

INTERNATIONAL BOUNDARY AND WATER COMMISSION  
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WESTERN WATER BULLETIN 1994

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**Flow of  
The Colorado River  
and other  
Western Boundary Streams  
and  
Related Data**

COLORADO RIVER

TIJUANA RIVER

SANTA CRUZ RIVER

SAN PEDRO RIVER

WHITEWATER DRAW

**1994**

CHEMICAL ANALYSES OF WATER SAMPLES

NEW RIVER

The table below is based on samples collected and analyzed by the the California Regional Water Quality Control Board - Colorado River Basin, Region-7. New River Samples prior to 1985 were collected and analyzed by the U.S. Geological Survey. Samples from the New River are taken from the right bank at the road bridge, 137 meters north of the international boundary.

SAMPLE TYPE	COMPOSITE	COMPOSITE	COMPOSITE	
DATE	Feb. 8, 1994	May 23, 1994	Oct. 25, 1994	
PARAMETER	CONCENTRATION	CONCENTRATION	CONCENTRATION	DETECTION LIMIT
Arsenic	N.D.	6.00 ug/L	4.0 mg/L	10.0 ug/L
Boron	N.D.	N.D.	N.D.	0.1 mg/L
Cadmium	N.D.	7.00 ug/L	1.0 mg/L	1.0 ug/L
Chromium	N.D.	22.00 ug/L	N.D.	10.0 ug/L
Copper	N.D.	94.00 ug/L	13.0 mg/L	10.0 ug/L
Lead	N.D.	N.D.	N.D.	10.0 ug/L
Phenol	0.015 mg/L	N.D.	N.D.	0.002 mg/L
MBAS	3.400 mg/L	0.42 mg/L	1.6 mg/L	0.025 mg/L
Zinc	N.D.	N.R.	N.D.	50.0 ug/L
Total Cyanide	N.D.	N.D.	N.D.	0.01 mg/L
Total Phosphate(P04-P)	1.600 mg/L	1.49 mg/L	1.56 mg/L	0.01 mg/L
Nitrate (NO3-N)	1.700 mg/L	0.30 mg/L	0.30 mg/L	0.01 mg/L
Nitrite (NO2-N)	N.D.	0.20 mg/L	N.D.	0.03 mg/L
Ammonia (NH3-NH4-N)	6.500 mg/L	3.10 mg/L	5.6 mg/L	0.05 mg/L
Total Dissolved Solids	2,761 mg/L	2,470 mg/L	2,670 mg/L	---
Total Suspended Solids	39,000 mg/L	13.0 mg/L	21.0 mg/L	---
Volatile Suspended Solids	1,000 mg/L	5.60 mg/L	7.0 mg/L	---

N.R.- None Reported  
N.D.- None Detected

The table below is based on samples collected and analyzed by the U. S. Section of the Commission.

Samples from the New River are taken from the right bank at road bridge, 137 meters north of the international boundary. Records of the sampling extend from April 1951 through 1994.

NEW RIVER

1994	Time	*Streamflow Momentary	Water Temperature	pH	Oxygen Dissolved (DO)	Specific Conductance	Fecal Coliform
Date	Std.	CMS	Deg C	Units	mg/L	Microsiemens/cm	Colonies/100 mL
Jan. 5	0850	7.33	13.0	7.9	5.6	4,100	125,000
Jan. 19	0850	5.89	12.0	7.8	4.8	4,700	70,000
Feb. 2	0705	6.83	11.0	7.8	6.3	4,200	90,000
Feb. 23	1015	7.31	15.0	7.7	5.5	4,500	75,000
Mar. 2	0725	6.46	16.5	7.7	3.5	4,600	64,000
Mar. 17	0855	8.95	19.0	7.7	4.0	3,900	80,000
Apr. 4	0900	8.07	19.0	7.6	2.5	5,200	55,000
Apr. 13	1120	6.03	21.0	7.7	N.R.	4,800	135,000
May 4	0855	8.64	22.0	7.5	3.1	4,000	70,000
May 19	0845	7.36	20.0	7.8	4.4	4,100	71,000
June 2	0825	7.08	27.0	7.6	0.9	4,100	540,000
June 15	0945	7.08	28.0	7.5	1.5	3,600	695,000
July 6	0820	3.96	27.0	7.5	2.1	5,050	202,000
July 20	0840	3.77	29.0	7.5	0.9	5,000	155,000
Aug. 4	0805	4.02	30.0	7.5	1.8	4,420	85,000
Aug. 17	0830	5.92	31.0	7.6	1.1	4,400	85,000
Sep. 6	0805	4.47	31.0	7.5	1.6	4,300	190,000
Sep. 28	0850	6.46	27.0	7.6	1.2	3,500	128,000
Oct. 4	0815	4.76	25.0	7.5	1.6	3,900	120,000
Oct. 19	1130	4.56	20.0	7.6	2.9	4,200	175,000
Nov. 1	0810	3.46	20.0	7.5	1.5	3,500	670,000
Nov. 22	0815	3.68	13.0	7.8	2.7	5,000	760,000
Dec. 7	0750	3.77	13.0	7.6	2.8	5,000	510,000
Dec. 20	0830	4.90	11.0	7.6	3.9	4,200	261,000

Note: Temperature, pH, D.O., and Specific Conductance - Data collected in field  
\* Flow reported by Imperial Irrigation District  
N.R.- None Reported

CHEMICAL ANALYSES OF WATER SAMPLES

The table below is based on samples collected and analyzed by the U. S. Section of the Commission.

Samples from the Alamo River are taken north of the international boundary upstream of the box culv under the All-American Canal. Flow at this point includes drainage flows across international boundary if from drain intercepts along the toe of the south bank of the All-American Canal.

ALAMO RIVER

1994	Time	*Streamflow Momentary	Water Temperature	pH	Oxygen Dissolved (DO)	Specific Conductance	Fecal Coliform
Date	Std.	CMS	Deg C	Units	mg/L	Microsiemens/cm	Colonies/100 mL
Jan. 19	0800	0.09	11.0	7.8	6.2	5,600	2,900
Feb. 23	0930	0.07	14.0	7.7	7.7	6,000	2,100
Mar. 17	0735	0.07	17.0	7.6	5.1	6,020	1,430
Apr. 13	0940	0.07	20.0	7.7	N.R.	5,500	1,470
May. 19	0800	0.07	18.0	7.8	5.7	6,000	1,200
June 15	1030	0.06	25.0	7.5	3.9	4,000	960
July 20	0750	0.28	25.0	7.6	4.9	6,500	960
Aug. 17	0755	0.14	29.0	7.6	5.8	5,400	N.R.
Aug. 24	1010	0.17	27.0	7.7	4.6	5,400	3,500
Sep. 28	0810	0.07	24.0	7.6	5.4	4,800	22,000
Oct. 4	1145	0.07	22.0	7.7	5.8	5,800	35,000
Nov. 22	0720	0.08	10.0	7.8	8.5	4,600	3,700
Dec. 20	0740	0.08	10.0	7.7	6.5	5,650	17,500

Note: Temperature, pH, D.O., and Specific Conductance - Data collected in field  
\* Flow reported by Imperial Irrigation District  
N.R.- None Reported

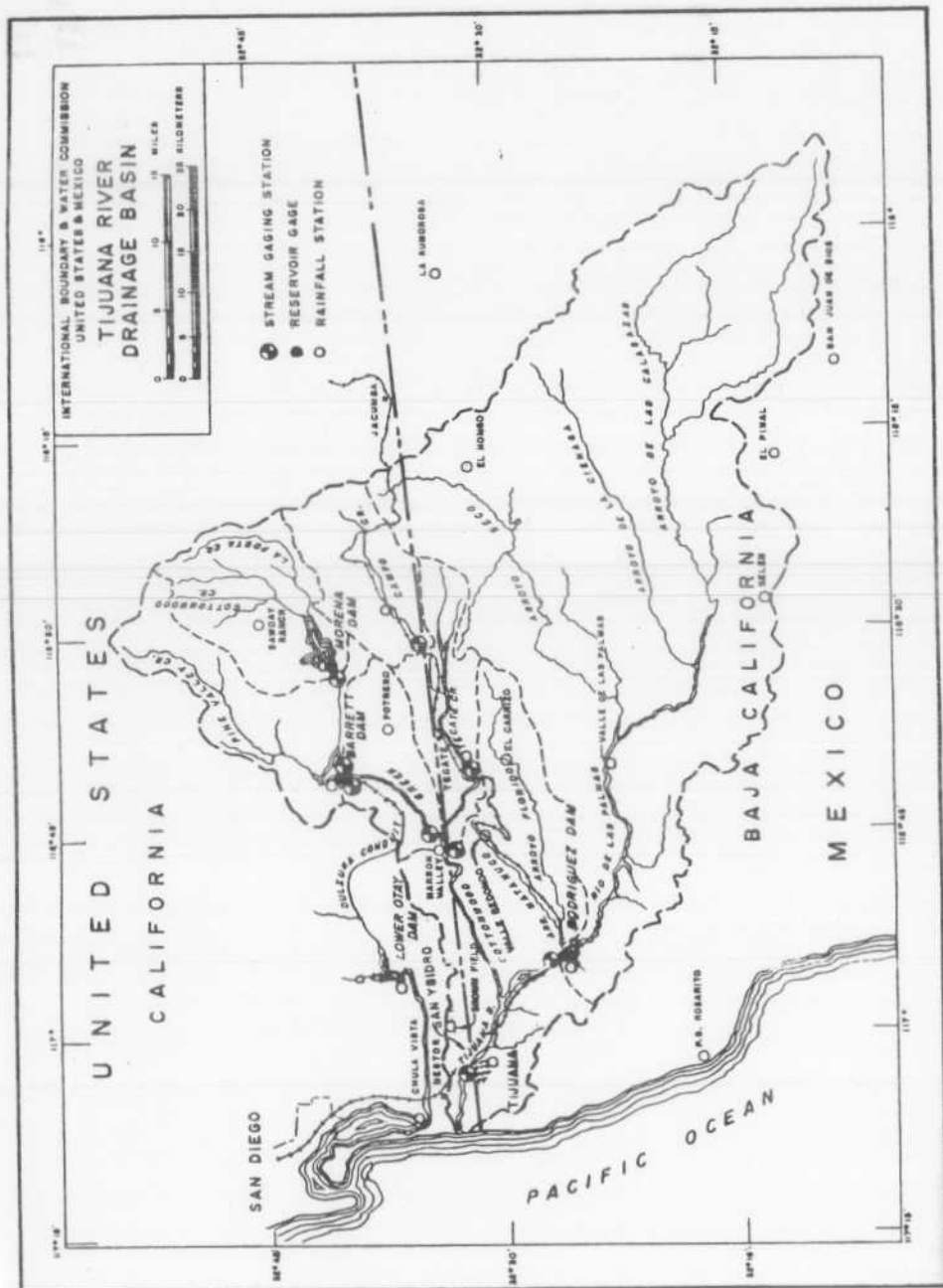
SPECIFIC CONDUCTANCE OF WATER SAMPLES

The following table shows specific conductance of individual water samples from the New River in Mexico the international boundary. Samples were taken by the Mexican Section of the Commission, who also made determinations.

NEW RIVER AT INTERNATIONAL BOUNDARY

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 1994

January	February	March	April	May	June	July	August	September	October	November	December
05 5,200	02 4,400	02 5,000	06 5,200	01 5,200	01 5,200	03 5,800	05 6,000	07 5,800	07 6,000	07 5,000	05 5,000
12 5,000	09 5,600	09 5,100	08 5,800	08 4,900	08 4,900	10 6,000	12 6,200	14 5,400	12 6,200	09 5,400	14 5,000
19 5,300	16 5,300	16 5,300	08 5,000	18 5,000	15 5,100	20 5,900	19 6,100	21 5,800	16 5,800	16 5,000	21 6,000
26 5,700	20 5,700	23 5,200	27 6,100	25 4,800	22 5,600	24 5,700	26 5,800	28 6,000	23 5,000	23 5,000	28 5,000
		30 6,000			29 5,800	31 5,500			30 5,000		



## 11-0100.00 COTTONWOOD CREEK ABOVE MORENA DAM, CALIFORNIA

**DESCRIPTION:** Staff gage located on east side of outlet tower immediately upstream from face of Morena Dam. The dam is located on Cottonwood Creek 2.9 kilometers upstream from the mouth of Hauser Creek, 13.7 kilometers upstream from Barrett Dam, and about 32.2 kilometers upstream from the international boundary. The zero of the gage is 878.555 meters above mean sea level, U. S. C. & G. S. datum.

**RECORDS:** Reservoir inflows shown below were computed from monthly reservoir records of storage, release spills, leakage, evaporation, and rainfall, by the International Boundary and Water Commission, United States Section. They represent all water reaching Morena Reservoir, including rainfall on reservoir water surface. Basic data were furnished by the City of San Diego, California. Records April 1911 through 1994.

**REMARKS:** Storage began in Morena Reservoir March 1910. Reservoir capacity and area ratings date from when Morena Dam was completed. Records for 1994 computed on basis of area-capacity curves determined from 1948 resurvey. Various changes have been made to the spillway section since construction of the dam. Elevation of the present crest of ungated spillway is 47.855 meters, gage datum. Reservoir capacity at spillway crest, 1948 survey, is 61,934 TCM. The entire capacity of Morena Reservoir is used to furnish a part of the water supply of the City of San Diego, California. Water is released from Morena Reservoir down Cottonwood Creek to Barrett Reservoir as required.

**EXTREMES:** Maximum monthly inflow since 1937, 55,845 TCM, March 1983. Prior to 1937, maximum monthly inflow 45,886 TCM, January 1916; minimum no flow during parts of many years.

MONTHLY DISCHARGE IN THOUSAND CUBIC METERS

MONTH	CURRENT YEAR 1994	PERIOD 1937 - 1994		
		AVERAGE	MAXIMUM	MINIMUM
January	1,278	1,161	20,362	0
February	2,056	2,648	41,407	9.9
March	2,031	3,684	55,845	23.8
April	1,464	2,065	28,530	4.1
May	1,113	1,039	18,642	0
June	710	578	10,173	0
July	5.7	356	7,651	0
August	300	298	8,916	0
September	144	198	6,331	0
October	62.5	179	4,817	0
November	8.4	293	5,633	0
December	393	804	9,472	5.4
Yearly	9,566	13,303	177,579	149