Water-Data Report 2012

09510000 VERDE RIVER BELOW BARTLETT DAM, AZ

Verde Basin
Lower Verde Subbasin

LOCATION.--Lat 33°48′30″, long 111°39′46″ referenced to North American Datum of 1927, in NW ¼ sec.5, T.5 N., R.7 E., Maricopa County, AZ, Hydrologic Unit 15060203, in Tonto National Forest, on right bank 2.1 mi downstream from Bartlett Dam, 4.0 mi upstream from Camp Creek, and 16 mi east of town of Cave Creek.(unsurveyed).

DRAINAGE AREA.--6,161 mi^2, of which 365 mi^2 is non-contributing, including 357 mi^2 in Aubrey Valley Playa, a closed basin.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Aug. 1888 to current year. (Monthly discharge only Aug. 1888 to Dec. 1903, and Jan. 1910 to Sept. 1913. For some periods prior to Dec. 1903 gage heights, discharge measurements, and daily discharge hydrographs are published in reports of the Geological Survey.) Prior to Oct. 1941, published under different names as follows: "near Fort McDowell," "at mouth," "above Salt River," "at McDowell," "at McDowell near Lehi," "near McDowell," and "above Camp Creek, near McDowell."

REVISED RECORDS.--WSP 1049: 1893, 1913-14, 1917-18, 1926-27, 1929. WSP 1213: 1915-16. WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,570.34 ft above sea level. Gage at present site and datum 2.00 ft higher Jan. 1, 1942, to Sept. 30, 1961, Dec. 30, 1965, to Mar. 10, 1971, and Oct. 1, 1978, to Jan. 4, 1993; Mar. 2 to Sept. 30, 1978, used as supplementary gage, and Feb. 18, 1975, to Feb. 28, 1978, supplementary water-stage recorder at site 30 ft upstream at same datum. Oct. 1, 1961, to Dec. 29, 1965, and Mar. 11, 1971, to Sept. 30, 1973, water-stage recorder at site 1.9 mi upstream at datum 1,600 ft, from topographic map; at same site at datum 4.00 ft higher, Oct. 1, 1973, to Mar. 3, 1975, and 5.00 ft higher, Oct. 1, 1961, to Dec. 29, 1965, and Mar. 11, 1971, to Sept. 30, 1973. Feb. 17, 1925, to Dec. 31, 1941, water-stage recorder at two sites within 0.5 mi upstream from Camp Creek, at various datums. Prior to Feb. 17, 1925, nonrecording gages at several sites about 20 mi downstream from present location at various datums.

REMARKS.--Records good, no estimated daily discharges. About 12,500 acres above station are irrigated by surface water and ground water. Flow completely regulated by Bartlett Reservoir since Feb. 5, 1939, and Horseshoe Reservoir since Nov. 15, 1945, except during periods of spill. Water diverted downstream for municipal supply for the city of Phoenix, and for irrigation in Fort McDowell Indian Reservation. Remainder (except during infrequent periods of extreme flooding) is diverted at Granite Reef Dam on Salt River 27 mi downstream for irrigation in Salt River Valley, and for municipal use by the city of Phoenix.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--124 years, 651 ft^3/s, 471,659 acre-ft/yr; median of yearly mean discharge, 464 ft^3/s, 336,000 acre-ft/yr. (adjusted for storage in Bartlett and Horseshoe Reservoirs).

EXTREMES FOR PERIOD OF RECORD.--
1888-1939: Maximum discharge not determined, probably over 150,000 ft^3/s, Feb. 24, 1891; minimum daily, 29 ft^3/s, July 11 and 13, 1901. Floods of Nov. 27, 1905 and Mar. 4, 1938, reached maximum discharges of 96,000 ft^3/s and 95,000 ft^3/s, respectively.
1939-Current Year: Maximum discharge, 110,000 ft^3/s, Jan. 8, 1993; minimum, no flow at Bartlett Dam at times when gates in dam were closed.

EXTREMES FOR CURRENT YEAR.--Peak discharges, maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 15	1845	*669	*2.35

Minimum daily discharge, 97 ft^3/s, Apr. 11, 12.

Suggested citation: U.S. Geological Survey, 2013, Water-resources data for the United States, Water Year 2012: U.S. Geological Survey Water-Data Report WDR-US-2012, site 09510000, accessed at http://wdr.water.usgs.gov/wy2012/pdfs/09510000.2012.pdf

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	129	120	593	340	535	111	115	107	104	102	107	111
2	129	119	480	334	541	111	120	106	104	102	106	111
3	129	118	441	395	510	111	119	106	104	102	105	111
4	123	119	402	479	536	111	119	106	104	103	105	111
5	120	121	354	487	518	112	119	106	104	103	105	111
6	119	120	355	358	575	112	119	106	104	102	105	111
7	119	123	405	312	625	111	116	106	104	102	105	119
8	118	121	459	264	603	111	106	106	103	102	106	110
9	118	120	464	203	523	111	106	109	103	102	109	109
10	118	121	432	285	500	111	104	114	103	102	109	109
11	118	122	389	309	450	115	97	100	104	103	109	110
12	119	132	302	319	419	121	97	100	104	104	109	110
13	118	142	221	334	400	121	98	99	103	104	109	110
14	118	248	189	395	385	124	101	99	103	105	108	110
15	118	452	287	440	426	125	102	100	104	104	109	110
16	118	434	323	459	487	115	107	100	104	104	109	110
17	119	445	301	410	566	105	119	100	104	103	110	110
18	118	297	293	396	542	106	119	100	104	102	110	110
19	118	228	291	432	489	106	119	100	103	104	110	113
20	118	207	309	455	335	116	119	100	104	105	110	115
21	119	278	330	413	162	121	119	101	104	106	110	115
22	119	371	331	409	121	121	119	105	104	106	111	114
23	119	490	312	374	109	117	119	104	104	106	111	111
24	120	493	291	359	113	107	114	104	104	108	112	112
25	120	563	253	425	114	106	110	104	104	108	113	124
26	120	577	308	531	116	105	112	104	104	110	111	124
27	119	575	388	563	120	105	124	104	104	110	111	125
28	120	592	415	469	121	105	124	104	104	111	111	117
29	119	632	479	466	114	105	124	104	103	111	111	117
30	120	620	590	488	---	105	113	104	102	106	111	116
31	120	---	412	509	---	105	---	104	---	107	111	---
Total	3,719	9,100	11,399	12,412	11,055	3,468	3,399	3,212	3,111	3,249	3,378	3,396
Mean	120	303	368	400	381	112	113	104	104	105	109	113
Max	129	632	593	563	625	125	124	114	104	111	113	125
Min	118	118	189	203	109	105	97	99	102	102	105	109
Ac-ft	7,380	18,050	22,610	24,620	21,930	6,880	6,740	6,370	6,170	6,440	6,700	6,740

	Calendar Year 2011	Water Year 2012
Total	134,007	70,898
Mean	367	194
Max	1,350	632
Min	104	97
Ac-ft	265,800	140,600

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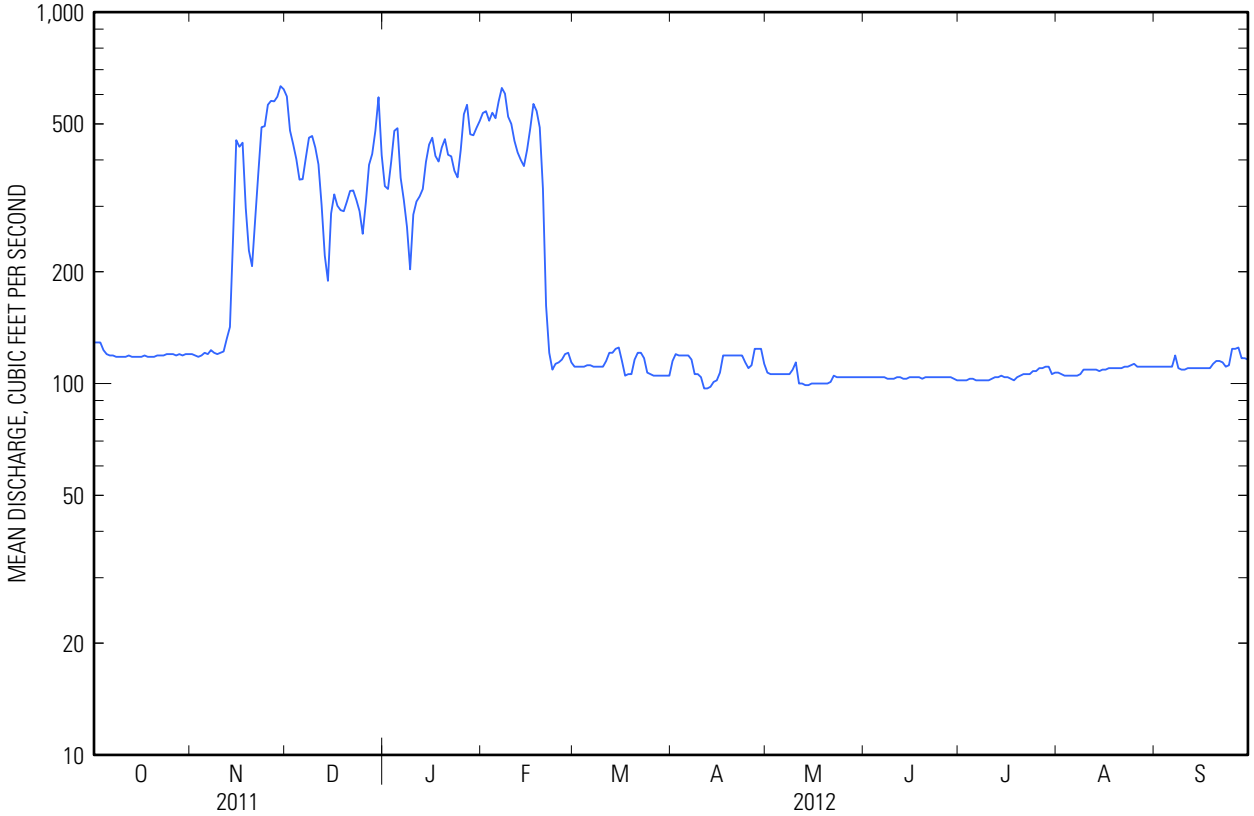

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Dec. 1950 to Aug. 1992, June 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Oct. 1964 to Dec. 1981, Mar. 1982 to Sept. 1982, Apr. 1983 to Sept. 1990.
WATER TEMPERATURE: Dec. 1950 to Dec. 1981, Mar. 1982 to Sept. 1982, Apr. 1983 to Sept. 1990.

REMARKS.--Unpublished daily specific conductance measurements for period Dec. 1950 to Sept. 1964 available from Arizona Water Science Center in Tucson, AZ.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 1 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Medium name	Sample type	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Discharge, instantaneous, ft^3/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
12-06-2011 1045	Surface water	Regular	734	6.0	342	9.7	97	8.5
03-15-2012 1015	Surface water	Regular	726	19.5	125	10.3	98	8.3
06-07-2012 0655	*QC sample - Artificial*	*Blank*	--	--	--	--	--	*5.6*
06-07-2012 1125	Surface water	Regular	719	30.5	103	10.1	106	8.3
08-14-2012 1000	Surface water	Regular	720	33.5	109	8.6	92	8.2

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 2 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)	Temperature, water, °C (00010)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Dissolved solids dried at 180°C, water, filtered, mg/L (70300)	Dissolved solids, water, filtered, sum of constituents, mg/L (70301)	Dissolved solids, water, filtered, tons per acre-foot (70303)	Hardness, water, mg/L as $CaCO_3$ (00900)	Noncarbonate hardness, water, filtered, field, mg/L as $CaCO_3$ (00904)	Suspended solids, water, unfiltered, mg/L (00530)
12-06-2011 1045	569	13.7	E 7.1	345	329	0.47	230	5	< 15
03-15-2012 1015	596	11.1	E 4.0	370	339	.50	249	14	< 15
06-07-2012 0655	*.0*	--	--	--	--	--	--	--	--
06-07-2012 1125	611	14.7	E 3.9	366	340	.50	250	11	< 15
08-14-2012 1000	613	16.2	E 2.3	372	329	.51	256	36	< 15

09510000 VERDE RIVER BELOW BARTLETT DAM, AZ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 3 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Calcium, water, filtered, mg/L (00915)	Calcium, water, unfiltered, recover-able, mg/L (00916)	Magne-sium, water, filtered, mg/L (00925)	Magne-sium, water, unfiltered, recover-able, mg/L (00927)	Potassium, water, filtered, mg/L (00935)	Sodium adsorption ratio, water, number (00931)	Sodium, water, filtered, mg/L (00930)	Alkalinity, water, filtered, inflection-point, incremental titration method, field, mg/L as $CaCO_3$ (39086)	Bicarbonate, water, filtered, inflection-point, incremental titration method, field, mg/L (00453)
12-06-2011 1045	40.0	41.3	31.5	32.1	2.87	1.07	37.2	224	255
03-15-2012 1015	46.0	45.6	32.6	32.1	2.72	1.03	37.5	236	273
06-07-2012 0655	--	--	--	--	--	--	--	--	--
06-07-2012 1125	45.7	46.1	33.0	32.6	2.82	1.04	37.6	239	279
08-14-2012 1000	48.1 r	46.3	33.1 r	31.6 r	2.62	1.04	38.2	220	254

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 4 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Carbonate, water, filtered, inflection-point incremental titration method, field, mg/L (00452)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Organic nitrogen, water, unfiltered, mg/L (00605)	Phosphorus, water, unfiltered, mg/L as P (00665)
12-06-2011 1045	9.2	25.1	0.37	57.3	0.24	0.022	0.076	0.22	0.04
03-15-2012 1015	6.8	23.8	.39	54.7	.20	.016	< .040	.19	.03
06-07-2012 0655	--	--	--	--	*< .07*	*< .010*	*.051*	*< .07*	*< .01*
06-07-2012 1125	6.1	23.4	.38	53.9	.18	.012	< .040	.17	.04
08-14-2012 1000	7.3	23.4	.33	50.3	.22	.068	.050	.15	.06

09510000 VERDE RIVER BELOW BARTLETT DAM, AZ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
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[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Total nitrogen, water, unfiltered, mg/L (00600)	Escherichia coli, modified m-TEC MF method, water, col/100 mL (90902)	Barium, water, unfiltered, recoverable, µg/L (01007)	Beryllium, water, filtered, µg/L (01010)	Beryllium, water, unfiltered, recoverable, µg/L (01012)	Cadmium, water, filtered, µg/L (01025)	Cadmium, water, unfiltered, µg/L (01027)	Chromium, water, unfiltered, recoverable, µg/L (01034)	Copper, water, filtered, µg/L (01040)
12-06-2011 1045	0.32	E 1 k	54.7	< .006	< .02	< .016	< .016	0.43	< .80
03-15-2012 1015	< .24	< 1 k	57.8	< .006	< .02	< .016	< .016	< .30	.84
06-07-2012 0655	*< .12*	*< 1 k*	--	*< .006*	--	*< .016*	--	--	*< .80*
06-07-2012 1125	< .22	E 5 k	62.1	< .006	< .02	.017	< .016	.70	< .80
08-14-2012 1000	.27	E 3 k	62.1	< .006	.02	< .016	< .016	< .30	< .80

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 6 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Copper, water, unfiltered, recoverable, µg/L (01042)	Lead, water, filtered, µg/L (01049)	Lead, water, unfiltered, recoverable, µg/L (01051)	Manganese, water, unfiltered, recoverable, µg/L (01055)	Mercury, water, filtered, µg/L (71890)	Mercury, water, unfiltered, recoverable, µg/L (71900)	Zinc, water, filtered, µg/L (01090)	Zinc, water, unfiltered, recoverable, µg/L (01092)	Antimony, water, filtered, µg/L (01095)
12-06-2011 1045	0.92	< .025	0.28	47.5	< .005	< .005	< 1.4	< 3.0	0.151
03-15-2012 1015	.92	.031	.19	39.4	< .005	< .005	< 1.4	< 3.0	.125
06-07-2012 0655	--	*< .025*	--	--	*< .005*	--	*10.8 r*	--	--
06-07-2012 1125	.82	< .025	.15	49.4	< .005	< .005	< 1.4	< 3.0	.107
08-14-2012 1000	< .70	< .025	.12	93.4	< .005	< .005	1.5	< 3.0	.129

09510000 VERDE RIVER BELOW BARTLETT DAM, AZ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 7 of 7

[%, percent; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated; k, counts outside acceptable range; r, value verified by rerun, same method]

Sample date-time	Antimony, water, unfiltered, µg/L (01097)	Arsenic, water, filtered, µg/L (01000)	Arsenic, water, unfiltered, µg/L (01002)	Boron, water, unfiltered, recoverable, micrograms per liter (01022)	Selenium, water, unfiltered, µg/L (01147)	Suspended sediment concen-tration, mg/L (80154)	Suspended sediment discharge, tons per day (80155)
12-06-2011 1045	0.21	17.6	16.9	162	0.504	29	27
03-15-2012 1015	< .18	14.4	14.9	157	.546	9	3.0
06-07-2012 0655	--	--	--	--	--	< .5	--
06-07-2012 1125	< .18	14.8	14.5	178	.499	22	6.1
08-14-2012 1000	< .18	17.3	16.5	151	.394	5	1.5