COLORADO RIVER MAIN STEM

09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA

LOCATION.--Lat 32°52'59", long 114°27'55", at Imperial Dam. The Arizona end of the dam is in SW1/4NW1/4 sec. 30, T.6 S., R.21 W., Gila and Salt River meridian, Yuma County, Hydrologic Unit 15030104; the California end is in NW1/4SW1/4 sec. 9, T.15 S., R.24 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030104. Imperial Dam is 5 mi upstream from Laguna Dam, 15 mi northeast of Yuma, AZ, 90 mi downstream from Palo Verde Dam, and 147 mi downstream from Parker Dam.

DRAINAGE AREA.--188,500 mi^2, approximately, including 3,959 mi^2 in Great Divide basin in southern Wyoming, which is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1903–34 (yearly discharge only, published in WSP 1313), July 1934 to current year (monthly discharge only Oct. 1942 to Sept. 1979). Prior to Oct. 1942 published as "near Picacho, Ca." Oct. 1942 to Sept. 1971 published as "at Imperial Dam" (monthly discharge shown as "flow reaching Imperial Dam," listed as supplement to "flow passing Imperial Dam").

GAGE.--None. This record is synthesized from records of several other stations (see REMARKS). July 13, 1934, to Sept. 30, 1942, water-stage recorder at site 14.5 mi upstream at datum 167.38 ft above sea level.

REMARKS.--Records show flow of Colorado River reaching Imperial Dam, and are based on combined daily total flow of Colorado River below Imperial Dam (sta 09429500), All-American Canal near Imperial Dam (sta 09523000), Gila Gravity Main Canal at Imperial Dam (sta 09522500), and diversions to Mittry Lake (sta 09522400). Records for 1903–34 and for Oct. 1942 to Sept. 1960 were computed as combined flow of Colorado River at Yuma (sta 09521000) and the canals diverting at Imperial and Laguna Dams, less the flow of Gila River near Dome (sta 09520500); for some of these periods drainage and waste return flows and channel losses between the gaging stations and Imperial Dam were considered, and for other periods they were neglected. Records for Oct. 1960 to Sept. 1979 are based on combined monthly total flow of same stations on which daily flows are currently based. Records for July 1934 to Sept. 1942 show daily discharge of Colorado River at gaging station near Picacho, CA, water withdrawals, and diversions for irrigation, municipal, and industrial uses, and return flows from irrigated areas. Diversions to Mittry Lake, which began June 23, 1970, are included in river records in table below. Additional regulation, beginning Jan. 31, 1966, to equalize supplies for downstream water users, is provided by pumped storage in reservoir on Senator Wash, about 2 mi upstream from Imperial Dam. Monthend contents of Senator Wash Reservoir—capacity, 13,840 acre-ft—is given in table below.

COOPERATION.--Records of Sparling meter readings of diversion to Mittry Lake furnished by Imperial Irrigation District and contents of Senator Wash Reservoir furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF 1934-2003.--Maximum discharge, 40,800 ft^3/s Sept. 5, 1939; minimum, 538 ft^3/s Aug. 3, 1934; minimum daily since regulation of Hoover Dam began, 1,450 ft^3/s Feb. 17, 1935.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8530	6420	4810	3460	5060	5460	11800	10600	9340	10000	7330	8220
2	8500	6110	4760	4500	6100	6100	11700	9800	10500	10200	8330	8550
3	8050	6860	4850	4450	6130	5840	11000	10900	10900	9120	8370	7940
4	7380	6810	5070	4540	6430	5850	10500	10900	10100	8500	8740	8010
5	7100	6640	5460	5260	6640	5810	10300	11200	9530	9320	9520	6760
6	8050	6510	5660	5700	6380	5780	9290	11600	8730	9750	9080	7110
7	8290	6030	5390	5000	6220	5830	9230	11100	9740	9930	7780	7430
8	8310	5940	6040	4880	5810	7940	9120	9700	9900	10000	7400	7310
9	8370	5810	6260	4640	6520	8910	9790	9520	9960	9750	8540	7820
10	7950	5980	6300	4620	6730	9330	9040	10000	9960	8630	8500	7470
11	7100	6140	6110	4300	6740	9850	8480	10400	10300	8390	8920	6830
12	6390	6370	5800	5460	6990	10200	10500	10400	8840	9460	9080	7240
13	7430	6120	5660	5360	6710	9820	11700	10200	7610	9620	8500	7410
14	7570	5880	5300	5310	6040	9170	11700	9810	9180	9680	8230	7530
15	7770	5350	5960	5640	5540	10800	11700	8470	9770	9960	8030	7760
16	7640	4490	5930	5580	7110	11500	11900	8660	9890	9480	8040	7540
17	7300	5010	6080	5230	7290	11200	11100	9750	9310	8640	8930	7380
18	6930	5140	6280	4820	7350	11700	10800	9950	9230	8200	8970	6950
19	6310	5260	5720	5300	7170	10400	11700	9500	8340	9300	8080	6500
20	7590	5350	5480	5750	7300	9540	11700	9070	7600	9780	7400	7570
21	7650	5350	5040	5780	6530	9220	11500	8700	9000	9780	7070	9370
22	7620	5190	5470	5180	6360	10200	11900	7960	9330	9920	6780	8860
23	7840	5030	5440	5030	6510	11000	10900	7080	9390	9740	7910	7650
24	7620	5920	4050	4580	7610	11300	9660	8430	9990	8600	8060	7550
25	7020	6280	3230	4180	7960	11800	9480	9200	9630	8420	8430	6880
26	6400	6000	4480	4970	6180	11300	11100	9200	8750	8870	8250	7140
27	6930	5120	4390	5140	4980	10300	11600	9500	8010	9250	7980	7420
28	7340	5620	4250	5570	4900	10200	11900	9300	9450	9670	7250	8100
29	7500	5690	4940	5670	4810	11800	11600	8680	9750	9330	6980	7870
30	7200	5050	4700	5720	---	12200	11200	7550	10100	9180	7980	7680
31	6950	---	4100	5530	---	12200	---	8190	---	7800	8000	---
TOTAL	232630	173470	163010	157150	186100	292550	323890	295320	282130	288270	252460	227850
MEAN	7504	5782	5258	5069	6417	9437	10800	9526	9404	9299	8144	7595
MAX	8530	6860	6300	5780	7960	12200	11900	11600	10900	10200	9520	9370
MIN	6310	4490	3230	3460	4810	5460	8480	7080	7600	7800	6780	6500
AC-FT	461400	344100	323300	311700	369100	580300	642400	585800	559600	571800	500800	451900
(*)	7733	4865	7160	4143	7034	3641	3818	5242	6775	8003	4913	2183
(**)	984	893	770	875	863	922	833	742	790	897	799	714

CAL YR 2003 TOTAL 2911590 MEAN 7977 MAX 12800 MIN 3230 AC-FT 5775000 (**) 10590
WTR YR 2004 TOTAL 2874830 MEAN 7855 MAX 12200 MIN 3230 AC-FT 5702000 (**) 10080

(*) Monthend contents, in acre-feet, for Senator Wash Reservoir
(**) Deversion, in acre-feet, to Mittry Diversion (09522400)

09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA—CONTINUED

WATER-QUALITY RECORDS

LOCATION.--Water samples collected above trash racks at All-American Canal headworks at west end of Imperial Dam.
PERIOD OF RECORD.--Aug. 1969 to Sept. 1992, Aug. 1996 to Sept. 2000 and current water year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Oct. 1969 to Sept. 2000.
WATER TEMPERATURE: Oct. 1974 to Sept. 2000.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum observed, 1,970 microsiemens, Aug. 23, 1977; minimum observed, 866 microsiemens, Sept. 12, 1986.
WATER TEMPERATURE: Maximum observed, 33.0°C, Aug. 20, 1977, Aug. 28, 29, 1981; minimum recorded, 6.5°C Dec. 25, 26, 1990.
INSTRUMENTATION.--Streamflow not gaged by USGS.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Noncarb hardness, wat flt field, mg/L as CaCO3 (00904)
DEC													
17...	0840	9	5020	--	1.2	772	9.9	89	8.1	1130	10.0	11.0	170
FEB													
25...	0930	9	3620	--	3.1	766	6.6	68	8.1	1110	15.0	17.0	170
MAY													
25...	0800	9	7370	--	.33	756	--	--	8.2	1170	25.0	23.0	170
AUG													
25...	0830	9	6500	2.8	--	758	5.7	72	8.0	1170	28.0	27.0	190

Date	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)
DEC													
17...	310	76.0	81.0	30.0	30.0	4.30	3	110	146	174	<1	100	.4
FEB													
25...	310	78.0	77.0	29.0	30.0	4.70	3	110	146	174	<1	100	.4
MAY													
25...	320	78.0	80.0	30.0	29.0	4.70	3	110	150	183	<1	110	.4
AUG													
25...	330	80.9	80.0	31.9	31.9	4.98	3	121	142	173	<1	108	.4

Date	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/acre-ft (70303)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)
DEC													
17...	260	666	.99	729	2	.30	--	<.01	--	.220	<.02	.52	2.3
FEB													
25...	270	678	.98	719	9	<.20	--	<.01	--	.320	<.02	--	--
MAY													
25...	280	703	1.02	750	8	.60	--	<.01	--	.230	<.02	.83	3.7
AUG													
25...	284	717	1.03	757	<10	.18	<.04	--	.14	--	.02	.32	--

Date	COD, high level, water, unfltrd mg/L (00340)	E coli, m-TEC MF, water, col/100 mL (31633)	Fecal coliform, M-FC 0.7u MF col/100 mL (31625)	Aluminum, water, fltrd, ug/L (01106)	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recoverable, ug/L (01007)	Beryllium, water, fltrd, ug/L (01010)	Beryllium, water, unfltrd recoverable, ug/L (01012)	Boron, water, fltrd, ug/L (01020)
DEC													
17...	7	--	9k	--	<1	2	2	5	100	110	<1	<1	152
FEB													
25...	8	4k	--	--	<1	<1	2	2	110	120	<1	<1	147
MAY													
25...	<5	3k	--	--	<1	<1	2	2	120	130	<1	<1	152
AUG													
25...	--	9k	--	--	.26	.3	2.5	3	--	131	<.06	<.06	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover -able, ug/L (01042)	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)
DEC													
17...	155	<.5	<.5	<1	<1	<2	<2	<2	76	<2	<2	2	13
FEB													
25...	148	<.5	<.5	<1	<1	<2	<2	<2	174	<2	<2	3	26
MAY													
25...	155	<.5	<.5	<1	<1	<2	<2	<2	143	<2	<2	2	23
AUG													
25...	157	E.02n	<.04	--	<.8	2.2	3.2	--	--	E.05n	.25	--	16

Date	Mercury water, fltrd, ug/L (71890)	Mercury water, unfltrd recover -able, ug/L (71900)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover -able, ug/L (01067)	Selen- ium, water, fltrd, ug/L (01145)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover -able, ug/L (01077)	Stront- ium, water, unfltrd recover -able, ug/L (01082)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover -able, ug/L (01092)
DEC													
17...	<.1	<.1	<1	<1	<1	2	<1	<1	1120	<2	<2	<2	<2
FEB													
25...	<.1	<.1	<1	4	2	<1	<1	<1	1120	<2	<2	<2	2
MAY													
25...	<.1	<.1	<1	2	<1	1	<1	<1	1160	<2	<2	15	3
AUG													
25...	E.01n	E.01n	--	--	--	2.0	--	--	--	--	--	7.5	2

Date	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)	Data base number	Medium code
DEC				
17...	13	176	01	9
FEB				
25...	14	137	01	9
MAY				
25...	14	279	01	9
AUG				
25...	13	228	01	9

Remark codes used in this table:
< -- Less than
E -- Estimated value
Value qualifier codes used in this table:
k -- Counts outside acceptable range
n -- Below the LRL and above the LT-MDL