830	2.0	6.9	--	--	--	--	--	93	--
12-03-2010 0832	2.0	6.9	--	--	--	--	--	88	--
12-03-2010 0834	2.0	6.9	--	--	--	--	--	A 91	--
12-19-2010 1226	284	9.7	--	--	--	--	--	24	28
12-29-2010 0820	92	9.8	28	28	34	41	47	53	72
12-29-2010 0821	92	9.8	27	27	33	38	44	50	68
12-29-2010 0822	92	9.8	A 27	A 28	A 33	A 40	A 45	A 51	A 70

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 2 of 2

[ft³/s, cubic feet per second; mg/L, milligrams per liter; mm, millimeters; °C, degrees Celsius; A, average]

Sample date-time	Suspended sediment, sieve diameter, percent smaller than 0.25 mm (70333)	Suspended sediment, sieve diameter, percent smaller than 0.5 mm (70334)	Suspended sediment, sieve diameter, percent smaller than 1 mm (70335)	Suspended sediment, sieve diameter, percent smaller than 2 mm (70336)	Suspended sediment concentration, mg/L (80154)	Suspended sediment discharge, tons per day (80155)
12-03-2010 0830	--	--	--	--	50	.27
12-03-2010 0832	--	--	--	--	62	.33
12-03-2010 0834	--	--	--	--	A 56	A .30
12-19-2010 1226	36	71	96	100	833	638
12-29-2010 0820	93	99	100	--	1,630	405
12-29-2010 0821	92	99	100	--	1,900	472
12-29-2010 0822	A 92	A 99	A 100	--	A 1,770	A 439